



## 2<sup>nd</sup> ICSMTR 2017

INTERNATIONAL CONFERENCE ON STATISTICS, MATHEMATICS, TEACHING, AND RESEARCH

Department of Statistics & Department of Mathematics

Faculty of Mathematics and Natural Sciences, Universitas Negeri Makassar

Jalan Daeng Tata, Kampus UNM Parangtambung Makassar, Indonesia

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Nomor : 05/ICSMTR17/X/2017

2 Oktober 2017

Lampiran : 1 berkas

Perihal : **Undangan Menghadiri dan Presentasi di ICSMTR 2017**

Yth. (Daftar Pemakalah Terlampir)

Pemakalah pada ICSMTR 2017

di

Tempat

Assalamu Alaikum Wr. Wb.

Dengan hormat,

Menindaklanjuti pengumuman pemakalah yang dinyatakan **ACCEPTED** pada ICSMTR 2017 yang dilaksanakan oleh Program Studi Statistika dan Jurusan Matematika Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Negeri Makassar, selanjutnya kami mengundang Bapak/Ibu untuk menghadiri konferensi dan mempresentasikan makalah Anda pada:

Hari : Senin - Selasa


Tanggal : 9 – 10 Oktober 2017


Tempat : Grand Clarion Hotel, Makassar, Indonesia

Susunan acara konferensi dan jadwal Bapak/Ibu presentasi dapat dilihat dalam lampiran surat ini.

Demikian informasi ini, atas perhatian, partisipasi, dan kehadiran Bapak/Ibu, kami mengucapkan terima kasih.

Hormat kami,

Dean,  
  
Prof. Dr. Abdul Rahman, M.Pd.  
FMIPA

Chairman of Committee,  
  
Dr. Syafruddin Side, M.Si.



# Book of ABSTRACTS

INTERNATIONAL CONFERENCE ON  
STATISTICS, MATHEMATICS, TEACHING, AND RESEARCH

**2<sup>nd</sup> ICSMTR 2017**

Theme :

*Advanced Research on Statistics, Mathematics, Science and Education  
for Enhancing International Publication*



# Book of Abstracts

*International Conference on Statistics,  
Mathematics, Teaching, and Research*

**2<sup>nd</sup> ICSMTR 2017**

Makassar, South Sulawesi, Indonesia

October 9 – 10, 2017

**Faculty of Mathematics and Natural Sciences  
Universitas Negeri Makassar  
Indonesia**



## WELCOME SPEECH

### Forewords from the Head of Committee

Assalamu Alaikum Warahmatullahi Wabarakatuh.

The honourable, Rector of Universitas Negeri Makassar (UNM) and all Vice Rectors, the Dean of Mathematics and Natural Sciences Faculty and all Vice Deans, all invited Speakers and Participants.

First of all, let us praise and thank to Allah Subhana Wata'ala, because his Blessings and Helpings, we are able to gather here to attend this conference.

Second, I would like to give our welcome to all delegates, speakers, and participants coming today in The Second International Conference on Statistics, Mathematics, Teaching and Research 2017 (2<sup>nd</sup> ICSMTR-2017) "Advanced Research for Statistics, Mathematics, Sciences and Education for Enhancing International Publications" organized by Mathematics and Natural Sciences Faculty, UNM.

This conference is conducted in two days from 9th to 10th of October 2017 in Grand Clarion Hotel Makassar. It involves: a keynote speaker, six invited speakers and approximately 300 parallel speakers coming from the West to East Indonesia and several countries.

Ladies and gentleman as, I previously said, the conference proudly invites keynote speaker and six invited speakers coming from several countries. Therefore, on behalf of the committee, I would like to express my sincere thanks to them, specifically: 1) Directorate General of Research and Development Strengthening, Ministry of Research, Technology, and Higher Education; 2) Prof. M. Shaheed Hartley (University of Western Cape, South Africa); 3) Prof. Ahmed A. Bahnassy (King Fahd Medical City, Saudi Arabia); 4) Prof. Madya Dr. Ahmad Johari Bin Sihes (Universiti Teknologi Malaysia, Malaysia); 5) Prof. Dr. Khairil Anwar Notodiputro, MS (Bogor Agricultural University, Indonesia); 6) Abbas Panakkal, Ph.D (Ma'din Academy Research Center and International Study, India); 7) Prof. Hamzah Upu, M.Ed. (Universitas Negeri Makassar, Indonesia) and 8) Prof. Muhammad Arif Tiro, Ph.D. (Universitas Negeri Makassar, Indonesia).

Next, I would like thanks to all sponshors and also thanks to all organizing committee who have been showing very good work and determination for the accomplishment of this conference. All of them working since the beginning of the planning stage and they are still here today for all of us, even though, they are very busy with their personal responsibilities.



On this occasion, I would like to apologize to all of you when there are some inconvenience during the conference.

Finally, I would like thanks to the speakers and participants listed in the 2nd ICSMTR 2017. Have a nice conference and also that you have a very pleasant stay in Makassar city. Thank you very much for attention. Assalamu Alaikum Warahmatullahi Wabarakatuh.

Head of Committee,

Prof. Dr. Syafruddin Side, M.Si.



**Forewords from the Dean of Mathematics and Sciences Faculty,  
Universitas Negeri Makassar**

Your excellency Rector of Universitas Negeri Makassar  
Honourable Vice Rectors and Dean of All Faculties  
Honorable Keynote Speakers  
Distinguished all invited speakers from outstanding universities  
Distinguished all speakers and guests  
All participants,  
Ladies & Gentlemen,

*Assalamu'alaykum Warahmatullahi Wabarakatuh.* My greetings for all of you. May peace and God's blessing be upon us all. *Alhamdulillah*, all praises be to the Almighty God, Allah *subhanahu wata'ala*.

It is my pleasure to welcome you all to the opening of The 2<sup>nd</sup> International Conference on Statistics, Mathematics, Teaching, and Research (2<sup>nd</sup> ICSMTR). I am delighted to see that the Mathematics and Natural Sciences Faculty has again organized the second conference that capitalize on our strength and built on our commitment to promoting Mathematics, Science, Teaching and Research.

I do hope that this conference would bring a great opportunity for all of us to strengthen our contribution to the advancement of our nation.

I would like to take this opportunity to thank the conference organizing committee for their diligent work. I would also like to thank participants, especially those of you coming from abroad, for joining us and sharing your valuable experiences. Should you find any inconveniences and shortcomings, please accept our sincere apologies. Finally, let me wish you fruitful discussion and a very pleasant stay in Makassar.

Thank you,

Wassalamu'alaykum Warahmatullahi Wabarakatuh

Dean of Faculty of Mathematics and Natural Sciences  
Universitas Negeri Makassar

Prof. Dr. Abdul Rahman, M.Pd.



## 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 and invited 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 for Faculty of 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) 2017.

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. Husain Syam, M.TP  
Rector of Universitas Negeri Makassar



## CONFERENCE SCHEDULE

### The 2<sup>nd</sup> ICSMTR

Faculty of Mathematics and Natural Sciences

Universitas Negeri Makassar

Clarion Hotel, Makassar, Indonesia, 9 – 10 October 2017

Day 1: Monday, 9 October 2017		
07.00 – 08.00	Registration	Jasmine Hall
08.00 – 09.00	Opening Ceremony Traditional Dance Doa National Anthem: Indonesia Raya Welcome speech: a. Head of Committee Prof. Dr. Syafruddin Side, M.Si. b. Dean of Math & Natural Sciences Faculty Prof. Dr. Abdul Rahman, M.Pd. c. Rector of Universitas Negeri Makassar Prof. Dr. Husain Syam, M.TP.	Jasmine Hall
09.00 – 09.45	Keynote Speaker Directorate General of Research and Development Strengthening, Ministry of Research, Technology, and Higher Education	Jasmine Hall
09.45 – 10.00	Coffee Break	Jasmine Hall
10.00 – 12.00	Invited Speakers 1. Prof. M. Shaheed Hartley, Ph.D. 2. Prof. Dr. Hamzah Upu, M.Ed. 3. Prof. Madya Dr. Ahmad Johari Bin Sihe	Jasmine Hall
12.00 – 13.00	Lunch & Pray	
13.00 – 15.30	Parallel Sesion 1	Parallel Rooms





15.30 – 16.00	Coffee Break	Parallel Rooms
16.00 – 18.00	Parallel Session 2	Parallel Rooms
<b>Day 2: Tuesday, 10 October 2017</b>		
08.00 – 10.00	Invited Speakers 1. Prof. Dr. Khairil Anwar Notodiputro, M.S 2. Prof. Ahmed A. Bahnassy, Ph.D. 3. Prof. Muhammad Arif Tiro, Ph.D. 4. Abbas Panakkal, Ph.D.	Jasmine Hall
10.00 – 10.10	Coffee Break	Jasmine Hall
10.10 – 11.30	Parallel Session 3	Parallel Rooms
11.30 – 12.00	Closing Ceremony	Jasmine Hall
12.00 – 13.00	Lunch & Pray	
13.00 – End	City Tour	



## INVITED SPEAKER SESSION

Day 1: Monday, 9 October 2017		
10.00 – 12.00	Professor M.Shaheed Hartley, Ph.D. University of Western Cape, South Africa <i>Training, supervision and mentorship on a professional development journey from 2010 to 2017: A reflection by students and supervisors</i>	Jasmine Hall
	Professor Dr. Hamzah Upu, M.Ed. Universitas Negeri Makassar, Indonesia <i>The Effectiveness of Mathematics Learning Packages Based on Bilingual Approach.</i>	
	Professor Madya Dr. Ahmad Johari Bin Sihes Universiti Technology Malaysia, Malaysia <i>Transformation of Higher Education Curriculum to Meet the 4<sup>th</sup> Industrial Revolution Challenges</i>	
Day 2: Tuesday, 10 October 2017		
08.00 – 10.00	Professor Dr. Khairil Anwar Notodiputro, M.S Bogor Agricultural University, Indonesia	Jasmine Hall
	Professor Ahmed A. Bahnassy, Ph.D. King Fahd Medical City, Saudi Arabia	
	Professor Muh. Arif Tiro, Ph.D. Universitas Negeri Makassar, Indonesia <i>National Movement for Statistical Literacy in Indonesia: An idea.</i>	
	Abbas Panakkal, Ph.D. Ma'din Academy Research Center, India <i>Technological Trajectories and Epistemological Paradigms in Social Science Researches.</i>	



## INVITED SPEAKERS' ABSTRACTS

### **Training, Supervision and Mentorship on a Professional Development Journey from 2010 to 2017: A Reflection by Students and Supervisors**

Shaheed Hartley

*Science Learning Centre for Africa, University of the Western Cape, South Africa*

#### **Abstract**

The poor results of learners in the high school exit examinations have been a point of debate for many years in South Africa. The negative cycle of science and mathematics outcomes by learners are compounded by many national and international benchmark tests conducted over the past 20 years which describe a dire view of the country's education system. In attempt to address this challenge, many of the provinces in the country have advanced a number of strategies in this regard. This study represents one of the interventions that the education department of the Eastern Cape Province implemented. The Science Learning Centre of the University of the Western Cape was invited to provide training to their science teachers in the form of a structured course called Advanced Certificate in Education (ACE) conducted on a part-time basis in 2010 and 2011. The course was directed at improving teachers' content knowledge, pedagogical strategies and practical and experimental skills. A total of 41 of the original 50 science teachers completed the course. As part of their continuous professional development, 31 science teachers enrolled for BEd Hons in science education in 2013 and 29 of them completed the course in 2014. These students graduated in 2015. Of the 29 BEd Hons students who completed the course 25 registered for Masters in Science Education and were joined by an additional 2 students. This paper reflects on the training, supervision and mentorship provided to educators as students of science education. The growth and development of students through their own reflection and understanding as well as through the eyes of the lecturers and supervisors that took part in the training provide the evaluation of the professional development process over the past few years. This study attempts to identify the merits, challenges and limitations of this project and the lessons to be learnt on such projects.



## The Effectiveness of Mathematics Learning Packages Based on Bilingual Approach

Hamzah Upu

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### Abstract

The specific targets of this research were to produce; (1) Student book (SB), (2) Student Worksheet (SW), (3) Lesson Plan (LP) and to (4) Know their effectiveness of learning packages themselves. The development design of the packages was the modification and adaptation of Four-D model (Thiagarajan, 1974), which is encompassing four phases namely; Define, Design, Develop, and Disseminate. The criteria, used as the references of Bilingual Method, refers to; (1) Indonesian Qualification Framework (IQF), based on President Regulation No. 20/2012, (2) English as a language, in which the packages were made, (3) The validators are native speakers, (4) The structure of the learning packages, which can lead students' paradigm, insight, and knowledge to worldwide things. The research finds that: (1) Quantitatively, the learning packages are generally effective to improve students' achievement, specifically shown by the increase of students' grade from the pretest to posttest as many as 8.16 in 100-grading scale and, (2) Qualitatively; (a) the development SB emphasizes on three facets namely; the clarity and the structure of the content, the language, and the problem solving, (b) The development of SW emphasizes on three primary aspects namely; the task direction, the order of the task, and the language (c) The development of LP emphasizes on four primary aspects: formulation of basic competency, time allocation, learning material, and its structure.

**Keywords:** Effectiveness, Learning Packages, International Standard



## **Transformation of Higher Education Curriculum to Meet the 4th Industrial Revolution Challenges**

Professor Madya Dr. Ahmad Johari Bin Sihes

*Universiti Teknologi Malaysia, Malaysia*

### **Abstract**

A significant change in human life over the past 100 years has been a challenge to the world of education. The changing educational landscape witnessed some important trends such as the development of postgraduate higher education level, diversity of students and continental cross-movements in search and expanding knowledge. Education, as a whole, also impressed with the end of the 20th century and the beginning of the 21st Century. The long-standing university in power and the expansion of knowledge has been suggested to act swiftly to take account of major changes. This is necessary to make higher education more relevant to provide the necessary human capital in the future. Current education is seen as something that does not meet the needs of the job. The need to take into account the various perspectives in the curriculum is an approach that is often addressed in discussions and studies in relation to the present curriculum. The 21st Century Learning has been suggested as a result of educators, educators and industry experts in identifying the skills needed to succeed in life, employment and support systems that should be the core of learning outcomes. The Future of Jobs report estimates that more than 1/3 of the jobs considered important today will change over the next five years. Advanced robotics and automated transport, artificial intelligence and advanced materials, biotechnology and genomics are a revolution in life. The advanced development that transforms lifestyle will create unexpected jobs and eliminate today's popular career. This change will have a profound impact on higher education. The rapid movement and development of knowledge has transformed teaching and learning. And this is expected to be more serious when the world is facing a rapid change in technology. Automation in the workplace will make the skills of automated assisted and system-assisted work critical regardless of any job field. The Phenomenon of the 4th Industrial Revolution is seen to give a greater challenge to higher education. In this regard, education needs to be able to produce individuals capable of exploring and possessing sophisticated analysis and even solving complex problems. At the same time, higher education needs more flexibility and innovation to enable lifelong learning. Higher education in the 4th Industrial Revolution (4IR) is seen as something complex but it is a



chance to transform society. Artificial intelligence drives 4IR which emphasizes various disciplines in teaching, research and innovation. With human sophistication and wisdom, the gap between humanity and social science and science and technology can be diminished. The 4th Industrial Revolution triggers a new phenomenon in the life of a universal human being. University and society collaborations in addressing the real problems of life are very important. Universities and communities need to jointly develop a higher education curriculum to be more relevant. Higher education must take into account the needs of the 4IR to ensure that the academic programs are sustained and relevant. In this regard, the forming, formulation and review of curriculum based on the criteria that are specific and agreed upon is necessary to humanizing 4IR so that physical and moral progress will go hand in hand.

**Keywords:** Effectiveness, Learning Packages, International Standard



## National Movement for Statistical Literacy in Indonesia: An Idea

Muhammad Arif Tiro

*Department of Statistics, Universitas Negeri Makassar, 90222, Indonesia, arif\_tiro@yahoo.com*

### Abstract

The national movement of statistical literacy in Indonesia needs to be initiated and implemented. It is important to realize the noble ideals of the Indonesian nation to educate the nation's life. We cannot avoid reading statistical data presentation. Reading newspapers, magazines, and other papers will undoubtedly always find data presentation. Moreover, if we read scientific papers it is very difficult to avoid the presentation of data, both in the form of descriptive statistics and even in the form of inferential statistics. The need for the ability to read and interpret statistical data is not limited to a particular community, but to almost all communities within the nation. Therefore, the idea to promote the national movement of statistical literacy in Indonesia is presented in this conference forum.

**Keywords:** information literacy, statistical literacy, descriptive statistics, inferential statistics, nation's life



## Technological Trajectories and Epistemological Paradigms in Social Science Researches

Dr. Abbas Panakkal

*ICD, Nathan Campus, Griffith University, Australia*

### Abstract

It is very important to analyse how the new technological advancements influenced the academic writing expectations in HDR (Higher Degree Research) level. Embracing technological advancements, new researchers and supervisors drive well beyond the standard methodological manual or stylebook, which were the manifest of research for centuries and one third of the research time was spent to tame various modes and methods. In social science research all the big questions (who, what, why, where) are still existed, but most of them are gently answered by the smart software, which were officially adopted by top listed universities around the world. Technology scientifically reaffirms the elements, which in principle assure original writings and significant contributions to the knowledge and understanding. The EndNote software offers wonderful arena of styles in a single mouse click and enables to transform the whole article to the any international style. There are number of online tutorial aides from focal universities and the thesis can be checked with the help of software whether it is clearly articulated, logically presented with accurate references and sound arguments. Tara Brabazon online materials are examples of bundle of information for current doctoral students and supervisors by Times Higher Education. Academic institutions also offer online resources with instructions and examples of accepted type of research style and techniques. Reflections of evolving novel technologies in the field of Higher Degree Research are well identified and clearly accepted in the current social science research world. The real purpose of adopted technologies are to ease problems of drafting procedures, mode of writing and systems of citations.

This also helps supervisors, internal and external examiners to affirm the authenticity of cited manuscripts, articles, books and implications of different perspectives on how researches were designed, conducted and narrated. The result of this technological advancement and its effective use bring a novice and





progressive mode of research and keep an outlook on how technology can be used for the betterment of intellectual, scientific phenomena of social science research. This paper focuses on wonderful tools and platforms developed by timely educationalists that bridges the methodological gap and reconsiders important epistemological questions, which are often overlooked.



### Parallel Sessions Schedule

Day/ Date : Monday/ 9 October 2017  
 Time : 13.00 – 18.00  
 Room : A

No	Time	Name	Title	Institutions	Pages
1	13.00 – 13.10	Riki Herliansyah <sup>1</sup> , Rezzy Eko Caraka <sup>1</sup> , Jamilatuzzahro <sup>3</sup>	Generalized Linear Latent Variable Models For Count Outcomes in Ecology Using TMB Package	<sup>1</sup> University of New South Wales, <sup>2</sup> Institut Teknologi Bandung	1
2	13.10 – 13.20	Jamilatuzzahro <sup>1</sup> , Rezzy Eko Caraka <sup>2</sup> , Riki Herliansyah <sup>2</sup>	A Fundamental Analysis Indonesia Export and Import of Oil and Non-Oil Sectors Using Multivariate Adaptive Regression Spline (MARS)	<sup>1</sup> Institut Teknologi Bandung, <sup>2</sup> University of New South Wales	2
3	13.20 – 13.30	Kabir Bello, Suleiman Bashir, Umar Sodangi	Exponential Smoothing with Application to Design of Production Planning System, a Case of Sokoto Cement Company of Northern Nigeria, Sokoto State, Nigeria”	Federal University Gusau, Zamfara State	3
4	13.30 – 13.40	Dewi Retno Sari Saputro, Andi Darmawan, Purnami Widyaningsih	Parameter Estimation of Additive Genetic and Unique Environment (AE) Model on Diabetes Mellitus Type 2 using Bayesian Method	Sebelas Maret University	4
5	13.40 – 13.50	Isnandar Slamet, Syaiful Nur Arifan, Sutrima	Optimal Portfolio of Jakarta Islamic Index using Stochastic Dominance and Multi Index Models	Sebelas Maret University	5
6	13.50 – 14.00	Tri Handhika <sup>1</sup> and Martha Endika Sasongko <sup>2</sup>	Kaplan-Meier Survival Analysis in Estimating The Number of Earned Exposure Units For The One of Auto Insurance Company In Indonesia	<sup>1</sup> Gunadarma University, <sup>2</sup> University of Indonesia	6
7	14.00 – 14.10	Dewi Retno Sari Saputro, Kornelius Ronald Demu, Purnami Widyaningsih	Nonparametric Truncated Spline Regression Model on The Data of Human Development Index (HDI) In Indonesia	Sebelas Maret University	7
8	14.10 – 14.20	Ida Mariati Hutabarat, Yacob Ruru	Application of Geographically Weighted Regression Model to Analysis of Percentage on Malnutrition Occurrences in Papua Province	Cenderawasih University	8



9	14.20 – 14.30	Yunan Hanun <sup>1</sup> , Muhammad Ikhsan Setiawan <sup>2</sup> , Ansari Saleh Ahmar <sup>3,4</sup>	Designing Cost Production of Concrete	<sup>1</sup> Tarumanegara University, <sup>2</sup> Narotama University, <sup>3</sup> Universitas Negeri Makassar, <sup>4</sup> AHMAR Institute	9
10	14.30 – 14.40	Isnandar Slamet <sup>1</sup> , Ritu Gupta <sup>2</sup> , Narasimaha R. Achuthan <sup>2</sup> , Roger Collinson <sup>2</sup>	Probability Density Function of the Total Idle Time of Busy Period Densities of M/C2/1 Queues under (0,k) Control Policy	<sup>1</sup> Universitas Sebelas Maret, <sup>2</sup> Curlin University	10
11	14.40 – 14.50	M. Fariz Fadillah Mardianto <sup>1</sup> , Sri Haryatmi <sup>1</sup> , Herni Utami <sup>1</sup> , I Nyoman Budiantara <sup>1</sup>	Nonparametric Regression Analysis Based on Three Forms of Fourier Series Estimator, Case Study for Modeling Poverty Rate in East Java	<sup>1</sup> University of Gadjah Mada, <sup>2</sup> Institute of Teknologi Sepuluh Nopember	11
12	14.50 – 15.00	Eko Tjahjono, M. Fariz Fadillah Mardianto, Nur Chamidah	Prediction of Maximum Electricity Consumption Using Bi-response Nonparametric Regression Approach Based on Fourier Series Estimator	University of Airlangga	12
13	15.00 – 15.10	Rohmatul Fajriyah <sup>1</sup> , Paulo C. Rodriguez <sup>2</sup>	Implementing the Computer-Supported Collaborative Learning and Teaching in a Statistics Class for the Engineering Students	<sup>1</sup> Universitas Islam Indonesia, <sup>2</sup> University of Tampere	13
14	15.10 – 15.20	Muhammad Ahsan, Muhammad Mashuri, Hidayatul Khusna	T2 Control Chart based on Successive Difference Covariance Matrix for Intrusion Detection System	Institut Teknologi Sepuluh Nopember Surabaya	14
15	15.20 – 15.30	Hidayatul Khusna, Muhammad Mashuri, Suhartono Suhartono, Dedy Dwi Prastyo, Muhammad Ahsan	Multioutput Least Square SVR Based Residual of MEWMA Control Chart	Institut Teknologi Sepuluh Nopember Surabaya	15
15.30 – 16.00 Coffee Break					
16	16.00 – 16.10	Alfian F. Hadi, Kurnia Ahadiyah, Moh. Hasan, Halimatus Sadiyah	Handling Outlier in Two-Ways Table Data: The Robustness of Row-Column Interaction Model	University of Jember	16
17	16.10 – 16.20	Muhammad Nusrang <sup>1</sup> , Suwardi Annas <sup>1</sup> , Asfar <sup>1</sup> , Jajang <sup>2</sup>	Performance REML and ML in SAE Model	<sup>1</sup> Universitas Negeri Makasar, <sup>2</sup> Universitas Jenderal Soedirman	17
18	16.20 – 16.30	Dedy Dwi Prastyo, Iio Lionita Sudjati, Setiawan, Suhartono	Value-at-Risk Modeling with Exogenous Variables using ARMAX-GARCHX Approach: An Application to Risk Quantification of Stock Return	Institut Teknologi Sepuluh Nopember	18



19	16.30 – 16.40	Zuherman Rustam, Durrabida Zahras	Comparison between Support Vector Machine and Fuzzy C-Means as Classifiers for Intrusion Detection System	Universitas Indonesia	19
20	16.40 – 16.50	Sugiyanto, Etik Zukhronah, Anis Nur Aini	Forecasting of Financial Crisis in Indonesia Based on Bank deposits, Real Exchange Rates and Exchange Rates of Trade Indicators	Sebelas Maret University, Surakarta	20
21	16.50 – 17.00	Didit B. Nugroho	Comparative Analysis of Three MCMC Methods for Estimating GARCH Models	Satya Wacana Christian University, Salatiga	21
22	17.00 – 17.10	Novi Ajeng Salehah, Suhartono, Dedy Dwi Prastyo, Santi Puteri Rahayu	Hybrid ARIMAX Quantile Regression Model for Forecasting Inflow and Outflow of Bank Indonesia at East Java Province	Institut Teknologi Sepuluh Nopember, Surabaya	22
23	17.10 – 17.20	Suhartono, Farah Fajrina Amalia, Priyandari Dina Saputri, Santi Puteri Rahayu, Brodjol Sutijo Suprih Ulama	Simulation Study for Determining the Best Architecture of Multilayer Perceptron for Forecasting Nonlinear Seasonal Time Series	Institut Teknologi Sepuluh Nopember, Surabaya	23
24	17.20 – 17.30	M. Nadjib Bustan, M. Arif Tiro, Adiatma	Modeling of Breast Cancer Diagnosis Classification Based on Hospital Medical Records	Universitas Negeri Makassar	24
25	17.30 – 17.40	M. Nadjib Bustan <sup>1</sup> , Arman <sup>2</sup> , M. Kasim Aidid <sup>1</sup> , Syamsidar <sup>2</sup>	Cox Proportional Hazard Survival Analysis of Inpatient Breast Cancer Cases	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universitas Muslim Indonesia	25
26	17.40 – 17.50	Akhmad Fauzy, Anggara Setyabawana Putra, Zaky Musyarof, Wahyu Listyawan, Yulianto Purwono Prihatmaji, Kasam	Remote Sensing Analysis Using Landsat 7 ETM+ And 8 OLI Data To Support Energy Conservation Policy Based On Vegetation In Special Region of Yogyakarta	Islamic University of Indonesia	26
27	17.50 – 18.00	Eka Safitri, Muhammad Arif Tiro, Suwardi Annas	Subtractive Fuzzy C-Means Method (SFCM) in Regency / City Grouping in South Sulawesi Province Based on Indicators of Human Development Index	Universitas Negeri Makassar	27



### Parallel Sessions Schedule

Day/ Date : Monday/ 9 October 2017

Time : 13.00 – 18.00

Room : B

No	Time	Name	Title	Institutions	Pages
1	13.00 – 13.10	Mardeli Jandja, Mohammad Lutfi	The Five Columns Rule in Solving Definite Integration by Parts through Transformation of Integral Limits	Tadulako University	50
2	13.10 – 13.20	Purnami Widyaningsih, Rifqi Choiril Affan, Dewi Retno Sari Saputro	A Mathematical Model for the Epidemiology of Diabetes Mellitus with Lifestyle and Genetic Factors	Universitas Sebelas Maret	51
3	13.20 – 13.30	Abdussakir <sup>1</sup> , Muzakir <sup>1</sup> , Corry Corazon Marzuki <sup>2</sup>	Detour Spectrum and Energy of Conjugate Graph Complement of Dihedral Group	<sup>1</sup> Universitas Islam Negeri Maulana Malik Ibrahim Malang, <sup>2</sup> Universitas Islam Negeri Sultan Syarif Kasim, Riau	52
4	13.30 – 13.40	Abdussakir, Dini Chandra Aulia Putri, Ziyadatur Rohmah Fadhillah	Full Automorphism Group of Commuting and Non-Commuting Graph of Dihedral and Symmetric Groups	Universitas Islam Negeri Maulana Malik Ibrahim Malang	53
5	13.40 – 13.50	Le Thanh Hue	Station Cone Algorithm for Linear Program With Non - Negative Input Data	Hanoi University of Mining and Geology, Hanoi, Vietnam	54
6	13.50 – 14.00	B N Fauzi, Sutanto, V Y Kurniawan	An Integrated Vendor and Buyer Inventory Model with Inspection Errors, Controllable Leadtime, and Learning In Production	Universitas Sebelas Maret,	55
7	14.00 – 14.10	Meilantifa	Detection Speed Accommodation and Asimilation Students of VII Classroom In Learning Triangle is Specially	Wijaya Kusuma Surabaya University	56
8	14.10 – 14.20	Abd. Rahim	Estimation of Household Income of Traditional Catch Fishermen	Universitas Negeri Makassar	57
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10	14.30 – 14.40	Bobby Poerwanto <sup>1</sup> , Riska Yanu Farifah <sup>1</sup> , Wahidah Sanusi <sup>2</sup> , Syafruddin Side <sup>2</sup>	A Matlab Code To Compute Prediction of Survival Trends in Patients with DHF	<sup>1</sup> Universitas Cokroaminoto Palopo, <sup>2</sup> Universitas Negeri Makassar	59
11	14.40 – 14.50	Titu Udjiani, Harjito, Suryoto, Nikken Prima	The Moore Existence of Normal Element on Ring with Involution	Diponegoro University	60
12	14.50 – 15.00	Zuherman Rustam, Frederica Yaurita	Insolvency Prediction in Insurance Companies Using Support Vector Machines and Fuzzy Kernel C-Means	University of Indonesia	61
13	15.00 – 15.10	Supiyanto, Westy Bianita Kawuwung, Tiku Tandianga	Face Recognition Using the Fisherface Method	Universitas Cenderawasih, Jayapura	62
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15	15.20 – 15.30	Stefanie Intan Christienova, Yusep Suparman	Cluster Analysis using Particle Swarm Optimization K-Harmonic Means Method for Sister Village of Remote Areas in Survey	Padjadjaran University	29
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16	16.00 – 16.10	Nurfadhila Fahmi Utami, Suwardi Annas, Muhammad Nusrang, Asfar, Rizwan Arisandi	The Analysis Of Survival With Model Of Regression Cox Proportional Hazard (Case In: Stayed Patient In RSUD Makassar City)	Universitas Negeri Makassar	30
17	16.10 – 16.20	Farah Fajrina Amalia, Suhartono, Santi Puteri Rahayu	Quantile Regression Neural Network for Forecasting Inflow and Outflow in Special Region of Yogyakarta	Institut Teknologi Sepuluh Nopember	31
18	16.20 – 16.30	Suwardi Annas, Ansari Saleh Ahmar, Rizwan Arisandi	Parameter Estimation in Multivariate Cox Regression	Universitas Negeri Makassar	32
19	16.30 – 16.40	Wiwini Rewini Kunusa, Ishak Isa, Lukman A.R Laliyo, Hendrik Iyabu	FTIR, XRD and SEM Analysis of Microcrystalline Cellulose (MCC) Fibers from Corncores in Alkaline Treatment	Gorontalo State University	33
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21	16.50 – 17.00	Anna Islamiyati <sup>1</sup> , Fatmawati <sup>2</sup> , Nur Chamidah <sup>2</sup>	Longitudinal Data Analysis with Penalized Spline Bi- Response Regression Model	<sup>1</sup> Hasanuddin University, <sup>2</sup> Airlangga University	35
22	17.00 – 17.10	Alfian F. Hadi, Ira Yudistira, Dian Anggraeni and Moh. Hasan	Geographical Clustering of The Rainfall Station on Seasonal GSTAR Modelling For Rainfall Forecasting at Jember Regnecy	University of Jember	36
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24	17.20 – 17.30	Adam Surya Wijaya and Irhamah Irhamah	Forecasting Electricity Load at Each Cities in East Java using ARIMA-Support Vector Regression	Institut Teknologi Sepuluh Nopember	38
25	17.30 – 17.40	Halim Shukri Kamaruddin <sup>1</sup> , Noriszura Ismail <sup>2</sup>	Statistical Comparison of Mortality Rate and Life Expectancy of Malaysia by using 4 Variants of Lee- Carter and Cairne-Blake-Dowd (CBD) Models	<sup>1</sup> Taylor's University, <sup>2</sup> Universiti Kebangsaan Malaysia	39
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27	17.50 – 18.00	Suwardi Annas, Muhammad Arif Tiro, Irwan	Meta Analysis on the Application of Structural Equation Models	Universitas Negeri Makassar	41



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2	13.10 – 13.20	Halifah Pagarra <sup>1</sup> , Roshanida A. Rahman <sup>2</sup> , Abd. Muis <sup>1</sup> , Hartati <sup>1</sup> , Rachmawaty <sup>1</sup> , Arifah Novia Arifin <sup>1</sup>	Screening of Factors Influencing Exo-polygalacturonase Production by <i>Aspergillus niger</i> ATCC120120 Using 2-Level Factorial Design	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universiti Teknologi Malaysia,	78
3	13.20 – 13.30	Frederik Palallo, Muhammad Ardi, Guntur Yusuf	The Potency of Livestock Waste into Renewable Energy (Biogas) in Palipu District Tana Toraja Regency	Universitas Negeri Makassar	79
4	13.30 – 13.40	Andi Citra Pratiwi <sup>1</sup> , Sirinapa Kijkuakul <sup>2</sup> , Pattamon Sangin <sup>2</sup>	The Development of Students' Nature of Science Views in Cellular Respiration Context	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Naresuan University,	80
5	13.40 – 13.50	Dwi Kesuma Sari, Irma Andriani, Khusnul Yaqin	Histological Study of The Circulatory System of Sulawesi Medaka Fish ( <i>Oryzias celebensis</i> ) for Animal Model Research	Hasanuddin University	81
6	13.50 – 14.00	A Magfira Satya Apada <sup>1</sup> , Michael Haryadi Wibowo <sup>2</sup> , Widya Asmara <sup>2</sup>	The Characterization of Polymerase Protein Basic 2 (PB2) of Duck Origin Avian Influenza Virus	<sup>1</sup> Hasanuddin University, <sup>2</sup> Gadjah Mada University	82
7	14.00 – 14.10	Rachmawaty <sup>1</sup> , A. Mu'nisa, Hasri <sup>1</sup> , Halifah Pagarra <sup>1</sup> , Hartati <sup>1</sup> , Zulkifli Maulana <sup>2</sup>	Extraction of Bioactive Compounds from Cocoa Pod Husk ( <i>Theobroma cacao</i> L.) and Potential Antifungi Activity	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universitas Bosowa	83
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9	14.20 – 14.30	Alimuddin Ali <sup>1</sup> , Muhammad Junda <sup>1</sup> , Herlina Rante <sup>2</sup> , Riska Nuramelia <sup>1</sup>	Characterization of Actinomycetes Antagonist <i>Fusarium oxysporum</i> f.sp. <i>passiflora</i> Isolated from Rhizosphere Soil of Purple Passion Fruit Plants, South Sulawesi, Indonesia	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Hasanuddin University	85
10	14.30 – 14.40	Fatmawati	Influence of Level of Education on Horticultural Farmers' Behavior in the Application of Eco-Friendly Practices in Gowa Regency, Indonesia	Bosowa University of Makassar	86
11	14.40 – 14.50	Nurhayani H. Muhiddin <sup>1</sup> , Nur Arfa Yanti <sup>2</sup>	Antibacterial Activity of Mold Isolate from "Wikau Maombo" Based on Incubation Period	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universitas Halu Oleo	87
12	14.50 – 15.00	Muhammad Wiharto, Lahming, Diyahwati, Muhammad Wijaya, Hamka Lodang, Fatma Hiola	Vegetation Structure of Sapling Plant at Bantimurung Bulusaraung National Park Ballocci Resort South Sulawesi	Universitas Negeri Makassar	88
13	15.00 – 15.10	Fitri Damayanti <sup>1</sup> , Suharsono <sup>2</sup> , Aris Tjahjoleksono <sup>2</sup> , Ika Mariska <sup>3</sup>	Embryogenic Callus Cytology and Regeneration Condition for Genetic Transformation of Sugarcane ( <i>Saccharum officinarum</i> L.)	<sup>1</sup> University of Indraprasta, <sup>2</sup> Bogor Agricultural University, <sup>3</sup> Indonesian Center for Estate Crops Research and Development (ICECRD)	89
14	15.10 – 15.20	Hartati <sup>1</sup> , Liza Md Salleh <sup>2</sup> , Halifah Pagarra <sup>2</sup> , Rachmawaty <sup>1</sup>	Response Surfaces of Linoleic Acid of Swietenia Mahagoni in Supercritical Carbon Dioxide	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universiti Teknologi Malaysia	103
15	15.20 – 15.30	Hasri, Diana E. Pratiwi, Suriati Eka Putri	Synthesis and Characterization of Nanochitosan as Eco-Sorbent Candidat	Universitas Negeri Makassar	104
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18	16.20 – 16.30	Vistarani Arini Tiwow, Meytij Jeanne Rampe, Muhammad Arsyad	Identification of Natural Sand Characteristics in South Sulawesi	Universitas Negeri Makassar	99



19	16.30 – 16.40	Vistarani Arini Tiwow, Meytij Jeanne Rampe, Muhammad Arsyad, Pariabti Palloan	Microstructures Identification of the Iron Sand Deposits in South Sulawesi, Indonesia	Universitas Negeri Makassar	100
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21	16.50 – 17.00	M. A. Martawijaya	Perception of Prospective Physics Teacher to the Model of Learning Based on Local Wisdom	Universitas Negeri Makassar	102
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23	17.10 – 17.20	Ramli Umar <sup>1</sup> , Muhammad Yusuf <sup>1</sup> , Ravinesh Rohit Prasad <sup>2</sup>	Drought Index in Jenepono, South Sulawesi Province of Indonesia with the use of the Walsh and Lawler method	<sup>1</sup> Universitas Negeri Makasar, <sup>2</sup> Universitas Negeri Malang	116
24	17.20 – 17.30	Chalid Imran Musa, Muhammad Hasan	Social, Economic, and Demographic Aspects of Micro, Small, and Medium Enterprises in Makassar City	Universitas Negeri Makassar	117
25	17.30 – 17.40	Baihaqi Siregar, Ahmad Badril Azmi Nasution, Lukman Adlin Harahap, Ulfi Andayani, Fahmi	Soil Moisture Condition Monitoring System In Wireless Sensor Network Using Wasmote Soil Moisture Sensor	University of Sumatera Utara	118
26	17.40 – 17.50	Sukri Nyompa, Rosmini Maru, Uca Sideng, Amal Arfan	Analysis of Migration Ethnic Makassar, Bugis, Toraja and Java in Metropolitan Makassar	Universitas Negeri Makassar	119
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3	13.20 – 13.30	Murtafiah Murtafiah <sup>1</sup> , Sitti Inaya Masrura <sup>1</sup> , Nenny Indrawati <sup>1</sup> , Nurdin Arsyad <sup>2</sup> , Awi <sup>3</sup>	Development of Learning Device Based on Metacognitive Strategies to Build the Students Character	<sup>1</sup> Universitas Sulawesi Barat, <sup>2</sup> Universitas Negeri Makassar	172
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5	13.40 – 13.50	Risnawati, Alfina Hadiarti Darwis and Novita Sari	The Development of Learning Media Based on Visual, Auditory, and Kinesthetic (VAK) Approach to Facilitate Students' Mathematical Comprehension Ability of Junior High School 21 Pekanbaru	State Islamic University of Sultan Syarif Kasim Riau	174
6	13.50 – 14.00	Muhammad Ilman Nafi'An <sup>1</sup> , Purwanto Purwanto <sup>2</sup> , Abdur Rahman Asari <sup>2</sup> , Edy Bambang Irawan <sup>2</sup>	Type Justification on Transformation Process Of Mathematical Knowledge Primary School Student	<sup>1</sup> STKIP PGRI Tulungagung, <sup>2</sup> Universitas Negeri Malang,	175
7	14.00 – 14.10	Muhammad Muzaini <sup>1</sup> , Dwi Juniati <sup>2</sup> , Tatag Y.E Siswono <sup>2</sup>	Quantitative Reasoning Analysis of Junior High School Students in Generalizing in Terms of Gender Differences	<sup>1</sup> Universitas Cokroaminoto Palopo, <sup>2</sup> Universitas Negeri Surabaya	176



8	14.10 – 14.20	Nur Wahidin Ashari, Salwah	Working with Definition of Absolute Value: Study on Prospective Mathematics Teacher of Cokroaminoto Palopo University in Real Analysis Subject	Universitas Cokroaminoto Palopo, Indonesia	177
9	14.20 – 14.30	Meilantifa <sup>1</sup> , Herva Maulina <sup>1</sup> , Mega Teguh Budiarto <sup>2</sup> , Janet Trineke Manoy <sup>2</sup>	Development Learning Tools Models of Triangle using Problem Solving Based Rigorous Mathematical Thinking in University Wijaya Kusuma Surabaya	<sup>1</sup> Universitas Wijaya Kusuma Surabaya, <sup>2</sup> Universitas Negeri Surabaya	178
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11	14.40 – 14.50	Arvyaty, Salim, Era Maryanti	Development of Teaching Material to Improve Students' Mathematics Literacy Ability by Using Metacognitive Guidance Approachmnet	Halu Oleo University	180
12	14.50 – 15.00	Andi Mulawakkan Firdaus	Profile of Students' Critical Thinking in Solving Mathematical Problems based on Gender	Universitas Muhammadiyah Makassar, Indonesia	181
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14	15.10 – 15.20	La Misu, Mohamad Salam	Profile of Metacognition of Mathematics Education Students in Understand the Concept of Integral Calculus in Category Classifying and Summarizing Based on Gender Differences	Halu Oleo University	183
15	15.20 – 15.30	Arwanto <sup>1</sup> , I Ketut Budaya <sup>2</sup> , Mega Teguh Budiarto <sup>2</sup>	Intuition Profile of Mathematics Student in Problems Solve through Polya Steps based on the Differences of Masculine and Feminine Personality	<sup>1</sup> University of Muhammadiyah Cirebon, <sup>2</sup> State Universitas Surabaya	184
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		Ikhran, Irma Surya Nigsi Sam, Firda Nurfaizah Anhar, Miqhiyal Akbar, Ahmad Ridfah			
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27	17.50 – 18.00	Nurhanurawati <sup>1</sup> , Purwanto, Abdurrahman As'ari <sup>2</sup> , Edy Bambang Irawan <sup>2</sup>	Tortuous Thinking Intuitively in Solving Problem of Convergence of Sequence	<sup>1</sup> Universitas Lampung, <sup>2</sup> Universitas Negeri Malang	196



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5	13.40 – 13.50	Ni Putu Ayu Audia Ariantari, Zuherman Rustam	Support Vector Machine for Classifying Policyholders Satisfactorily in Automobile Insurance	University of Indonesia	125
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7	14.00 – 14.10	Heri Nurdyanto <sup>1</sup> , Robbi Rahim <sup>2</sup> , Ansari Saleh Ahmar <sup>3,4</sup> , Muhammad Syahril <sup>5</sup> , Muhammad Dahria <sup>5</sup> , Herlina Ahmad <sup>6</sup>	Secure a Transaction Activity with Base64 Algorithm and Word Auto Key Encryption Algorithm	<sup>1</sup> STMIK Dharma Wacana, <sup>2</sup> Universiti Malaysia Perlis, <sup>3</sup> Universitas Negeri Makassar, <sup>4</sup> AHMAR Institute, <sup>5</sup> STMIK Triguna Dharma, <sup>6</sup> Universitas Al Asyariah Mandar	127
8	14.10 – 14.20	Ahmad Yanie <sup>1</sup> , Abdurrozaq Hasibuan <sup>2</sup> , Ishaq <sup>3</sup> , Marsono <sup>3</sup>	Web Based Application for Decision Support System with ELECTRE Method	<sup>1</sup> Sekolah Tinggi Teknik Harapan,	128



		Mesran <sup>4</sup> , Surya Darna Nasution <sup>4</sup> , Robbi Rahim <sup>5</sup> , Heri Nurdianto <sup>6</sup> , Ansari Saleh Ahmar <sup>7,8</sup>		<sup>2</sup> Universitas Islam Sumatera Utara, <sup>3</sup> STMIK Triguna Dharma, <sup>4</sup> STMIK Budi Dharma, <sup>5</sup> Akademi Perekam Medik dan Infokes Imelda, <sup>6</sup> STMIK Dharma Wacana, <sup>7</sup> Universitas Negeri Makassar, <sup>8</sup> AHMAR Institute	
9	14.20 – 14.30	Suhendar <sup>1</sup> , Herminarto Sofyan <sup>2</sup> , Priyanto <sup>2</sup>	Development of Operator Competence Units on Programmable Logic Controller as Work-Based Teaching Method	<sup>1</sup> University of Sultan Ageng Tirtayasa (UNTIRTA) Banten, <sup>2</sup> Yogyakarta State University	129
10	14.30 – 14.40	S Sriadhi <sup>1</sup> , Robbi Rahim <sup>2</sup> , Ansari Saleh Ahmar <sup>3,4</sup>	RC4 Algorithm Visualization for Cryptography Education	<sup>1</sup> Universitas Negeri Medan, Indonesia, <sup>2</sup> Akademi Perekam Medik dan Infokes Imelda, <sup>3</sup> Universitas Negeri Makassar, <sup>4</sup> AHMAR Institute	130
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13	15.00 – 15.10	Ansari Saleh Ahmar <sup>1,2*</sup> , Rahmat Hidayat <sup>3</sup> , Darmawan Napitupulu <sup>4</sup> , Robbi Rahim <sup>5</sup> , Yance Sonatha <sup>3</sup> , and Meri Azmi <sup>3</sup>	Design Web-Based Conference Management Information System (eConf)	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute, <sup>3</sup> Politeknik Negeri Padang, <sup>4</sup> Indonesian Institute of Sciences, <sup>5</sup> Universiti Malaysia Perlis	133
14	15.10 – 15.20	Diana Rahmawati <sup>1</sup> , Miftachul Ulum <sup>1</sup> , Heri Setiawan <sup>2</sup>	Design of Android Base Fuzzy Wireless Sensor Network for mini Smart Green House	<sup>1</sup> University of Trunajaya Madura, <sup>2</sup> Indonesian Army Polytechnic	134



15	15.20 – 15.30	Rusli <sup>1</sup> , Nasrul Ihsan <sup>1</sup> , Nurdin Noni <sup>1</sup> , Ansari Saleh Ahmar <sup>1,2</sup>	The Design and Development of Management Information System Research as an Effort to Improve Quality, Monitoring and Evaluation in relation to Management Research at the Universitas Negeri Makassar	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute	135
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18	16.20 – 16.30	Hamidah Harahap, Hamda Eka Agustini, Taslim Taslim, Iriany, Halimatuddahlia Nasution, Yuni Aldriani Lubis	The Effect of Drying Temperature on Natural Rubber Latex (NRL) Films with Modification of Nanocrystal Cellulose (NCC) Filler	Univ Sumatera Utara	138
19	16.30 – 16.40	Sabib <sup>1</sup> , M. Ikhsan Setiawan <sup>2</sup> , Ansari Saleh Ahmar <sup>3,4</sup>	Performance of Asphalt Concret with Chrome and Hot Rolled Sheet with Chrome Using Portland Cement Filler and Prevent Exfoliation by Empirical Mechanism	<sup>1</sup> Tarumanegara University, <sup>2</sup> Narotama University, <sup>3</sup> Universitas Negeri Makassar, <sup>4</sup> AHMAR Institute	139
20	16.40 – 16.50	Corvis L Rantererung, Titus Tandiseno, Mika Mallisa	Optimize Performance of Cross Flow Turbine with Multi Nozzle	Paulus Christian University of Indonesia, Makassar	140
21	16.50 – 17.00	Shahryar Sorooshian	Group Decision Making With Unbalanced-Expertise	Universiti Malaysia Pahang, Malaysia	141
22	17.00 – 17.10	M. S. Hadi <sup>1</sup> , A. N. Afandi <sup>1</sup> , A. P. Wibawa <sup>1</sup> , A. S. Ahmar <sup>2,3</sup> , K. H. Saputra <sup>1</sup>	Stand-alone Data Logger for Solar Panel Energy System with RTC and SD Card	<sup>1</sup> Universitas Negeri Malang, <sup>2</sup> Universitas Negeri Makassar, <sup>3</sup> AHMAR Institute	142
23	17.10 – 17.20	M. S. Hadi <sup>1</sup> , A. N. Afandi <sup>1</sup> , A. P. Wibawa <sup>1</sup> , A. S. Ahmar <sup>2,3</sup> , I. M. Sakti <sup>1</sup> , M. D. Maulana <sup>1</sup>	IOT Cloud Data Logger for Color Picker Arm Robot	<sup>1</sup> Universitas Negeri Malang, <sup>2</sup> Universitas Negeri Makassar, <sup>3</sup> AHMAR Institute	143
24	17.20 – 17.30	Aji Prasetya Wibawa, Felix Andika Dwiyanto, Triyanna	Utilization Visualgo.net as a Data Structure Learning Media based on CDIO	Department of Electrical Engineering, Universitas Negeri	235





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25	17.30 – 17.40	Ansari Saleh Ahmar <sup>1,2</sup> , Riny Jefry <sup>1</sup>	The Development of Information System of IT-Based Scientific Works to Improve the Quality of the Students' Final Project Publication	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute	236
26	17.40 – 17.50	Abdul Rahman <sup>1</sup> , Usman Mulbar <sup>1</sup> , Ansari Saleh Ahmar <sup>1,2</sup>	Development of Web-based Logical Thinking Abilities and Android as an Alternative Solution for Research Instruments	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute	237
27	17.50 – 18.00	Didik Dwi Prasetya <sup>1</sup> , Aji Prasetya Wibawa <sup>1</sup> , Ansari Saleh Ahmar <sup>2,3</sup>	Design of Web-based Lightweight Interactive Multimedia for Distance Learning	<sup>1</sup> Universitas Negeri Malang, <sup>2</sup> Universitas Negeri Makassar, <sup>3</sup> AHMAR Institute	238



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2	13.10 – 13.20	Kadek Adi Wibawa <sup>1</sup> , Toto Nusantara <sup>2</sup> , Subanji <sup>2</sup> , I Nengah Parta <sup>2</sup>	Defragmentation of Student Thinking Structure in Solving Mathematical Problems based on CRA Framework	<sup>1</sup> Universitas Mahasaraswati Denpasar, <sup>2</sup> Universitas Negeri Malang	198
3	13.20 – 13.30	Mustafa A.H. Ruhama <sup>1</sup> , Cholis Sa'dijah <sup>2</sup> , Abdur Rahman As'ari <sup>3</sup> , and Sisworo <sup>4</sup>	Pointing Gesture and Speech of Teachers in Mathematics Learning According to Information, Initiation and Feedback	<sup>1</sup> Khairun University, <sup>2</sup> Universitas Negeri Malang	199
4	13.30 – 13.40	Ferryansyah, Eka Widyawati, and Setia Widia Rahayu	The Analysis of Students' Difficulty in Learning Linear Algebra Majoring Mathematics Education of Borneo University of Tarakan	Borneo University of Tarakan	200
5	13.40 – 13.50	Ahmad Afandi, Ariyanti Jalal	Development of Student Activity Sheet With Open-Ended Approach To Improve Creative Thinking Ability In Geometry Course	Khairun University	201
6	13.50 – 14.00	Rini Oktavia, Ridha Ferdhiana, Risky Ayunanda, Nurmaulidar, Intan Syahrini, Hafnani, Tarmizi Usman and Taufiq Iskandar	The Development of Instruments to Identify Basic Mathematics Understanding of New Students of FMIPA Syiah Kuala University	Syiah Kuala University	202
7	14.00 – 14.10	Imam Sujadi, Arum Nur Wulandari, Ira Kurniawati and Fengky Adie Perdana	Strategy Assessment as Learning for Developing Pedagogical Competence of Indonesian-Thailand Mathematics Student Teachers	Sebelas Maret University	203
8	14.10 – 14.20	Rahmat Kamaruddin, Vivi Rosida, Sitti Busyrah Muchsin	Developing Learning Instruments of Mathematics Geometry Based on Van Hiele Theory to Improving Students' Character	STKIP Andi Matappa	204
9	14.20 – 14.30	Henry Kurniawan <sup>1</sup> , Akbar	The Thinking Process of Students in Representing	<sup>1</sup> Politeknik Negeri	205



		Sutawidjaja <sup>2</sup> , Abdur Rahman As'ari <sup>2</sup> , Makbul Muksar <sup>2</sup>	Images to Symbols in Fractions	Lampung, <sup>2</sup> Universitas Negeri Malang	
10	14.30 – 14.40	Kristayulita <sup>1</sup> , Toto Nusantara <sup>2</sup> , Abdur Rahman As'ari <sup>2</sup> , Cholis Sa'dijah <sup>2</sup>	Identification of Students Errors in Problem Solving Indirect Analogies Based on Analogical Reasoning Components	<sup>1</sup> Universitas Islam Negeri Mataram, <sup>2</sup> Universitas Negeri Malang	206
11	14.40 – 14.50	Usman Mulbar, Ahmad Zaki	Design of Realistic Mathematical Learning on Elementary School Students	Universitas Negeri Makassar	207
12	14.50 – 15.00	Christina Laamena <sup>1*</sup> , Toto Nusantara <sup>2</sup> , Edy Bambang Irawan <sup>2</sup> and Makbul Muksar <sup>2</sup>	Analysis of the Students' Argumentation based on the Level of Ability: Study on the Process of Mathematical Proof	<sup>1</sup> Pattimura University, <sup>2</sup> Universitas Negeri Malang	208
13	15.00 – 15.10	Hisyam Ihsan, Ahmad Zaki	Performance-Based Learning Model in College Lectures	Universitas Negeri Makassar	209
14	15.10 – 15.20	Yusminah Hala, Ulil Ardi Syahdan, Halifah Pagarra, Sitti Saenab	Identification of Misconceptions on Cell Concepts among Biology Teachers in Makassar by Using CRI Method	Universitas Negeri Makassar	218
15	15.20 – 15.30	Sitti Saenab <sup>1</sup> , Sitti Rahma Yunus <sup>1</sup> , Andi Nurulvirninda <sup>1</sup> , Andi Rahmat Saleh <sup>2</sup> , Nurul Arifah Sofyan <sup>1</sup>	The Effect Of Project Based Learning Model On Science Education Students' communication Skills In Faculty Of Mathematics And Natural Science Universitas Negeri Makassar	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Celebes Global School	219
	15.30 – 16.00	Coffee Break			
16	16.00 – 16.10	Nurhikmah H., Suradi Tahmir, Muhammad Junda, Baso Asrul N. Bena	Blended Based Learning Media in Biology Class	Universitas Negeri Makassar	220
17	16.10 – 16.20	Arsad Bahri and Irma Suryani Idris	Development and Validation of Learning Strategy for Metacognitive Skills Empowerment: PBLRQA (PBL integrated with Reading, Questioning, and Answering)	Universitas Negeri Makassar	221
18	16.20 – 16.30	Muhammad Danial, Muhammad Sawal, Nurlaela	Development of Senior High School Chemistry Learning Tools Based Investigation and Its Effect on Critical Thinking Skills, Metacognition, and Concept Mastery of Students for Subject Matter of Buffer Solution	Universitas Negeri Makassar	229
19	16.30 – 16.40	Army Auliah	Indonesian Teacher's Perception of Green Chemistry Principle: a Case Study of a	Universitas Negeri Makassar	230



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21	16.50 – 17.00	Ramlawati, Abdul Mun'im, Sitti Rahma Yunus	Improving Prospective Natural Science Teachers Competences to Develop Learning Materials Based on 2013 Curriculum through the Jigsaw Type Cooperative Learning Model	Universitas Negeri Makassar	232
22	17.00 – 17.10	Andi Tenri Ola Rivai	The Effect of Night Futsal Sport Towards Serum Malondialdehyde (MDA) Level of Young Adults	Universitas Negeri Makassar	261
23	17.10 – 17.20	Haslinda DS	The Effect of Evening Futsal Sport on the Level of Cortisol Serum in Young Adults	Nursing Academy of Pelamonia, Makassar	262
24	17.20 – 17.30	M.Nadjib Bustan <sup>1</sup> , Arifin Seweng <sup>2</sup> , Ernawati <sup>2</sup>	Abdominal Stretching Exercise in Decreased Pain of Dysmenorrhea in Nursing Students	<sup>1</sup> Universitas Negeri Makasar, <sup>2</sup> Universitas Hasanuddin	263
25	17.30 – 17.40	Alamsyah, Sri Ramadhani, Veni Hadju	The Effect Of Organizational Preparedness Resources Officer Disaster Management Agency (BPBD) District Jeneponto In the Face of Disaster in the District Jeneponto	Hasanuddin University	264
26	17.40 – 17.50	Rachman Suwandar <sup>1</sup> , Herlinah Lina <sup>2</sup>	Dynamics of Unit Kegiatan Mahasiswa Organization In Makassar (Case Study at STIM Nitro and STIMIK Handayani)	<sup>1</sup> STIM Nitro Makassar, <sup>2</sup> STMIK Handayani Makassar	249
27	17.50 – 18.00	Yermi <sup>1</sup> , Muhammad Ardi <sup>2</sup> , Lahming <sup>2</sup> , Suradi Tahmir <sup>2</sup>	Knowledge and Attitudes Family in the Prevention of Pulmonary Tuberculosis in Regency of Maros South Sulawesi, Indonesia	<sup>1</sup> Al-Hambra Makassar, <sup>2</sup> Universitas Negeri Makassar	250



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2	13.10 – 13.20	Arie Arma Arsyad	Development of Learning Package using Cooperative Problem Solving in Optics to Improve Student's Problem Solving Skills Junior High School	Universitas sulawesi Barat	145
3	13.20 – 13.30	Syamsidah	The Improvement of Students' Academic Performance Through Think-Pair-Share Cooperative Learning Model	Universitas Negeri Makassar	146
4	13.30 – 13.40	Rianti Cahyani	Validation and Student Scientific Inquiry Aided Multimedia On Climate Change	FKIP Universitas Islam Nusantara Bandung	147
5	13.40 – 13.50	Muhammad Takwin Machmud, Omthajit Pansri, Teamjan Parnichparinchai, Saifon Vibulrangson	Developing a Self-Assessment to Analyze a Social and Personal Competencies of Teachers in Senior High School In Indonesia	Naresuan University	148
6	13.50 – 14.00	Zulidyana D. Rusnalasari <sup>1</sup> , Hafid Algristian <sup>2</sup> , Tahegga Primananda Alfath <sup>3</sup> , Andini D. Arumsari <sup>4</sup> , Immah Inayati <sup>4</sup>	Vulnerability and Education Analysis, to Prevent Terrorism Ideology	<sup>1</sup> Universitas Negri Surabaya, <sup>2</sup> Universitas Nahdlatul Ulama Surabaya, <sup>3</sup> Universitas Airlangga Surabaya <sup>4</sup> Universitas Narotama	149
7	14.00 – 14.10	Hasmyati, Suwardi	Experimentation of Cooperative Learning Model STAD-TGT Type against Students' Learning Outcomes	Universitas Negeri Makassar	150
8	14.10 – 14.20	Muhammad Rais <sup>1</sup> , Farida Aryani <sup>1</sup> , Ansari Saleh Ahmar <sup>1,2</sup> , Hamdan Arfandi <sup>3</sup>	Learning Media Edu-Games "My Profession" as an Effort to Introduce Various Types of Profession in Early Childhood Education Students	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute, <sup>3</sup> STIMIK Dipanegara	151



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9	14.20 – 14.30	A. R. Shadiqin <sup>1</sup> , Endang Sri Dewi <sup>2</sup> , Sri Rahayu <sup>2</sup>	Fitness and Learning Performance among Polytechnic Students	<sup>1</sup> Universitas Lambung Mangkurat, <sup>2</sup> Poltekkes Kemenkes Malang	152
10	14.30 – 14.40	Supratman	Developing Piaget's Theory in Mistakes Construction of Knowledge when Problem Solving through Analogical Reasoning	University of Siliwangi	153
11	14.40 – 14.50	Farida Aryani, Muhammad Rais, Abdullah Sinring	Effect of SIMPESA Career Application on Student Self-Efficacy in Selecting Majors	Universitas Negeri Makassar	154
12	14.50 – 15.00	Edy Saputra	Improvement of Spatial Levels Reviewed From Students' Cognitive Styles	Universitas Pendidikan Indonesia	155
13	15.00 – 15.10	Muhammad Dimyati <sup>1</sup> , Akhmad Fauzy <sup>2</sup> , and Zaky Musyarof <sup>2</sup>	Higher Education Provider Excellence Mapping Based On Scientific Publication	<sup>1</sup> The Ministry of Research, Technology, and Higher Education, <sup>2</sup> Islamic University of Indonesia	156
14	15.10 – 15.20	Arismunandar	The Competency of Elementary Schools' Principal in Supporting the Standardization of Leadership in Education	Universitas Negeri Makassar	157
15	15.20 – 15.30	I G. A. Putu Arya Wulandari <sup>1</sup> , Cholis Sa'dijah <sup>2</sup> , Abdur Rahman As'ari <sup>2</sup> , Swasono Rahardjo <sup>2</sup>	Modified Guided Discovery Model: A conceptual Framework for Designing Learning Model Using Guided Discovery to Promote Student's Analytical Thinking Skills	<sup>1</sup> University of Mahasaraswati Denpasar, <sup>2</sup> State University of Malang	158
	15.30 – 16.00	Coffee Break			
16	16.00 – 16.10	Musdalifah Syamsul <sup>1</sup> , Sapto Haryoko <sup>2</sup> , Lahming <sup>2</sup> , Nurlita <sup>2</sup>	The Roles Of Family Knowledge And Attitudes In Preventing Dengue Fever A Case Study In The Regency Of Maros South Sulawesi, Indonesia	<sup>1</sup> Al-Hambra Makassar, <sup>2</sup> Universitas Negeri Makassar	251
17	16.10 – 16.20	Sufirman Rahman, Abdul Qahar, Nurul Qamar, Amiruddin	Resolution of Conflict of Land Right Community of Customary Law Community on Foreign Investment Company in Bulukumba, South Sulawesi	Moslem University of Indonesia	252
18	16.20 – 16.30	Dian Novita Siswanti, Rozainee Khairuddin, Fatimawati Halim	Spiritual Intelligence, Emotion Competency, and Social Competence Against Competency of Leadership	University of Kebangsaan Malaysia	253



19	16.30 – 16.40	Evy Sulistianingsih	Analysis of Human Development Index of 13 Districts in West Kalimantan	University of Tanjungpura	254
20	16.40 – 16.50	Rahmat Satrio Wibowo, Supattra Wannacubchae, Rudklaw Pampasit	The Authority of Indonesian Local Government in Tourism Management: “A Case Study of Tourism Management in Berau Regency, East Kalimantan Province”	Naresuan University, Thailand	273
21	16.50 – 17.00	Tulus Suryanto <sup>1</sup> , Robbi Rahim <sup>2</sup> , Ansari Saleh Ahmar <sup>3,4</sup>	Employee Recruitment Fraud Prevention with the Implementation of Decision Support System	<sup>1</sup> Universitas Islam Negeri Raden Intan lampung, <sup>2</sup> Akademi Perekam Medik dan Infokes Imelda, <sup>3</sup> Universitas Negeri Makassar, <sup>4</sup> AHMAR Institute	274
22	17.00 – 17.10	Muhammad Akbal, Firman Umar	Legal Understanding in Field of Educator Profession (Study on Civic Teacher as Participants on PLPG Rayon 124 UNM year 2017)	Universitas Negeri Makassar	275
23	17.10 – 17.20	Syamsul Ridjal and Akhmad Muhammadin	Analysis of Influencing Factors Social Environment and Generic Strategies toward Performance of the Banking Sector in Indonesia	Makassar Economic College (STIEM-Bongaya)	276
24	17.20 – 17.30	Rifdan, Muhammadong	Implementation of Islamic Law in Realizing Marriage Registration at the Office of Religious Affairs of Makassar City	Universitas Negeri Makassar	277
25	17.30 – 17.40	Jokebet Saludung	Model Development of Food Types Various and Cakes Based on Local and Ecopreneurship	Universitas Negeri Makassar	278
26	17.40 – 17.50	Rosmini Maru <sup>1</sup> , Ramli Umar <sup>1</sup> , Takdir Ismail <sup>2</sup> , Syukri Nyompa <sup>1</sup> , Rusman Rasyid <sup>2</sup>	Mapping of Poverty Characteristics, Based on the Quality of Fisherman's House, Bajo Tribe, South Halmahera, Indonesia	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universitas Khairun	279
27	17.50 – 18.00	Amiruddin, Abdul Muis Mappalotteng, Nurlaela, Sunardi	Employability Skill Development of Mechanical Engineering Students Through Project Based Learning In Vocational High School In South Sulawesi	Universitas Negeri Makassar	282



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2	13.10 – 13.20	Patahuddin	Formative Assessment Models and Thinking Styles In Learning History	Universitas Negeri Makassar	160
3	13.20 – 13.30	Amat Mukhadis, Andika Bagus Nur Rahma Putra, Ahmad Mursyidun Nidhom, Ahmad Dardiri, Hary Suswanto	Relevance of Expertise Areas In Vocational High School with Priority of Leading Potential Area In Indonesia (34 Provinces)	Universitas Negeri Malang	161
4	13.30 – 13.40	Ahmad Mursyidun Nidhom, Andika Bagus Nur Rahma Putra, Azhar Ahmad Smaragdina	Development of Mobile Academic Exhibition Information System to Support Achievement of Job Hiring Graduate Vocational High School	Universitas Negeri Malang	163
5	13.40 – 13.50	Ansari Saleh Ahmar <sup>1,2</sup> , Abdul Rahman <sup>1</sup> , Usman Mulbar <sup>1</sup>	The Analysis of Students' Logical Thinking Ability and Adversity Quotient, and it is Judged from Cognitive Style	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute	164
6	13.50 – 14.00	Abdul Azis, Andi Fatimah Yunus	The Implementation of Moody Model in Learning Abstract and Orientation of Exemplum Text	Universitas Negeri Makassar	165
7	14.00 – 14.10	Abdul hadis, Nurhayati	Developing Science Process Skill Based Learning in Science for Children with Special Needs Course	Universitas Negeri Makassar	166
8	14.10 – 14.20	Andi Kasmawati	Teachers under Child Protection Law	Universitas Negeri Makassar	167
9	14.20 – 14.30	Maya Sari Wahyuni <sup>1</sup> , Amat Mukhadis <sup>2</sup> , Waras Kamdi <sup>2</sup> ,	Relevance of Refferal Vocational Education Development with Region Potential	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universitas Negeri Malang	168





		Mansyur <sup>2</sup>			
10	14.30 – 14.40	M. Ma'ruf Idris <sup>1</sup> , Amat Mukhadis <sup>1</sup> , Marten Pali <sup>1</sup> , Abdi Akbar <sup>2</sup>	The Contribution of Entrepreneurship Learning towards Entrepreneurial Passion and Entrepreneurial Activities of Vocational Students	<sup>1</sup> Universitas Negeri Malang, <sup>2</sup> Universitas Negeri Makassar	169
11	14.40 – 14.50	Syaad Patmanthara, and Wahyu Nur Hidayat	Improving Vocational High School Students Digital Literacy Skill Through Blended Learning Model	Universitas Negeri Malang	233
12	14.50 – 15.00	Muladi, Aji Prasetya Wibawa, Kirya Mateeke Moses	The Linkage between Vocational High School with Industries in The Information Technology in Malang City	Universitas Negeri Malang	234
13	15.00 – 15.10	Dian Novita Dewi	Video Recording Feature as Speaking Skill's Assessment	Universitas Brawijaya	239
14	15.10 – 15.20	Tri Handhika <sup>1</sup> , Revaldo Ilfesta Metzi Zen <sup>2</sup> , Murni <sup>1</sup> , Dewi Putrie Lestari <sup>1</sup> , Ilmiyati Sari <sup>1</sup>	Gesture Recognition for Indonesian Sign Language (BISINDO)	<sup>1</sup> Gunadarma University, <sup>2</sup> Telkom Indonesia	240
15	15.20 – 15.30	Norma Pawestri, Unchalee Wongwattana	Ambiguity in Indonesian Jokes on the Instagram "Dagelan"	Naresuan University	241
	15.30 – 16.00	Coffee Break			
16	16.00 – 16.10	Mantiasiah R, Yusri	The Development of Pay it Forward Model in Foreign Language Learning to Increase Student's Self Efficacy and Academic Motivation	Universitas Negeri Makassar	242
17	16.10 – 16.20	Siti Dahlia Said <sup>1</sup> , Ahmad Johari Bin Sihes <sup>2</sup> , Zanita Yusof <sup>2</sup>	Theme-Based Instruction method in English Reading Comprehension: Using Makassar Local Culture-Based Curriculum Contents	<sup>1</sup> Sekolah Menengah Pertama Negeri 13 Makassar, <sup>2</sup> University Technology Malaysia	243
18	16.20 – 16.30	Ambo Dalle	The Effectiveness of Domino Card Games Media in Vocabulary Learning for German Language Students from Department of German Language	Universitas Negeri Makasar	244
19	16.30 – 16.40	Christiana Sidupa	Language Transfer in Writing: A Case Study at University	Indonesia University	245
20	16.40 – 16.50	Nurin Haniah Asmuni, Sharifah Nazatul Shima Syed	Estimation of Critical Illness Incidence Rates for Private Insurance Product Valuation	Universiti Teknologi MARA	255



		Mohamed Shahrudin, and Norkhairunnisa Mohamed Redzwan			
21	16.50 – 17.00	Hendra Jaya, Sapto Haryoko, Saharuddin, Sabran, Sutarsi Suhaeb	Life Skills Education for Children with Special Needs In Order to Facilitate Vocational Skills	Universitas Negeri Makassar	256
22	17.00 – 17.10	Najamuddin	Governance Structure and Shifting of Local Officials: Dutch Colonial Bureaucracy Against South Sulawesi Region 1900-1950	Universitas Negeri Makassar	257
23	17.10 – 17.20	Firdaus W. Suhaeb	Phenomena of Orphanage Children from NTT In Gowa District	Universitas Negeri Makassar	258
24	17.20 – 17.30	Hasnawi Haris	Law Analysis: Content and Implementation of Biased Regional Regulation of Human Rights in South Sulawesi, Indonesia	Universitas Negeri Makassar	259
25	17.30 – 17.40	Arifuddin Usman	Developing Supporter Community of Makassar Football Association (PSM)	Universitas Negeri Makassar	260
26	17.40 – 17.50	Sayidiman Sayidiman, Wawan Krismanto and Atika Sahriyanti	Andragogy Learning Models Based On Learning Communities on Music Art Education	Universitas Negeri Makassar	246
27	17.50 – 18.00	Andi Muhammad Irfan <sup>1</sup> , Ahmad Sonhadji KH <sup>2</sup> , Eddy Sutadji <sup>2</sup> , Soetyono Iskandar <sup>1</sup> , Sunardi <sup>1</sup>	Development Model of Community College (CC) Curriculum Management Bases on Pre-Eminent Potency of District and Public Requirement	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universitas Negeri Malang	280
28	18.00 – 18.10	A. Muhammad Idkhan, Ma'ruf Idris, Sunardi	The Contribution Knowledge of Entrepreneurship, Self Efficiency, and Preparation of Instrumentation to the Entrepreneurial Intension and Its Impact In Entrepreneurial Preparation	Universitas Negeri Makassar	281



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2	10.20 – 10.30	Ansari Saleh Ahmar <sup>1,2*</sup> , Darmawan Napitupulu <sup>3</sup> , Robbi Rahim <sup>4</sup> , Rahmat Hidayat <sup>5</sup> , Yance Sonatha <sup>5</sup> , Meri Azmi <sup>5</sup>	Using Fuzzy C-Means Clustering to Clustering Province in Indonesia	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute, <sup>3</sup> Indonesian Institute of Sciences, <sup>4</sup> Universiti Malaysia Perlis, <sup>5</sup> Politeknik Negeri Padang	43
3	10.30 – 10.40	Ahmad Faisal Ismail <sup>1</sup> , Afizuddin Othman <sup>1</sup> , Nazih Shaaban Mustafa <sup>1</sup> , Muhannad Ali Kashmoola <sup>1</sup> , Basma Ezzat Mustafa <sup>1</sup> , Mohd Yusmiadil Putera Mohd Yusof <sup>2</sup>	Accuracy Of Different Dental Age Assessment Methods To Determine Chronological Age Among Malay Children	<sup>1</sup> International Islamic University Malaysia, <sup>2</sup> Universiti Teknologi MARA	44
4	10.40 – 10.50	Ansari Saleh Ahmar <sup>1,2*</sup> , Andi Nurani Mangkawani Arifin <sup>2</sup> , Dewi Satria Ahmar <sup>2,3</sup> , Kurniawan Harikesuma Ahmar <sup>2</sup> , Muh. Agus <sup>4</sup>	Implementation of $\alpha$ -Sutte Indicator to Forecasting GDP (current US\$) in South Africa	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute, <sup>3</sup> STKIP YAPTI Jeneponto, <sup>4</sup> Universitas Muhammadiyah Makassar	45
5	10.50 – 11.00	Ansari Saleh Ahmar <sup>1,2</sup>	The Forecast of Consumer Price Index and Inflation Rate Data in Indonesia using RcmdrPlugin.sutteForecastR	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> AHMAR Institute	46
6	11.00 – 11.10	Yundari, Udjianna S Pasaribu, Utriweni Mukhaiyar and Mohamad N Heriawan	Spatial Weight Determination of GSTAR(1,1) Model by Using Kernel Function	Intitut Teknologi Bandung	47



7	11.10 – 11.20	Sari Devia Agustina, Mustakim, Celsa Bella, Muhammad Anang Ramadhan	Support Vector Regression Algorithm Modeling To Predict The Availability Of Foodstuff In Indonesia To Face The Demographic Bonus	Universitas Islam Negeri Sultan Syarif Kasim	48
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2	10.20 – 10.30	Lia Yuliawati <sup>1</sup> , Wono Setya Budhi <sup>2</sup> , Didit Adytia <sup>3</sup>	Numerical Soliton Solution of 1D Variational Boussinesq Model	<sup>1</sup> STKIP Sebelas April Sumedang, <sup>2</sup> Institut Teknologi Bandung, <sup>3</sup> Telkom University	64
3	10.30 – 10.40	Marsudi Marsudi, Noor Hidayat, Ratno Bagus Edy Wibowo	Optimal strategy for controlling the spread of HIV dynamics with educational campaigns and antiretroviral therapy	Brawijaya University	65
4	10.40 – 10.50	Wibawati, Muhammad Mashuri, Purihadi, Irhamah, Muhammad Ahsan	Performance of Fuzzy Multinomial Control Chart	Institut Teknologi Sepuluh Nopember	66
5	10.50 – 11.00	Prilyandari Dina Saputri, Suhartono, and Dedy Dwi Prastyo	Hybrid Quantile Regression Neural Network Model for Forecasting Currency Inflow and Outflow in Indonesia	Institut Teknologi Sepuluh Nopember,	67
6	11.00 – 11.10	Baihaqi Siregar, Erna Budhiarti Nababan, Jun Arthur Rumahorbo, Sawaluddin Sawaluddin, Ulfi Andayani, Fahmi	Nearest Distance Searching of Indekos Based on Android Using A* Algorithm	University of Sumatera Utara	68
7	11.10 – 11.20	Mesran <sup>1</sup> , Dahlan Abdullah <sup>2</sup> , Dedy Hartama <sup>3</sup> , Roslina <sup>4</sup> , Robbi Rahim <sup>5</sup> , Ansari Saleh	Combination Base64 and Hashing Variable Length for Securing Data	<sup>1</sup> STMIK Budi Darma, <sup>2</sup> Universitas Malikussaleh, Aceh, <sup>3</sup> STIKOM Tunas Bangsa,	69



		Ahmar <sup>6,7</sup>		<sup>4</sup> Politeknik Negeri Medan, <sup>5</sup> Universiti Malaysia Perlis, <sup>6</sup> Universitas Negeri Makassar, <sup>7</sup> AHMAR Institute	
8	10.20 – 10.30	Siti Zahidah <sup>1</sup> , Aleams Barra <sup>2</sup>	The Construction of Disjunct Matrix for Non-Adaptive Group Testing	<sup>1</sup> Universitas Airlangga, <sup>2</sup> Institut Teknologi Bandung	70



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2	10.20 – 10.30	Masitah Shahrill	Teachers' Devotion to Review Lessons: Insights to the Mathematics Lessons in Brunei	Universiti Brunei Darussalam	211
3	10.30 – 10.40	Fajar Arwadi <sup>1</sup> , Bustang <sup>1</sup> , Ratu Ilma Indra Putri <sup>2</sup> , Somakim <sup>2</sup>	Tree Diagram Model as a Means in Supporting Elementary School Student's Skill and Comprehending in Solving Multiplication Principle Problems	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universitas Sriwijaya	212
4	10.40 – 10.50	Ramlan Mahmud	Social Learning Models Based on Metacognitive Strategies for Growing Mathematical and Self-Regulated Learning Communications In Mathematics Education Students UNM, Indonesia	STKIP YPUP Makassar	213
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2	10.20 – 10.30	Tri Lestari G., Nani Kurnia, Andi Asmawati Azis	Exploration of Dicots Plant for Interest Microscopic Observation of Stem Anatomy	Universitas Negeri Makassar	91
3	10.30 – 10.40	A. Asmawati Azis <sup>1</sup> , A. Faridah Arsal <sup>1</sup> , A. Bida Purnamasari <sup>2</sup>	Menstrual Cycle Length of Woman Aged 20 to 30 years	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> STKIPPI	92
4	10.40 – 10.50	Muhammad Junda	Development of Intensive Shrimp Farming, <i>Litopenaeus vannamei</i> in Land-Based Ponds: Production and Management	Universitas Negeri Makassar	93
5	10.50 – 11.00	Giry Marhento, Mashudi Alamsyah, Nurul Frijuniarsi, Muhammad Akhir	Analysis of Echinodermata Variety at Intertidal Zone in Harapan Island of Seribu Islands	University of Indraprasta PGRI	94
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8	10.20 – 10.30	A.Mu'nisa, Syamsiah, Rachmawaty, A. Muflihunna	Bioactive compound and Antioxidant Activity Analysis of Some Medicinal Plants of Province of Western Sulawesi	Universitas Negeri Makassar	97





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3	10.30 – 10.40	Arbianingsih <sup>1</sup> , Nur Hidayah <sup>1</sup> , Huriati <sup>1</sup> , A. Adriana Amal <sup>1</sup> , Yeni Rustina <sup>2</sup> , Tri Krianto <sup>2</sup> , Dian Ayubi <sup>1</sup>	Arbi Care as an Educational Game to Improve Knowledge in Diarrhea Prevention Among Preschoolers	<sup>1</sup> Alauddin State Islamic University of Makassar, <sup>2</sup> University of Indonesia	267
4	10.40 – 10.50	Intan Nurma Yulita, Mira Suryani, Rudi Rosadi, Sri Purwani	Multi-Layer Perceptron for Sleep Stage Classification	Universitas Padjadjaran	268
5	10.50 – 11.00	Endang Purwanti Setyaningsih <sup>1</sup> , Tutik Nurhidayati <sup>1</sup> , Syam Pratiwi <sup>1</sup> , Sri Nurhatika <sup>1</sup> , Dini Ermavitalini <sup>1</sup> , Anton Muhibudin <sup>2</sup> , Kristanti Indah Purwani <sup>1</sup> , Edwin Setyawan <sup>1</sup>	Microalgae Growth and Morphology of Skeletonema costatum On Physiological Stress Nutrient Silicon (Si)	<sup>1</sup> Institut Teknologi Sepuluh, <sup>2</sup> Brawijaya University	269
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2	10.20 – 10.30	Rini Asnawati, Caswita	Redefinition of the Kinds of Quadrilateral Based on the Angle and Side	University of Lampung	72
3	10.30 – 10.40	Muhammad Abdy	On the Fuzzy Field and Fuzzy Vector Space	Universitas Negeri Makassar	73
4	10.40 – 10.50	Nurhasanah <sup>1</sup> , Joko Sampurno <sup>1</sup> , Okto Ivansyah <sup>2</sup>	Detection of Osteoporosis Using Fractal Method Based on Fourier Analysis of Hand Bone Image	<sup>1</sup> Tanjungpura University, <sup>2</sup> Polytechnic of Pontianak	74
5	10.50 – 11.00	Irhamah Irhamah, Neni Alya Firdausanti	Classification of Pneumonia Risk Classes Using Hybrid Linear Discriminant Analysis-Particle Swarm Optimization	Institut Teknologi Sepuluh Nopember	75
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4	10.40 – 10.50	Dinny Mardiana Alaudin	Development of Basic Natural Science Study Materials to Enhance Student Competencies	Universitas Islam Nusantara	225
5	10.50 – 11.00	Suriati Eka Putri <sup>1</sup> , Diana Eka Pratiwi <sup>1</sup> , Rachmat Triandi <sup>2</sup> , Diah Mardiana <sup>2</sup>	Performance Test of Gel casted Porous Ceramic as Adsorbent of Azo Dyes	<sup>1</sup> Universitas Negeri Makassar, <sup>2</sup> Universitas Brawijaya	111
6	11.00 – 11.10	Tutik Nurhidayati <sup>1</sup> , R. Yuvita Rakhman <sup>2</sup> , Herry Purnobasuki <sup>1</sup> , Sucipto Hariyanto <sup>1</sup> , Nurul Jadid <sup>2</sup>	Responses of Periodic Waterlogging Stress In Some Varieties Nicotiana tabacum	<sup>1</sup> Airlangga University, <sup>2</sup> Institut Teknologi Sepuluh Nopember	112
7	11.10 – 11.20	Anwar Mallongi <sup>1</sup> , Muhammad Nadjib Bustan <sup>2</sup> , Nur Juliana <sup>1</sup>	The Risk Assessment Due To the Exposure to Copper (Cu) and Nitrogen Dioxide (NO <sub>2</sub> ) In the Goldsmith In Malimongan Villages Sub Wajo Makassar City	<sup>1</sup> Hasanuddin University, <sup>2</sup> Universitas Negeri Makassar	113
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3	10.30 – 10.40	Meytij Jeanne Rampe <sup>1</sup> , Vistarani Arini Tiwow <sup>2</sup>	Fabrication and Characterization of Activated Carbon from Charcoal Coconut Shell Minahasa, Indonesia	<sup>1</sup> State University of Manado, Tondano, <sup>2</sup> State University of Makassar	108
4	10.40 – 10.50	Chaerul Rochman <sup>1</sup> , Dindin Nasrudin <sup>1</sup> , Imelda Helsy <sup>1</sup> , Neni Herminta <sup>2</sup> , Wahyudin Darmalaksana <sup>1</sup>	Nutrition Literacy Program for Improving Public Wellness	<sup>1</sup> UIN Sunan Gunung Djati Bandung, <sup>2</sup> Universitas Negeri Riau	109
5	10.50 – 11.00	Abu Masykur, Atmanto Heru Wibowo, Tri Martini, Khofifah Cyntia Laras	Syntheses of Chitosan Macropore and Application as Procion Red Dyes Adsorbent	Sebelas Maret University	110
6	11.00 – 11.10	Rabiudin, Enos Taruh, Mursalin	Development of Authentic Affective Assessment Instrument in High School Physics Learning	State University of Gorontalo	226
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## Generalized Linear Latent Variable Models for Count Outcomes in Ecology Using TMB Package

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### Abstract

In ecology, the data collected are often in the form of multivariate responses (abundance). Generalized Linear Latent Variable Models (GLLVMs), a complex statistical model with latent variables, is often considered to model this abundance. The objective of this paper is to implement GLLVMs on multivariate count outcomes using fast-automatic Laplace approximation from TMB package. The TMB package contains high-performance libraries specially designed for models with random effects with fast computation. Count results can be modeled using Poisson, Negative Binomial (NB) and Zero-Inflated Poisson (ZIP) distributions. In this paper, we developed new code in C++ using TMB package for Zero-Inflated Poisson (ZIP) model to estimate parameters of GLLVMs. For the implementation, we used 28 observations of the abundance of 12 hunting spider species to fit GLLVMs for three different distributions for the implementation of GLLVMs. The aim is to show the comparisons of these three models for fitting count responses. The best model was used to visualize the relationship between multivariate responses and explanatory variables including latent variables.

**Keywords:** GLLVM; Latent variable; Laplace Approximation; TMB; Ecology



## **A Fundamental Analysis Indonesia Export and Import of Oil and Non-Oil Sectors Using Multivariate Adaptive Regression Spline (MARS)**

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### **Abstract**

Prediction Indonesia export and import is one of the necessary activities to determine the target of economic in The National Medium–Term Development Plan. To explain the significance or value of the study, we are using statistical analysis nonparametric regression methods Multivariate Adaptive Regression Spline (MARS) to forecasting of export and import by considering some external factors like data of oil and non-oil sectors. So far this method is one of the flexible methods for regression modeling with high-dimensional data also can be utilized as an alternative to solve the problem of fluctuating data. In the same time, it does not need any particular assumptions that must be fulfilled. Mean Absolute Percentage Error (MAPE) success to measure error on MARS models.

**Keywords:** MARS; Export; Import; Spline; Forecasting



## **Exponential Smoothing with Application to Design of Production Planning System, a Case of Sokoto Cement Company of Northern Nigeria, Sokoto State, Nigeria”**

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### **Abstract**

This research work seeks to forecast the demand of cement for a better production planning systems for Cement Company of Northern Nigeria Plc Sokoto (CCNN). The models used for the analysis of the data obtained from the company for the period of 15 years are the single exponential smoothing model, double exponential smoothing model and triple exponential smoothing model. The results shows that, the company is expected to base on its production planning systems at the exponential smoothing constant 0.8, also the best model for the demand forecast is single exponential smoothing model. Double exponential smoothing produced negative forecast, hence not fit and triple exponential smoothing model cannot be used for the data is free from seasonality. Therefore, single exponential smoothing is highly recommended for the cement company sokoto to forecast its demand for good production system and it could be different for other company.

**Keywords:** Time Series; Trend; Seasonality; Demand; Production; Forecast; Forecast error





## Parameter Estimation of Additive Genetic and Unique Environment (AE) Model on Diabetes Mellitus Type 2 using Bayesian Method

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### Abstract

Diabetes mellitus (DM) is a chronic disease occurred in human when the pancreas can not produce enough of insulin hormone or the body uses the insulin ineffectively. They are two types of DM which are divided according to the main cause, namely DM type 1 and type 2. Diabetes type 1 as known as insulin dependent diabetes, occurs due to lack of insulin secretion by beta cells in the pancreas. Meanwhile, diabetes type 2 as known as non insulin dependent diabetes is caused by a decrease in target tissue sensitivity to produce insulin. Based on the two types of disease, diabetes type 2 is the one which is more common in patients. The main factors of this disease are genetic (A) and lifestyle (E). The disease with those factors can be constructed with additive genetic and unique environment (AE) model. The aims of this research are to estimate the parameter of AE model using bayesian method and to do simulation of DM type 2 on parent-offspring. The result of simulation are 0.3600 for genetic variance and 0.0899 for lifestyle variance. Therefore, the variance of genetic factor in DM type 2 is greater than lifestyle.

**Keywords:** AE Model, Bayesian Method, DM Type 2, Genetic, Lifestyle.



## Optimal Portfolio of Jakarta Islamic Index using Stochastic Dominance and Multi Index Models

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### Abstract

Investment is a process of purchasing asset with the purpose that the asset will be sold in the future at a higher price. This generates stable growth over the long term and provides pension fund. In investing activities, the risk-return trade-off needs to be concerned. To reduce risk, investment diversification can be done by splitting the investment into several companies in the form of portfolio. This research is aimed to determine the optimal portfolio through Stochastic Dominance Criteria and Multi Index Model. The data used in this research were stocks from Jakarta Islamic Index for the period of January 2012 to December 2014. The result shows that using Stochastic Dominance and Multi Index Model, there are 15 optimal stocks and 11 optimal stocks, respectively. Furthermore, it can be stated that portfolio obtained based on Multi Index Model is considered to be the optimal portfolio with 2.25% expected returns and 3.99% risk portfolio.

**Keywords:** Portfolio Optimization, Stochastic Dominance, Multi Index Models.



## Kaplan-Meier Survival Analysis in Estimating The Number of Earned Exposure Units For The One of Auto Insurance Company In Indonesia

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### Abstract

The estimated number of earned exposure units can help corporate executives of auto insurance company in calculating their own individual claim reserves. We conduct the estimation of this number of earned exposure units by using Kaplan-Meier survival analysis to generate the survival table. The generated survival table were then divided to be 60 risk groups based on the issuance of Financial Services Authority of Indonesia No. 6/SEOJK.05/2017 and the duration of auto insurance coverage in Indonesia. We used Root Mean Squared of Error (RMSE), Mean Absolute Deviation of Error (MADE) and one-sample test to ensure the accuracy of the survival model. Meanwhile, a series of two-sample test were performed between observation periods for each risk group to demonstrate the goodness of fit test, i.e. log-rank test and Peto and Peto Modification of the Gehan-Wilcoxon test. The estimation generated by using the survival table is able to provide more conservative results compared to the reality. This gives assurance for one of the auto insurance company in Indonesia to use the expected earned exposure units as a basis to calculate the amount of unit that have risk to suffer a partial loss claim but still support the company in optimizing their resources.

**Keywords:** Number of Earned Exposure Units, Auto Insurance, Kaplan-Meier, Non-Parametric Survival Model, Estimation.



## Nonparametric Truncated Spline Regression Model on The Data of Human Development Index (HDI) In Indonesia

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### Abstract

The standard measurement for country's human development is Human Development Index (HDI). Several factors allegedly affect it, such as life expectancy, gross domestic regional product (GDRP), the number of poor people, and the percentage of an illiterate people. The influence of those factors to HDI in Indonesia can be determined by regression model. If the HDI's data and those four factors is plotted, then the plot do not form a specific pattern, so the HDI's data can be applied with nonparametric truncated spline regression model. The best of nonparametric truncated spline regression model influenced by the order and knot points selection. In this article, nonparametric truncated spline regression model on the data of HDI in Indonesia applied at first order with 3,4 and 5 knot points. Based on the result, nonparametric truncated spline regression model on the data of HDI in Indonesia is obtained by the combination of 5-5-5-4 knot points with life expetancy and and the percentage of an illiterate people affect the HDI in Indonesia.

**Keywords:** HDI, Nonparametric Truncated Spline Regression Model



## Application of Geographically Weighted Regression Model to Analysis of Percentage on Malnutrition Occurrences in Papua Province

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### Abstract

The Province of Papua has its characteristics that differentiate it from any other regions. Dissimilarities in characteristics of a region may encompass issues such as social, economic, cultural, parenting, education, and the environment, so as to cause the difference in the case of severe under nutrition between one region to another. Sufferers of malnutrition in one region may be linked and influenced by the surrounding regions. Therefore, we need a statistical modeling that can take into account the spatial factor. Statistical methods that can be used to analyze the data and also takes into account the spatial factor are the Geographically Weighted Regression (GWR). This study is aimed to determine of malnutrition occurrences models in Papua Province using GWR and comparing it to the conventional linear regression model. The data used in the study are secondary data obtained from the Statistics of Papua Province (2015) conducted in 29 districts in Papua. Estimation is done by using the Weighted Least Squares method that provides different weighting values to each region. The result showed that there are 29 models of the malnutrition case that is different from each district in Papua.

**Keywords:** Geographical Weighted Regression, Malnutrition, Weighted Least Square, Papua



## Designing Cost Production of Concrete

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### Abstract

The Ability to produce concrete of each company is different, depending on the foresight in calculating material costs, carefulness in the management of materials to be wasted a little, buying materials for cheap prices, the use of the right tools, optimizing tool operation, selecting factory location, and placing human resource to manage production process, whose ultimate goal is to get the lowest cost (production cost) in producing concrete. The objectives of this study are to design the cost estimation of concrete production and to identify factors influencing the cost of concrete production. The study was conducted on 38 (thirty eight) factories in Java. The method used is doubled linear regression using SPSS (Statistical Package for the Social Sciences) software. This method is chosen because it is a technique that can be used to analyze and predict the contribution of a potential variable for overall reliability. The estimated model is  $Y = -2351,577 + 1,386 X_1 + 0,856 X_2 + 0,656 X_3 - 0,004 X_4 + 279,253 X_5 + 3,041 X_6 + 1,354 X_7 + 2,576 X_8 + 0,040 X_9 + 0,381 X_{10}$ .

**Keywords:** production cost; concrete; estimation design



## Probability Density Function of the Total Idle Time of Busy Period Densities of M/C2/1 Queues under (0,k) Control Policy

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### Abstract

In real life situations often queueing systems are operated under heuristically arrived control policies on service mechanisms. But the literature hardly discusses any analysis of busy period densities of a queueing process under control policies. In this paper, our main objective is to derive the probability density function (pdf) of the total idle time of busy period of M/G/1 queues operating under control policies through lattice path (LPC) approach which entails approximating general service distribution by Coxian distribution. We focus on deriving the pdf of M/G/1 queues under (0,k) control policy, wherein the server goes on the vacation when the system becomes empty and re-opens for service immediately at the arrival of the  $k^{\text{th}}$  customer.

**Keywords:** Probability Density Function, Idle Time, (0,k) Control Policy



## Nonparametric Regression Analysis Based on Three Forms of Fourier Series Estimator, Case Study for Modeling Poverty Rate in East Java

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### Abstract

Nonparametric regression is an alternative analysis which often be used, when parametric regression cannot give some goodness criteria. One of the estimators that interest to explore for nonparametric regression is Fourier series. The advantage using nonparametric regression based on Fourier series estimator, i.e., able to overcome the data that has oscillation pattern, in this case can be approximated by sinus and cosines function. Until now, most researchers are using Fourier cosines series estimator. However, that series not only Fourier cosines series but also Fourier sinus series and Fourier series which include Fourier cosines and sinus series. In this paper, nonparametric regression analysis estimator study for Fourier series globally and Fourier sinus series developed by using Fourier cosines series estimator concept. In this research, we have three forms of Fourier series estimator. Then, three forms of Fourier series estimator applied to model poverty rate in East Java, Indonesia, based on predictors that affect poverty rate. The result based on comparison from the smallest GCV, MSE, R<sup>2</sup> and proximity of estimation results with original data, can be concluded that the best estimator is formed from Fourier cosines series.

**Keywords:** nonparametric regression; fourier series; fourier cosines series; fourier sinus series; poverty rate





## Prediction of Maximum Electricity Consumption Using Bi-response Nonparametric Regression Approach Based on Fourier Series Estimator

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### Abstract

Population density is associated with an increase in the number of buildings and infrastructures that can make electricity consumption grow up. East Java, a province in Indonesia, is the largest province in Java Island, the island with the highest population density that has rapid growth of buildings and infrastructures. East Java also contributes 40.94% of Indonesia electricity demand in 2015, and has the largest power plants that capable to produce electricity on a big scale. Electricity is an essential necessary for people. So, prediction of maximum electricity consumption is required in order to anticipate the supply of electricity, including the decision to regulate the generation, and anticipation of power outages that may disturb people activities. In this paper, maximum electricity consumption at afternoon and night in East Java observed monthly, are predicted by using bi-response nonparametric regression based on Fourier series estimator. Fourier series has the advantage, i.e., overcomes data that has a repetitive pattern. This research gives the smallest GCV value when oscillation parameter achieves 48. The selected model based on the smallest GCV has met the goodness of model's criteria. We use the selected model to predict the maximum electricity consumption at afternoon and night in East Java.

**Keywords:** maximum electricity consumption; east java; bi-response nonparametric regression; fourier series

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## Implementing the Computer-Supported Collaborative Learning and Teaching in a Statistics Class for the Engineering Students

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### Abstract

Teaching statistics for non-statistics students is a quite daunting job. The students need to understand the concepts and capable to apply them to solve the pseudo and real problems. Traditional teaching method is mostly one direction, from the lecturer to the students. Therefore, it is solely a lecturer responsibility to make the students enjoying and understanding statistics. The implementation of the new teaching method by incorporating another lecturer, student and statistical software R in the learning process give very positive results. The students learn on how to build a solid team to finish and defense their projects. Their levels of understanding about statistics are better than the previous year students, which can be seen from their scores on the final project report, the homework and the written exam. In continuing the teaching method, we learn that it is suitable more for the small class only. For the bigger class then we will need some teaching assistants to help during the computer sessions.

**Keywords:** Collaborative Learning, Collaborative Teaching, Statistical Software, Statistics



## T2 Control Chart based on Successive Difference Covariance Matrix for Intrusion Detection System

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### Abstract

The rapid flow of information allows for potential security holes that can lead to increased attacks on computer networks. Therefore, the security system from attacks by irresponsible parties is needed, one of the mechanisms that can be used is the intrusion detection system. Intrusion detection is a process to monitor the events taking place in a computer system or network and analyze the monitoring results to find signs of intrusion. One of the statistical methods that can be used in intrusion detection is the Statistical Process Control especially the control chart. The multivariate control chart that is often used in intrusion detection is Hotelling's T2. In this research, the Hotelling's T2 chart performance for intrusion detection is improved using the Successive Difference Covariance Matrix where the control limits will be calculated using Kernel Density Estimation. Proposed method using T2 based on Kernel Density Estimation control limit outperforms the other approaches both in training and testing dataset.

**Keywords:** T2 control chart; successive difference covariance matrix; kernel density estimation; intrusion detection



## Multioutput Least Square SVR Based Residual of MEWMA Control Chart

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### Abstract

Serially independent is one of the assumption for most classical control charts. Autocorrelation among variables lead to a bias estimator of traditional control chart. To overcome this problem, many kind of statistical approaches have been developed to estimate the serial structure of process. Multioutput least squares SVR has ability to remove serial correlation of process by mapping multivariate input space to multivariate output space. This paper proposes multioutput least squares SVR based residual of multivariate EWMA control chart for detecting small changes in the mean vector of autocorrelated process. VARMA model with additive and innovative outliers are generated to probe the performance of proposed method. Simulation studies approve that multioutput least squares SVR based residual of multivariate EWMA control chart detect either single additive outlier or consecutive additive outlier takes place at different time in each variable accurately. On the contrary, single innovative outlier in each variable that occur either at different time or at the same time is detected by multioutput least squares SVR based residual of multivariate EWMA control chart as double out-of control signals.

**Keywords:** multioutput least square svr; multivariate EWMA control chart; autocorrelation; additive; outlier



## Handling Outlier in Two-Ways Table Data: The Robustness of Row-Column Interaction Model

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### Abstract

As part of our recent statistical research on modeling of the two-ways table data, here we will to investigate of the robustness of Row Column Interaction Model (RCIM). RCIM is an RR-VGLM class modeling with the first linear predictor is modeled by the sum of the column effect, row effect, and the interaction effect which on the interaction effect is shown as a reduced-rank regression. Now we turn to give attention on outlier(s) observation in the two ways data table. Outliers are sample points that have unique characteristics, they differ from the majority of the sample. But there are some outliers that are difficult to identify due to the location and size of the data. The previous method of handling outlier in additive and multiplicative modeling by applying Robust Alternating Regression in FANOVA model we called it Robust Factor model for short. The two models will be compared in analyzing two-ways table data that containing some outliers. In this research, two-ways table data are generated randomly follows normal distribution with some different types of outliers. The RCIM model seem provide a better result in fitting the data than Robust factor model, the RCIM model have smaller error.

**Keywords:** robust; RCIM; FANOVA; RAR; log-likelihood



## Performance REML and ML in SAE Model

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### Abstract

This paper presented performance of method of Restricted Maximum Likelihood (REML) and Maximum Likelihood (ML) to estimate the random effect on model of small area estimation (SAE). For evaluation of performance of both methods, it was used requirement of root mean square error (RMSE). While data used is result of awakening through monte carlo simulation and real data of human development index (HDI) of South Sulawesi province in 2015. Research result showed that predicted result with REML method has level of better accuracy than ML method. Furthermore, from result of research that used HDI data, REML method has accurate prediction.

**Keywords:** REML, ML, SAE, HDI



## Value-at-Risk Modeling with Exogenous Variables using ARMAX-GARCHX Approach: An Application to Risk Quantification of Stock Return

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### Abstract

Stock is one of investment instrument that has high risk with high possible return or loss. Quantifying the risk associated with stock return is important work for financial institution to optimize their portfolios. To do that analysis, the Value-at-Risk (VaR) method becomes very popular and frequently applied recently. This work applies Value-at-Risk (VaR) modeling that considers the exogenous variables having high possibility to affect the volatility of return. Our proposed method is ARMAX-GARCHX approach to calculate VaR. Moreover, in this research the VaR is estimated based on observations spanning in moving windows with three kind of windows size, i.e. 250, 375, and 500 days. Applying the proposed method to stock return of companies that capitalize top four of market share in construction and building subsector at Indonesian stock exchange (IDX), the empirical results show that the VaR estimation using windows size 500 days of transaction perform better than ones obtained from the shorter windows.

**Keywords:** Value-at-Risk, exogenous variables, ARMAX-GARCHX, stock return, risk



## Comparison between Support Vector Machine and Fuzzy C-Means as Classifiers for Intrusion Detection System

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### Abstract

In this globalization era, cyber crime has been entering every aspects through internet network. The development of Intrusion Detection System is being studied deeply to solve the problem. There are several classifier algorithms for Intrusion Detection System such as Support Vector Machine and Fuzzy C-Means. In this study, we will compare proposed model using both Support Vector Machine and Fuzzy C-Means to find a better result that increase accuracy of the network attacks. KDD Cup 1999 will be our subject to evaluate the result.

**Keywords:** Intrusion Detection System, Support Vector Machine, Fuzzy C-Means.





## Forecasting of Financial Crisis in Indonesia Based on Bank deposits, Real Exchange Rates and Exchange Rates of Trade Indicators

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### Abstract

Several times Indonesia has experienced a financial crisis, but the crisis that occurred in 1997 had a tremendous impact on the economy and national stability. Therefore, it needs a model that can be used to predict the condition ahead. This paper proposes forecasting the financial crisis in Indonesia. Bank deposits, real exchange rates and exchange rates of trade indicators are used in this paper. Data from January 1990 to December 2015 are used to form the models, while data from January to December 2016 are used to accurate the models. The combination of volatility and Markov switching models are used to model the data. The result showed that the appropriate model for bank deposit and real exchange trade are SWARCH(3,1), and for real exchange rates is SWARCH(3,2). Model SWARCH(3,1) has the accuration 100%, while SWARCH(3,2) has the accuration 83%. Based on these models, it can be forecasted that there is no financial crisis in Indonesia on 2017.

**Keywords:** Financial crisis; forecast; and SWARCH



## Comparative Analysis of Three MCMC Methods for Estimating GARCH Models

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### Abstract

GARCH model has been considered as an important and widely employed tool to analyse and forecast variance of the financial market. This study develops three MCMC methods, namely adaptive random walk Metropolis, Hamiltonian Monte Carlo, and Independence chain Metropolis–Hastings algorithms, for estimating GARCH(1,1) models under Normal and Student-t distributions for conditional return distribution. Results on real financial market data indicate in terms of autocorrelation time and numerical standard error of the MCMC that the best method is the approach based on the Independence chain Metropolis–Hastings algorithm.

**Keywords:** GARCH; independence chain metropolis–hastings; integrated autocorrelation time; MCMC



## Hybrid ARIMAX Quantile Regression Model for Forecasting Inflow and Outflow of Bank Indonesia at East Java Province

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### Abstract

Most of inflow and outflow data in Indonesia are characterized by trend, seasonal, calendar variation, and heterogeneous variance. Various methods have been developed to overcome these data, particularly quantile regression which provides more insightful conditional information in each series that containing heteroscedasticity than conventional time series model. This study proposed hybrid ARIMAX Quantile Regression model for forecasting data that have trend, seasonal, calendar variation, and heterogeneous variance. This study used two types of data, i.e. simulation and real data. The real data are monthly inflow and outflow of Bank Indonesia at East Java Province per banknotes for the period 2003 to December 2016. There are four types of ARIMAX Quantile Regression models with different predictors that be used for forecasting both data. The results show that hybrid ARIMAX Quantile Regression model is able to capture accurately all patterns in the data. Moreover, this hybrid model yield better forecast than individual ARIMAX model at 8 of 14 banknotes of inflow and outflow data in East Java Province. Thus, based on forecast accuracy criteria, i.e. RMSE, MAE and MdAE, it could be concluded that hybrid ARIMAX Quantile Regression model tend to give better forecast than other individual methods

**Keywords:** ARIMAX; quantile regression; hybrid model; inflow; outflow



## Simulation Study for Determining the Best Architecture of Multilayer Perceptron for Forecasting Nonlinear Seasonal Time Series

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### Abstract

Neural network is one of flexible nonlinear models that could handle various relationship patterns on data with high accuracy. The data-driven approach is one of the advantages of neural network models in solving complex problems in forecasting. The selection of the best model becomes one of the most important problems in the application of neural network for time series forecasting, which consists of determining the input, the number of neurons in the hidden layer, the activation function, and preprocessing method. This paper focuses on the simulation study to explore how to determine the best architecture of multilayer perceptron for forecasting nonlinear seasonal time series. The data that be generated from seasonal exponential smooth transition autoregressive model are used as a case study. The results show that the inputs and the number of neurons in the hidden layer are two main factors that affect significantly the forecast accuracy. In contrary, the activation function and preprocessing method do not significantly influence the forecast accuracy

**Keywords:** inputs; activation function; neurons; preprocessing; multilayer perceptron; time series



## Modeling of Breast Cancer Diagnosis Classification Based on Hospital Medical Records

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### Abstract

Accuracy of breast cancer diagnosis by stadium is very important. The study aim was to determine the most appropriate diagnosis model based the predictor factors which were the location of cancer, the presence of metastasis, chemotherapy, age, weight, marital status and parity. The data were medical records of breast cancer 261 patients in Wahidin Sudirohusodo Hospital, Makassar, Indonesia during the year 2016, where drawn 181 samples. The most appropriate logistic regression model test was multinomial logistics where the values of Pearson and Deviance Goodnes of Fit showed statistically accepted, with pseudo r-square Nagelkerke 0.696. McFadden value 0.486 means this model is able to explain the variation of breast cancer stage classification by 48.6%. The result of simultaneous test of logistic regression  $-2\log\text{-likelihood}$  was 191,410 ( $p < 0,01$ ), where the main predictors was age with  $g_0(x) = -19,556 + 0,0022 \text{ Age}$  and  $g_1(x) = -14,527 - 0,052 \text{ Age}$ . Moreover, the addition of the age of patients one year will give the chance of the occurrence of stadium 0 was smaller than in stadiums I, II and III. The model cannot explain the chances of an increased likelihood of stage IV cancer if age increase one year.

**Keywords:** breast cancer; classification model; multi nominal logistic regression



## Cox Proportional Hazard Survival Analysis of Inpatient Breast Cancer Cases

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### Abstract

Breast cancer problems are characterized by increased incidence and trends, including death. The prognosis of survival rate in 5 years in stadium I is 90%, stadium II 65%, stadium III 15-20%, and stadium IV is less than 5%. To determine survival rate and cause of death, survival analysis has been done to find the relationship between survival rate and clinical stages, tumor location, metastasis, age and co-morbidity. A retrospective cohort study of inpatient breast cancer cases in Ibnu Sina UMI Hospital, Makassar, Indonesia 2013-2016 was selected as 108 cases out of 436 all inpatient cases. The survival analysis was performed using Kaplan-Meier and Cox Proportional Hazard methods. The results showed that the survival probability was 0.029, and the median survival was 20 months at intervals from 0 to 47 months. Significant related factors with survival were cancer stadium, metastasis and co-morbidity. The Hazard Ratio of cancer stadium was 2,061. Stadium III survival rate was 73.1%, and stadium IV/metastases decreased to 6.5%, but it was increased to 42.6% when treated. Suggestions of the need for early detection so that mothers can come early in the early stages.

**Keywords:** cox proportional hazard; hazard ratio; breast cancer stadium



## Remote Sensing Analysis Using Landsat 7 ETM+ and 8 OLI Data to Support Energy Conservation Policy Based On Vegetation In Special Region of Yogyakarta

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### Abstract

Today, energy conservation policy has become one of things that must be considered in order to preserve natural resources. Extreme exploration and uncontrolled development lead to disrupt natural balance. Efforts to support the regulation of natural resource utilization can be done using various approaches, one of them is by using spatial approach. The purpose of this study is to conduct an analysis using remote sensing methods to support energy conservation policy based a vegetation in Special Region of Yogyakarta. Result of the research show that energy utilization by public and industrial corporation increase rapidly. This result is evidenced by an increase in number of transportation vehicles that numbered 2.119.575, increase by 10,55% in 2017. Oil fuel (BBM) for household and industrial activities increasing forecast in 2017 is 682.133.683,8 kg or 25,7%. The size of Open Green Space (RTH) area has not changed significantly in recent years. Using forecast analysis method, the number of RTH area size is estimated to be 1.090.377 Ha in 2017. Furthermore, using remote sensing analysis of Landsat 7 ETM+ and 8 OLI data indicates that land used in Special Region of Yogyakarta has changed significantly.

**Keywords:** Conservation; Energy; Landsat; Remote sensing



## Subtractive Fuzzy C-Means Method (Sfcm) in Regency / City Grouping in South Sulawesi Province Based On Indicators of Human Development Index

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### Abstract

he low HDI of regency / municipality in South Sulawesi Province is only indicated by the Composite Index, but it is not indicated which indicator is dominant to high / low HDI rating. In fact, the value of each indicator forming HDI should be seen in order to know the achievement of each indicator. Grouping of regencies / municipalities in South Sulawesi Province needs to be done as material for planning and evaluation of government program targets to increase human development figures. The statistical method that can be used to describe the grouping of similarities is the cluster analysis. The clustering analysis is one of the multiple variable analysis used to group objects into groups based on the measurement of similarities of the observed variables, so that similar objects in the same group are compared between objects of different groups. The method of group analysis used is the Subtractive Fuzzy C-Means (SFCM) method This method is combine between subtractive clustering method an Fuzzy c-means. it can give good and efective result to increase the homogeneity of each group produced. the application of SFCM algorithm for grouping the distric/city in south sulawesi province base on Human Development Index (HDI) indicator which consist of four indicator that are Live Expenctancy (LE) , School Duration Average (SDA), School Duration Expectancy (SDE), Purchasing Power Parity (PPP). Analysis result indicates that base on Partition Coefficient indeks (PC), optimum group obtained 3 groups. First group consist 10 distric/city, second group consist 3 distric/city, third group consist 11 distric/city. By looking on group characteristic base on Human development Indeks average, then can be concluded that the second group is a group that has human development index average higher than the other group.

**Keywords:** Clustering, Subtractive Fuzzy C-Means, Partition Coefficient, Human Development Index (HDI).





## Triple Reproduction Analysis of Economy, Social, and Environment in Indonesia: A Simultaneous Panel Data Using EC2SLS

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### Abstract

In the last few years, Indonesia's economic growth has been slowing. In 2011, Indonesia's economic growth was 6,16%, but in 2014 it decreased to 5,2%. However, Indonesia's economic growth is still positive when compared to other countries. A region with high economic growth should have good environmental and social conditions. Good social conditions can be reflected through the Labor Force Participation Rate (LFPR) as reflection of actual well-being of the population. However, some regions in Indonesia have an unbalance system between economic growth with their social and environmental conditions. For example, during the period of 2011-2014, DKI Jakarta has economic growth which tends to be high but has the lowest Environmental Quality Index (EQI) and low LFPR compared to other regions. It becomes a problem because high economic conditions should be supported by social and environmental conditions in order to achieve a sustainable economic system. To build a sustainable economic system, it is necessary to balance between the economic, social, and environment factors. The balance system between these factors can be explained by Triple Reproduction Theory which consists of three subsystems, namely reproduction of the economy, humans, and natural environment. Therefore, this study aims to see relationship between these three factors in 33 provinces in Indonesia, from 2011 to 2014. Using simultaneous panel with EC2SLS method, the results are: 1) There is a simultaneous relationship between economic growth and EQI in Indonesia, 2) EQI affects the LFPR in Indonesia, but not vice versa, 3) There is no relationship between economic growth and the LFPR in Indonesia, 4) The inflation proved to have an effect on economic growth and 5) Population density proved to have an effect on EQI in Indonesia.

**Keywords:** Triple Reproduction Theory, Labor, Environment, Economic Growth, Simultaneous Panel

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## Cluster Analysis using Particle Swarm Optimization K-Harmonic Means Method for Sister Village of Remote Areas in Survey

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### Abstract

The geographic and socio-political conditions in remote areas can create an obstacle to the implementation of survey in Indonesia. This problem can trigger the delay in reporting the results of data collection activities, sample change, and non-response that commonly occur in the region of east Indonesia, such as Papua. In many surveys, Statistics Indonesia (BPS) often exclude the remote areas from sampling frame related to the transportation cost and access. Nevertheless, it may bring the missing data problem of some characteristics of the area. Therefore, it is essential to find others areas which have similar characteristics (sister village) with the remote areas to be a sample substitution. Cluster analysis can be used to arrange the non-remote areas to be in the same cluster with the remote areas based on similarity characteristics. K-Harmonic Means (KHM) is a clustering algorithm that can solve cluster center initialization problems in the K-Means algorithm, but easily convergence in local optima problems. Particle Swarm Optimization (PSO) is a stochastic algorithm that can be used to find the optimal solution on a numerical problem. This research uses PSOKHM algorithm to generate better clustering results, best solution in few number of iterations, and avoid trapping in local optima. This algorithm is applied for 143 villages data set in Kabupaten Lanny Jaya, Papua. The validity test shows that the most optimal number of cluster is as much as 11 cluster. In addition, the results also indicate the presence of non-remote areas within the same cluster with remote areas, can be used as sample substitution (sister village).

**Keywords:** Sister Village, Cluster Analysis, K-Harmonic Means, Particle Swarm Optimization



## The Analysis of Survival with Model of Regression Cox Proportional Hazard (Case In: Stayed Patient In RSUD Makassar City)

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### Abstract

Survival analysis is a set of statistical procedures used to analyze data such as time between events. Time can be expressed in years, months, weeks, or days from the beginning of an observation to an individual until an event occurs to an individual. One of the purpose of survival analysis is how to know the correlation between the time of event and the independent variables measured at the time of the research. One of the regression method approaches that can be used is Cox Proportional Hazard (Cox PH) regression. Data used in this research is data of patient Dengue Hemorrhagic Fever (DHF) in Makassar City Hospital. DHF data has characteristics that allow for analysis by using cox proportional hazard regression (cox PH). The results of the analysis based on the value Akaike Information Criterion (AIC) of each model, obtained the most influential factor to the patient's healing rate is the number of patient platelets. Of the 105 treated patients, 90% of patients with below normal platelet counts were normal. From the hazard ratio for platelets concluded that the rate of recovery of patients with DHF with below normal platelet counts is 2,625 times the normal platelet count, so that patients with below normal platelet counts, will recover longer than patients with normal platelet counts.

**Keywords:** Survival Analysis; Cox PH; Dengue Hemorrhagic Fever (DHF)



## Quantile Regression Neural Network for Forecasting Inflow and Outflow In Special Region of Yogyakarta

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### Abstract

Quantile Regression Neural Network (QRNN) is a development of quantile regression method that can model data with non-homogeneous variance with artificial neural network approach that can capture nonlinear patterns in the data. One example of real data that allegedly have such characteristics is the inflow and outflow of currency, where the inflow is the amount of money flow coming from banks and the public to Bank Indonesia while outflow is the flow of money out of BI to the banks and community. The data used in this research are inflow and outflow in Special Region of Yogyakarta as many as 14 notes during January 2003 until December 2016 period. This study aims to forecast inflow and outflow in Special Region of Yogyakarta with QRNN method and compare the result with conventional method that is ARIMAX-GARCH and NN. With RMSE and MdAE evaluation criteria, the result is inflow of Rp100.000, Rp20.000 Rp10.000, dan Rp5.000 better modeled with ARIMAX, while the inflow Rp50.000, Rp2.000, Rp1.000, and outflow Rp100.000, Rp50.000, Rp20.000, Rp10.000, Rp5.000, Rp2.000, and Rp1.000 are better modeled with QRNN. The QRNN method results in better forecasting and can capture the effects of calendar variations on the data.

**Keywords:** Heteroscedasticity; Inflow; Nonlinearity; Outflow; QRNN



## Parameter Estimation in Multivariate Cox Regression

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### Abstract

Multivariate Cox Regression is a cox regression model that has more than one dependent variable and the ratios of the hazard function for two individuals with covariate vectors  $z_1$  and  $z_2$  does not depend on vectors of time survival. Study about multivariate Cox Regression model is still not popular also there is no parameter estimation yet to form this model, so this research is aimed to make parameter estimation model from Multivariate Cox Regression with Maximum Partial Likelihood Estimation (MPLE) method. To obtain coefficient value from parameter estimation, this research create macro programming using breast cancer patient data, with the result obtained are  $\beta_1 = 0,0021$ ,  $\beta_2 = - 0.00084$ , and  $\beta_3 = 0,00099$ .

**Keywords:** Multivariate Cox Regression; Maximum Partial Likelihood Estimation (MPLE); breast cancer



## FTIR, XRD and SEM Analysis Of Microcrystalline Cellulose (MCC) Fibers From Corncoarbs In Alkaline Treatment

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### Abstract

The main objective of this work was to extrac microcrystalline cellulose (MCC) particles from corncoarbs waste as cellulosic resources. In process cellulose isolation was done with variation of concentration NaOH 4%, 6%, 8%, 10%, 12%, 14% and 17%. The MCC particles were extracted by acid hydrolisis with 0.1N HCl ratio 1: 2 and refluxed at 800C for  $\pm$  2 hours. The processing parameters like acid concentration, temperature, time and mechanical force were kept constant. The MCC particles were studied by FTIR, XRD and SEM analysis. FTIR spectra showed that each MCC had -OH group at wave number 3422, 3331, 3347, and 3360 cm<sup>-1</sup>. The C-O bond at 1635 cm<sup>-1</sup>, 1642-1649 cm<sup>-1</sup> shows the different stretching of C-O on cellulose fiber I and cellulose II and C-O bonds at 1161.83 and 1063-1065 cm<sup>-1</sup>. 995-895 cm<sup>-1</sup> shows a change in rotation of glucose residue around the glycosidic bond into Cellulose II. SEM analysis showed that NaOH 6% had a standard pore cell surface structure. The acid hydrolysis changed the % crystallinity and crystallite sizes of the MCC particles compared to their source materials.

**Keywords:** corncoarbs; cellulosemicrocrystalline; FTIR; XRD; SEM



## Multi Model Calibration of Rainfall Forecasts In East Nusa Tenggara Using Ensemble Model Output Statistics

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### Abstract

The current weather is changing uncertainly, marked by significant rise in surface temperatures and reduced rainfall in the tropics. Moreover, recent weather change can be said to entering unstable stage when compared with climate change in the past. The impact from this unstability often leads to a misprediction which may causes the lack of anticipation for the upcoming extreme weather pattern. Indonesia itself which is located nearly in equator line also affected by its misprediction. In 2015, Indonesia experienced the drought-related threat posed by the impact of El Nino storms in the Asia Pacific region. The impact of this phenomenon affected the agricultural sector where almost 21 thousand hectares of agricultural land along the islands of Java, Bali and Nusa Tenggara are experiencing drought. Statistical approach is required to reduce misprediction which is frequently happened. In this research, we will use the method of calibrating forecasting of ensembles, in which the method is able to predict and highly relevant to the current climate which contains elements of high uncertainty. The ensemble forecasting calibration method used is Ensemble Model Output Statistics (EMOS) which is applied in rainfall forecast data in East Nusa Tenggara. The results is calibration procedure using EMOS is able to give a better forecast results in both lead time, in which the most optimum forecast occurred with training window of 24.

**Keywords:** Rainfall; calibration; Rank Histogram; EMOS; CRPS.



## Longitudinal Data Analysis with Penalized Spline Bi-Response Regression Model

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### Abstract

Longitudinal data is a combination of cross sectional and time series data. In this article, we use a penalized spline estimator in the bi-response nonparametric regression model. Longitudinal data with two correlated responses requires analysis method it capable of overcoming the autocorrelation of the data. Penalized spline has good estimation capabilities because it involves knot, and smoothing parameters simultaneously. In addition, the matrix of covariance used as weighted that also with knots, and smoothing parameter in estimating the nonparametric bi-response regression model in the longitudinal data. The spline function for each response is assumed to have the same order and knots. The application model is used to analyze the pattern of blood glucose changing in patients of type 2 diabetes during the treatment period. The results of the analysis showed that blood glucose levels in the morning have a different pattern with blood glucose levels in the night. The morning blood glucose level may increase at certain times, while the blood glucose levels in the night looks down steadily to the end of treatment.

**Keywords:** Bi-response; Longitudinal data; Penalized spline; Nonparametric regression; Type 2 diabetes.





## Geographical Clustering of the Rainfall Station on Seasonal GSTAR Modelling For Rainfall Forecasting at Jember Regnecy

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### Abstract

Recent research in time series shows that the data not only have inter-relations with events in the previous time, but also have inter-location linkages. This type of time series data with elements of time and location dependencies are modeled with the Space-Time model. The Space-Time model with heterogeneous research sites is the Generalized Space Time Autoregressive (GSTAR) model. The data that has a seasonal pattern is modeled with seasonal GSTAR by including seasonal elements in the non-seasonal model. In this case, Jember Regency has 77 rain stations with various regional topography. Based on various characteristics, K-Means cluster analysis is used to obtain optimal rainfall rain stations clusters. This clustering is expected to give better rainfall forecasting result compared with clustering conducted by the Statistics Central of Jember (BPS). The RMSE value can be minimized by including seasonal elements in the model, both in BPS and K-Means clustering. In addition, the K-Means clustering in this study may also reduce the RMSE value of model, both on non-seasonal and seasonal models. The best model for this case is GSTARK-seasonal(1;1) , ie Seasonal GSTAR model on K-Means clustering.

**Keywords:** Geographical K-Mean Clusterig; Space-Time model; Generalized Space Time Autoregresif; Seasonal GSTAR



## Variable Selection and Parameter Estimation of Enzyme Inhibitor Classification Using Hybrid Binary Logistic Regression-Genetic Algorithm

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### Abstract

In big data with huge amount of variables, variable selection is required to select the best model. The common variable selection methods in binary logistic regression are forward, backward and stepwise methods. In this research genetic algorithm was proposed for variable selection. Afterwards, genetic algorithm also applied to optimize parameter estimation in order to obtain higher classification accuracy. The results of binary logistic regression modeling for enzyme inhibitor classification: type Cah2, Aofb and Hs90a show that genetic algorithm is the best method for variable selection compared to forward, backward and stepwise since it gives highest classification accuracy. Parameter estimation using genetic algorithm is also better than Maximum Likelihood Estimation (MLE), because it produces higher classification accuracy in classifying type Cah2, Aofb, and Hs90a enzyme inhibitors.

**Keywords:** Binary Logistic Regression; Genetic Algorithm; Parameter Estimation; Variable Selection; Enzyme Inhibitor; Classification



## Forecasting Electricity Load at Each Cities in East Java using ARIMA-Support Vector Regression

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### Abstract

Electricity load is one of the needs that society needs. This is known by the increasing demand of electrical load from year to year. With the increase in electricity load, PLN needs to take action to anticipate the increase because of the limited ability to supply electrical load. Anticipation steps that can be done is to do forecasting short-term expenses. ARIMA is a method of forecasting and has a weakness to nonlinear pattern and in previous research, electric load has nonlinear pattern. The SVR method is a method that has the function of the RBF (Gaussian) kernel that can handle nonlinear patterns. Forecasting will be done by using a significant lag as input on the SVR. SVR-ARIMA performs well in forecasting electricity load based on higher accuracy criterias.

**Keywords:** Electrical Load; Forecasting; ARIMA; Support Vector Regression



## Statistical Comparison of Mortality Rate and Life Expectancy of Malaysia by using 4 Variants of Lee-Carter and Cairne-Blake-Dowd (CBD) Models

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### Abstract

Mortality patterns change throughout the years and ages. Observation over a thirty years mortality data set of Malaysia will be examined and the trend and pattern of its mortality rate and life expectancy will be observed. Government's pension and insurance companies are two of many organizations which always dealing with financial security after retirement. Both of these organizations concern about the realible tool and method to demonstrate the forecasting outcome. Four variants of Lee-Carter Models and Cairns-Blake-Dowd model will be used to get the fitting model and projection of life expectancy. The data of this analysis is indexed by age of death and year of death from 1984 to 2013, which are supplied by Department of Statistics Malaysia. Statistical analysis of the fitted cross-sectional models will be retrieved by using R programming. Further discussion about the impact concerning mortality in Malaysia will stack up at the end of the paper.

**Keywords:** Life expectancy; Mortality data; Lee-Carter; Cairns-Blake-Dowd



## Combing Fuzzy Clustering and Hidden Markov Models for Sundanese Speech Recognition

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### Abstract

Sundanese tribe is one of the largest population tribe in Indonesia. But over time, users of the Sundanese language is declining because of the living languages outside of Sundanese. One way to preserve Sundanese is Sundanese Speech Recognition. In this research, several processes of recognition done include pre-processing, feature extraction, Fuzzy Clustering, and Hidden Markov Models. Pre-processing aims to separate the recording from the noise and normalize the speech signal, while the feature extraction to obtain the characteristics of the speech signal to distinguish each phoneme from the speech. In particular, the contribution of this research is to combine Fuzzy Clustering and Hidden Markov Models for Sundanese Speech Recognition. Fuzzy Clustering plays a role in finding unique symbols in the speech signal. These symbols are represented as centroid in fuzzy clustering. The next process, each segment of the speech signal calculated the probability of the membership for all centroids. The output of this calculation becomes input to Hidden Markov Models. The test uses a speech corpus derived from 30 people to analyze the results of this combination. The results obtained that the combination of Fuzzy Clustering and Hidden Markov Models have a better performance than Hidden Markov Models.

**Keywords:** Fuzzy Clustering; Hidden Markov Models; Sundanese; Speech Recognition



## Meta Analysis on the Application of Structural Equation Models

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### Abstract

This study examines the various things about writing a doctoral dissertation in Public Administration Study Program at the Postgraduate Program (PPs) State University of Makassar (UNM), which uses structural equation models or path analysis. The aim of this study is to get more qualified information, more precise and accurate, more useful in practice, and broaden the knowledge. Systematic steps taken, namely: identifying and selecting a dissertation that uses structural equation models, carefully read the problem statement and research questions of those selected dissertations, analyzing the accuracy of the analysis of the appropriate problem statement and research questions, making a compilation of all literature review from selected dissertation, incorporating relevant data for analysis (meta-analysis) in order to obtain a higher strength of the conclusions, making interpretations of the results of meta-analysis, and formulating recommendations for further research, as well as the revitalization of the learning and using statistics in research, as well as repairing the quality of supervising doctoral candidate students. The analysis showed that none of considered aspects is fully meet the expectations. Recommendations for subsequent meta-analysis of research need to be done in other dissertations of other study programs. Thus, the recommendation of the research is PPs UNM need to strengthen the teaching team of research methods and statistics and set a high quality as a target. This can be done by activating peer group of lecturers of statistics and research methods to conduct discussions and workshops on a regular basis to revitalize the way of thinking and researching among students and teachers.

**Keywords:** Dissertation studies; Meta-analysis; Structural equation models



## An Introduction of DEG2 R for Metabolomics Data

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### Abstract

Statistics is considered as a gentle guide starting point for further analysis in metabolomics data analysis to achieve the goals such as biomarker discovery and disease diagnosis. Statistical methods of univariate and multivariate are used extensively in metabolomics studies (Xi et. al, 2014). We present a new R package, namely DEG2 (Differentially Expressed Genes 2). For its current version, this package can be used, for instances, to do the cross-variance statistical test for Microarray/Sequencing/metabolomics data which has been proposed and introduced in Fajriyah ((Fajriyah 2014) and (Fajriyah 2016)). In metabolomics studies, the test can be used as an alternative test to show which metabolites have the power to differentiate the two different groups in the data set when the sample size is small, the situation which is usually appeared in the bioinformatics research. Based on its statistical distribution, the p-value can be also provided. The test is built under the homogeneity of variances between samples.

**Keywords:** Cross-Variance; Homogeneity; T-Test; Cross-Variance Test; Metabolomics Study



## Using Fuzzy C-Means Clustering to Clustering Province in Indonesia

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### Abstract

Fuzzy C-Means Clustering (FCM) adalah suatu teknik yang digunakan dalam melakukan pengelompokan data. Prosedur pengelompokan datanya didasarkan pada derajat keanggotaan setiap anggota. Tujuan dari penelitian ini adalah melakukan pengelompokan Provinsi yang ada di Indonesia berdasarkan Kepadatan Penduduk, Angka Partisipasi Sekolah, Indeks Pembangunan Manusia, dan Tingkat Pengangguran Terbuka menggunakan dengan Menggunakan Fuzzy C-Means Clustering.

**Keywords:** Fuzzy C-Means Clustering, province, population density, school participation rate, human development index, unemployment rate





## Accuracy of Different Dental Age Assessment Methods to Determine Chronological Age among Malay Children

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### Abstract

Willems method is the most commonly used method for dental age assessment among Malaysian children. London Atlas method was introduced in 2010, with clear illustration of internal and external features of each tooth to help in age estimation, however, there was no study conducted using this method for Malaysian children. The objective of the present study was to compare the accuracy between Willems method and London Atlas method for age estimation in determining chronological age among Malay children. **METHODS:** This research was conducted retrospectively by analysing 150 digital dental panoramic tomograms of 5-, 10- and 15-year-old healthy Malay children attending Faculty of Dentistry, International Islamic University Malaysia within the period from 2012 to 2016. Dental anomalies, history of orthodontic therapy and medically compromised children were excluded from this study. The mean age estimated using Willems method and London Atlas method were compared to the mean chronological age. All data were analysed using RStudio software. **RESULTS:** The results of the study showed that intra- and inter-examiner reliability were 0.75 and 0.82, respectively. The mean chronological age for 5-, 10- and 15-year-old groups were 5.49, 10.22 and 15.39, respectively. Significant differences were observed for 5- and 10-year-old groups between London Atlas method ( $P < 0.05$ ) and Willems method ( $P < 0.05$ ) when compared to chronological age. However, no significant difference was observed for 15-year-old group ( $P > 0.05$ ). **CONCLUSIONS:** Willems method is more accurate in determining chronological age for the 5- and 10-year-old groups compared to London Atlas method

**Keywords:** Dental age assessment; Chronological age; Malay children



## The Implementation of $\alpha$ -Sutte Indicator to Forecasting GDP in South Africa

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### Abstract

The purpose of this study is to apply the  $\alpha$ -Sutte Indicator in forecasting (US\$) GDP in South Africa.  $\alpha$ -Sutte Indicator is a new forecasting method developed in 2017 by Ansari Saleh Ahmar. To see the accuracy of these methods, so that the forecasting results of the  $\alpha$ -Sutte Indicator will be compared to other forecasting methods, namely: AutoARIMA, HoltWinters, Neural Network Time Series (NNETAR), Robust Exponential Smoothing, and The Theta Model.

**Keywords:**  $\alpha$ -Sutte Indicator, forecasting, GDP, South Africa



## The Forecast of Consumer Price Index and Inflation Rate Data in Indonesia using RcmdrPlugin.sutteForecastR

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### Abstract

The purpose of this research is to apply RcmdrPlugin.sutteForecastR in forecasting data. RcmdrPlugin.sutteForecastR is the Rcmdr Plug-in package by using the package from  $\alpha$ -Sutte Indicator i.e. sutteForecastR. Data used in this research are Consumer Price Index and Inflation in Indonesia from January 2015 to August 2017.

**Keywords:**  $\alpha$ -Sutte Indicator, sutteForecastR, RcmdrPlugin.sutteForecastR, Forecasting



## Spatial Weight Determination Of GSTAR(1,1) Model By Using Kernel Function

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### Abstract

The stochastic process models with the index parameters such as time and location were investigated in this paper. The model used is GSTAR (1.1), and it was applied to the Gamma ray log data. The important thing is to be assessed in this model is the determination of the space weight matrix. Commonly, the space weight matrix was determined based on the Euclidean distance, but not based on data. In this work, we use the kernel function approach to determine the spatial weighting function whose domain is in the form of data observation. In addition, we also study the influence of this weight matrix to the stationary condition of GSTAR (1;1) model, and we use the inverse of autocovariance matrices or IAcM methods. The results showed that the kernel weights matrix approach still being met influence on stationary of this model.

**Keywords:** Kernel weight; Generalized STAR; Space-time model; Autoregressive; Autocovariance matrices.



## Support Vector Regression Algorithm Modeling to Predict the Availability of Foodstuff In Indonesia to Face The Demographic Bonus

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### Abstract

The demographic bonus becomes a valuable phenomenon for Indonesian. One of the positive effects of this phenomenon is the increase of productive age proclaimed which will be the future of Indonesian economy. The agricultural sector plays an important role of the overall national economy which is indicated by an increase from year to year. However, the level of nutritional adequacy declined by a few percent each year due to an increase in the number of people who are not balanced by increased demand for food. In this case the government is expected to determine the policy priorities related to Demographic Bonus issues by predicting the future. Computing and data mining technologies play an important role in prediction cases by drawing conclusions based on regression lines. The technique is called Support Vector Regression, which is able to handle some cases of statistical data. Three determinant attributes used in this research are (1) Harvest Area; (2) Number of Harvest Production; and (3) Food Productivity, become the main reference for 714 data from 1998-2015 in 34 Provinces in Indonesia containing 7 types of crops. Three distribution data experiments conducted using K-Fold Cross Validation have the highest accuracy on Fold-1 with correlation coefficient value (R) of 92% with the smallest error value at fold-1 with MSE value of 14%. Predicted results show a decline in the number of food production in almost every province in Indonesia. From the experimental results, it is known that the biggest contributor of food products is Java island, especially in East Java. Almost every kind of palawija plant, East Java plays an important role in the production of food needed in Indonesia..

**Keywords:** K-Fold Cross Validation, Prediction, Support Vector Regression, The Demographic



## Preferences of FMIPA UNM Students to the Quality of Lecturers in Joint Learning Semester

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### Abstract

Lecturer is an important factor in improving academic quality, so it must be able to show superiority in education and teaching, research and community service. Characteristic of lecturers is one factor that can affect the behavior of individuals who are learning. This paper examines the preference of FMIPA UNM students to lecturers' quality in joint learning semester using conjoint analysis. There are 4 attribute variables, each consisting of 2 attribute levels; (1) the character of the lecturer (KD) with the attribute level of serious and relaxed; (2) lecturer's educational background (LBP) with the attribute level of master (S2) and doctorate (S3); (3) teaching method given by lecturer (MP) with the attribute level of conventional and unconventional; and (4) class interaction (IK) with attribute level of active and passive. There were 89 students who were the respondents of the total 805 students of Faculty of Mathematics and Natural Sciences of class of 2017 which is the observed population. Profile cards are organized based on Orthogonal Array. The result of the analysis shows that the combination of the most favored lecturers' characteristics in joint learning semester at FMIPA UNM is by interaction in active class, serious character in learning, and teaching with conventional method and master's degree (S2).

**Keywords:** Joint Learning Semester, preference, Conjoint Analysis, Interaction



## The Five Columns Rule in Solving Definite Integration by Parts through Transformation of Integral Limits

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### Abstract

This research introduces alternative method in solving definite integration by parts. The integral is solved using an algorithm of the tabular integration by parts through transformation of integral limits. The results revealed that the integration by parts formula changed to a new form after transformation. The implication of this method revealed that the final solution between this technique and standard techniques in calculus text books are exactly the same. The problem in this method is the procedures becomes longer than usual, therefore, the authors has derived the five columns rule to simplify the problem. The explanation of each columns are as follows: the first column writes the positive and negative signs repeatedly, the second column contains  $u = f(x)$ , and then successive its derivative repeatedly, the third column contains the integral and then its result repeatedly, the fourth column writes the lower limit ( $x = a$ ) and the upper limit ( $x = b$ ), and the fifth column contains the lower double limit  $\{u(a)v(a)\}$  and upper double limit  $\{u(b)v(b)\}$  on the integral respectively.

**Keywords:** Definite Integration by Parts, Five Columns Rule, Transformation of Integral Limits



## A Mathematical Model for the Epidemiology of Diabetes Mellitus with Lifestyle and Genetic Factors

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### Abstract

Diabetes is a chronic disease which is indicated by high blood sugar levels. Death cases of diabetes usually occur on diabetics people with complications. Mathematical model to elaborate the prevalence of diabetics has been determined by diabetes complication (DC) model in 2004. In the DC model, people with diabetes were classified into two compartments, uncomplicated diabetics (D) and complicated diabetics (C). The number of incidences in the DC model was assumed to be constant and those causal factors were ignored. Actually the number of incidences is not constant, diabetes causal factors can affect incidence's fluctuations. Diabetes is known as a disease caused by lifestyle and genetic factors. A bad lifestyle leads a susceptible individual to become a diabetic. Bad lifestyle is strongly influenced by risky social interaction. In the other side, a genetic factor is the main cause of the diabetes genetic disorder birth. Consider these both factors, the DC model was developed into a susceptible diabetes complication (SDC) model. Susceptible individuals were involved in the calculation of risky interactions. The SDC model is a first order nonlinear differential equation. The number and the change of individuals in each compartment can be determined from the solution of this model.

**Keywords:** diabetes, genetic, incidence, lifestyle, mathematical modeling.





## Detour Spectrum and Energy of Conjugate Graph Complement of Dihedral Group

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### Abstract

Study of graph from a group has become an interesting topic until now. One of the topics is spectrum of a graph. Spectrum of a graph is defined as collection of all distinct eigenvalues and algebraic multiplicity of its adjacency matrix. The most related topic in the study of spectrum of graph is energy. Energy of a graph is defined as sum of absolute value of all its eigenvalues. In this paper, we determine the spectrum and energy of detour matrix of conjugate graph complement of dihedral group. The main result is presented as theorems with complete proof.

**Keywords:** spectrum, energy, complement graph, conjugate graph, dihedral group.



## Full Automorphism Group of Commuting and Non-Commuting Graph of Dihedral and Symmetric Groups

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### Abstract

An automorphism of graph  $G$  is a permutation on vertex set of  $G$  that preserves adjacency. The set of all automorphism of  $G$  is a group under operation of composition of function. This group is called the full automorphism group of  $G$ . Study on the full automorphism group is an interesting topic because most graphs have only the trivial automorphism and many special graphs have many automorphisms. One of the special graphs is graph that associated with group. In this paper we determine the full automorphism groups of commuting and non-commuting graph of non-abelian finite group, especially on dihedral and symmetric groups.

**Keywords:** full automorphism group, commuting graph, non-commuting graph, dihedral group, symmetric group.



## Station Cone Algorithm for Linear Program With Non - Negative Input Data

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### Abstract

The paper studies the linear programming problem with non-negative input data and applies the station cone algorithm to find the solution. From the non - negative input data and station cone algorithm's properties, the author has shown how to derive the feasible solution in a simple way. This significantly reduces the computational time, because it skips the the feasible solution study phase without having to use the phase I of the simplex algorithm to search. The paper also points out how an interior point is the center of a convex polyhedron in the feasible domain. This is the point in order to connect with the vertex of the station cone which serves to identify the variables in and out of the simplex pivot. Another important part of this paper is the experimental calculation of the station cone algorithm for the above problem class. Tests have shown that the station cone algorithm has fewer iterations than the dual simplex method.

**Keywords:** Linear program, station cone algorithm, dual simplex method.



## An Integrated Vendor and Buyer Inventory Model with Inspection Errors, Controllable Leadtime, and Learning In Production

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### Abstract

Inventory level is controllable by an integrated inventory model of vendor and buyer. This integrated inventory model considers inspection errors, controllable lead time, and learning in production. The imperfect items produced by the vendor are detected during inspection by the buyer, however there are inspection errors possibilities. Assumed that consumer demand during lead time following normal distribution. Lead time is controllable by crashing cost. It is also necessary to concern learning in production, the learning ability of workers to produce more items due to experience. The purposes of this research are to formulate the integrated vendor and buyer inventory model, find the optimal solution, and applying this model. The results of this application show that the number of items delivered by vendor increase per cycle and total cost of integrated inventory decrease per year.

**Keywords:** Integrsted vendor, Buyer inventory



## Detection Speed Accommodation and Assimilation Students of VII Classroom In Learning Triangle is Specially

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### Abstract

Each student is born as an individual with different abilities both in absorbing and processing information received. Students have different speeds in analyzing the acquisition of new information or knowledge, some are low, medium and low. Similarly, the time required is short, there is also a long time. As he absorbs, processes, and analyzes the information, he has adapted accommodation and assimilation within his cognitive structure. This study aims to determine the speed of assimilation and accommodation of VII students who are highly capable, moderate, and low in learning special triangle. The approach used is qualitative approach by using task-based interview. Researchers interviewed the subject using interview guidelines that have been compiled and tested. The questions are intended to guide the subject in performing the assigned task as a way of recording the speed of the accommodation and assimilation process. The tasks assigned to the subject are triangular questions containing new concepts such as special triangle properties, triangular lines, triangular drawings and triangular lines, calculating the number of outside corners and special triangles, and calculating the area from a variety of special triangles. Another tool in this study is the stopwatch to detect the speed of accommodation and assimilation of each student. Data analysis was done by three stages: studying data transcript, data reduction, and coding. The results of this study obtained high-ability students detected quickly in the process of accommodation and assimilation.

**Keywords:** accommodation, assimilation, triangle



## Estimation of Household Income of Traditional Catch Fishermen

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### Abstract

One of causes low households income of the tradisional fishermen in Indonesia due to seasonal changing issues (capturing and not capturing seasons). Thus, it has been affected to household's income of the traditional fishermen. We estimate affecting factors to household's income of the traditional fishermen in South Sulawesi Indonesia. The traditional fishermen of Barru District, are studied here as a case area that has low income during recent decades. Using Multiple Regression analysis with exponential functions, adjusted  $R^2$ , hypothesis testing of the regression (F-test and t-test), and followed by classical assumption tests (multicollinearity and heteroscedasticity) of the cross-section data 2014 from fieldwork, we found that the head households education, education fishermen's wife, number of dependents, *dummy* of differences housing of fishermen have been significant affected to households income of the traditional fishermen, whereas the age of the head household have not been significant affected.

**Keywords:** Household income, traditional catch fishermen



## Spread of Measles Disease in Indonesia with Susceptible Vaccinated Infected Recovered (SVIR) Model

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### Abstract

Measles is a disease which can spread caused by virus and has been a priority's Ministry of Health in Indonesia to be solved. To prevent the spread of measles transmission, the Ministry of Health holds vaccinations program. The aims of the research are to derive susceptible vaccinated infected recovered (SVIR) model, to determine the patterns of disease spread with SVIR model, and also to apply the SVIR model on the spread of measles in Indonesia. Based on the article, the spread model of measles with vaccinations can be constructed with SVIR model. The patterns of disease spread is determined by solution of the model. Based on that model Indonesia will be measles-free nation in 2186 with the average of vaccinations scope about 88% and the average score of vaccinations failure about 4.9%. If it is simulated as Ministry of Health new programs with the average of vaccinations scope about 95% and the average score of vaccinations failure about 3%, then Indonesia will be measles-free nation in 2184. Even with the average of vaccinations scope about 100% and no failure of vaccinations, Indonesia will be measles-free nation in 2183. Indonesia's target as measles-free nation in 2020 has not been reached.

**Keywords:** measles, vaccination, SIR, SVIR.



## A Matlab Code To Compute Prediction of Survival Trends in Patients with DHF

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### Abstract

This manuscript aims to provide an algorithm that can be used to predict the survival of patients with dengue hemorrhagic fever (DHF). The algorithm is based on Maximum Partial Likelihood Estimation (MPLE) to estimate the parameters. Medically, one of the main indicators to identify patients suffering from DHF is platelets. The first analysis conducted is to predict how huge the influence of platelets on patient survival. Secondly, the model is analyzed by adding other medical record data. The results display the difference between the model with additional predictors and without them.

**Keywords:** survival analysis, cox regression, maximum partial likelihood estimation, dengue fever





## The Moore Existence of Normal Element on Ring with Involution

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### Abstract

Some inverse concept which is have been knowing in the ring with involution are generalized Moore Penrose inverse and group inverse. In addition, the normal elements also has defined in the ring. The existence of Generalized Moore Penrose invertible element is normal, has been obtained by utilizing the commutative double properties of group invertible element. This paper yields another approach for the existence of normal elements by exploiting the commutative properties of normal elements.

**Keywords:** Generalized Moore Penrose.



## Insolvency Prediction in Insurance Companies Using Support Vector Machines and Fuzzy Kernel C-Means

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### Abstract

Insolvency of insurance companies has been a concern of parties such as insurance regulators, investors, management, financial analysts, banks, auditors, policy holders, and consumers. This concern has arisen from the perceived need to protect the general public against the consequences of insurers insolvencies, as well as minimizing the responsibilities for management and auditors. In this paper we propose an approach to avoid insolvency in insurance companies. A large number of methods such as discriminant analysis, logit analysis, recursive partitioning algorithm, etc., have been used in the past for insolvency prediction. However, the special characteristics of the insurance sector have made most of them unfeasible, and just a few have been applied to this sector. In this study we predict the insolvency using two different methods, there are Support Vector Machines (SVM) and Fuzzy Kernel C-Means (FKCM). The results are very encouraging and show that SVM and FKCM can be a useful tool for parties who are interest in evaluating insolvency of an insurance firm.

**Keywords:** business failure, insolvency, support vector machines, fuzzy kernel c-means



## Face Recognition Using the Fisherface Method

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### Abstract

Fisherface is one of the popular algorithms used in face recognition, and is generally believed to be superior to other techniques, such as eigenface because of the effort to maximize the separation between classes in the training process. The purpose of this research is to build a program of face recognition application using fisherface method by utilizing GUI applications and databases that are used in the form of a Papuan facial image. Image recognition using fisherface method is based on the reduction of face space dimension using Principacal Component Analysis (PCA) method, then apply Fisher's Linear Discriminant (FDL) method or also known as Linear Discriminant Analysis (LDA) method to obtain feature of image characteristic. The algorithm used in the process for image recognition is fisherfaces algorithm while for identification or matching face image using minimum euclidian. The method used in this study is literature study that is studying and reviewing various books or literature related to mathematical concepts that underlies the formation of fisherface algorithm to recognize the image of a person's face which is then applied in programming language, especially programming language Matlab 6.5. While in the process of pre-processing to make the face image to be uniform in terms of size and format are ready to use; used Adobe Photoshop 7 application program. The results show that for image recognition where the image of testing is the same as the training image, the percentage of program success is 100%, while for 73 facial test images with various expressions and various positions, 70 faces are recognized correctly and 3 faces are recognized incorrectly etc.) so the percentage of success is 96%.

**Keywords:** Fisherface, PCA, FLD, Image, Face, Papua



## Identification of Parameter Existence and Stability of Treatment Diabetes Mellitus Prognosis Model

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### Abstract

Diabetes mellitus is a prognosis disease, preceded by overweight and obese, and followed by chronics and metabolic syndrome if the sufferer is not treated. The transition from such healthy person to overweight, obese, diabetes mellitus, chronics and metabolic syndrome is driven by interaction among its population. This paper considers two kinds of interaction, namely positive and negative interaction. The positive interaction impacts the person of such group population move to the higher level of prognosis, while the negative interaction turns to the lower one. A mathematical model that represents its prognosis is governed regarding to two different treatments. The model is developed by consider the transition of every group of population due to the prognosis process. The existence of an endemic implicit critical point of the model is guaranteed in such parameter interval. The stability of the critical point is identified from the Jacobian matrix of the represented nonlinear system. The identification notices some parameter requirement that determined the local stability of the critical point. The simulations show that the diabetes mellitus population is not easy to be reduced

**Keywords:** *critical point, diabetes mellitus, local stability, prognosis model, stability*



## Numerical Soliton Solution of 1D Variational Boussinesq Model

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### Abstract

In this paper, we use numerical approach for finding soliton solution of 1D weakly nonlinear Variational Boussinesq Model (VBM) with one parabolic vertical function. Fliert (1993) shows that a soliton solution of the Korteweg-de Vries (KdV) equation is actually an external value of its Hamiltonian energy for a given value of its momentum. Numerically, Yuliawati et al (2017) use conjugate gradient method and finite different method to find the soliton solution of KdV equation in the form external value problem. We improve this scheme to find the soliton solution of 1D VBM. Writing the model in Hamiltonian system and adding the traveling wave hypothesis to the system, we obtain the external values problem. This problem is solved using conjugate gradient method and an assumption is added to guarantee the constraint. Using this method, we obtain a dynamical system and we solve numerically the system using Runge-Kutta and pseudo-spectral.

**Keywords:** numerical solution, soliton, Variational Boussinesq Model



## Optimal Strategy for Controlling the Spread Of HIV Dynamics with Educational Campaigns and Antiretroviral Therapy

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### Abstract

This paper discusses an application of optimal control theory to assess the effectiveness of control measures in the dynamics of the spread of HIV. A deterministic mathematical model with educational campaigns and ARV (Anti Retro Viral) therapy as control variables are formulated and analyzed using optimal control theory and the Pontryagin's Maximum Principle. We formulate the appropriate optimal control problem and investigate the necessary conditions for the disease control in order to determine the role of the asymptomatic stage and pre-AIDS stage of HIV infection and in the spread of HIV using of educational campaign and antiretroviral therapy are used as the control items. The optimality system is derived and solved numerically.

**Keywords:** Optimal control, basic reproduction number, Pontryagin's maximum principle, educational campaign, antiretroviral therapy



## Perfomance of Fuzzy Multinomial Control Chart

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### Abstract

On of the most useful tool in Statistics Process Control is control chart. This technique has been used widely in industry and services. One of the most simple attribute control chart is p chart, when the item classified into to categories. In its development, if each item of quality characteristics classify in more than two categories Multinomial control chart more appropriate. The classify such as Excellent, Good, Fair and Bad. However, if there is vagueness of the classification for each item, the fuzzy multinomial control chart is more appropriately used. By using the triangular fuzzy number to calculate the representative value and simulation study, the control chart will be evaluated based on the value of Average Run Length. For small shift of parameter  $p_i$ , the value of average run length when the process is in control closed to 370 and when the process out of control the value of average run length is decreased. Based on this value, it is shown that the Fuzzy Multinomial control chart is sensitive.

**Keywords:** control chart, fuzzy multinomial, average run length



## Hybrid Quantile Regression Neural Network Model for Forecasting Currency Inflow and Outflow in Indonesia

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### Abstract

Regression analysis which can explain the relationship between variables on various quantiles has been developed using quantile regression. Moreover, quantile regression can be applied in forecasting analysis. The aim of this study was to find the best model for forecasting inflow and outflow in Indonesia which contains heteroscedasticity and nonlinearity problems. In order to improve the forecast accuracy, quantile regression will be combined with neural network method, known as quantile regression neural network (QRNN). Then, the forecast accuracy of QRNN will be compared with ARIMAX and neural network method based on some forecast accuracy criteria, i.e. RMSE, MAE, MdAE, MAPE, and MdAPE. Two types of data are used as case studies in this research, i.e. simulation data and real data about 14 currencies of inflow and outflow data in Indonesia. The result of simulation study shows that QRNN is the best method to solve heteroscedasticity and nonlinearity problem. Furthermore, the comparison results on real data show that QRNN yield more accurate forecast than other methods at 10 of 14 currencies.

**Keywords:** Inflow, Outflow, Heteroscedasticity, Nonlinearity, Neural Network, Quantile Regression





## Nearest Distance Searching of Indekos Based on Android Using A\* Algorithm

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### Abstract

Indekos is a temporary residence for students or workers coming from other cities. New arrivals often experience information difficulties in obtaining appropriate boarding places based on the shortest distance and access roads to workplaces or schools where studying aims to save on transportation costs. This problem is solved by applying the A\* algorithm to the built information system. As an example of the case in this study, field data is used in the form of several faculty within the campus complex of University of Sumatera Utara as a learning destination for students who can decide the choice of boarding place around the campus location based on information from applications that can be accessed via Android-based smartphone. In addition to distance information, the homestay information system also provides information on the cost and availability of empty rooms on the place of the registered boarders in the application. The results of this study concluded that the implementation of the A\* algorithm in the information system application of the board is able to find the nearest route selection from the faculty to the place of boarding with an accuracy of 86.67%.

**Keywords:** Indekos, A\* algorithm, shortest path, Android



## Combination Base64 and Hashing Variable Length for Securing Data

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### Abstract

Keeping the data intact without changing becomes an important factor in a communication, the data itself has many forms such as text data, audio data, image data and for secure every form data an algorithm Base64 are needed, Base64 algorithm is used as data format to transmit data due to the result of base64 itself, but Base64 algorithm is not safe enough because it is easy to decoding and get the original form data, therefore need additional security and in this research combined with Hashing Variable Length (HAVAL) algorithm, HAVAL algorithm has a way work secures and compresses plaintext, so the encoding result from Base64 is re-secured and compressed using HAVAL algorithm with length of hashing 32 bit or 4 bytes so when data transmission process will not take many bytes of data compared with Base64 algorithm.

**Keywords:** Base64 Algorithm, Combination Algorithm, Data Security, Hashing Variable Length



## The Construction of Disjunct Matrix for Non-Adaptive Group Testing

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### Abstract

Historically, group testing theory related to the testing of blood samples to identify a disease. Based on the algorithm, there are two types of group testing, Adaptive Group Testing (AGT) and Non-Adaptive Group Testing (NAGT). NAGT algorithm can be represented by a binary matrix, where columns are labeled by items and rows by tests (blocks). On the other hand, the test results of each block is represented in a column vector, called outcome vector. Based on these representations, the problem of group testing can be viewed as finding representation matrix  $M$  which satisfies the equation  $Mx=y$  where  $y$  is an outcome vector and  $x$  are tested samples. If there are  $d$  positive sample of  $n$  samples then we say  $d$ -Combinatorial Group Testing, abbreviated by  $d$ -CGT. In this paper will show the construction of  $d$ -disjunct matrix which is a solution of group testing equation. Furthermore, from the construction will be modified such that the new construction can be identified more than  $d$  positive samples.

**Keywords:** Group testing, Non-Adaptive Group Testing, disjunct matrix



## SIR Model Analysis for Transmission of Dengue Fever Disease with Climate Factors Using Lyapunov Function

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### Abstract

The aim of this paper is to discuss the dynamic system of SIR model with climate factors for transmission characteristics of dengue fever in closed population. Human population is divided into three types, which are susceptible population, infected population, and recovered population, while mosquito population is divided into two kinds that are susceptible population and infected population contaminated by dengue fever virus. Five nonlinear differential equations are analyzed to obtain the equilibrium of the system and the basic reproduction number. Next, the stability of the equilibrium of the system is dissected with three theorems using Lyapunov. The results will be in the form of the disease-free equilibrium, the endemic equilibrium, and the basic reproduction number. The basic reproduction number is influenced by climate factors. If , the disease-free equilibrium will be asymptotically stable, whereas if , the endemic equilibrium will become asymptotically stable instead. Based on the results, the dengue fever transmission is affected greatly by the climate of a region.

**Keywords:** SIR Model, Lyapunov Function, Basic Reproduction Number, Climate Factors



## Redefinition of the Kinds of Quadrilateral Based on the Angle and Side

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### Abstract

Goemetry is a branch in mathematics that has important and strategic role to develop learner's spatial knowledge and higher order thinking skills. Both of them can be achieved by learner whenever geometry is studied through inquiry-discovery process. Therefore, redefinition of the kinds of quadrilateral and their properties through process analysis with respect to its angles and sides are a study that are done in this study. Method of the study is by doing analysis and evaluate of many literatures discussing definition and property of quadrilateral, and then create what should be found. Based on the study has done, it was obtained many kinds of quadrilateral based on the angle and side, and their properties as well.

**Keywords:** Redefinition, quadrilateral, spatial knowledge, higher order thinking



## On the Fuzzy Field and Fuzzy Vector Space

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### Abstract

This study presents some improvement on the definition of fuzzy field and fuzzy vector space given in R. Biswas and G. Wenxiang. Some theorems are also proved by using the given definitions.

**Keywords:** *Fuzzy Field, Fuzzy Vector Space*



## Detection of Osteoporosis Using Fractal Method Based on Fourier Analysis of Hand Bone Image

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### Abstract

This study applies the method of fractal-based 2D Fourier transform to determine an image of osteoporosis or normal based on the dimensions and intercept of the X ray image hand bones. The first step is to create a program to determine the dimensions and the intercept of image. It is determined by using a fractal method based on 2D Fourier transform. Testing the success of the program is done by input X ray image of the hand bones. The result shows that the program testing 2D Fourier transforms can be applied to determine the dimensions and intercept of the hand bones image. The classification of the normal and osteoporosis image is based on the dimensions and intercept values. Normal image has dimension  $<1,4$  and intercept value  $> 34$ , osteoporosis image has dimension  $>1,4$  and intercept value  $<34$ . Dimensional of osteoporosis image have higher than normal image but the normal image density is higher than the osteoporosis image. Classification results quite effectively to help diagnose osteoporosis.

**Keywords:** fractal analysis, dimension, intercept, X-ray image



## Classification of Pneumonia Risk Classes Using Hybrid Linear Discriminant Analysis-Particle Swarm Optimization

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### Abstract

Pneumonia is a disease that is transmitted through the air, so that the spread of this disease is very fast. Pneumonia is the leading cause of death both in developing countries and also in developed countries such as the United States, Canada and European countries. It is very difficult to find the cause of pneumonia and takes several days to get the results, whereas if patients with pneumonia are not treated immediately will cause death. Therefore a fast and precise diagnosis is necessary in order to determine appropriate treatment and care. Several scoring assessments of pneumonia were developed to facilitate the diagnosis of pneumonia, but there is no definite benchmark to determine what system should be used to classify the risk class of pneumonia. Therefore, a classification study is needed to assess the variables used to correctly classify the risk of pneumonia. In this study, Linear Discriminant Analysis (LDA) and Naïve Bayes was applied to classify pneumonia risk class group based on patient medical record. The common variable selection methods in LDA are forward, backward and stepwise methods. However, these methods have certain disadvantages, therefore Particle Swarm Optimization was proposed for variable selection in LDA. The results of classification using LDA, LDA-PSO and Naïve Bayes show that LDA-PSO was the best method since it yields highest classification accuracy.

**Keywords:** *Linear Discriminant Analysis, Naïve Bayes, Particle Swarm Optimization, Pneumonia, Variable Selection*





## Classification of Epileptiform Waves Base on Frequency by Using Backpropagation Neural Network

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### Abstract

Epilepsi is an abnormal condition of brain activity that can be recorded by using Elektroensafalogram (EEG). On epilepsy patient, most of the recording is interictal wave that in form of spike wave and sharp wave. This study has goal to classify whether the interictal waves are spike wave or sharp wave. The study was conducted in two stages : Identification and Classification. Firstly, The epileptogenik wave were identified by transforming the baseline of each wave[5] to select the best baseline that contain all data of the wave, then doing normalization of it to get the features of frequency, amplitude 1 and amplitude 2. Secondly, Backpropagation Neural Network method is applied to classify it. Classification is done by using 200 data consisting of 120 training data and 80 testing data. The results show that classification using binary sigmoid activation function with learning rate of 0,9 give recognition rate of 91,25 % and Mean Square Error (MSE) of 0,0121 and become the best classification results of the method

**Keywords:** epilepsy, spike wave, sharp wave, Backpropagation Neural Network.



## In Vitro Cytotoxicity Study of *Artocarpus Lakoocha* Aqueous Extract and Oxyresveratrol in SH-SY5Y Neuroblastoma Cells

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### Abstract

*Artocarpus lakoocha* is one of traditional plants, can be found in South/Southeast Asia, which has been used for centuries as antelmintic in form of aqueous extract. This extract, also called puag haad in Thailand, contains oxyresveratrol, stilbene, as an active compound of puag haad. To evaluate biological activity of these tested compounds, cytotoxicity study was conducted to determine proper doses of the tested compounds in SH-SY5Y neuroblastoma cells. SH-SY5Y neuroblastoma cells is neuroblastoma cell line which can be used to study several neurodegenerative diseases in cell cultural models. This study aimed to examine cytotoxicity of *A. Lakoocha* aqueous extract and oxyresveratrol in SH-SY5Y neuroblastoma cells by XTT and LDH assays. The result of this study demonstrated that  $\leq 25 \mu\text{g/ml}$  of puag haad and  $\leq 200 \mu\text{M}$  of oxyresveratrol did not show toxicity to SH-SY5Y neuroblastoma cells. The concentrations at  $\leq 25 \mu\text{g/ml}$  of puag haad and  $\leq 200 \mu\text{M}$  of oxyresveratrol could be used to investigate neuroprotective effect using SH-SY5Y neuroblastoma cells. Further studies are required to investigate the effect of *A. Lakoocha* aqueous extract and oxyresveratrol related to neurodegenerative disease in cell cultural model.

**Keywords:** Cytotoxicity, SH-SY5Y neuroblastoma cells, *Artocarpus lakoocha* aqueous extract, oxyresveratrol



## Screening of Factors Influencing Exo-polygalacturonase Production by *Aspergillus niger* ATCC120120 Using 2-Level Factorial Design

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### Abstract

A study was conducted to vary the parameters affecting the production of exo-polygalacturonase by *Aspergillus niger* ATCC120120 on Solid State Fermentation (SSF) of *Nephrolepis biserrata* leaves using a 2-level factorial design (2LFD). Experimental designs were performed to screen for significant environmental factors for the production of exo-polygalacturonase. Factors involved consist of pH, incubation time, temperature, pectin concentration, inoculum size and moisture content. The result of variance analysis (ANOVA), found the four major factors that influence very statistically to the production of exo-polygalacturonase, those were incubation time, temperature, pectin concentration and moisture content. The following significant factors are interaction factors between pH and pectin concentration factor, interaction between incubation time and temperature, interaction between incubation time and moisture content, and interaction between pH, pectin concentration and moisture content. Statistical analysis shows that the linear model is significant with the value of  $R^2$  is 0.9711. There are four significant factors that influence the earnings of exo-polygalacturonase by *Aspergillus niger* obtained by 40.00 U/g with P value less than 0.05 ( $P < 0.05$ ).

**Keywords:** *Aspergillus niger*, Exo-polygalacturonase, 2 Level Factorial Design



## The Potency of Livestock Waste into Renewable Energy (Biogas) in Palipu District Tana Toraja Regency

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### Abstract

The utilization of renewable energy sources are derived from non-fossil sources such as urban waste, animal manure, agricultural waste and other biomass sources are becoming increasingly important. Biogas is a renewable energy source produced by anaerobic fermentation of organic material. Biogas can be produced from animal manure, wastewater, and solid waste. Its composition varies, depending on the source material biogas Biogas is a renewable energy and fuel used to replace fossil such as kerosene and natural gas. This study aims to find out how much the production of biogas in the third installation of biogas reactor 4 m<sup>3</sup> in the village of Tana Toraja Palipu. The research method with survey variants directly measure pH, temperature, and the production of biogas. The results showed pH of 6,49 input materials, output of 7.8, the temperature in the reactor an average of 29<sup>0</sup>C, ambient temperature Average at 26<sup>0</sup>C, biogas production average of 2,714 m<sup>3</sup> per day. The potential of 1 kg of livestock waste to produce 0.117 m<sup>3</sup> of biogas. In Palipu District the are 2561 pigs (data of Jun 2017) producing an average of 1 kg waste / day for a total of 2561 kg of waste per day. The potential of livestock waste in Palipu District of 2561 kg waste x 0,117 m<sup>3</sup> = 299,637 m<sup>3</sup>, of biogas, equivalent to Liquit Petroleum Gas (LPG) 299,637 m<sup>3</sup> x 0,06 kg, Kerosene 299,637 x 0,6 =185,770 liters, Solar Oil 299,637 x 0,52=155,811 liters, Fire wood 299,637 x 0,35 =1048,73 kg.

**Keywords:** Potential, livestock waste, renewable energy, biogas



## The Development of Students' Nature of Science Views in Cellular Respiration Context

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### Abstract

The study aimed to investigate the development of students' views of nature of science in cellular respiration context, including scientific knowledge is tentative, scientists are creative, scientific knowledge is based on empirical evidence, science is a complex social activity, and science has global implications. Grade X students (n=15) registered in English Program (EP) of a high school in Phitsanulok were taught about the NOS in cellular respiration context through the implementation of conceptual change approach. The intervention had been conducted in three repetitive cycles of action research, along with the utilization of a series of instruments: the Nature of Science Questionnaire (NOSQ) and Cellular Respiration Questionnaire (CRQ), nine 55-minute lessons, semi-structured observations, and semi-structured interviews. The result of content analysis and triangulation showed that the implementation of conceptual change approach in this study had been effective in enhancing students views of targeted NOS aspects, in which the highest improvement regarding scientific knowledge is tentative and scientist are creative.

**Keywords:** Nature of Science, Cellular Respiration, Conceptual Change Approach



## Histological Study of The Circulatory System of Sulawesi Medaka Fish (*Oryzias celebensis*) for Animal Model Research

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### Abstract

Medaka fish especially Javanese medaka fish (*Oryzias latipes*) were used as an animal model as well as Zebra fish that was developed as an animal model in the previous study. Sulawesi medaka fish (*Oryzias celebensis*) is one part of medaka fish that are endemic in the region of South Sulawesi. This study aims to observe histological structure of the circulatory system of Sulawesi medaka fish. Morphological study showed that the heart is located in the anterior region of the Sulawesi medaka fish body. Histological study of the circulatory of Sulawesi medaka fish showed that the atrium has thin walls whereas the ventricles have thick walls. The contractions of the ventricle have high pressure and then the blood will be pumped through a bulbus arteriosus that is shaped like an onion. Bulbus arteriosus consists of fibroelastic tissue and some smooth muscle. Bulbus arteriosus, is a unique structure and is to dampen the pressure pulse that generated by the ventricle. From the heart, the ventral aorta distributes blood to the gill through the afferent branchial artery. According to the circulatory system of zebra fish showed that there were similarity between Sulawesi medaka fish and Zebra fish. In general the structure of the circulatory system specially heart and bulbus arteriosus in Sulawesi medaka fish has similarity with Zebra fish as well as other Teleostei fish. This results suggested that Sulawesi medaka fish can be used as model animals especially in the use of fish as animal models in research.

**Keywords:** Sulawesi medaka fish, circulatory system, heart, bulbus arteriosus, animal model

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## The Characterization of Polymerase Protein Basic 2 (PB2) of Duck Origin Avian Influenza Virus

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### Abstract

Since the end of 2012, identified avian influenza clade 2.3.2 virus that caused dead of hundreds of ducks in Central and East Java. This virus has an opportunity to attack other poultry and even mammals includes human. This afraid related to the ability of avian influenza virus to adapt with mammals and human governed by PB2 protein. This research was aimed to analyze amino acid that compose PB2 protein fragments in position 627 of avian influenza virus derived from East Java region isolate 2013. The amplification gen was conducted by a reverse transcriptase polymerase chain reaction using protein specific primary PB2. The amplification result then is visualized by electroforesys. The PCR product obtained refined and sequenced. The sequencing result obtained was analyzed by a mega program 5.0 cover multiple alignment and phylogenetic tree with Neighbor Joining method. The result obtained was protein fragment PB2 could be amplified and analyzed its amino acid that compose the target gen. The position of amino acid 627 of PB2 isolat sample was glutamate and does not experience mutation into lisin. The result of phylogenetic tree protein PB2 showed a high familiarity level with isolate of gene bank virus from Vietnam isolated in 2012 and 2013.

**Keywords:** avian influenza, amplification, PB2



## Extraction of Bioactive Compounds from Cocoa Pod Husk (*Theobroma cacao* L.) and Potential Antifungi Activity

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### Abstract

The research on extraction bioactive compound of cocoa pod husk and antifungal activity assay by in vitro has been done. The aim of this research was to get phytochemical component extracted from cocoa pod husk and to know the potency of activity as antifungal. Cocoa pod husk was used that has been dried. Samples were extracted by maceration with acetone-water solvent (7: 3) and ethanol 70%. Phytochemical analysis using Gas Chromatography-Mass Spectrometry (GC-MS) while the antifungal assay was done by agar diffusion method. The result of GC-MS analysis showed that there are 3 major compound components in ethanol solvent: Methyl Octadeca-9,12-Dienoate; 9-Octadecenoic Acid (Z)-, Methyl Esters; Hexadecanoic Acid, 15-Methyl-, Methyl Esters. While on acetone solvent shows 4 components of major compounds are: Isopropyl Myristate; 1,2-Benzenedicarboxylic Acid, Dioctyl Esther; 9-Octadecenoic Acid (Z) -, Methyl Esters; Octadecanoic Acid, Methyl Esther. Antifungal using with acetone:water (7:3) as solvent showed the extract can inhibit *Fusarium oxysporum* (fungal pathogen in tomato plants), which means that the extract has the potential as antifungal against *Fusarium oxysporum*.

**Keywords:** Cocoa podhusk, antifungal, bioactive compound





## Effectivity of Anatagonistic Bacteria in Controlling of *Fusarium* Wilt Diseases of Banana (*Musa paradisiaca*) by *in Vitro*

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### Abstract

*Fusarium* wilt disease caused by *Fusarium oxysporum* f sp. *Cubennse* (*Foc*) is a major disease on Banana plant which lost production more than 50 %. This patogen is a soil-born disease and persistence until five years in the soil. Biological control is one of strategic diseases control need to applied to inhibit development of *Fusarium* wilt disease of Banana. The purposes of this study are a). to isolate antagonistic bacteria from banana plant rhizosphere which has a good potential to inhibit *Foc* growth by *in vitro*; b) to know antagonistic mechanisms of selected bacteria by secondary metabolite production by *in vitro*. This study was carried out in Biology Laboratory Makassar State University with method as follows: (a) Isolation and purification of antagonistic bacteria from Banana plant rhizoaphere; (2) test of dual culture; (3) test of secondary metabolite substance. The result of this study showed that (a) there are four selected bacteria which have a good potential in inhibiting *Foc* growth by *in vitro* such as : Isolate B6, B8, B2 and B1 with inhibitor capacity 80.47 %, 80.17 %, 78.78 % and 77.74 %, respectively. (b) Inhibitor capacity of selected bacteria by chitinaze enzyme, pectinase and high antibiotic substance.

**Keywords:** Bacteria, antagonistic, *Foc* fungus



## Characterization of Actinomycetes Antagonist *Fusarium oxysporum* f.sp. *passiflora* Isolated from Rhizosphere Soil of Purple Passion Fruit Plants, South Sulawesi, Indonesia

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### Abstract

To survey rhizosphere actinomycetes as potential biocontrol against fungal disease of passion fruits, rhizosphere soil of the plant were used as an isolation sources. Twenty five strains were assigned to Streptomyces-like strain based on morphological properties of spore chain. Four strain with distinguishing characteristic based on the macroscopic appearance of colonies on different media, were recovery from rhizosphere soil of passion fruits plant suggesting that various Streptomyces spp. grow surrounding of plant roots. On an agar medium, four strains (11.43%) commonly formed a clear growth-inhibition zone against fungal pathogen of passion fruits, *Fusarium oxysporum* f.sp. *radicalix passiflori* (FORP), indicating that this strains can produce antifungal substances. The present results indicate that four strain are a suitable candidate for the biocontrol of fusarium wilt.

**Keywords:** rhizosphere, passion fruits, antifungi, *Fusarium oxysporum*



**Influence of Level of Education on Horticultural Farmers' Behavior in the Application of Eco-Friendly Practices in Gowa Regency, Indonesia**

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**Abstract**

This research aims to describe how the level of education affects horticultural farmers' behavior towards the application of environmentally-friendly agriculture in Gowa Regency. This research involved a survey, based on random sampling of 75 farms in Gowa Regency. Data was collected using a prepared questionnaire. Data analysis was performed by preparing descriptive statistics and some inferential statistical analysis of the total samples. The results showed that average level of education reached by the farmers was junior high school, and their behaviour in regard to the application of environmentally friendly agriculture is already considered quite good, although not yet at the maximum it could be. Therefore there still more to be done to improve the application of environmentally-friendly agricultural practices. Educational level had a positive and significant effect on the behavior of farmers in the implementation of environment-friendly agriculture in Gowa Regency.

**Keywords:** Farmers' Behavior, Education, Horticulture farmers, Eco-Friendly practices



## Antibacterial Activity of Mold Isolate from "Wikau Maombo" Based on Incubation Period

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### Abstract

"Wikau Maombo" is a traditional food made from a bitter cassava root (*Manihot aipi* Phol.) by a fermentation process. The process of making "Wikau Maombo" through the anaerobic fermentation process that utilizes microorganisms from the environment spontaneously. Many microorganisms that play a role in the fermentation process, namely from groups of molds, yeasts and bacteria. The mold from "Wikau Maombo" fermentation was been isolation, furthermore was observed its antibacterial activity. The aims of this study is to determine the antibacterial activity of the type of mold isolates obtained from "Wikau Maombo", the effect of incubation period of the mold isolates against antibacterial activity and the influence of the type and incubation period of the mold isolate against antibacterial activity. This research was experimental research which was to know the antibacterial activity by molds against bacterial growth of *Escherichia coli* ATCC 35218 and *Staphylococcus aureus* ATCC 25923. The Testing of antibacterial activity of the mold isolates were conducted using Well Diffusion method. The analysis of data used SAS software (Statistical Analysis System). The result showed that the type of mold isolates obtained from "Wikau Maombo" fermented significant effect on the antibacterial activity. The highest activity found in WM4 isolates which have antibacterial activity as much as 16.7 mm for *Escherichia coli* and 17.4 mm for *Staphylococcus aureus*. The incubation period of mold isolates significant effect on the antibacterial activity. The highest antibacterial activity found on the tenth day with activities as much as 9.8 mm for *Escherichia coli* and 10.2 mm for *Staphylococcus aureus*. Interaction between species and incubation period of mold isolates significant effect on the antibacterial activity. The best antibacterial activity found in WM4 with ten days of incubation period.

**Keywords:** antibacterial activity, mold, incubation period, "Wikau Maombo", fermentation



## Vegetation Structure of Sapling Plant at Bantimurung Bulusaraung National Park Balloci Resort South Sulawesi

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### Abstract

Tropical rainforests are dwindling so that the protected areas of the tropics are very important. Sapling plants as part of the undergrowth plants are an inseparable part of the forest ecosystem and play an important role in the sustainability of the forests, including forests in the tropics. We examine the structure and composition of sapling plants in Bantimurung Bulusaraung National Park, Balloci resort, in two areas, which are Bukit Batu Putih and Gunung Bulusaraung. This national park is one of the protected areas in Province of South Sulawesi, Indonesia. Species with the highest importance value index in Bukit Batu Putih are *Tabernaemontana sphaerocarpa*, *Homalium guianense*, *Micromelum minutum*, *Lepiniopsis tematensis* and *Melicope lunu-ankenda* with a total of 191.84%, while the lowest are *Planchonella firma*, *Coffea* sp., *Matthaea sancta*, *Ficus pumila* and *Syzygium ingens* with a total of 1.58%. Species in Gunung Bulusaraung with the highest important value index are *Daemonorops longipes*, *Actephilla excelsa*, *Memecylon paniculatum*, *Galbulimina belgraveana* and *Ficus gul* with a total of 126.31%, while the lowest are *Arenga pinnata*, *Pterospermum celebicum*, *Ficus ampelas*, *Antidesma buniis* and *Cyathea contaminans* with a total of 2.68%. The value of Shannon-wiener diversity, Simpson's diversity index, number of species, Pielou's evenness index, and Rarefaction in Bukit Batu Putih is lower than that of Gunung Bulusaraung and only Simpson's dominance index is higher indicating of lower species diversity in Bukit Putih area. The value of similarity index between Bukit Batu Putih and Gunung Bulusaraung is 23.71% indicating that these two areas have a high difference in the structure and composition of sapling plant vegetation.

**Keywords:** Bantimurung bulusaraung national park, sapling plant, south Sulawesi, vegetation structure



## Embryogenic Callus Cytology and Regeneration Condition for Genetic Transformation of Sugarcane (*Saccharum officinarum* L.)

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### Abstract

The development in vitro based plant breeding research is a solution to solve complex problems in increasing sugarcane production. In addition, cytological studies and the proliferation of embryogenic callus plays an important role in the successful efficiency of genetic transformation processes. One of the early stages of in vitro breeding is the development of protocols for somatic embryogenesis processes. The ultimate stage in induction of somatic embryogenesis is to ensure that the resulting callus is completely embryogenic in that it can induce the formation of somatic embryos derived from a single cell. Therefore, cytology studies should be done to see the somatic embryo development stage of embryogenic callus produced. This study was aim to examine the important stages of somatic embryogenesis from the process of single cell differentiation to the formation of planlet. Microscopic observation showed that the resulting callus was a mixture of embryogenic and non-embryogenic cells. The resulting embryogenic cell group was thought to be a pre-embryogenic mass (PEM). In this study found important mechanisms during the process of somatic embryogenesis namely asymmetric cell division and cell elongation due to the use of 2,4-D and casein hydrolysate as the source of Nitrogen.

**Keywords:** callus, PEM (pre-embriogenic mass), sugarcane



## Dielectric Properties of Carbon from Cassava Starch Synthesized from Hydrothermal Process

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### Abstract

Carbon has been synthesized from biomass materials ie cassava starch through a hydrothermal process has potential as dielectric material. The carbon synthesized from cassava starch through a hydrothermal process is then made into pellets, then tested capacitance value using a HIOKI 3522-50 LCR HiTESTER using conductive ITO glass as the electrode during measurement. This study aims to determine the dielectric properties of carbon synthesis through measurement on the value of capacitance. Through the measurement of capacitance values are used to determine the value of the dielectric constant. Measurements were performed with the two aspects, namely the measurement of capacitance with temperature and capacitance measurement of the frequency. The test results indicate a change in the capacitance value both to changes in temperature and frequency. While the value of the dielectric constant also shows the dependence on temperature and frequency. Based on the measurement of dielectric constant value of the carbon that was synthesized shows the level of ability of carbon material in terms of storing a charge.

**Keywords:** biomass, capacitance, charge, frequency, temperature



## Exploration of Dicots Plant for Interest Microscopic Observation of Stem Anatomy

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### Abstract

This research is a descriptive research that aims to explore the type of dicot plants as anatomical observation activity of the stem. Research activities are conducting through four stages. The first stage was exploration, the second stage was a section, the third stage was observations and the fourth stage was limited trial. The exploration stage was conducted in the several school yards in Makassar. Free hand cross section method was done in the section stage while staining with safranin and without staining was done in observation stage. The results showed there are 10 species of cosmopolitan dicot plants in the yards. Meanwhile, based on the second stage showed that 6 out of 10 types were to be observed using microscope. Then the observation stage found that from 6 plants, known 4 plants are highly recommended and 2 plants are otherwise recommended as a material activity of microscopic observation for plant tissue structure. The fourth stage is a limited trial conducted by 26 students on the 6 plants that categorized in quite easy, easy and very easy to section showed 5 types of plants that are quite easily and 1 type of plants that are easy to section with the results of observations of the average preparation is stated to have clear clarity of the cross section.

**Keywords:** Types of dicot plant, Exploration, Section





## Menstrual Cycle Length of Woman Aged 20 to 30 years

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### Abstract

Menstrual cycle is a naturally occurring mechanism in a reproductive aged woman. The ability of a woman to identify the length of a menstrual cycle is important as a basis to determine the fertile period in the subsequent menstrual cycle. This research aimed to investigate the length of menstrual cycle of women in reproductive age. A regular menstrual cycle occurs in a regular pattern of length which can range from 21 to 35 days in adults. A subsequent cycle which occurs three to five days earlier or longer than the usual pattern would still be considered as normal. Meanwhile, a menstrual cycle which occurs twice in a month or once in more than two months would be considered as irregular cycle. The method implemented was an exploratory method through which menstruation periods of woman in reproductive age were recorded in three consecutive months. The research population was Biology students who are registered in academic year 2017. The participants were students who are registered in Reproduction and Animal Development subject. The data of menstrual period were collected from four study group which consists of 101 students. The result of data analysis on a total of 169 menstrual cycle showed that the average length of participants' menstrual cycle was 30.08 days. The total of participants showed regular and irregular length of menstrual cycle was 59.41% and 42.57%, respectively.

**Keywords:** Menstrual Cycle Length, Reproductive Aged Woman



## Development of Intensive Shrimp Farming, *Litopenaeus vannamei* in Land-Based Ponds: Production and Management

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### Abstract

The aim of this study is to evaluate the development of intensive shrimp farming in land –based ponds and its production and management. This study was carried out in traditional growth ponds of the farmers in Kab Pankep, South Sulawesi. There were seven ponds used for shrimp growth with intensive system such as used of high quality feed, seed, probiotic bacteria, intensive aeration, minerals and vitamins. Shrimp growth ponds used intensively culture system with profile condition as follows : (1) water depth of ponds, 120 – 150 cm, feeding rate four times a day, water quality parameters were measured every day for, water temperature, pH, salinity, turbidity, dissolved oxygen (DO). Average daily growth (ADG), survival rate (SR), Feed conversion ratio (FCR) and MBW were measured every week. Stocking density every ponds was different, 35 – 120 individuals/m<sup>2</sup>. Feeding process was conducted four times a day: 08.00 am, 10.00 am, 14.00 p.m, 16.00 p.m. Days of culture (DOC) were different per ponds between 90 -110 days/ growth cycles. All ponds used minimal water exchange system and addition water from well for change loss water by evaporation. The results of this study showed that shrimp production, 2,177 kg – 4,219 kg,; FCR: 1.2 – 1.62; ADG: 0.21 – 0.24; water temperature, 29 – 34 °C; pH 7.9 – 9.0; dissolved oxygen, 3.4 – 4.5 mg/L. Salinity 10 – 16 ppt. Development of intensive shrimp culture system, *L. vannamei* has a good prospect in soil-based ponds because it can increase production significantly with minimal water exchange strategy and water quality stable for this system.

**Keywords:** intensive production, minimal water exchange, *Litopenaeus vannamei*



## Analysis of *Echinodermata* Variety at Intertidal Zone in Harapan Island of Seribu Islands

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### Abstract

The purpose of this study is to identify the variety and types of Echinodermata that live at Intertidal Zone in Harapan Island of Seribu Islands. This study was conducted with Qualitative Method where the sample was taken by using Line Transect Method, while data was collected with Triangulation Technique (observation, interview, and documentation). This study involves the calculation of species abundance, and variety as well as homogeneity index. The results of study involving 3 stations found that there are three classes of Echinodermata, consist of 5 species and 140 living creatures in total, spread on various substrates. The statistical calculation is obtained if the index of variety in station I = 0.674, station II = 1.087, and station III = 0.825, while the equality of species in station I = 0.166, station II = 0.310, and station III = 0.210, and the species abundance in all stations is 99.95% - 100%.

**Keywords:** Species variety; *Echinodermata*; Intertidal Zone



## **Antioxidant Capacity of Snakehead Fish Extract (*Channa striata*) at Different Shelf Life and Temperatures**

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### **Abstract**

The albumin-rich of snakehead fish (*Channa striata*) extract (SHFE) has been developed as medicinal-food due to its antioxidant potential. This investigation were aimed to determining the effect of shelf life (1, 4 and 8 weeks) and temperatures (4°C; 30°C; 50°C) toward SHFE antioxidant capacity using tetramethoxy azobismethylene quinone (TMAMQ) enzymatic-based. The ascorbic acid was used as an antioxidant control. The fluctuated antioxidant capacities were found during different shelf life i.e. at temperature storage of. 4°C (4.17-6.49 µM); 30°C (7.72 -5.58 µM) and 50°C (6.60 – 6.11). Antioxidant capacity of SHFE was approximately 5.7 times higher than ascorbic acid.

**Keywords:** Antioxidant, *Channa striata*, , TMAMQ, shelf life, temperature



## Identification of Secondary Metabolite Compounds on Leaves Kirinyuh as Organic Pesticide on Vegetable-leaved

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### Abstract

This study was conducted to determine the potential of the leaves Kirinyuh (*Chloromelaena Odorata*) as pesticides and phytohormones on vegetable-leaved mustard greens (*Barissica juncea*). Concentration of ethanol extract of leaves Kirinyuh (*Chloromelaena odorata*) is 5, 10, and 15 %, and 0% as control. This study uses the full tool design (RAL) of data in regression and Anova analysis followed by BNT 5%. Kirinyuh leaf extract (*Chloromelaena odorata*) has the activity of pesticides on soil worm (*Agrotis Ipsilon*) and growth hormone on mustard plants. Various concentrations of ethanol extract given a different effect on the death rate toward soil worm (*Agrotis Ipsilon*). For the analysis of variants that influence leaf extract concentration Kirinyuh (*Chloromelaena odorata*) with ethanol to death soil worm (*Agrotis Ipsilon*) showed that very influential or significant to mortality rates with the smallest Significant Difference Test (BNT) 1 % (0,01) = 0.89 and 5% (0.05) = 0.59, while different rotational states significant differences (significant) between each treatment in which a concentration of 10 and 5 % respectively differently 2.533 (a) as well as the concentration of 15 and 10% ie 4.083 (b) as well as 15 and 5% ie 5.050 (c).

**Keywords:** Pesticides activity, leaves Kirinyuh, soil worm



## Bioactive compound and Antioxidant Activity Analysis of Some Medicinal Plants of Province of Western Sulawesi

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### Abstract

The main objective of this study was the screening of some selected medicinal plants very popular in Provinsi of western Sulawesi, with respect to their total phenolic content, antioxidant capacity, and bioactive compound. All plants were extracted with the conventional method, maceration with methanol. Bioactive compound was measured by GCMS-QP2010 Ultra Shimadzu. The antioxidant capacity of the plant extracts was measured by their ability to scavenge free radicals such as DPPH (2,2-diphenyl-1-picrylhydrazyl). The Folin-Ciocalteu method proved the existence of antioxidants in plant extracts. These extracts resulted in a rapid increase and decrease of the absorbance and showed different hydrogen-donating capacity towards the 2, 2'-diphenyl-1-picrylhydrazyl (DPPH) radical. A lot of differences found and showing anti-oxidant activity of methanol extracts of different plant species. Among the species, methanol extract of *Ficus septica*, *Cordolone sp.*, *Celotia argantea*, *Physalis angulate*, *Kalandioe pinnata* and *Melostoma polyanthum*, showed the maximum scavenging capacity of over 70.

**Keywords:** antioxidant, DPPH, bioactive compound, medicinal plant



## Fractal Analysis of Land Surface Temperature for Geothermal Site Characterization

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### Abstract

This study discusses fractal analysis for characterization of the geothermal surface temperature. The data were obtained from Landsat-8 satellite imagery. The data were analyzed using Fractal method to produce complexity parameters, namely: Dimension, Intercept, and Lacunarity. Based on the parameters, the character of the geothermal surface temperature was identified. This procedure was applied to both geothermal and non-geothermal surface temperature. The result shows that the fractal method can be applied successfully to characterize the geothermal surface temperature and to distinguish it with the non-geothermal surface. In addition, all parameter plots also exhibit that the geothermal surface has a convergence pattern, while the non-geothermal area has a divergence pattern.

**Keywords:** Fractal analysis, surface temperature, geothermal



## Identification of Natural Sand Characteristics in South Sulawesi

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### Abstract

Natural sand is a resource that is widely available in coastal areas of South Sulawesi. The locations that have natural sand deposits are Bontokanang Village, Takalar Regency and Tanjung Bayang Beach Makassar. This study aims to identify characteristics such as the composition of chemical elements, surface morphology, and minerals content in the natural sand of Bontokanang Village, Takalar Regency and Tanjung Bayang Beach, South Sulawesi before being extracted. SEM-EDS (*Scanning Electron Microscopy-Energy Dispersive Spectroscopy*) and XRD (*X-Ray Diffraction*) methods are used for testing chemical elements composition, surface morphology, and mineral content. The results of SEM-EDS and XRD testing show that sand from Bontokanang Village is dominated by iron and titanium elements, monoclinic crystal structure, and dominated by rankinite and magnesioferite minerals. While natural sand from Tanjung Bayang Beach Makassar is dominated by silicon and calcium elements, monoclinic crystal structure and dominated by augite and keatite minerals.

**Keywords:** natural sand, SEM, EDS, XRD





## Microstructures Identification of the Iron Sand Deposits in South Sulawesi, Indonesia

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### Abstract

Iron sand is found in coastal areas of South Sulawesi which in its use has not been optimally utilized. In this study, to identify microstructures of iron sand deposits, extraction and characterization were performed. Iron sand was taken in Bontokanang Village, Takalar Regency and Tanjung Bayang Beach, Makassar. Scanning Electron Microscopy-Energy Dispersive Spectroscopy (SEM-EDS) and X-Ray Diffraction (XRD) methods were used for testing of chemical composition, surface morphology, and phase composition, respectively. The results showed that iron sand from Bontokanang Village contained FeO of 66,70 %, magnetite of 59 %, chromium (VI) oxide of 30 %, and aluminum oxide of 11 %. Meanwhile, iron sand from Tanjung Bayang Beach contained FeO of 79,56 %, iron silicon oxide of 77 %, and magnetite of 23 %. In addition, the surface morphology of iron sand deposits at each research site in the form of solid with the grain size was not uniform. These results suggest that by finding the magnetite phase so further research is needed to obtain it with high purity.

**Keywords:** iron sand, chemical composition, surface morphology, phase composition



## Fabrication and Analysis Optical Properties of Double Layers Glass Surface; Self Cleaning and Glowing Glass

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### Abstract

This research has been carried out the production of self-cleaning and double layers of glowing glass and also to analyze the optical properties of the glass. The glass surface has been fabricated therefore have a new characteristic that coating the surface of the glass with two layers, the thin film of carbon phosphor dots urea - citric acid and TiO<sub>2</sub>. Methods of fabricating and coating the solutions using a simple method that are sol gel and dip coating techniques. Based on the test results and analysis of the optical properties, outcomes of contact angle measurements on the wettability test were obtained the contact angle to 0° (super hydrophilic). Shortly after the glass was dropped water, the water becomes spreading wetting. In visually test to see substrate resistance to the fog/vapor (antifogging) formed is not presence of fog and droplets on glass that has been coated with TiO<sub>2</sub>. This indicates that the surface already has self-cleaning properties. Based on observations of UV to see a glowing effect, glass has the effect of fluorescent yellow with emission wavelength around 570-590 nm. It proved also to be glowing glass.

**Keywords:** self-cleaning, glowing glass, optical properties



## **Perception of Prospective Physics Teacher to the Model of Learning Based on Local Wisdom**

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### **Abstract**

Phenomenology research has been conducted that aims to identify the perception of prospective physics teacher to the model of learning based on local wisdom. The participants of this study consist of higher physics education students who have followed the courses of Physics Learning Strategy, Physics Curriculum Study, Learning Models, and Microteaching with the content of lecturing materials on the learning model based on local wisdom. The participants are 12 people who are selected based on their desire and interest about this learning model. The results of this study indicate that all participants gave positive perceptions to the elements of learning model. Therefore it can be concluded that the prospective physics teacher agreed and interested to implement this model on the educational unit where they will become a teacher later.

**Keywords:** learning model, local wisdom, perception, prospective teacher.



## Response Surfaces of Linoleic Acid of Swietenia Mahagoni in Supercritical Carbon Dioxide

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### Abstract

The process variables pressure, temperature and particle size were studied for optimization of linoleic acid by response surface methodology following a Box-Behnken design of experiments. The results indicated effect of extraction condition on linoleic acid of the extracts produced SC-CO<sub>2</sub> gave different effect. But, Analysis of variance of the data indicated that there was no statistically significant difference between the other sample. Although there was greater variation within the sample, there was still no statistically significant effect of temperature and pressure on the extraction. The optimum conditions for linoleic acid yield from Swietenia mahagoni seed within the experimental range were found to be pressure of 29.02 MPa, a temperature of 67.88°C and particle size 0.75 mm, and the predicted linoleic acid was found to be 34.91%.

**Keywords:** Linoleic acid, Optimum extraction condition, Response surface methodology, Supercritical carbon dioxide



## Synthesis and Characterization of Nanochitosan as Eco-Sorbent Candidat

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### Abstract

The synthesis of chitosan into nanokitosan is currently being developed, given the nanostructure is more efficient and effective use in various fields. Therefore, this study aims to synthesize nanochitosan and its characterization. Synthesis of nanochitosan used the citric acid solvent with the variety of concentration using ionic gelation method. Stability test used UV-Vis spectrophotometer. Characterization of functional groups and particle size used Fourier Transform Infrared (FT-IR) spectrophotometer and Particle Size Analyzer (PSA). Stability of nanochitosan successively; concentration of 1% stable up to 90 minutes; 5% stable until 360 minutes'; 10% stable up to the minute to 1440'; 15% stable until minute 60' and 20% stable until minute 90'. The water content was 6.04% respectively; 7.25%; 3.26%; 7.95% and 10.44%. The result of functional group identification showed that there was a shift of absorption peak after the formation of nanochitosan with particle size respectively 3296,6 nm, 7270,9 nm, 4446,5 nm, 2819,5 nm and 1981,7 nm. Based on stability test can be concluded that nanochitosan candidate with the concentration 10% more efficient in time than another nanochitosan candidate.

**Keywords:** Synthesis, Ionic gelation, Nanochitosan



## Modification of Chitosan from *Scylla* sp Shell: A Biopolymer for Coagulation and Flocculation in Water Treatment

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### Abstract

Crab (*Scylla* sp) shell is one of the marine resources that can be used as raw material chitosan. Chitosan is a polysaccharide compound obtained by chitin deacetylation from shells. Chitosan was produced from No and Meyers method with some modification through 2 subsequent processes i.e. deproteination and demineralization. Furthermore, the process of deacetylation of chitin done in 2 ways: chemical using NaOH, and enzymatic using *Bacillus* sp K29. The characteristics of chitosan chemically are the degree of deacetylation was 87.64% and molecular mass was 3332, 98 g/mole, chitosan enzymatically are the degree of deacetylation was 64.80% and molecular mass was 1467, 74 g/mole. Biopolymer from chitosan as natural coagulant can remove turbidity through coagulation and flocculation process. The use of chitosan as a coagulant in this study used synthetic turbid water using distilled water, suspended solids representing kaolin and humic acids which represents organic matter. Chitosan was use with variations in pH and coagulant dosage.

**Keywords:** *Scylla* sp shell, chitosan, coagulation, flocculation, water treatment.



## Purification of Palm Biodiesel (Palm Methyl Ester and Palm Ethyl Ester) Using Deep Eutectic Solvent (DES) Based Choline Chloride (ChCl) and 1,2-Propanediol ( $C_3H_8O_2$ )

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### Abstract

The development of environmentally friendly technologies is now gaining important attention in the field of chemistry, one of which is the development of environmentally friendly organic solvents. Deep eutectic solvent (DES) is potential as an environmentally-friendly solvent because it is non-toxic, non-reactive with water, biodegradable, low melting point and easy and inexpensive synthesis to produce high purity DES. This study was aimed to test the potency and effectiveness of Deep Eutectic Solvent (DES) based choline chloride: 1,2-propanediol as co-solvent in biodiesel purification. DES used on the basis of Choline Chloride (salt) and 1,2-Propanediol (HBD) with a 1: 2 and 1: 3 molar ratio were applied to purification of biodiesel at concentration of 1; 5; 10; and 15% (w/w). And then will be compared between methanolysis and ethanolysis process. From the result of the research, it found that DES based ChCl / 1,2 Propanediol has good freezing point, density, and viscosity as solvent and can increase ester content or purity and yield of biodiesel in purification process. The highest yield biodiesel was 88,15% at methanol to oil molar ratio of 6: 1 and 10% DES in methanolysis process.

**Keywords:** deep eutectic solvent, methanol, ethanol, purification, biodiesel



## Response Surface Methodology to Optimize Microwave Sterilization of Oil Palm Fruit

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### Abstract

This study employed response surface methodology (RSM) to optimize microwave sterilization (MS) of oil palm fruit (OPF). RSM used experimental design CCD (central composite design) arrangement with three experimental factors: mass (330-1171 g), microwave power (80-800 W) and sterilization time (5.3-18.7 min) as main variables. This study adjusted significant level to 5% error ( $\alpha = 0.05$ ) with confidence level of 95%. MS affected moisture loss during MS significantly indicated by  $p$ -value experimental factors less than 0.05. The  $p$ -value of mass, power and time were 0.0001, 0.001, and 0.002 respectively. RSM provided predictive model to evaluate effect of sterilization time, mass and microwave power to moisture loss. Evaluation on normalized curve of MS treatment and lack of fit test of predictive model resulted  $p$ -value of 0.011 or less than 0.05 indicated no deviation of experimental data with the model. Determination of optimum condition for MS conducted by evaluated the surface and contour plots obtained from response surface study. The optimum condition of MS was obtained from combination of heating 350.7 g palm fruit using microwave power of 639.29 W for 18.728 min. The moisture loss during optimum MS treatment was observed approximately 32.07%.

**Keywords:** moisture loss; optimization; response surface methodology; sterilization





## Fabrication and Characterization of Activated Carbon from Charcoal Coconut Shell Minahasa, Indonesia

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### Abstract

This Has performed the fabrication and characterization of actived carbon from charcoal coconut shell with combination of activator HCl and NaOH. Fabrication is done in two stages, the characterization and activation. Conducted through pyrolysis carbonization batch at a temperature of 350 °C for 6 h to get charcoal. Activation is done chemically by immersing charcoal in the activator HCl for 24 h. Activated carbon with activator HCl back in activated with activator NaOH for 24 h. Characterization of activated carbon include the determination of functional groups with FTIR, morphology and topography by SEM, the type of elements and elemental composition by EDS, specific surface area, total pore volume, and pore radius with methods BET and the identification of the structure crystallinity by XRD. Characteristics of activated carbon products with a combination of HCl and NaOH activator showed changes in the physicochemical properties of the base material charcoal coconut shell into activated carbon. The resulting activated carbon is polar with carbon element content of 94.93 % and has a smooth surface porous with a surface area of 5.041 m<sup>2</sup>/g, pore volume of 5.229 cc/g and pore radius of 20.74 Å. In Addition, the activated carbon produced is also semi crystal with a hexagonal crystal structure and pore structure of mesoporous size.

**Keywords:** charcoal coconut shell, activated carbon, a combination of activatotrs



## Nutrition Literacy Program for Improving Public Wellness

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### Abstract

This study aims to describe the scientific concept and the relationship between scientific literacy level and wellness quality of public through Nutrition Literacy Program (NLP). The characterization of scientific concept on the Nutrition Literacy Concept is obtained from the identification of scientific concepts on the material and the educational process of Nutrition Literacy. The wellness quality of the communities is identified through several body composition indicators comprised of several human body components, such as water, muscles, and fats. Quantitative wellness data is gathered through nutrition measuring scale (bio-impedance device), while qualitative wellness data is obtained through interview for 30 members of a nutrition literacy movement group (NLP) by counseling and sustained mentoring. From this research, it can be concluded that: (1) The scientific concepts in the material and process of Nutrition Literacy Concept demonstrates various characteristics, (2) The characteristics variation of scientific concepts on NLP is able to help respondents improve their wellness quality, (3) there is an improvement on wellness quality of the communities after joining NLP (4) there is a relationship between scientific literacy level and the wellness quality of communities through Nutrition Literacy Program (NLP).

**Keywords:** Nutrition Literacy Program (NLP), public wellness, scientific concept



## Syntheses of Chitosan Macropore and Application as Procion Red Dyes Adsorben

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### Abstract

The purpose of this research is to conduct syntheses of chitosan macropore using epichlorohydrin (ECH) as crosslinker and KCl as porogen. The synthesis process was done through three stages: first, chitosan dissolved in acetic acid and added KCl as porogen; second, crosslinking chitosan using epichlorohydrin and third, washing of chitosan crosslinked by aquadest to release KCl to produce pore. Chitosan and modified chitosan was characterized solubility on acid medium, fungtional groups using fourier transform infra red (FTIR), and photo micrograph using scanning electron microscoppy (SEM). Chitosan dissolved on acetic acid 5% medium, but cChitosan-ECH and chitosan macropore insoluble. The FTIR spectrum of chitosan and chitosan modified there are no significant differences because they have same of functional groups. SEM micrograph of chitosan and chitosan-ECH showed smooth surface, but addition KCl as porogen on modified chitosan produced pore in the surface of adsorben. Adsorption experiments were conducted to study the removal of procion red dyes and optimum adsorption conditions were obtained at pH 2. Chitosan, chitosan-ECH and chitosan macropore showed percentage adsorption for procion red respectively are 68.0%, 61.0% and 78.8%. Chitosan modification with crosslinking and porogen addition proved to improve stability and adsorption ability of chitosan.

**Keywords:** chitosan macropore, crosslinking, adsorben, procion red



## Performance Test of Gelcasting Porous Ceramic as Adsorbent of Azo Dyes

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### Abstract

Has been done a research about performance test of gelcasting porous ceramic as adsorbent of Azo Dyes. The method of synthesis porous ceramic used was gelcasting method. The monomers used was acrylamide (AM) with crosslinkers was methylenbisacrylamide (MBAM). The polymer formed acts as a pore template. Variation of AM:MBAM ratio used at 6:1; 12:1; 18:1; 24:1. Characterization of porous ceramic carried out were the density, porosity, morphology, and percent adsorption of ceramic to azo dyes. The results showed that the lowest density occurred at ratio 6:1 of 15.82 g/cm<sup>3</sup> with the highest porosity of 36.86 %. The morphology test indicated the presence of open and closed pores in the ceramic body. The highest adsorption percentage occurred at the ratio 6:1 against to congo red, acid orange, and direct blue with adsorption percentage respectively 39.72 %, 48,38 %, 32,26 %.

**Keywords:** porous ceramic, gelcasting, adsorption, azo dyes



## Responses of Periodic Waterlogging Stress in Some Varieties *Nicotiana tabacum*

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### Abstract

Waterlogging Stress can cause a crop production decreased, mainly on terrestrial plants such as tobacco. It is based on the existence of global climate change that shifts the crop and harvest season. Thus, it can increase the losses of farmers. This study aims to investigate the response of *Nicotiana tabacum* which is gripped by a pool of periodic review of aspects such as the emergence of adventitious roots morphological and physiological aspects such as total leaf chlorophyll. The method in this research is to use four varieties of tobacco plants (Jepon Pelakean, Jinten, Manilo and Morakot) which was given periodic waterlogging stress in the vegetative phase with waterlogging stage for five days, followed by partial submergence during the next five days. Data were analyzed using One-Way Anova with a level of 95% to examine the differences that occur between varieties. In the aspect of morphology (the number of adventitious roots), Pelakean Jepon varieties have the highest rates, reaching 11.33 per individual roots. In the aspect of physiology, decreased chlorophyll is highest in Manilo varieties of 415% and the highest chlorophyll Morakot has amounted to 10.06 ppm.

**Keywords:** waterlogging stress, *nicotiana tabacum*, chlorophyll, periodic



## The Risk Assessment Due To the Exposure to Copper (Cu) and Nitrogen Dioxide (NO<sub>2</sub>) In the Goldsmith In Malimongan Villages Sub Wajo Makassar City

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### Abstract

Manufacture of gold jewelry is one of the manufacturing processes involving several dangerous chemicals. These chemicals are used for melting, refining, welding, electroplating, and polishing the gold metal. This research aimed to determine the health risk as the resulted of the exposure to copper (Cu) and nitrogen dioxide (NO<sub>2</sub>) of the goldsmiths in Malimongan village Sub wajo, Makassar city. The research used observational design with the environmental health risk assessment approach. The 30 environmental samples and 30 human samples were chosen using the simple random sampling. The data were analyzed using the Environmental Health Risk Analysis and processed using Microsoft Excel and IBM SPSS version 21. The research results of indoor concentrations copper from measurement point all represent bellow 1 mg/m<sup>3</sup>. The highest concentration is 0,07390 mg/m<sup>3</sup> and the lowest is 0,0015 mg/m<sup>3</sup>, the mean concentration of Copper is 0,0268 mg/m<sup>3</sup>. As for NO<sub>2</sub> measurement point also is concentrations below 3 ppm, the highest concentration is 0,020 ppm and the lowest is 0,010 ppm, the mean concentration of nitrogen dioxide is 0,0154 ppm. The non carcinogenic risk to copper of the goldsmiths showed that the average is 3,927. From the 30 people indicated 23 goldsmiths (76,7%) at risk had RQ  $\geq$  1 and 7 goldsmiths (23,3%) had risk RQ  $<$  1, the health risk NO<sub>2</sub> average is 0,05947. In conclusion, from all of respondent 30 people (100%) had RQ  $\geq$  1. Goldsmiths has shown the risks of exposure copper but not nitrogen dioxide..

**Keywords:** Environmental health risk assesment, copper, nitrogen dioxide, goldsmiths.

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## Polycyclic Aromatic Hydrocarbon (PAH) Content in Green Shells (*Perna viridis L*) in Around Makassar Beach

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### Abstract

The aim of this study was to obtain water content and fat content in determining the concentration of PAH on green shells (*Perna viridis L*) around Makassar Beach and to see the content of PAH in green shells at each station. Based on the analysis of moisture content and higher fat content of a sample of green shells, the smaller the concentration of PAH obtained. The concentration of PAH in green shells at 17 sampling stations was only found in 3 stations. The three stations were analyzed and obtained the highest water content at station 8 (IKI 1) allowing the concentration of PAH to be obtained in small amounts. This is supported by slightly higher fat content than green shells at station 14 (UTA 1), whereas higher fat content is at station 17 (LAE 1) showing the ability of a green shell to block the PAH accumulating in the body of the green shell so that its contents experience decline. The total PAH concentration from each of the highest green shell sampling stations was obtained at station 9 (IKI 4-5 cm) with a large size of 336.56 ppm, because the area is not too far from the Sukarno-Hatta Port area and Makassar Industrial Area (KIMA) as well as very crowded motor vehicle traffic. Based on the regulation of MKLH, the level of PAH in green shell samples has not fulfilled the requirement to be consumed, so the need to be more careful especially the people around the coast of Makassar.

**Keywords:** water content, fat content, PAH analysis, green shell



**The Waste Management of the Local Administrative  
Organization in Khao Kho District, Phetchabun Province,  
Thailand**

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**Abstract**

In Thailand, the responsibility for waste management has been decentralized to the local administrative organizations. However, presently, it is still observed that most of the local administrative organizations fail to fulfill this duty due to the insufficiency of budget, the lack of appropriate technology, and the limited area for managing waste. This study conducted the interviews with 410 sample households in 5 local administrative organizations. It was found that Khao Kho District currently and increasingly faced with waste problem as a consequence of both the expansion of tourism and the community itself. In spite of this, 60% of the local administrative organizations within Khao Kho District possessed no process to cope with the waste management. Thus, the huge amount of accumulated waste has been left without properly handling. The limitation of these local administrative organizations in waste management was due to their mountainous landscape situated in the National Park area. And, according to the Thai law, this specific area was classified as a Conservative Forest (Zone C) and Watershed (Tier 1 & 2) implied that waste management could not be done without official permission. However, the households within this area were aware of the problem and collaborated with the local administrative organizations in applying 5R & Zero Waste Principle to decrease the amount of waste from its source.

**Keywords:** Local Administrative Organization, Waste Management, Thailand





## **Drought Index in Jeneponto, South Sulawesi Province of Indonesia with the Use of The Walsh and Lawler Method**

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### **Abstract**

This is There is a need to do research on Drought Index at Jeneponto regency because agricultural activities rely more heavily on rainfall rather than irrigation technology. Farmers must estimate the months that have adequate rainfall so that planting can be done so that the plants produce optimal outcomes. Drought index is obtained by calculating the number of monthly rainfall, the amount of annual rainfall and the amount of rainfall monthly average for 10 years in the research area. The formula used to determine drought index was by using the method of Walsh and Lawler. The Drought index in the Jeneponto region was based on the classification of Lawsh and Lawler which is divided into two classes, namely class seasonal and seasonal classes with long dry season. Seasonal class characterized by drought balanced by the rainy season of the year with a drought index 0.71-0.78, while the seasonal class with a long dry season in a year marked by a dry season which is slightly longer than the rainy season with a drought index 0.8-0.95.

**Keywords:** drought index, Walsh and Lawler method, Jeneponto



## **Social, Economic, and Demographic Aspects of Micro, Small, and Medium Enterprises in Makassar City**

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### **Abstract**

Social, Economic, and Demographic Aspects of Micro, Small and Medium Enterprises (MSMEs) in Makassar City. This research aims to determine to know the characteristics (social, economic, demographic) workers on MSMEs in Makassar. This research is quantitative with econometric analysis tool. The results of this research show the social characteristics (education), economy (income and work experience), demographics (age and gender) of workers at MSMEs in Makassar vary significantly. Also, the effect of income, age, and work experience is very significant to the working hours of MSMEs workers, but education does not significantly affect the working hours. Income and age have a negative effect while education, work experience, and gender have a positive effect on working hours.

**Keywords:** social, economic, demographic aspects



## Soil Moisture Condition Monitoring System in Wireless Sensor Network Using Waspote Soil Moisture Sensor

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### Abstract

Monitoring soil moisture is generally will take a long time, especially when monitoring the level of soil moisture decline. This situation is less efficient plus if examining the level of decrease in percentage of soil moisture contained plant in it. For that we need a solution to improve efficiency in terms of use of time and in terms of facilitate the monitoring of soil moisture conditions to be studied. The soil moisture monitoring system uses Libelium Waspote soil moisture sensor as microcontroller. The process of sending data from the sensor to the Internet network and then to the database server takes about 10-15 seconds. This is influenced by the process of taking data from the board and also the delay when the sensor will connect to the available network. The results show that the system can work in a way if researchers leave the soil with high humidity then researchers want to monitor soil moisture at a certain moisture level, then the researchers simply set the level of humidity that want to be monitored on the application. If the soil moisture content is equal to or less than the point set on the system, the system will notify you immediately.

**Keywords:** Soil Moisture, Waspote



## Analysis of Migration Ethnic Makassar, Bugis, Toraja and Java in Metropolitan Makassar

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### Abstract

Makassar is the capital of South Sulawesi located in strategic locations. This position causes the Metropolitan Makassar has a strong traction force to the migrants. This study aims to analyze the characteristics of migrant ethnic Makassar, Bugis, Toraja and Java in terms of age, Gender, marital status, education, occupation, income, push and pull factors. The population is ethnic migrants Makassar, Bugis, Toraja and Java in the Metropolitan Makassar selected purposively and proportionate. A sample of 600 respondents. Primary and secondary data processed using Excel and MapInfo mikrosoft 8. The results showed largely migrants are men between the ages of 30-49 years where the education level is high school top down. Additionally largely been married migrants, entrepreneurs and sales dominated jobs while revenue increased. Key factors driving migrants into four ethnic groups, is largely limited employment and low incomes in their native places, facilities for education are also limited and following the family who emigrated. Instead largely attracting factor is the opportunity to get work and higher incomes, better facilities for education and support families living in Metropolitan Makassar. Thus, governments need to create a policy and strategic dayahuni dijangka city will support the improvement and survival is better for migrants in Metropolitan Makassar.

**Keywords:** characteristics of migrants; ethnicity; metropolitan makassar.



## **Mapping and Zonation Level of Landslide Hazard Risk in Enrekang Regency**

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### **Abstract**

Enrekang Regency is one of the districts in South Sulawesi that often happens landslides. Therefore it is necessary to mapping and zonation areas prone to landslides in the area. This study aims to map and determine the risk level of landslide hazard in Enrekang Regency. Zonation level of landslide hazard risk is done by overlay technique of map landform, map of gradien slope, map of geology, map of soil texture, map of land use and landslide prones map.

The landscape, gradien of slope, the type of rock, the soil texture and landuse make in five class, with the value 1 until 5. The landslide risk level is performed by overlay using ArcGis 10.3. The result of analysis shows there are 3 classes of landslide risk level in Enrekang Regency that is low, medium and high. There are sequences of areas most vulnerable to landslides are Bungin, Buntu Batu, Anggeraja, Enrekang, Masalle, Baraka, Baroko, Alla and Maiwa.

**Keywords:** Mapping, Zonation, landslide hazard and Risk



## Implementation of Innovation Strategy Application of Premarital Course Based on Android with a Sequential Model Approach

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### Abstract

Information technology strategy system is an application of the use of information technology to support or implement a competition strategy of an organization, which functions to change goals, operations, products, services or environmental relations in order to achieve such competitive advantage. Therefore, an organization needs to make a breakthrough by providing innovative products or services with the utilization of information technology systems that have not been done by other competitor organizations.

Premarital Course activity is a ministry of religion program implemented by BP4. In accordance with the Regulation of DirjenBimas Islam No.II / 372/2011 on the guideline of prenuptial training, it is conceptually held for 10 working days with 24 hours duration of lesson intended to provide sufficient understanding for the bride to the course material presented during the learning. But the facts in the field it is still difficult to do with the reasons of which is the difficulty of arranging the time course for prospective bride who is an employee.

The innovative learning design of pre-marital course based which is the result of an information technology strategy system. Software application of pre-marital course based is an innovation as a supplementation and complement of conventional pre-marital education process. The application of pre-marital course based uses self-learning materials stored in smartphones or computers that can be accessed by resource persons and pre-marital course participants, anytime and anywhere, resulting in a new tendency in learning that forms an increasing paradigm efficiency and effectiveness of pre-marital courses.

**Keywords:** implementation, Strategy, Innovation, Application, Android



## Expansion on Construction of $CBFS_2(n)$ to Quartery Cross Bifix Free Codes

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### Abstract

Frame Synchronization is one of the main topic in digital communication systems. In this system, to guarantee the synchronization between a transmitted data by transmitter and received data by receiver can be done by periodically inserting a fixed sequence into the transmitted data . In order to find what the transmitted data is, the receiver should find the fixed sequence. Study of Cross Bifix Free Codes arise to solve Synchronization's problem via distributed sequence's method which introduced by Wignardeen and Willink in 2000. A Cross Bifix Free Codes is a set of sequences in which no prefix of any length of less than  $n$  of any sequences is the suffix of any sequence in the set. In 2012, Bilotta et al construct binary cross bifix free codes by using Dyck path. In this paper, will be constructed Quartery Cross Bifix Free Codes for arbitrary length by expand the construction of  $CBFS_2(n)$ .

**Keywords:**  $CBFS_2(n)$ , Cross Bifix Free Codes, Distributed sequence, Dyck path, Frame Synchronization.



## Classification of Epileptiform Waves Base AAon Frequency by Using Backpropagation Neural Network

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### Abstract

Epilepsi is an abnormal condition of brain activity that can be recorded by using Elektroensafalogram (EEG). On epilepsy patient, most of the recording is interictal wave that in form of spike wave and sharp wave. This study has goal to classify whether the interictal waves are spike wave or sharp wave. The study was conducted in two stages: Identification and Classification. Firstly, The epileptogenic wave were identified by transforming the baseline of each wave[5] to select the best baseline that contain all data of the wave, then doing normalization of it to get the features of frequency, amplitude 1 and amplitude 2. Secondly, *Backpropagation Neural Network* method is applied to classify it. Classification is done by using 200 data consisting of 120 *training* data and 80 *testing* data. The results show that classification using binary sigmoid activation function with learning rate of 0,9 give recognition rate of 91,25 % and Mean Square Error (MSE) of 0,0121 and become the best classification results of the method.

**Keywords:** epilepsy, spike wave, sharp wave, *Backpropagation Neural Network*





## Harmonic Oscillation Characteristic Using Visual Basic Application

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### Abstract

Abstrak. The Visual Basic Application (VBA) programming application has become a new choice by researchers to work on numerical solutions, since it is accessible to wider user. Although the solution of harmonic equation has been done in previous research, however numerical solution using VBA was limited. In this study we solved and plotted the numerical solution using VBA and obtained a solution of simple harmonic motion that is very close to analytical solutions. It is concluded that the results of harmonic oscillation motion analysis obtained with numerical solutions using VBA provide the same characteristics with analytical solutions. In this research will also discuss how the The Runge Kutta 2 method and Euler method were applied and the ease of making command from VBA editor, so that can be exploited by user.

**Keywords:** harmonic oscillation, numeric solution, visual basic application



## **Support Vector Machine for Classifying Policyholders Satisfactorily in Automobile Insurance**

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### **Abstract**

In every insurance company, the satisfactory of policyholder is important to predict the future of the company. This leads to the point that we need a system to classify policyholders satisfactorily. In this study, we proposed the used of machine learning, which is Support Vector Machine, to classify policyholders satisfactorily. Thus, we also need to focus on car policyholders' policy. Several risk factors need to be employed to gain a good explanatory for classifying the policies. Another addition to increase the prediction is to know more about policyholders' characteristics which can be achieved by having a psychological data. Therefore, Support Vector Machine is claimed to result in a reliable data to classify policyholders satisfactorily.

**Keywords:** Support Vector Machine, Automobile Insurance Company, Risk Factors, Machine Learning



## Legal Protection for Child Victims of Cyber Crime In Indonesia

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### Abstract

Cyber crime against children as victims in Indonesia according to data report of the Directorate of Criminal Crime Criminal Investigation Agency of the Indonesian National Police increased from 2011-2016. Another thing is because the cyber security system in Indonesia is not safe. This crime does not occur in Indonesia, cyber crime is a worldwide problem, with global reach. The importance of this research is to know the basic problem of children as victims of cyber crime, because it will disturb the future of children in Indonesia. This study uses the theory of viktuologi and other relevant theories to study the specificity of children victims of cyber crime. This study combines normative legal research (literature research) and empirical research (field research). This type of approach is qualitative. Research data are primary data and secondary data. (South Sulawesi, North Sulawesi, Central Sulawesi, Southeast Sulawesi). The secondary data consists of searching the legal literature related to the research topic. The results of this study offer cyber crime in Indonesia.

**Keywords:** Legal Protection, Child, Victim, Cyber Crime



## Secure a Transaction Activity with Base64 Algorithm and Word Auto Key Encryption Algorithm

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### Abstract

Security in a transaction activity is crucial, in digital communication that irresponsible parties can tap all objects sent in the form of bits, the use of cryptographic algorithms such as Base64 and Word Auto Key Encryption can be a solution that produces a secure ciphertext, base64 algorithm which can encode all objects such as text, image, and audio files into text form and the result is re-secured with Word Auto Key Encryption algorithm, the results of this research get better security by combining the two algorithms.

**Keywords:** Base64 Algorithm; Encryption Decryption; Secure Message; Word Auto Key Encryption



## Web Based Application for Decision Support System with ELECTRE Method

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### Abstract

Decision Support System is a system commonly used to assist management in assisting decision-making in top managerial sections, MultiCriteria Decision Making (MCDM) is one of many decision-making methods that can be used to select the best alternative from a number of alternatives based on certain criteria, one of the methods that can be used is the Elimination Et Choix Traduisant la Realite (ELECTRE) method that works based on the concept of outranking using pairwise comparisons of each alternative based on appropriate criteria, this paper applies the ELECTRE method in a web based application that can be used for input and output dynamic for alternatives, criteria, user values and also a fast ranking process, the choice of web based application because there are many research about decision support system but only few that applied to application, and this research tries to applied ELECTRE method to web based application.

**Keywords:** Decision Support System, Web Based Application, ELECTRE, Multi-Criteria Decision Making



## Development of Operator Competence Units on Programmable Logic Controller as Work-Based Teaching Method

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### Abstract

The competence unit is a description of function and job duties that support the achievement of competency standards. Programmable Logic Controller (PLC) is one of the competence units that must be taken by every Vocational High School (SMK) student in the field of electricity. They should be able to complete each competence unit before performing a comprehensive skill test. The Indonesian National Work Competency Standards (SKKNI) has formulated that the competence units of an Electricity Construction Operator must have expertise in operating the PLC. In this paper has been described about a teacher of SMK should be able to plan and formulate the stage of enhancement the competency of student, include aspects of knowledge, skills and attitudes. SKKNI has been very suitable as a reference for the development of students and workers competency. The development stages can be begin from: 1) to determinate map of competency; 2) formulate teaching program outlines; 3) compile planing of teaching unit; 4) write teaching materials; 5) formulate assessment instruments; 6) to conduct competency unit tests; and 7) evaluate. The ability of teachers to plan workI-based teaching will greatly influence the success of students completing and achieving skills passport of operator competence units on PLC.

**Keywords:** Operator, Programmable Logic Controller, Competence Units, Work-Based Teaching, Vocational High School, Indonesian National Work Competency Standards



## RC4 Algorithm Visualization for Cryptography Education

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### Abstract

Cryptography is a field of science that can be learned to secure data and information, cryptography is now used in almost all communications both in network and non-network; and one of the algorithm could used is RC4 algorithm, publication about RC4 algorithm is quite a lot but the discussion is dominant only theory alone does not complete the RC4 algorithm process in detail and applications only show input and output none of the process include, in this research paper shows the process of RC4 algorithm in detail and with visualization to shows the work of RC4 algorithm step by step to make it easiest for readers to learn cryptography.

**Keywords:** RC4 Algorithm, Cryptography, Visualization



## **Android Smartphone to Control Motorcycle Security Devices based on Promini Microcontroller**

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### **Abstract**

To improve motorcycle safety, one of the ways used is to modernize motorcycle security system from conventional way to high tech by utilizing the development of information technology. In this study, motorcycles use ATmega328 microcontroller on Arduino Promini board which is controlled using smartphone with Android platform. Controls made through the smartphone will activate or disconnect the electric motorcycle circuit connected to the relay. The results obtained can be a motorcycle security solution. In this study also, a study was conducted to test the effectiveness of the time required by the device to be active based on different distances. The results of this test indicate that, as for turning on or off a motorcycle, the device takes 0.5 seconds at a minimum distance of 1 meter and takes 1.5 seconds at a maximum distance of 15 meters. In testing to turn on a motorcycle engine, it takes 0.5 seconds at a minimum distance of 1 meter and 3 seconds at a maximum distance of 15 meters. And on the test using a timer takes 0.5 seconds at a minimum distance of 1 meter and 4 seconds at a maximum distance of 15 meters.

**Keywords:** Android Smartphone





## Traditional Game Bekel Application with Leap Motion Controller

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### Abstract

Game bekel is a traditional game derived from western Java. The game uses seeds and balls to play. The number of seeds in the game is usually 6-10 seeds. The game is done by throwing the ball and taking the seeds one to one, two to two, until all the seeds are taken at once. In the rules, the bekel ball can only bounce once on the floor. However, the traditional game bekel currently increasingly abandoned because of technological interest in the modern game. Therefore, it needs a modern technology that can be used to play game bekel to make it now interesting as well. In this study, we build traditional game applications bekel by using Leap Motion Controller as a tool to play it. Using this tool, players can interact with game applications with hand movements read by Leap Motion sensors. This study proves that traditional game applications that already exist can be re-developed by using modern technology.

**Keywords:** traditional game, bekel



## The Development of Conference Management Information System (eConf)

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### Abstract

Along with the development of the times, the need for the Internet is increasingly needed by the society. Not just in the world of education that requires the Internet, the world outside of education also requires the internet. In the world of education, especially higher education, if a lecturer wants to increase his/her rank to a higher rank, so that he/she needs some publications either in the form of journals, books, or seminar proceedings. One of the usual activities conducted by a lecturer is to follow a seminar both national and international seminars. In conducting the seminar registration, it is required an information system that can accommodate the registrants data. Based on this, the purpose of this study is to design a web-based Conference information system (eConf). This information system was developed using SDLC (System Development Life Cycle) method.

**Keywords:** econf, information system, conference



## Design of Android Base Fuzzy Wireless Sensor Network for mini Smart Green House

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### Abstract

This article presents a mini smart greenhouse climate control using Wireless Sensor Networks (WSNs), and Android phone supporting android applications and a system for plant realtime monitoring. In this system the optimized data are collected from the wireless sensor nodes and then the data are analyzed for an expert climate control using fuzzy logic in order to optimize water usage and energy consumption. The fuzzy logic parameter is used and implemented using Arduino board. The data from different sensors are aggregated to repeatedly monitor temperature, humidity, soil moisture, light intensity in the greenhouse. The information from the greenhouse climate is received by the sensor node, it is transmitted to the wireless node through a wireless protocol. This system uses nodemCu wireless module for data transmission from the end devices to the web server node. With the information from the web server node the farmer can monitor and control the greenhouse climate automatically using android application.

**Keywords:** android, mini Smart greenhouse, wireless sensor Networks, fuzzy, monitoring



**The Design and Development of Management Information System  
Research as an Effort to Improve Quality, Monitoring and  
Evaluation in relation to Management Research at the Universitas  
Negeri Makassar**

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**Abstract**

Long-term goal of this research is the development of a Research Management Information System at the Universitas Negeri Makassar that can be accessed by various parties related to research anytime and anywhere without any time and location limitation so that the disclosure of research management information can be done from the level of the study program to university level. Specific targets achieved from the development of this system is the creation of an information disclosure management situation both in terms of proposal entry, selection and review of proposals as well as progress reports and logbooks obtainment in reports of transparent and appropriate budget usage that is useful for the leadership of the University in taking policy related to the next research. To achieve these objectives, the information system development process will use the Plomp Development Model (1997) consisting of a preliminary investigation phase; design phase; phase realization/construction; test phase, evaluation and revision; and implementation. The development of this information system using PHP programming language based on CodeIgniter Framework with MySQL database.

**Keywords:** Information System, Research Institute, Universitas Negeri Makassar, PHP, CodeIgniter



## **A Study of VHS Cultural of Quality through Improving the Role of ICT Center Management**

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### **Abstract**

In 2006, Kemendiknas RI have done big enough investment in developing national computer network, called Jardiknas. Based on observation, there are quite a lot unproductive ICT center, is previously established in vocational schools. The study aims to find the suitable model of ICT management for Vocational High School (VHS). The model is expected to give the cultural contribution on the quality of education.

**Keywords:** Jardiknas, Cultural of quality, ICT center.



## The Effect of Gravitational Field in *Brachistochrone* Problem

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### Abstract

The equation of the minimum time trajectory (the *brachistochrone*) does not contain the gravity acceleration explicitly. This research aims to prove that the gravitational field affect the trajectory by solving functional for the uniform gravitational field and nonuniform gravitational field for the central gravity, furthermore, the gravity effect could be revealed by analyzing both results. The results revealed that the effect of constant gravity acceleration is inversely proportional on the arc length of the cycloid, except at  $g = 0 \text{ m/s}^2$ , which means that the trajectory could not be formed without gravity acceleration at a location where a particle are not affected by the gravitational field, whereas in nonuniform gravitational field, the particle's trajectory is not a cycloid and lies in two quadrant. The curve in first quadrant is a mirror image of the curve in fourth quadrant and vice versa. The difference trajectory between uniform and nonuniform gravitational cases is the proof of the existence of the gravitational field effect.

**Keywords:** Effect, Gravitational Field, *Brachistochrone*.



## **The Effect of Drying Temperature on Natural Rubber Latex (NRL) Films with Modification of Nanocrystal Cellulose (NCC) Filler**

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### **Abstract**

The process of vulcanization in the formation of NRL products is influenced by temperature at which the drying temperature has important role in the process of crosslinking which can affect the mechanical properties of NRL films produced. This study discusses about the effect of drying temperature on the mechanical properties of NRL films with modification of corn cob NCC filler obtained from the hydrolysis process with sulfuric acid. NCC filler is made of dispersion system involving polyvinylpyrrolidone as a dispersion agent. The resulting product was prepared by mixing NRL compound with modified NCC filler with a polyvinylpyrrolidone dispersion agent by coagulant dipping method. The coagulant used in the process of formation of NRL film using 10% calcium nitrate and NRL film which formed with variation of drying temperature 100°C, 110°C, and 120°C for 20 minutes. In this study has been analyzed the mechanical properties such as tensile strength, elongation at break, and M100 dan M300 of NRL films. The results showed that mechanical properties such as elongation at break increases with the higher of drying temperature, it was different with tensile strength, M100 and M300. In addition, in this study was also analyzed crosslink density and morphological of NRL films.

**Keywords:** drying temperature, nanocrystal cellulose, natural rubber latex, tensile strength



## **Performance of Asphalt Concret with Chrome and Hot Rolled Sheet with Chrome Using Portland Cement Filler and Prevent Exfoliation by Empirical Mechanism**

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### **Abstract**

Abstrak. A fine aggregate fraction that passes No. 200 is filler that affects the performance of a hot asphalt mixture. The usual Portland cement used on the asphalt mixture is Portland cement type 1. it will be tested using portland cement type1, type 2, type 3, and type 5. The chance of road damage is greater in wet than dry. The loss of asphalt or adhesion attachment can lead to weak bond between the asphalt/binder and the strength of interlocking and friction on the aggregate. If the binding strength is reduced or weak, the damage occurs on the aggregate and the asphalt consequently the structural value becomes reduced. Reduced structural values of weak bonds are often referred to as stripping processes. Aggregate attachment level with asphalt can be increased by adding anti stripping. The results showed that the best filler exprission of Portland cement type 1, type 2, type 3 and type 5, was the highest stability filler. This is owned by type 1 and type 5 filler. Portland cement type 1 type stabilitas value is 1,296.10 kg while the type 5 value has a stability of 1317.20 kg.

**Keywords:** Filler portland cement type, Anti Stripping, AC-WC. HRS-WC. Stability, Modulus Resilience, permanent deformation





## **Optimize Performance of Cross Flow Turbine with Multi Nozzle**

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### **Abstract**

This research is conducted to optimize cross flow turbine performance with multi nozzle and compare with cross flow turbine performance using only single nozzle. The results showed that turbine cross flow with multi nozzle has more optimal performance because the water jet energy from the nozzle is more effective to move the turbine blade runner with a more stable rotation so that the output power and turbine efficiency is more optimal.

**Keywords:** Optimze Performance, Cross Flow Turbine, Multi Nossel



## Group Decision Making With Unbalanced-Expertise

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### Abstract

Problem complexities have forced the decision making techniques to shift to a more dynamic approach. In this study, a mixed decision-making methodology is introduced which integrates multi-attribute decision-making (MADM) techniques with qualitative group decision making approaches (Delphi, Brainstorming, and Nominal group technique). In addition, this study proposes a generalizable new multi-attribute group decision-making approach, with a group of experts who have a non-equal level of expertise. Feasibility of the proposed approach is tested with a case of a factor rating (Weighted Score method) MADM.

**Keywords:** Group decision making; Multi-attribute decision-making (MADM); Delphi; Brainstorming; Nominal group technique; Weighted score method (WSM).



## Stand-alone Data Logger for Solar Panel Energy System with RTC and SD Card

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### Abstract

In this research stand-alone data logger device that can be used for measuring solar panel power characteristics is introduced. With RTC and SD Card installed on the device, the energy produced by solar panel is measured, then data are stored in CSV format that is compatible with MS Excel. Stand-alone feature makes it suitable for monitoring solar panel systems installed on remote area. Research result exhibits that all device sub systems are working perfectly. Voltage sensor convert the output voltage range of solar panel 0-12V to suitable voltage for microcontroller 0-5V. Real Time Clock (RTC) is able to show real time hours, minute and seconds of every measurements. Current sensor could measure the current with similar result compared to standard lab instruments. Despite data stored to SD Card, a 16x2 LCD display real time measurement results. Overall, the device works very well as if standard data logger instrument, but featuring real time monitoring and computer compatibility data.

**Keywords:** solar panel systems, power characteristics, data logger, microcontroller



## IOT Cloud Data Logger for Color Picker Arm Robot

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### Abstract

In this research cloud based data logger system for color picker arm robot is developed. Arduino is used as main controller of data logger system. The microcontroller process data from TCS3200 RGB sensor, that is used for color detection, then ask arm robot to put color box into marked basket. Then data will be sent to thingspeak.com as cloud system through internet connection. An ESP8266 on wifi router mode was used to make arduino connected to internet. Experiment result shows that TCS3200RGB sensor successfully detects color box by detecting its signature RGB value. The RGB value was set after applying different light condition. Data logger count number of defined color picked by arm robot, then exhibits it with graph. To access data, user can access URL link generated by thingspeak.com. Data update speed depends on internet access speed. However, the data logger system works accurately with accuracy up to 100%.

**Keywords:** arm robot, data logger, cloud system



## Effectivity of Metacognitive Skill Model Based Learning

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### Abstract

This study report the effectivity of metacognitive skill model based learning in learning mathematic. The variables of this study are learning outcomes and treatment by applying metacognitive skill model based learning. Population of this study is all students Class XI in Senior High School 4 Parepare Years 2016/2017. The sample selection of experimental and control class is done randomly. Research data were analyzed by descriptive statistical analysis and inferential statistical analysis. The result of the study showed mean score of the learning outcomes in experimental class amount 83,67 out of ideal score 100 with standard deviation 7,66. While mean score of the control class amount 77,58 out of ideal score 100 with standard deviation 9,691. In the experimental class, from 24 students obtained 21 or 87,5% students have completed learning. While in control class, from 24 students obtained 15 or 62,5% students who have completed learning. Students activity of the experimental class is more active than students in control class. So it can be concluded that metacognitive skill model based learning is effectively applied in mathematic learning.

**Keyword :** learning model, mathematic, metacognitive skill



## **Development of Learning Package Using Cooperative Problem Solving in Optics to Improve Student's Problem Solving Skills Junior High School**

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### **Abstract**

This research development aims to produce learning package using cooperative problem solving (CPS) the quality (validity, practicality, and effectiveness) to improve student's problem solving skills in the subject optic. This research was implemented in three phases, namely define, design, and development using the 4-D model of Thiagarajan. Learning device implementation for four meetings with 18 students of eight grade of the state junior high school 3 Makassar, in the second semester the academic year 2014/2015 by using one group pretest-posttest design the result of the research was analyzed by using descriptive analysis techniques. The obtained data: validator assessment of the lesson plan (RPP), Student's Book, student worksheet (LKS), and assessment sheet with valid category. Student's worksheet assessment and student's book also have a high degree of readability. Lesson plan feasibility with the score of 3,99 is well performed category. N-gain problem solving skills of students increased to 0.72. Based of observation 76% of the learning was student's activity. The students responded the learning activities of CPS models positively. The research showed that the learning package using CPS model valid, practical, and effective to improve student's problem solving skills.

**Keywords:** learning package, cooperative problem solving, problem solving skills, optics, junior high school



## The Improvement of Students' Academic Performance Through Think-Pair-Share Cooperative Learning Model

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### Abstract

This study was a classroom action research that aimed to improve the academic performance of students. The study was conducted using Think-Pair-Share Cooperative Learning model (PKTPS). The subjects of this study were 21 students of the second semester in the Department of Family Welfare Education, Faculty of Engineering UNM who took knowledge of food ingredients course. Based on the classroom action research steps, this study was performed with some stages namely: 1) planning, 2) implementation of action, 3) observation, 4) evaluation and 5) reflection. The indicator of attainment of the action was observed from the weight of student involvement in the learning process as well as the result of learning test. Therefore, the learning tools were required, including syllabus, lesson plan, students' worksheets, guidelines for observation and evaluation. The data were analyzed using descriptive analysis technique. The result of the study showed that the PKTPS can improve students' academic performance. This can be seen after conducted two class action cycles. The PKTPS model was considered appropriate to improve students' academic performance through (1) apperception, (2) tutorial and learning problem orientation, (3) group discussion for problem-solving in the students' worksheets. The step was begun with think (individually), then pair (discuss with a partner), and share (join with other couples in the group). The group would then discuss unfinished tasks or things that had not been understood during the discussion. After that, the students established the final answers of their groups in the class discussions.

**Keywords:** academic performance; PKTPS; knowledge of food ingredients.



## **Validation and Student Scientific Inquiry Aided Multimedia On Climate Change**

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### **Abstract**

The research aims to: (1) obtain the validity of scientific work instruments on Climate Change material; (2) analyze students' scientific inquiry activities based on the different time of problem distribution with multimedia; (3) Obtain students' scientific attitude during learning. The design was research & development. The participants were two-classes of PGM. Validity obtained from expert judgment, scientific inquiry activities obtained from student worksheet and scientific attitudes obtained from observations during learning. Research shows that the validity of scientific inquiry instruments (multimedia, worksheets and scientific attitude sheets) are good and appropriate. Different time of problem distribution influence the students' scientific inquiry activity. Communication is a dominant indicator of the successful scientific inquiry activities in both classes. cooperation and curiosity are a dominant scientific attitude in both classes. Using the data and create an images are indicators that affect the scientific inquiry activities.

**Keywords:** scientific inquiry, multimedia, climat change





## Developing a Self-Assessment to Analyze a Social and Personal Competencies of Teachers in Senior High School in Indonesia

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### Abstract

Teacher competencies is an important requirement for educational system quality. This present study aimed to develop self-assessment instrument and norms test to analyze teachers social and personal competencies. The development of self-assessment instrument are using development model suggested by DeVellis. The item are constructed by using personal and social competencies indicator that released by Indonesia educational ministry. The result of instrument quality test shown: (1) Content validity analysis through experts judgment and IOC analysis shown there are only 66 item (out of 101 as an initial design) are valid; (2) analysis of language content result through pilot study interview shown most of respondent agree that the items are easily to understand. Although some of items contain with typographical error; (3) Discriminant power analysis shown there are 48 items (selected from 66 items) has a good indexes value; (4) Construct validity analysis using CFA shown the model that tested are fit; (5) Reliability analysis shown the alpha value both personal and social competencies are accepted. Moreover, present study also developed Norm to interpret self-assessment instrument result which consist of three scale (High, Average, and Low). All things considered, the development of self-assessment instrument can be used to measure teacher social and personal competences.

**Keywords:** Self-Assessment Instrument, Teacher Competencies, Teachers Personal, Competencies, Teachers Social Competencies, Norm Development



## Vulnerability and Education Analysis, to Prevent Terrorism Ideology

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### Abstract

Education as the long term solution to prevent and recover disasters in any kind of society faces a new challenge, social network. The increase number of internet users especially those in young age brings many consequences, related with anti-terrorism as a novel disaster management. Indonesia has Pancasila as nation ideology, but the effect of the understanding this ideology has not been explored yet. Educators have focused on the material that would appear only in the exam, and tend to neglect the material that would be appear in the real life. Previous study found that students are the vulnerable target of terrorism ideology, so they should be protected and guided. This study aimed to analyze the effect of understanding between nation ideology and sensitive words to vulnerable students. This research will focus on the divinity understanding of students about several sensitive words which often used by media to describe certain act or group which resulted to phobia and generalization. This phenomenon becomes greater time by time, along with the minimum effort filter to the media which now become bias and set aside the journalism ethic. The object of the research will involve for about 250 students in age 14-19 which are claimed as active internet users. They have asked to answer several questions related with their understanding to several sensitive words like, "terrorism, radicalism, fundamentalism, etc". Furthermore, the students' understanding about Pancasila as the nation ideology will also be questioned, whether this ideology create or effect the identity creation of the students. The importance of the ideology for them, is questionable. The result will show the grade of understanding and vulnerability of certain group to react the news that probably become a trigger to disaster in sociopolitical.

**Keywords:** vulnerability; disaster management; understanding; ideology; terrorism



## Experimentation of Cooperative Learning Model STAD-TGT Type against Students' Learning Outcomes

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### Abstract

This quasi-experimental research aims to determine differences of students' learning outcomes between STAD, TGT, STAD-TGT learning and conventional learning. The research design was a control group post-test only design. The population was all of students of Senior High School in Makassar during academic year 2016-2017. Data were obtained by the pretest and posttest using essay test. This research used simple random sampling technique with grouping test before. Data were analyzed using ANOVA Test. The data analysis showed that there were differences learning outcome between STAD, TGT, STAD-TGT, and conventional learning class. It showed that learning strategy affect the students' learning outcome significantly. Post hoc test (Turkey HSD) showed students' learning outcome with STAD, TGT, and STAD-TGT learning strategy significantly different with conventional learning. STAD and STAD-TGT learning strategy showed students' learning outcomes significantly different with TGT learning strategy. It is uncovered too that STAD learning strategy did not different significantly with STAD-TGT.

**Keywords:** learning strategy, STAD, TGT, STAD-TGT, learning outcome.



## Learning Media Edu-Games “My Profession” As an Effort to Introduce Various Types of Profession In Early Childhood Education Students

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### Abstract

This research aims to obtain a picture of attitudes and understanding of early childhood education teachers on the use of learning media Edu-Games My Profession as an effort to introduce various types of professions in early childhood education students. The developed product includes My Professional Edu-Games app guide that meets the contents feasibility aspect. This research is a research of the development of ADDIE model which has five main elements consist of Analysis, Design, Develop, Implement, and Evaluate. The research data are analysed quantitatively to answer whether the product in the form of guide, material and application of Edu-Games My Profession has fulfilled the criterion of clarity. Products are tested on expert groups with a focus on the clarity aspects of content and applications. The result showed 1) early childhood education teachers generally understand that the use of media applications Edu-Games My Profession has not been used and is needed as a medium of learning to introduce various types of professions. 2) Early childhood teachers have commonly known that the use of Edu-Games My Profession learning media can assist students in recognizing early childhood interest in different types of professions., and 3) expert group test results have fulfilled the clarity aspect of content and application of Edu-Games My Profession.

**Keywords:** Learning media; Edu-Games; My Profession



## **Fitness and Learning Performance among Polytechnic Students**

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### **Abstract**

This paper aims to describe the fitness and learning performance among polytechnic students. It is based on the findings and results of observing the second-year polytechnic students. Twenty-five girls do series of fitness test and competency test. As a result, students with lower BMI has higher VO2Max since they can run faster than their competitors. Students with lower VO2Max have better learning outcome than other respondents.

**Keywords:** fitness, learning performance



## **Developing Piaget's Theory in Mistakes Construction of Knowledge when Problem Solving through Analogical Reasoning**

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### **Abstract**

This study aims to see the errors of knowledge construction when students solve algebra problems. To get the subject of research conducted exploration to class VII students with given algebra task sheet in the form of analogy. Through Think out loud method is enhanced by interview obtained verbal data. The results showed that the characteristics of algebraic construction errors in students include: no analogical reasoning, mistake in assimilation and accommodation, and happened pseudo thinking. In addition, mistakes were found in assimilation and accommodation of relationships and strategies.

**Keywords:** *construction error, analogy reasoning, assimilation and accommodation*



## Effect of SIMPESA Career Application On Student Self-Efficacy In Selecting Majors

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### Abstract

This research aims to examine the effect of the use of Android-based career application on the self-efficacy of students in the selection of majors in high school. This research is a pre-experiment research on high school students in Makassar city, South Sulawesi. This research begins with development research and has been produced in previous research an Android-based career application named SIMPESA (high school student interest) that has been tested the validity and acceptance by psychologists and ICT experts and counseling counselor (counselor) to assist students in choosing majors in senior high school. The population in this research was all students of State Senior High School 5 Makassar-South Sulawesi class X. The sampling technique was using proportional random sampling involving 30 students of class X. The research design used is the use of pre-experimental design. The research instrument was using career decision making self-efficacy scale and focus group discussion. While the data analysis technique used t test. The results showed that there was a significant increase in pre-test and post-test averages in the trial group, where the post-test average score was higher than the pre-test average score. The conclusion of this research is SIMPESA android based career application have positive influence to self-efficacy students in selecting majors in senior high school.

**Keywords:** Career Application SIMPESA; Self-efficacy in Choosing majors in Senior High School



## Improvement of Spatial Levels Reviewed From Students' Cognitive Styles

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### Abstract

Space ability can be interpreted with the ability of spatial. The Great Indonesian Dictionary mentions that spatial is anything related to space or place. It can be interpreted that the students' spatial ability demands their ability to understand the visualization of abstract objects or objects in the minds of students. This spatial capability itself will require the mastery of its geometric capabilities. Students' geometry ability mastery can be supported by the improvement of his cognitive style of how to receive, organize, process information and then organize them based on their experiences relating to how they think and solve the problems. The purpose of this study was to examine the differences in spatial ability among students with the cognitive style of Field Independent with Field Dependent on learning Anchored Instruction. Population of this research was all students of class X IPA SMA Negeri 1 Takengon Regency of Central Aceh in the academic year 2016/2017. The samples of the research were 2 classes; those were X IPA 1 and X IPA 2, with the number of students was 30 for each class determined by purposive sampling. Data analysis was done by using descriptively quantitative. To know the difference of mean was by using t test of two samples. From the calculation results, it was concluded that there was no difference of spatial ability between students with cognitive style of Field Independent with Field Dependent, there was no difference of spatial ability between students with cognitive style Field Independent in class X IPA 1 with cognitive style Field Independent on learning Expository X IPA 2, There was no difference of spatial ability between students with cognitive style of Field Dependent in class X IPA 1 with cognitive style of Field Dependent in class X IPA 2.

**Keywords:** Spatial Ability, Cognitive Style, Field Independent, Field Dependent





## Higher Education Provider Excellence Mapping Based On Scientific Publication

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### Abstract

Higher education is one of the most important educational stages in a country. Most experts in various fields become proficient through higher education. Therefore, higher education provider should improve their education quality continuously. One of ways to improve their quality is by higher education provider excellence mapping. This mapping is held with aim to see the excellence of each providers in Indonesia. As a center of education, as well as research center, one that can be used as a mapping base is scientific publication. In this study, the excellence that is want to be seen refers to RPJPN 2005-2025 and RPJMN 2015-2019. Those are food; energy; technology and transportation management; information and communication technology; defense and security technologies; health and medicine technology; and advanced material. This mapping is done by The Ministry of Research, Technology, and Higher Education (KEMENRISTEKDIKTI) Republic of Indonesia. Hopefully, through this mapping, higher education provider will be encouraged to improve their education quality continuously.

**Keywords:** mapping, higher education provider, appropriate technology



## The Competency of Elementary Schools' Principal in Supporting the Standardization of Leadership in Education

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### Abstract

The principal's competencies play a vital role in supporting quality of leadership. A number of studies show that leadership in education should be supported by the competency of principal. According to the Indonesia government regulation, principal has to hold five competencies which are: personality competency, managerial competency, entrepreneurship competency, supervision competency, and social competency. This study was conducted to know the three of five competencies of principals. They were managerial competency, entrepreneurship competency, and supervision competency in elementary school. Based on the results of a study towards 42 samples of elementary school principals in Makassar, it was found that the mean score on the test results of the three competencies was in middle category. When it was analyzed on each item of competencies, the managerial and entrepreneurship competencies in middle category, while the supervision competency was in the low category. The results of the research indicate that the local government needs to prepare for school principals through pre-service training in some area of principals' task as well as needs to do in service training to maintain principals competencies in changing world environment.

**Keywords:** Principal's Competency, Managerial, Entrepreneurship, Supervision



## Modified Guided Discovery Model: A conceptual Framework for Designing Learning Model Using Guided Discovery to Promote Student's Analytical Thinking Skills

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### Abstract

Analysis thinking is a key component in the learning process that is beneficial to all students. However, a variety of preliminary studies that have been done, analytical skills and components that support this capability is still very low. Therefore, this paper introduces the Modified Guided Discovery learning model as a conceptual framework for learning that focuses on improving students' analytical skills at the secondary level, using specific case studies through guided discovery to solve major problems in student analysis activities. This conceptual framework focuses on three processes in the cognitive system in New Taxonomy Marzano are intertwined with each other that is retrieval, comprehension, and analyzing. In analyzing process is focused on five activities, namely matching, classifying, analyzing errors, generalizing and specifying. Learning activities in this model start from retrieval, comprehension, problem statement, analyzing problem, verification, and generalization. This paper discusses the model in terms of its theoretical and activity at each stage.

**Keywords:** learning model, analytical thinking, guided discovery, new taxonomy marzano



## **Watson-Glaser's Critical Critical Thinking Skills**

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### **Abstract**

One of the objectives of education in Indonesia based on the curriculum of 2013 (as stated in Kemendibud, 2016, p. 1 point 9) is to develop the mindset related to the learning system in attempt to enhance critical thinking ability. This paper will discuss the critical thinking skills and indicators developed in measuring students' critical thinking skills at the secondary school level. The characteristics used in measuring this ability was Watson-Glaser's critical thinking skills. Watson-Glaser is one of the figures in the development of critical thinking skills, In his work he mentions that critical thinking focuses on the relationship between rational thought and the process of education. The competencies measured by Watson-Glaser in developing critical thinking skills are Recognizing Assumptions, Evaluating Arguments, and Drawing Conclusions. This concept is expected to be used in the developing and improving individuals of professionalism as well as achievements and also in understanding students' learning either in school or outside the school.

**Keywords:** Development, Indicator, Critical Thinking, Watson-Glatser



## **Formative Assessment Models and Thinking Styles In Learning History**

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### **Abstract**

*The objective of the research is to study the effect of the formative assessment models, the style of thinking, and the interaction of both variables on the students learning outcomes in History. The research was conducted at SMAN 2 and SMAN 5 Makassar in 2014/2015, by using experimental methods with samples of 84 students selected multi-stage random sampling. The findings of the research are as follows: (1) the learning outcomes of the students in History roommates are treated by the formative assessment models in each session are higher than those roommates are treated by the formative assessment based models after completing each competency , (2) the learning outcomes in the History of the students having divergent styles of thinking are higher than those of convergent style of thinking.*

**Keywords:** formative assessment, thinking styles, history



## Relevance of Expertise Areas In Vocational High School with Priority of Leading Potential Area In Indonesia (34 Provinces)

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### Abstract

Development of Vocational High School is currently still strongly bound by community argument. The argument states that choosing a popular department will do a quick job. It makes graduates of Vocational High School tend to choose to look for work in urban areas. As a result of that, the regional development becomes slow. Slow development occurs because skilled workers who build the area just choose to work in urban areas. The success of potential regional management must be supported by the superior quality of human resources. In Indonesia, from various provinces, there are various potentials of the region, both regarding culture, natural resources, social, and so forth. This study aims to: (1) identify the region's superior potential; (2) reviewing and classifying the region's superior potential; and (3) map the priority range of superior provincial potentials. This research was conducted in all regions (34 provinces) in Indonesia using qualitative and quantitative methods. Data collection through website exploration, observation, documentation, questionnaires, interviews, FGDs, and clarification of study results, and analyzed qualitatively and quantitatively. This research indicates that: (1) Labor with the priority of region's superior potential, as many as 30 provinces have the level of labor relevance with the priority of the region's superior potential under 50%. A total of 4 provinces in Indonesia have a



workforce relevance rate with priority areas above 50%. (2) The number of provinces that have a level of relevance below 50% on the suitability of various areas of expertise in Vocational High School with the priority of regional superior potentials of 26 provinces (Sumatera Utara, Sumatera Barat, Riau, Jambi, Sumatera Selatan, Bengkulu, Lampung, Bangka Belitung, Kepulauan Riau, Jawa Tengah, Jawa Barat, DI Yogyakarta, Jawa Timur, Banten, NTB, NTT, Kalimantan Barat, Kalimantan Timur, Kalimantan Utara, Sulawesi Utara, Sulawesi Tengah, Sulawesi Selatan, Sulawesi Tenggara, Gorontalo, Sulawesi Barat, Maluku, dan Maluku Utara); (3) the number of provinces that have a level of relevance above 50% on the suitability of various areas of expertise in Vocational High School with the priority of regional superior potentials of 8 provinces (Aceh, DKI Jakarta, Jawa Barat, Bali, Kalimantan Tengah, Kalimantan Selatan, Papua Barat, dan Papua).

**Keywords:** superior regional potentials; areas of expertise; vocational education



## Development of Mobile Academic Exhibition Information System to Support Achievement of Job Hiring Graduate Vocational High School

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### Abstract

This study aims to develop the Mobile Academic Exhibition information system that presents a solution of at least a platform for students of vocational to share the work or final project used mobile device as a potential medium. The purpose of this information system development is to help vocational students identify the work in one container information system that can be seen by the community, which ultimately provides benefits for students to be seen by industrial. Mobile Academic Exhibition (MAX) development method using the development of Extreme Programming (XP), XP is the most widely used approach to software development through several stages, namely: (1). Planning; (2). Design; (3). Coding; and (4). Testing. The result data will be tested using the effectiveness test and done to 100 samples. The use of research instruments is used to collect qualitative data from random responders and is expected to produce valid data. The results showed that 64.6% of the vocational school students could be accepted immediately after the industry saw the students' projects uploaded in the MAX system, 36.4% of the vocational school students were not accepted due to other factors (administration, attitude and ability to work).

**Keywords:** mobile, academic, exhibition





## The Analysis of Students' Logical Thinking Ability and Adversity Quotient, and it is Judged from Cognitive Style

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### Abstract

This type of research is qualitative research. The focus of this study is to determine the ability of students to think logically and *adversity quotient* and in terms of cognitive style. The population in this study is all 3<sup>rd</sup> force students of Statistics study Program, in the State University of Makassar. Determination of the subject in this study was conducted by referring to the results of cognitive style tests. Based on the results of the cognitive style test, students are grouped into two, namely: groups of students who have field-independent cognitive style (FI) and groups of students who have field-dependent cognitive style (FD). The data collection in this study uses main instrument, that is the researchers themselves, in addition to the main instruments usage, it also uses supporting instruments, namely: (1) Instruments for Knowing the Students' Cognitive Style: *Group Embedded Figures Test (GEFT)*, (2) Logical Thinking Ability Instruments (TOLT), and (3) Instruments of *Adversity Quotient* (AQ)

**Keywords:** the ability to think logically, adversity quotient, field-independent, field-dependent.



## The Implementation of Moody Model in Learning Abstract and Orientation of Exemplum Text

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### Abstract

In language teaching, teaching of exemplum text can be done in various ways like the Moody model. This research aimed to examine the effectiveness of the implementation of the Moody model in exemplum text teaching. This research was a quasi experiment by using pretest-posttest control group design. The population of research was the students of IX grade in Islamic Integrated Senior High School Al-Ishlah, Maros, Indonesia, as many as 42 students. The research sample was selected by purposive sampling i.e. Class IX.A as a control group taught by traditional learning and class IX.B as an experiment group taught by Moody model with 21 students for each group. Data on students' ability in compiling, linking, and consider the material to be written was measured by using the essay test and analyzed by using descriptive and inferential statistics. The results showed that there was a difference in the ability of students to the study of exemplum test taught by different model as much as 90.48% of students achieving the mastery learning on experiment group, while only 33.33% of the students in control group. The learning model Moody helps students to understand the text content because students discussed the content of text in small groups, students write down the core of the problems text, and write down the procedures of problem-solving systematically. Students can compare their answers with other groups to get the correct one. Finally, all students will get the same information so as to make it easier to understand the learning materials.

**Keywords:** moody model, exemplum text, language teaching, abstract and orientation



## **Developing Science Process Skill Based Learning in Science for Children with Special Needs Course**

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### **Abstract**

The facts show that most of alumni of college are prospective workers. They are ready to train, not ready to use. Therefore, there were 944,666 educated unemployment (BPS, 2016). This phenomenon occurs because the learning system in universities is still dominant using lecturing methods rather than process skills. The consequence is that the cognitive level of students generally are at the level of knowledge and understanding, it is weak in terms of application, analysis, synthesis, and evaluation with divergent thinking. To overcome this phenomenon, the implementation of process skills for all subjects in universities, especially in science subjects for children with special needs in the Department of Special Needs Education is needed in integrated, comprehensive, and sustainable process. Therefore, it is necessary to develop science process skill based learning in the course of science for children with special needs that can improve the quality of process and learning achievement in the classroom.

**Keywords:** learning instruments, science process skills, science, children with special needs, effectiveness



## Teachers under Child Protection Law

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### Abstract

The purposes of laws are providing justice, public order, and welfare to the society. However, it sometimes invites anxiety and unrest for some people. A study conducted by the author in 2014, entitled: Decency of giving punishment for students' violations in the perspective of child protection law for teachers at state junior high school in Barebbo, Bone, South Sulawesi showed that: child protection law makes teachers are afraid to give penalties for students who violate school rules. There are 36 out of 45 teachers and 80% of respondents said that the existence of child protection laws make them afraid of sentencing. It is because teachers, parents and the community at large do not fully understand the concept of punishment. Professional teachers should have professional, pedagogic, personality, and social competences. It also supported by the theory of giving punishment. The punishment must be aligned by mistake, fair, fast respond, and using the principle of trust to students and then punishments itself. The punishment standardized on behavior of students without emotion and have been agreed.

**Keywords:** Child Protection Law, Giving Punishment



## Relevance of Referral Vocational Education Development with Region Potential

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### Abstract

Every region in Indonesia, in the context of referral vocational education development has the authority in determining the development policy of referral vocational education program that suitable with the superior potential of each region. Referral vocational education program is directed to produce a productive workforce or human resources and able to utilize the region economic potential so that in the long term will increase the independence of the region. Referral vocational education function is also related to the provision of region economic driving force, where referral vocational education is expected able to open broader thought for the graduates of referral vocational education, so the graduates can develop their potential in producing and marketing the goods and services in accordance with the region potential.

To achieve this objective, the mapping of the region potential needs to be done as an indicator in developing referral vocational education where the determination of referral vocational education skills program development needs to be considered and adjusted to the region potential. It is intended that the existence of referral vocational education really useful for the region in advancing and developing its potential. The sectoral development approach that has improved the quality standard of Indonesian human resources to a certain extent, in the future needs to be followed by a development approach that takes into account the condition and aspirations of the region, not by a uniform approach. Human development strategies in the future should be able to identify the types of education and training that can place the workforce and educated graduates in job market that constantly demand skill improvement.

**Keywords:** referral vocational education, region potential, competence expertise



## The Contribution of Entrepreneurship Learning towards Entrepreneurial Passion and Entrepreneurial Activities of Vocational Students

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### Abstract

Entrepreneurship is a process that aims to make changes and create new things, which aims to generate welfare for the individual and add value to society. Subjects or entrepreneurship courses have become compulsory subjects that train to stimulate the students' interest to act actively in entrepreneurship in most of the vocational education in Indonesia at both vocational and university levels. Topic on entrepreneurial passion is barely studied. Therefore, in this study, the authors try to study conceptually the contribution of learning to passion that affects the entrepreneurial action of vocational students. This study is based on literature review aiming to reveal the relationship between entrepreneurial learning, entrepreneurial passion and entrepreneurial action. The first part of this research is the introductory part of entrepreneurial learning that examines theoretical entrepreneurship learning and in the next section examines the relationship between passion and entrepreneurial action in relation to entrepreneurial learning. Finally, a conceptual model is proposed based on the study of the constructed theories and the results of the research and implications are summarized in the conclusion section as the basis for further research.

**Keywords:** entrepreneurship learning, entrepreneurial passion, entrepreneurial action.



## A Portrait of Madrasah Aliyah (MA) based on Mathematics National Examination Results (UN)

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### Abstract

Madrasah Aliyah (MA) is an Indonesian term for Islamic high school. In 2016, there is 7260 MA with 1.099.366 students. The Amount of 88.63% MA is a private school, and suffering deprivation such as teachers' welfare, textbooks, facilities and infrastructures. This research aims are: (1) describe the quality of State MA and Private MA (MAS) based on student achievement in UN of mathematics subject and (2) describe the quality of Reach MA (MA Unggulan) and Islamic boarding school's MA based on student achievement in UN of mathematics subject. The population of this research is all MA in Indonesia who joined the UN 2016. The sample of this research is 1.455 MA spread across 38 districts in East Java. East Java was chosen as a sample because it has the highest number (20.04%) of MA in Indonesia. Furthermore, it is about 22.55% of MA students in Indonesia studying in East Java. Moreover, MA variants in East Java are very high. This research data is the UN score of mathematics subject in 2016 which obtained from the Center of Education Assessment of Balitbang Ministry of Education (Kemendikbud) RI. Data were analyzed using the quantitative descriptive statistics, with the percentage and mean. The results show: (1) the average of mathematics score in UN of MAS students in Science class (60.22) is lower than MAN students in Science class (62.59) and the average score of mathematics in UN of MAS students in Social class (62.44) is higher than MAN students in Social class (61.4); and (2) the average of Mathematics UN score of MA Unggulan students in Science class is 67.63 and 60.76 for Social class. Science Student at Islamic boarding school MA reaches quite good score in average (60.39), while Social students have a mean score of 53.65.

**Keywords:** Madrasah Aliyah (MA), National Examination (UN), and Mathematics



## Survey of Mathematics Teachers Classroom Management and its Implication on the Quality of Teaching and Learning at Lower Basic Education Level in Zamfara State, Nigeria

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### Abstract

Effective learning takes place in the classroom when there is an effective classroom management. In order to have effective management of the classroom, there are some actions, activities and personalities that the teacher most process or do. Therefore, this study investigated mathematics teachers' classroom management as it influence the teaching and learning of the subject at low basic education level. The research sampled three treatments basic schools and three non-treatment basic schools. Researchers developed questionnaire for teachers on classrooms managements and was used to collect data from the teachers on classroom management. Also pupils of sampled schools were subjected to researchers to developed mathematics test which was used to compare their achievement. The views to the teachers of treatment and non-treatment schools and the pupils' scores on the mathematics tested were tested using the T-test statistic. It was suggested in the paper that the mathematics teachers needs to employ the use of classroom languages, clear instruction, active participation in series of classrooms activities in their classroom.

**Keywords:** classroom management, teachers, learning, low basic education





## Development of Learning Device Based on Metacognition Strategies to Build the Students Character

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### Abstract

This study used research and development approach. It focus on metacognition strategies to build the students character. It aims to produce a valid learning device. The main products of learning device consisted of: (1) RPS, and (2) lesson book. The model 4D of research and development was applied, it consisted of 4 phases namely defined, design, development, and disseminate. This article explains the profile of learning device based on metacognition for character building of Introduction to Basic Mathematic. Validity of learning device was measured by the experts. The result of learning device consisted of RPS and lesson book had been valid.

**Keywords:** developing of learning device, metacognition, character building



## Effectivity of Metacognitive Skill Model based Learning

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### Abstract

This study report the effectivity of metacognitive skill model based learning in learning mathematic. The variables of this study are learning outcomes and treatment by applying metacognitive skill model based learning. Population of this study is all students Class XI in Senior High School 4 Parepare Years 2016/2017. The sample selection of experimental and control class is done randomly. Research data were analyzed by descriptive statistical analysis and inferential statistical analysis. The result of the study showed mean score of the learning outcomes in experimental class amount out of ideal score 100 with standard deviaton 7,66. While mean score of the control class amount out of ideal score 100 with standard deviation 9,691. In the experimental class, from 24 students obtained 21 or 87,5% students have completed learning. While in control class, from 24 students obtained 15 or 62,5% students who have completed learning. Students activity of the experimental class is more active than students in control class. So it can be concluded that metacognitive skill model based learning is effectively applied in mathematic learning.

**Keywords:** Learning Model, Mathematic, Metcognitive skill



## **The Development of Learning Media based on Visual, Auditory, and Kinesthetic (VAK) Approach to Facilitate Students' Mathematical Comprehension Ability of Junior High School 21 Pekanbaru**

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### **Abstract**

This study aims to develop learning media based on Visual, Auditory, and Kinesthetic (VAK) approach that is valid and practical and able to facilitate students' mathematical comprehension ability. This research was conducted at State Junior High School 21 Pekanbaru. The subject of this research are media experts and subject matter experts as validator and students of Grade 8<sup>th</sup> at State Junior High School 21 Pekanbaru and the object of this research is learning media based on Visual, Auditory, and Kinesthetic (VAK) approach. Based on the validity test, the learning media based on Visual, Auditory, and Kinesthetic (VAK) approach is categorized as very valid with 86.01% validity rate. Based on practicality test, learning media based on Visual, Auditory, and Kinesthetic (VAK) approach is very practical for small group with 91.73% practicality level, and very practical for large group with 89.65% practicality level. Based on the students' mathematical comprehension ability test, the learning media based on Visual, Auditory, and Kinesthetic (VAK) approach has facilitated students' mathematical comprehension ability with percentage of mastery level is 83,72% with high predicate. From these results, the developed learning media is very valid, very practical, and can facilitate students' mathematical comprehension ability.

**Keywords:** Learning Media; Visual, Auditory, and Kinesthetic (VAK); Students' Mathematical Comprehension Ability



## Type Justification on Transformation Process of Mathematical Knowledge Primary School Student

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### Abstract

This research to describe the Type of Justification in the process of transformation of Mathematics knowledge of primary school students, While the process of transformation of mathematical knowledge there are five stages namely, Socialization, Connection, Representation, Justification and Internalization. One of the most important components in the process of knowledge transformation is justification, The research approach used in this research is qualitative research. This research involved 5 students of SDIQU AL Bahjah Tulungagung as research subjects. Instruments in this study there are two kinds, Namely the main instrument and auxiliary instruments. The main instrument is the researcher himself, the auxiliary instruments is Mathematics test and interview guide, The result of this research is description of each type of justification, At the Assumption stage, Subject justification based on assumptions, At the Vague/broad statement stage, The subject justifies but does not answer the question clearly, whether the statement is true or false, At the Rule stage, Subjects do justification by giving reasons At the Procedural description stage, Subject explains the answer gradually At the Own explanation stage, Students give reasons to use their own language At the experience connection stage, Students answer with experience..

**Keywords:** justification, transformation, mathematical knowledge



## Quantitative Reasoning Analysis of Junior High School Students in Generalizing in Terms of Gender Differences

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### Abstract

Quantitative reasoning is important in mathematics learning. The main purpose of many mathematics teachers around the world is how to develop the relationship between mind and students' problem in the real life, so that can be solved mathematically. The students' concepts of quantity based on the nature of the object needs to be developed. The effort to achieve that goal is how students are able to use their quantitative reasoning. The quantitative reasoning referred to in this study is the mental activity undertaken by a person in identifying, connecting and constructing new quantities. Algebra is now known as one of the branches that study about structure, relationship and quantity. Therefore one of the efforts made to improve students' ability in understanding algebra is by using approach to introduce algebra that can strengthen students' ability to make generalization. Subjects in this study were male and female students in Junior High School in Makassar. This study aims to analyze students' quantitative reasoning abilities in generalizing in terms of gender differences. To achieve that goal, a qualitative approach is used to describe the students' quantitative reasoning abilities in generalizing that can be seen from the student's behavior in completing the task given. The results of this study will be a description of how students' quantitative reasoning in generalizing from stage (1) connecting quantity, (2) identifying quantity and (3) constructing new quantity.

**Keywords:** quantitative reasoning, generalization, gender



## **Working with Definition of Absolute Value: Study on Prospective Mathematics Teacher of Cokrominoto Palopo University in Real Analysis Subject**

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### **Abstract**

The Definition of absolute value was used to proof the representative theorem only. Furthermore, this definition will be no longer be used. According to the background mention before, the purpose of this study is to establish the Prospective mathematics teacher of Cokroaminoto University using the definition of Absolute value to solve some real analysis problem. The research unit of this study is the 6th semester prospective mathematics teacher in Cokroaminoto University. This research conducted on semester 6 on academic year of 2016/2017. The study shows that (1) there are some prospective teachers have difficulties to form the problem as definition of absolute value, (2) they cannot conclude the final solution set for two or more solution set. This Research suggest to use Problem Based Learning to improve the prospective mathematics teacher in solving real analysis problem.

**Keywords:** Real Analysis, Definition, Perspective Mathematics Teacher



## Development Learning Tools Models of Triangle using Problem Solving Based Rigorous Mathematical Thinking in University Wijaya Kusuma Surabaya

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### Abstract

Geometry learning given to Mathematics taught departement Faculty of Language and Sains University Wijaya Kusuma Surabaya using various strategy and learning models even acquired maximum result. Students still have difficult this to prove theorems, there for concepts understanding is needed about triangle. One of the alternative that can build up geometry concepts in students mains is by carrying out an approach Rigorous Mathematical Thinking (RMT). The goals of this research are to describe processes and results of the development learning tools models of triangle using problem solving based Rigorous Mathematical Thinking (RMT). Research is developmental one with is carried out for the students Mathematics taught departement Faculty of Language and Sains University Wijaya Kusuma Surabaya academic year 2017-2018. The research object is learning to of triangle using problem solving approach. With two subject are subject for validation and subject for limited try out. The learning instruments consist of validation sheets, observation of students activity sheets, students response sheets and test. The technique of data colection uses obsevation metods, test, and questiner. Research yields teaching handbook, silabus and student activity sheets.

**Keywords:** Rigorous Mathematical Thinking (RMT), Problem Solving



## The Profile of Students' Mathematical Problem Solving on the Topic of Linear Equation System for Two Variables Based on Their Thinking Style

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### Abstract

The study was a research, aimed to described the profile of Students' Mathematical Problem Solving on the topic of Linear Equation System for Two Variables based on Thinking Style of Grade VIII Students at MTs Al-Murahaman. The result of the research show that: 1) the profile of mathematical problem solving of concrete sequential student are: a) understanding mathematical problems tend to organize facts, which are obtained systematically and present the information thoughtfully and delivered straightly from things the had known and things they are asked, b) planning problems tend to use thinking pattern inductively, try to relate information (fact), c) conducting problem solving tend to work algorithmically in each stage of problem solving; The profile of mathematical problem solving of abstract sequential student are: a) understanding the problems, which had tendency to process information abstractly and arranged information which is obtained regularly, b) planning problem solving, the ability to analyze and present fact in form of mathematical symbol, c) conducting problem solving systematically and linear pattern, which focused on conceptual and procedural approach leading to algorithm strategy; The profile of mathematical problem solving of concrete random student are: a) tend to be consistent in using guessing strategy or trial and error in solving mathematics problem, b) tend to use formulating pattern strategy by building solving pattern according to the way of thinking; the profile of mathematical problem solving of abstract random student are: a) tend to use guessing strategy or trial and error in solving mathematical problem, b) tend to show the basic difference in processing information received, c) His thinking style has a positive effect on his learning achievement. So students with abstract random thinking are better than students with concrete sequential thinking styles.

**Keywords:** Mathematical Problem Solving, SPLDV, Thinking Style





## **Development of Teaching Material to Improve Students' Mathematics Literacy Ability by Using Metacognitive Guidance Approach**

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### **Abstract**

The purpose of this study is: to identify the necessity development of teaching material, analyzing the characteristics of teaching material that has been developed and describing the validity of teaching material that has been developed. The methodology of this research using Research and Development design (R & D) by referring into stage, according to Borg and Gall by modification just reaches two stages are: preface study and development. The result of this research among, others: has been found, it the teaching material that appropriate with the necessary, has the certain characteristic, and get the validity of teaching material. The conclusion of this research is creation the validity of teaching material to be ready implemented into a learning activity in the class to increase students' mathematic literacy ability of VIII grade students of Junior High School.

**Keywords:** Metacognitive, Guidance, Literacy



## Profile of Students' Critical Thinking in Solving Mathematical Problems based on Gender

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### Abstract

Profile of critical thinking in solving mathematical problems is an idea that is expressed in the words of the description based on FRISCO criteria in solving mathematical problems. This study aims to describe students' critical thinking profiles of men and women in solving mathematical problems. Research subjects chosen were two eighth grade students of SMP Negeri 21 Makassar is one male student and one female student. In this qualitative research, data collection using two problem solving tasks and interviews. Tested the validity of the data obtained through triangulation time. Furthermore, the data were analyzed based on criteria critical thinking FRISCO. Based on the data analysis and the discussion of the theory of critical thinking profiles, it can be concluded that in problem solving process determine the problem, decide which strategy to use in solving the problem, and provide a logical reason in the process of drawing conclusions, knowing the situation on the matter so that they can use the information in accordance with the problems, explains terms in the problem, and check back the answers. But the checking back in a male subject was just checking the final results only, while female subjects also check the answers at each step up to the end result.

**Keywords:** Critical Thinking, Mathematical Problem Solving, Gender.



## **Searching Awareness of Metacognition of Students in Learning Numbers Theory based on the Approach of Learning Theory of Behavior**

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### **Abstract**

The purpose of this study is to trace the metacognition of students in studying number theory based on behavioral learning theory approach. The steps of approach of behavioral learning theory consists of 5 phases, namely: (1) Cooperative selection as a learning approach, (2) The Prepare the material of number theory on a particular topic in paper form, (3) Presentation of term paper by group member in front of class, (4) Responses of other group members to the material presentation of the designated group, and (5) Summarizing or asserting the material as well as positive reinforcement and negative reinforcement. While the students metacognition review in studying the Theory of Numbers consists of 4 levels, namely: (1) tacit use, (2) aware use, (3) strategic use, and (4) reflective use. The subject of this research is the students of Mathematics Education Department who are studying the Theory of Numbers, consisting of 56 students. The results of this study show that in general (57.14%) the level of awareness of metacognition of students of Mathematics Education Department is at level 1 (tacit use), and a small part (5.36%) Level 4 (reflective use).

**Keywords:** Awareness of Metacognition, Behavioral Learning Theory, Students of Mathematics Education



## Profile of Metacognition of Mathematics Education Students in Understand the Concept of Integral Calculus in Category Classifying and Summarizing based on Gender Differences

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### Abstract

The purpose of this research is (1) To produce metacognition profile of female mathematics education student in understand the concept of integral calculus in Category Classifying and Summarizing, and (2) to produce metacognition profile of male mathematics education student in understand the concept of integral calculus in Category Classifying and Summarizing. The subjects of this study are mathematics education students who have studied integral calculus, consisting of 1 male student and 1 female student. This research type is explorative with qualitative approach. The main data collection of this research was obtained by using Interview technique. In addition, there are supporting data which is the result of the written work of research subjects (SP) in understanding the question of integral calculus. The results of this study are as follows: (1) there is no difference of metacognition profile between male and female students in understanding the indefinite Integral concepts in category classifying and summarizing, and (2) there is difference of metacognition profile between male and female students in understanding the definite Integral concepts in category classifying and summarizing.

**Keywords:** Matecognition Profile, Understand the Concept of Integral Calculus, Category Classifying and Summarizing, Gender



## Intuition Profile of Mathematics Student in Problems Solve through Polya Steps based on the Differences of Masculine and Feminim Personality

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### Abstract

This research is a qualitative research aimed to find out the profile of student intuition in solving the problem of mathematics story (Basic Mathematics) seen based on the difference of masculine and feminine personality. Methods of data collection is to provide problem-solving test of mathematics story, then conducted interview on research subject. In the interview, the subject of the study was interviewed whether the subject used intuition or not at each stage of problem solving of mathematical stories. The subject of this research is male students of mathematics education of Muhammadiyah University of Cirebon. Research subjects amounted to 2 male students, consisting of personality differences, namely (1). Masculine, (2). Fememine. The results showed on the profile of students in solving the problem of mathematics stories as follows: (1) Subjects Male students who have masculine personality; In understanding the problem, using affirmative intuition, in making plans and implementing problem solving, not using intuition, in re-examining problem solving, using conclusive intuition. (2) Subject of male students with Fememine personality; In understanding the problem, using affirmative intuition, in making plans and implementing problem solving and re-examining problem solving, not using intuition.

**Keywords:** Intuition, Mathematical Problems, Differences in Masculine and Feminine Personality



## The Development of Educational Game as Instructional Media to Facilitate Students' Capabilities in Mathematical Problem Solving

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### Abstract

This study aims to produce a valid and practical educational games that can facilitate students' mathematical problem solving ability. This study is a development research using Borg & Gall model which has been modified. Subjects were technologists and subject matter experts as validators and 8th grade students of State Junior High School 1 Singingi for practically test and the object of this study are educational games and students' mathematical problem solving ability. The data were obtained through a validation process by the validator, the practicalities by the students, and test of students' mathematical problem solving ability in the form of the posttest. Data collection instruments are in the forms of validation sheets, practicalities questionnaire sheets and posttest for mathematical problem solving ability. The data were analyzed with descriptive analysis techniques. The educational game development results have been tested with validity degree of 84.1% (very valid) and the practicality degree of 85.42% (very practical) as well as the level of students' mathematical problem solving ability of 75.06% (moderate). From these results, it was identified that the educational game based that developed was very valid, very practical and can facilitate students' mathematical problem solving skills with moderate predicate..

**Keywords:** development, educational games, mathematical problem solving ability



## Analysis of Student Errors in Mathematical Creative Thinking Based on Self-Regulated Learning

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### Abstract

Self-Regulated Learning (SRL) is one of the factors that can affect the ability of students' mathematical creative thinking. The purpose of this research is to analyze and describe students' mathematical creative thinking ability based on SRL. Subjects in this study are junior high school students who are in high and medium levels in Tasikmalaya City. This research used the qualitative method with an instrument that is about the test of mathematical creative thinking ability and SRL questionnaire. Both instruments were used, tested for validity by two mathematics education experts, and the results were declared valid as a research instrument. The results of the data analysis concluded that most students at high school level and high SRL have lack of flexibility and originality, while most students with moderate and low SRL did not have sensitivity, flexibility, originality, and elaboration. Students who are from middle school and high SRL levels, mostly make mistakes in sensitivity, flexibility, originality, and elaboration. While students with moderate and low SRL, only a small percentage of students were correct in sensitivity, flexibility, originality, and elaboration, in general they made mistakes on these indicators.

**Keywords:** Mathematical Creative Thinking, Self-Regulated Learning



## The Influence of Cooperative Learning Model Type Think Pair Share in Improving Self Efficacy of Students Junior High School on Mathematics Subjects

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### Abstract

This research was purposed to see the influence of cooperative learning model type think pair share in improving self efficacy of students on mathematics subjects. This type of research was a quas experiment with the design of The One Group Pre Test-Post Test Design. Participants in this research amounted to 25 students of grade VIII.C junior high school 1 Ajangale event obtained by using simple random sampling technique. The data from this research was obtained by using self efficacy scale containing 16 items of question. The data obtained from participants' answer were analyzed by One Way Anova using SPSS 22.00. The results of this study reveal that the pretest score was obtained  $M = 48,08$ ,  $SD = 8,046$ , while posttest score was obtained  $M = 60,76$ ,  $SD = 5,600$ . The result of hypothesis testing on self efficacy scale on pretest and posttest obtained  $F = 41,827$  with significance value  $p = 0,000$  ( $p < 0,05$ ). So, it can be said that cooperative learning model has a positive effect in improving self efficacy students on mathematics subjects.

**Keywords:** Influence, Cooperative learning model type think pair share, Self efficacy





## The Use of Mathematics Teaching Aids to Train Metacognition Ability of Elementary School Students

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### Abstract

The use of mathematics teaching aids in elementary school is useful not only for the acquisition of knowledge, but also for the formation of student awareness of his ability and the arrangement of his thinking in solving problems. This relates to the students' awareness of their ability to develop various possible ways in solving problems. The process of realizing and organizing of one own thinking is known as metacognition. The involvement of metacognition in learning provides great benefits to students in particular to strong mastery of the subject matter. The methods used in the study are: implementation of learning using mathematical teaching aids by applying metacognitive strategies, observations, tests, and interviews. The results showed that students with good metacognition ability, carry out the problem-solving activities based on a strong understanding of each steps, which are useful for solving more complex problems. Based on these reasons it is important for teachers to train metacognition ability especially in solving mathematics problems for elementary schools students.

**Keywords:** metacognition, mathematics problems, mathematics teaching aids, elementary school



## Improving of Mathematical Representation Ability to Solve Word Problem Using Cognitive Strategy: Orientation, Organization and Elaboration

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### Abstract

Mathematical word problems including problem-solving category. Many students confused when the teacher gives the word problems because they do not know where to begin their work. The purpose of this study to determine how students can use cognitive strategy orientation, organization, and elaboration when they complete of word problem. The sample consisted of 54 high school students from three different school levels was tested twice for two months. Study found there is progress from the initial test and the final test, which is about the students select and choose the manner deemed appropriate, the organization of information for managing the use of concepts and rules to describes the relationship for writing equations and solve them. Study show that first experimental group, second experimental group, and control group tended to have different mathematical expressions and written texts ability while solving algebra and geometry problems, whereas drawing ability tend to same for all three groups. Even when all relationships were recognised and correctly symbolised, integrating them into an equation was a common difficulty.

**Keywords:** Mathematical Representation; Word problem; Orientation; Organization; Elaboration



**Lecturer Perceptions toward the Teaching of Mathematics  
using English as Medium of Instruction at the International  
Class Program of Mathematics and Science Faculty of the  
State University of Makassar**

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**Abstract**

The objectives of the study were to find out: (1) the lecturers perceptions towards the teaching and learning of mathematics using English as medium of instruction (EMI) at the International Class Program (ICP) of Mathematics and Science Faculty of the State University of Makassar; (2) the students perceptions on their challenges to study in the program; and (3) the students perceptions on their English and mathematics achievement. The study applied qualitative research design. Interview was used to collect data. The lecturers participants were two lectures from Mathematics Department. They were all mathematics lecturers (non-English lecturers) and most of them have limited English proficiency. The students participants were 12 students of the ICP of UNM in 2016/2017 academic year. The data were analysed using Miles and Huberman's qualitative data analysis. Detailed findings will be presented and their implications discussed.

**Keywords:** EMI, ICP, teacher perceptions, students perceptions, limited English proficiency



## Using Computer in the Guided Discovery Learning of Algebra

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### Abstract

This article describes a study aimed to identify students' exploring ability of quadratic equations when using computer in the guided discovery learning. It was a case study that focuses on algebra learning in senior high school. Data collected through performance test and interview. The data analysis found that the high ability students seemed to be more able to seek that graph of quadratic equations is a parabola. They were able to explore relations between the change of the leading coefficient of quadratic equations and its graph. They were able to see that some quadratic equations do not have real roots and that this characteristic corresponds to the fact that their graphs do not cross the x-axis. Whereas the low ability students showed that they have problem in using computer. They lacked understanding of relation between quadratic equations and its graph. They weren't able to explore the change of the leading coefficient of quadratic equations.

**Keywords:** computer, guided discovery learning, algebra



## Framework Design Learning of Introduction to Computational Algorithms by Using the Theory Learning by Doing

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### Abstract

The purpose of this paper is to get the instructional design of introductory course for computing Algorithms for students who have the low marks of Math. They have kinesthetic and tactile learning styles in their learning. The discussion in this study is important because in some private universities in Indonesia found, that the new students of Informatics Engineering Program and Information Systems, they have below average of Mathematics ability, which is under 53 out of 100 points. The design of courses are prepared by using the theory of learning by doing. The question raised is how to apply the theory of learning by doing on the design of course outline. The result shows that the design of course outline is compiled using system approach with Context evaluation model, Input, Process, Product by using external stimulus in the form of Mathematical reasoning software for computational Algorithm, and avoiding imitation Mathematical reasoning from the beginning class, because it does not match the characteristics of knowledge on this course that are classified as conceptual and metacognitive knowledge.

**Keywords:** Computational Algorithms, Kinesthetics Learning Styles, Tactile Learning Styles, Mathematical Reasoning, Learning by Doing



## The Effect of The Implementation Reace (Relating, Exploring, Applying, Cooperating and Evaluating) Learning Model Toward The Understanding of Mathematics Concept.

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### Abstract

This is The result of the observation shows that the low understanding of students mathematical concepts is still below the predicted value of learning, which indicates that most students do not understand the concept of mathematical solving properly and correctly. One of the strategies to overcome the problem is through the application of learning model of REACE (relating, exploring, applying, cooperating and evaluating) oriented to instill the concept of subject matter by connecting the real life context so that students are more motivated to learn based on knowledge and experience possessed. This research is a type of quasi experimental research with nonequivalent Control Group research design, which aims to determine the effect of the implementation of REACE on the understanding of mathematical concepts. The analysis result showed that the average value of the experimental class (77,36) was higher than the control class (55,78) with value of gain test for the control class equals to 0,09 (weak category) while the experimental class gain test was 0,48 (category medium). The Hypothesis test using t-independent test with  $t_{\text{count}} > t_{\text{table}}$  ( $4,192 > 2,005$ ) meaning that  $H_0$  is rejected so that implementation of REACE learning model is influenced to the comprehension of students math concept.

**Keywords:** Learning Model, REACE, Concept Understanding.



## Modified Means-Ends-Analysis Model with Didactical Engineering to Enhance Junior High School Students' Mathematical Critical Thinking Ability

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### Abstract

This article presents the results of the implementation of a modified Means-Ends-Analysis learning model with Didactical Engineering to enhance students' mathematical critical thinking ability. Didactical engineering was implemented in designing teaching materials. The research adopted a quasi-experimental method with a pretest-posttest design. The population of this research was all eighth grade students of state junior high schools in Subang regency. The sample involved 158 eighth grade students from two junior high schools at the high and medium levels. The sample for the experimental group and control group was randomly selected on the basis of grades. The instruments used were tests of prior mathematical ability and critical thinking ability test. Research data of students' pretest, posttest, and normalized gain scores for mathematical critical thinking ability were analyzed using mix-methods, i.e. a combination of quantitative and qualitative analyses adapted to the existing data. Based on data analysis results, it is found that there is a significant difference in the enhancement of students' mathematical critical thinking ability between the experimental and control groups. The enhancement of mathematical critical thinking ability of the experimental group students who were taught with the modified MEA model with DE is significantly greater in each category of their prior mathematical ability both in the schools of the high and medium levels compared to the enhancement of the students who were taught with conventional learning model. However, the greatest enhancement in the mathematical critical thinking ability is attained by students with the high category of prior mathematical ability at a high-level school, and the lowest enhancement was attained by students with low prior mathematical ability from the medium-level school. The results of this study also show that there is no interaction effect between the modified MEA model with DE, the conventional learning model, and students' prior mathematical ability on the enhancement of students' mathematical disposition.

**Keywords:** Modified MEA Model, Didactical Engineering, Mathematical Critical Thinking Ability.

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## Development of Mathematical Skill Assessment Instruments In Secondary School Based on Bloom's Taxonomy

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### Abstract

What are the process and the result in developing mathematical skill assessment instrument in secondary school during numbers course? The assessment follows bloom's taxonomy. The research is a developmental research by using 4D model limited into defining, designing, as well as developing. The data analysed by using the descriptive rule. The product result of this study is an assesment intrument formed in rubric assessment involved performanc aspect assessed and perfromance qualities in the range of 0-4. The product validated and responded based on material, construction, language, objectivity, systematic, and practicability aspects. The result shows that the developed instrument got a great respon in the range of 84,47%. Researcher hope the study result contributes to increase the quality of assesment beside the teachers and practiciant develope in that based on bloom taxonomy.

**Keywords:** Skill Assessment, Mathematics Assessment, Bloom's Taxonomy.





## Tortuous Thinking Intuitively in Solving Problem of Convergence of Sequence

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### Abstract

This paper describes the process of intuitive thinking in a tortuous way to solve problem of convergence of sequence by students Program Study of Mathematics Education, Faculty of Teacher Training and Education of Universitas Lampung. It is said to be tortuous because the subject experienced several stuck in solving the problem. This research was conducted on 30 students, but who netted as subject of this research there are 2 students. Data is obtained from audio visual recording of student's think aloud and interview. Tortuous thinking intuitively can be explained in the following order. Student 1) understands the problem self-evidently and accepts the existing statement in the issue with intrinsic certainty and with great confidence, 2) plan the problem solving immediately and tend to rush, through trial and error based on primacy effect, 3) carry out the plan in order to get behavior of the sequence's term; however he is stuck. Then the students go back to step 2) plan the problem solving and then continue to step 3). This can last several times. After finding the behavior of the term of sequence, students go to the next step that is 4) make guesses about solution, 5) declare the solution with complete sentence.

**Keywords:** Tortuous Thinking Intuitively, Problem Solving, Convergence of Sequence.



## The Effect of Open-Ended Approach Towards Students' Mathematical Reasoning

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### Abstract

This research was examining students' mathematical reasoning by the open-ended approach. This research has a purpose to train students' mathematical reasoning abilities to think logically and know how much is the effect of open-ended approach to students' mathematical reasoning abilities. The subjects of this research are the students of 5th grade in elementary school Gugus I, Buleleng sub-district, Bali. The instrument using mathematical reasoning test which made by the researcher with reference to indicators of mathematical reasoning abilities of P4TK Yogyakarta. This research is a quasi-experiment research with randomized control group pre-test post-test design. The outcomes of the research tell us that in the experimental group, where the students in the experimental group were treated by open-ended approach during the learning process and the students in control group were treated by conventional approach during the learning process. Students' mathematical reasoning in the experimental group was better than students' mathematical reasoning in control group after post-test was given. Both groups had similar performance in the pre-test. Both groups were following common work schedule. Open-ended approach gave positive influences on students' logical thinking abilities.

**Keywords:** Open-Ended Approach, Mathematical Reasoning, Pre-Test Post-Test Design.



## Defragmentation of Student Thinking Structure in Solving Mathematical Problems based on CRA Framework

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### Abstract

Fragmentation of thinking structures is a phenomenon of constructing information in the brain that is inefficient, thus inhibiting the process of solving mathematical problems. Fragmentation of thinking structures is apparent when students experience difficulties or produce incorrect answers in solving mathematical problems. To overcome fragmentation, the students need to defragment the structure of thinking. Defragmentation is an integral part of the *checking* process, *repairing*, and *ascertaining* (CRA) or the structuring thinking process in solving mathematical problems. Students defragment the structure of thinking over the assistance of researchers through the provision of "limited intervention". Limited interventions are conducted by facilitating the occurrence of disequilibrium, cognitive conflicts, and *scaffolding*. In this study, there are five types of defragmentation of thinking structures, namely (1) defragmentation knitting scheme to organize a fragmentation of meaningless connections, (2) defragmentation activation scheme to organize a fragmentation of pseudo-false construction, (3) defragmentation appearance of connections to arrange a fragmentation of nothing connection, (4) defragmentation adjustment scheme a translation for arranging the occurrence of translational fragmentation, and (5) defragmentation appearance of schema to organize fragmentation of construction holes. In this study, students were asked to finish the sheet and express out loud what is being thought out (loud out). In addition, students are also interviewed to explore the data that has been collected. The research data used is the result of think out loud (in the form of written data, verbal, and expression) and interview result.

**Keywords:** Fragmentation Of Thinking Structure, Mathematical Problem Solving, Defragmentation Of Thinking Structure, Limited Intervention, CRA Framework

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## Pointing Gesture and Speech of Teachers in Mathematics Learning According to Information, Initiation and Feedback

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### Abstract

Pointing gestures form an integrated system with speech and contribute to the meaning that the partners acquire from speech speakers in communication. This paper reveals the pointing gesture and speech teacher's of SMP Negeri 2 dan SMP Negeri 4 Kota Ternate in learning mathematics according to information, initiation and feedback. In the information, pointing gesture teachers and assertive speech, which provide information about ideas or mathematical concepts to students with the movement of the finger of the teacher to point the idea or the concept of mathematics. In initiation, the teacher pointing gesture and the directive speech were asked to ask the students with finger movements from the teacher to point ideas or mathematical concepts. In feedback, the teacher pointing gesture and assertive speech, which affirming or justifying student answers.

**Keywords:** Pointing Gesture and Teacher's Speech, Information, Initiation and Feedback.



## **The Analysis of Students' Difficulty in Learning Linear Algebra Majoring Mathematics Education of Borneo University of Tarakan**

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### **Abstract**

Linear algebra is one of the subjects that will be taken by students of mathematics education department. Most of students' score was low. Thus, the purpose of this research was to analyze the students' difficulty in learning linear algebra. 35 students of mathematics education department were chosen as the participant. In collecting the data, paper and pencil test, questionnaire, and interview were used. This research was qualitative and quantitative research. The result showed that the students' difficulty in learning linear algebra was very high which students' difficulty in representing the symbol or notation was 88.63%, difficulty in using the symbol or notation or ideas of mathematics and logical reasoning was 88.11%, difficulty in comprehending the symbol or notation used by using logical reasoning was 88.38%, difficulty to check whether the symbol or notation or ideas of mathematics used has been applied correctly or not and use logical reasoning was 91.77%. It indicated that students' difficulties in learning linear algebra was very high. The internal factor influenced students' difficulty in learning linear algebra. The internal factor were less interested, attitude, attention, and effort in linear algebra learning while comprehending, competence in doing the test items was on moderate level.

**Keywords:** Analysis, Linear Algebra, Difficulty Learning.



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## **Development of Student Activity Sheet with Open-Ended Approach to Improve Creative Thinking Ability in Geometry Course**

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### **Abstract**

This research aims to develop student activity sheet in a Geometry subject by using Open-ended approach which is expected to improve students' creative thinking ability. Development of student activity sheets in this research refers to the 4-D device development model consisting of 4 stages, namely the definition stage (define), design stage, Development stage and Disseminate stage. The test of learning device involves the students of mathematics education program of FKIP Universitas Khairun class A academic year 2016/2017 as many as 40 students. The results showed that the feasibility of Student Activity Sheet by the expert is in good criterion, the implementation of learning for 6 meetings in very good criteria, Student Response to Student Activity Sheet is in good categories. Student Activity Sheets produced in this research can improve students' creative thinking ability.

**Keywords:** Student Activity Sheet, Open-Ended Approach, Creative Thinking Ability



## The Development of Instruments to Identify Basic Mathematics Understanding of New Students of FMIPA Syiah Kuala University

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### Abstract

This study aims to identify basic mathematics skills and understanding of new students of FMIPA Unsyiah. Prior to the beginning of August 2015, the research team developed an instrument to identify the basic skills of new students of FMIPA Unsyiah. The questions included in the instrument are developed based on some anecdotal or empirical input about students' misconceptions in some Basic Mathematics concepts. In this article, we will report the process of developing the instrument as well as the results of psychometric analysis performed to measure the quality of the developed instruments. Classical test theory analysis results reported in this article include the values of the point bi-serial indices and the difficulty indices obtained based on the student responses on the instrument. The data was obtained from the first administration participated by 325 new students. The result of item analysis shows that the point bi-serial indices of items in this instrument ranges from 0.269 up to 0.582 with difficulty indices ranging from 0.16 up to 0.898. The results indicate that items in this instrument can discriminate students' ability well and can measure students' ability from every level of ability, but revisions are still needed to improve it.

**Keywords:** Basic Mathematics, Classical Test Theory, Cognitive Level, Difficulty Level, Point Bi-Serial Index.





## Strategy Assessment as Learning for Developing Pedagogical Competence of Indonesian-Thailand Mathematics Student Teachers

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### Abstract

The SEA-Teacher Project purposes is to help students in developing pedagogical, teaching, and English-communication skills as well as providing experiences of studying the cultures of other countries. Student teachers who participate in this project should be able to develop their competence during implementation of (1) class observation, (2) teaching assistant, (3) teaching in classroom, and (3) reflection and lesson learned. This research aims to analyze the implementation of Strategy Assessment as Learning for developing pedagogical competence. This research used qualitative design that conducted with subject of Batch-4 SEA-Teacher Project student teachers in mathematics education. Research data were collected by questionnaire, observation, and interview method. The result of the research showed that Strategy Assessment as Learning help student teachers to do self-assessment in conducting teaching in classroom. Problems occur during the teaching and learning process in the classroom must be immediately addressed by student teacher with help of mentors. Student teachers discussed their weakness with mentors get fast-constructive feedback. Therefore, they used it as learning to improved their teaching while they still in SEA-Teacher Project.

**Keywords:** Assessment as Learning, Mathematics, Pedagogical Competence, Student Teachers.

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## Developing Learning Instruments of Mathematics Geometry Based On Van Hiele Theory to Improving Students' Character

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### Abstract

This development research aims to produce learning instruments of mathematics material geometry based on Van Hiele learning theory to develop characters which are valid, practical and effective criteria. The product consists of four components, namely: Lesson Plan, Student Book, Student Worksheet, and Learning Result Test. The process of developing using 4-D model Thiagarajan consisting of 4 stages namely define, design, development and disseminate. The result of the research shows that the learning tools developed are valid, practical, and effective based on the validator and the results of the experiments evaluated. The validity was measured based on experts validation which meet the criteria of validity, with each Content Validity greater than 75%. This indicates that the four components are in valid category. The practicality was measured by instructional management sheet shown by the fulfillment of every aspect that is in both good and excellent category. The effectiveness was indicated by the fulfillment of 3 of the 4 defined effectiveness indicators, among others: (1) The average percentage of classical completion of the learning result test is more than 85%, (2) the fulfillment of 7 of the 9 categories of student activities, (3) a positive response of 100% of each aspect being responded..

**Keywords:** Development Research, Learning Instruments, 4D Thiagarajan, Student Character.



## **The Thinking Process of Students in Representing Images to Symbols in Fractions**

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### **Abstract**

Thinking is the development of ideas and concepts within a person. The development of these ideas and concepts takes place through the process of establishing relationships between parts of information stored within a person in the form of notions. The process by which an object is captured by the student's senses. Then go into the brain for processing (the result is a concept / idea) expressed through a language called representation. This representation needs to be done by elementary school students because students are in concrete stages so that they are easily understood, such as representations on fractions. This research is a qualitative research that aims to describe the thinking process of students in representing images to symbols in fractions. Representation of the students on the picture to symbol using the knowledge of the usual fractions, percent and degrees.

**Keywords:** Thinking Process, Representations, Images, Symbols, Fractions.



## Identification of Students Errors in Problem Solving Indirect Analogies Based on Analogical Reasoning Components

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### Abstract

The purpose of this study was to identify students' errors in solving problems indirect analogies based on analogical reasoning components. As students who study mathematics are required to have the ability to relate problems that are faced with previous problems because the mathematical concepts are interconnected. The study was conducted on 148 high school students 2 Mataram and high school 1 Bolo Bima in West Nusa Tenggara, Indonesia. The instrument used is analogies problems consisting of source and target problems. Source problems related to a quadratic equation and target problems related to trigonometric equations and story about determining length and wide of a box. Based on the results of the research, students make mistakes in solving the analogy problem. Based on analogical reasoning components, errors can occur in structuring, mapping, applying, or verifying. Additionally, errors can occur in the combination of analogical reasoning components such as structuring-applying. This result can give an idea to the teacher to give emphasis in the learning process on certain materials used to teach the next material so that student errors in solving the analogies problem can be reduced.

**Keywords:** Identification, Errors, Problem Solving, Indirect Analogies, Analogical Reasoning Component.



## **Design of Realistic Mathematical Learning on Elementary School Students**

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### **Abstract**

The study examines developing a realistic mathematics learning design. In this learning design, it is developed and introduced about realistic and tangible things related to mathematics learning, so that students are more happy and tend to like realistic learning. The result of the research shows the design of realistic mathematics learning which consists of learning implementation plan, teacher manual, student book, student activity sheet, and test of good quality mathematics learning result, which fulfill the criteria of validity, practicality and effectiveness. The test of mathematics learning result in its function as a research instrument meets the criteria of validity, sensitivity, and reliability. In the learning process by using realistic mathematics learning in primary school, students get more active and have good spirit and motivation to learn, so that the impact on the increase of student learning outcomes.

**Keywords:** Learning Design, Realistic Mathematics.



## **Analysis of the Students ' Argumentation based on the Level of Ability: Study on the Process of Mathematical Proof**

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### **Abstract**

Argumentation is one important component in building an understanding of mathematics students. Argumentation is concerned with a person's ability to give reasons based on the facts to make a conclusion and is frequently used in mathematical proofs. Argumentation produce arguments that cannot be categorized right or wrong but it is valid or not, so a person's ability does not guarantee the validity of arguments, depending on his thinking process. This research aims to analyze the arguments using the Toulmin argumentation consists of: data, claim, warrant, backing, qualifier and rebuttal. The researchers grouped students based on skill level high and low then analyze the sixth component of argumentation used students and validitasnya in the process of proof. Qualitative Research methods are used to collect data in the form of the results of the work of students, think aloud, field notes, and the results of the interview. The results showed that students with low ability can make valid arguments with true claims whereas students with high ability can also produce a valid argument with wrong claims. Each component of the argument has different characteristics based on the student's ability level.

**Keywords:** Arguments, Toulmin Argumentation and Mathematical Proof.



## **Performance-Based Learning Model in College Lectures**

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### **Abstract**

This research produces a performance-based mathematics learning model in international students of the college class program. The result of the research has been obtained by development design according to plomp (2007) consisting of three output components, namely intervention result, principle design (intervention theory), and professional development, and component of outcome. The results of this study have fulfilled the criteria proposed by Nieveen (2007: 96), namely relevant (content validity), consistent internal (reliability), practical, and effective. The design of the development result is PMK-ICP implemented in college in college with experimental setting comparing other learning model. The result of experimental study obtained statistically there is a significant difference between experimental group learning result that is learning with PMK-ICP model compared with control group learning result that is learning by conventional way using discussion method, so it can be concluded that the learning model of PMK-ICP is effective for students International Class Program (ICP) Department of Mathematics FMIPA UNM.

**Keywords:** Learning Design, Performance Based.



## The Implementation of Learning Mathematics Based on Props towards the Geometry Concept Mastery

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### Abstract

Learning Geometric concept for Class VIII in Junior High School is still possible using props, because this learning is able to make the student to find concepts and formulas that will be used in solving mathematical problems, so they can be mastery for a better concept. This learning is appropriate with the Curriculum 2013 with one of the Geometry concept is a Circle. Therefore, this study aims to obtain information about the mastery of Circle concept from students who are taught with props compare with students who are taught only by their teachers learning habits. The research method is a quasi-experiment conducted on two classes, the first class is taught with props and the second only according to the teacher's learning habits of Circle concept. The research instruments include the instrument of the mastery of Circle concept, the teachers ability to manage the learning, and the student progress during the learning. Data analysis techniques used inferential analysis were Ancova and descriptive analysis. The results showed that the mastery of Circle concept from students who were taught by the props was higher than the students who taught only with teacher's learning habits. The teachers ability to manage learning process with props are in very good category and students activity during teaching takes place in very active category. Therefore, the result of this study recommends about learning using props is one of the learning alternatives that teachers can adopt to instilling and improving particularly in the mastery of Circle concept and generally in the Geometry concept.

**Keywords:** Mathematical props, Circle Concept Mastery





## Teachers' Devotion to Review Lessons: Insights to the Mathematics Lessons in Brunei Darussalam

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### Abstract

The aim of this study is to examine to what extent are the mathematics lessons of four teachers in Brunei Darussalam were dedicated to reviews. In total, twenty video-recorded lessons were collected and coded following the definitions provided by the TIMSS 1999 Video Study. The results indicated that 40% of the lessons were devoted entirely on review with 20% belonging to one teacher in particular. In addition, allowing for the hybrid data collection in this study provided some data and insights on teacher intention through the teacher video-stimulated recall interviews. From the teacher interview data analysis, one of key issues that emerged was the pressure of examinations in Brunei that led to the profound emphases on the pace of teaching placed by three teachers in relation to their review lessons. In the interview data, these three teachers emphasised their concerns in rushing through and completing the mathematics syllabus so that they can have review lessons before the respective examinations. It can also be observed that extensive review was a consequence of the emphasis on examination results. We have a culture in Brunei where every teacher is obliged to do a lot of preparatory work before the examination. Maybe we should not be quick to judge that this approach might not work. Perhaps, there is a possibility that the type of instruction that seems characteristic of the majority of the four Brunei classrooms may be a defensible, viable, and effective local solution to the problem on how to maximise test or examination performance. Even more simply, this style of teaching may just be in harmony with the school culture.

**Keywords:** review lessons, teacher interviews, examinations, school culture



## **Tree Diagram Model as a Means In Supporting Elementary School Student's Skill And Comprehending In Solving Multiplication Principle Problems**

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### **Abstract**

The present research was a part of a larger design research aiming to develop 10 – 12 year old children's skills in solving multiplication problems using efficient strategies as well as their understanding of multiplication principle topic. To reach the goals, a hypothetical Learning Trajectory which is the sequence of learning activities for the children was set and applied consisting of two main tasks, i.e. two-dimensional multiplication and three-dimensional multiplication problems under the method of design research. Twelve children actively participated of which their written works and learning process were documented and videotaped. The findings suggest that hands-on activity led students to make all different possible combinations of snacks and drinks as well as snacks, drinks, and fruits. Moreover, the activity of pairing one object to the other kind of objects facilitates the students to apply efficient strategy both in more complex two-dimensional problem and three-dimensional problems and use multiplication to determine the number of possible combinations of objects available. The comprehending of the multiplication is acquired.

**Keywords:** Design research; hypothetical learning trajectory



## Social Learning Models Based On Metacognitive Strategies For Growing Mathematical And Self-Regulated Learning Communications In Mathematics Education Students UNM, Indonesia

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### Abstract

The main problems in this research is the lack of independence and mathematical communication in the learning process of mathematics students who have not been optimal. This research is a development research that aims to develop learning tools in the form of valid, effective and practical learning materials (modules) and learning result test. This study will be conducted within two years. The target outcome is the international journal. The model that is developed is a metacognitive based social learning model. The aspects that will be improved in this development research is students' mathematical communication and self regulated learning (self-learning). This development research uses the scheme of Plomp development model, where the object of research is the students of mathematics education program in the mathematics modeling subject. The products produced that will be produced in this study is a textbook and test results learning tool that is valid, effective and practical.

**Keywords:** metacognitive, mathematical communication, self-regulated learning



## Primary Students' Works Dealing with a Proportion Problem

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### Abstract

Proportion is one of the main topics in mathematics have been learnt in primary school. However, some students still even in higher level have difficulties when they faced the proportion problem. Therefore, this study investigate how the primary students dealing with proportion problem. This is a descriptive study aims at understanding how primary students works on proportion problem. The subjects are grade 5 students. The instruments is a proportion problem test. The result shows that some students did not use idea of proportion attacking the problem. The students who used the proportion however they couldn't consider all of information in the problem. Thus, they couldn't draw a good statement in order to make a reasonable conclusion. It is only one student consider all of the data in the problem. However, the still couldn't use the information to draw a reasonable answer.

**Keywords:** Proportion, Mathematics primary school.



## Analysis Students' Thinking with Cognitive Style "Field Independent" Based on Van Hiele Theory

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### Abstract

This is a qualitative descriptive research that describes students' thinking level based on Van Hiele theory on three dimensional materials in terms of cognitive style of Field Independent (FI). The level of thinking based on Van Hiele theory consisting of five stages, namely visualization, analysis, informal deduction, deduction, and rigor. The subjects of this study were 2 students of class XII in SMAN 1 Pangkajene representing Field Independent (FI) cognitive style. The Instruments of this study were GEFT (Group Embedded Figure Test), Geometry test and interview based test. The GEFT test is used to measure students' cognitive style whether including Field Independent (FI). Geometry tests were arranged according to the level of thinking indicators based on Van Hiele theory. This test was used to determine the level of student thinking in terms of cognitive style. While the interview guide contained a number of guides that aimed to explore and clarify student answers in depth. Data were collected through tests and interviews and analyzed using Miles and Huberman data analysis model. The result of the study shows that: first subject and second subject (FI-1 and FI-2) are at the level of deduction. What distinguishes from both subjects is many ways of verification which is done where the subject of FI-1 is able to verify deductively through two ways of verification while the subject of FI-2 is only capable of 1 verification deductively. This result is in line with the theory of Piaget that high school students who have age of more than 11 years, means the student is already in the stage of formal operations. This is also in accordance with Level 3 in the level of thinking on Van Hiele's theory that is formal deduction.

**Keywords:** thinking level, Van Hiele theory, cognitive style, Field Independent.



## The Exploration of the Mathematics Knowledge of the People in Sangihe Regency

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### Abstract

This article will give depiction of the long-term purpose of the society's participation in the learning process of children in Sangihe regency. This purpose is related to the principle of democratic learning, which highlighting that learning process has to correspond with the children's experience and needs. The learning material and activity have to integrate the students' knowledge and skill and they gained inside and outside the classroom. The learning source, both the object and the subject of learning, and especially the society, should be involved actively in the learning process. The society has some special knowledge about Mathematics and the knowledge should be explored in order to strengthen the regular learning at school, and also to strengthen the context related to skill and value. This research will cover some stages of identifying Mathematics learning process in the society, planning the instructional material in the form of thematic assignments, and implementing the instructional planning with the society as the facilitator or the learning partner for students. The related Mathematics concepts are the slope of the land based on the concept of trigonometry, and the model of function graph in an event happening on the field. This learning-research plan is open to variety of material and learning activity that will develop in the learning process, as a result of democratic learning.

**Keywords:** Mathematics society, learning democratic, assignment thematic, participatory learning



## Mathematical Problem Solving Strategy Based on Conceptual Thinking

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### Abstract

Problem solving is an important competency for learners. The importance of this competence contained in the curriculum of education in Indonesia. Math problems have difficulty level that is high enough. The more complex concepts involved in a problem, the higher difficulty level of the problem. Thus, solving mathematical problems require the ability to associate many concepts into a united concept to bring up as a key concept. The key concept results an appropriate problem solution. This paper describes the important stages students did in applying conceptual thinking in solving mathematical problems. This is a descriptive exploratory study with qualitative approaches. The subject is selected from boys students in mathematics education department in Universitas Negeri Makassar. The subject was ask to solve mathematical problems and followed by an interview-based tasks. The results of this study describes important stages performed by the students in solving mathematical problems based on the conceptual thinking process. The stages include (1) describing the problem, (2) associating more concepts, (3) determining the key concepts, and (4) designing solutions to solving the problem.

**Keywords:** conceptual thinking, problem solving strategy, mathematical problem



## Identification of Misconception on Cell Concepts among Biology Teachers in Makassar by Using CRI Method

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### Abstract

This study aims (i) to assess the level of understanding and misconceptions of Biology teachers in Makassar regarding cell concepts, (ii) to identify the Basic Competence in which the teachers pose misconceptions, and (iii) to identify the factors cause misconceptions on cell concepts among biology teachers in Makassar. The study is a descriptive study which implement Certainty of Response Index (CRI) as the method to identify teachers' misconception. Participants of the study (n=22) were selected through purposive sampling based on the representativeness of the school in Makassar area. The result of data analysis showed that there were teachers who possess misconceptions (40.30%), scientifically accepted conceptions (49.10%), and transitional conceptions (10.77%). The misconceptions were found in 6 Basic competences of the cell concepts. The highest misconceptions (55.68%) was found on Basic Competence 3.2. which require participants to distinguish transport mechanism on membrane (diffusion, osmosis, active transport, endocytosis, and exocytosis) based on observation. There were several factors which cause the occurrence of misconceptions among the participants in this study, including low level of reasoning ability, low retention of knowledge obtained in undergraduate, lack of learning resources, incomprehensible terms, and low interest of Biology teachers on cell concepts.

**Keywords:** Misconception, Certainty of Response Index (CRI), Cell concepts.

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## Project Based Learning as the Atmosphere for Promoting Student's Communication Skill

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### Abstract

The research aimed to assess the effect of Project Based Learning Model on science education students' communication skills in Faculty of Mathematics and Natural Science, Universitas Negeri Makassar. The research was an experiment research which implemented Pre-Experimental Design Method, particularly the *One Shot Case Study* research design. The research subjects was undergraduate students registered in motion and change subject in Science Education Department. Research Instruments used to assess the students' communication skills were non test instruments consisting of rubric and questionnaire. The data collected was analyzed through descriptive and inferential statistics. The result of data analysis showed that the students communication skills were improved after the implementation of Project Based Learning Model (PjBL), in which there where 11 out of 29 students whose skills were categorized above level 1. The result of inferential statistics showed that there are influence of Project Based Learning (PjBL) on students' communication skills.

**Keywords:** Project Based Learning, Communication Skills



## Blended Based Learning Media in Biology Class

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### Abstract

This study aims at developing valid, practical, and effective *Blended* based learning packages in Biology class for grade XI SMA Negeri 1 Barru (senior high school level). This study developed two packages; 1) learning media based on Blended Learning and 2) the learning instruments such as lesson plans and learning material. The developmpent model used to develop these packages are Hannafin and Peck Model. The model consists of four stages; need assessment, desaining, development and implementation. The result of the need assessment shows that the need to develop blended based learning media for Biology subject in order to improve students' self learning skill and explore their skill personally. In addition, it is expected that the students can learn Biology everytime and everywhere.

**Keywords:** Media, Blended learning, Biology



## Development and Validation Of Learning Strategy For Metacognitive Skills Empowerment: PBLRQA (PBL Integrated With Reading, Questioning, And Answering)

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### Abstract

Traditional learning strategies were still dominate the pattern of lectures at the Faculty of Mathematics and Natural Sciences, Universitas Negeri Makassar, Indoensia. These strategy was not optimal to empower metacognitive skills of students. Problem Based Learning (PBL) is a constructivist learning strategy that could potentially in empowering metacognitive skills. The implementation of PBL has revealed various benefits, but there was also some weakness. Thus, it required a learning strategy which is expected to cover that weakness of PBL as Questioning, Reading, and Aswering (RQA) learning strategy. RQA is a learning strategy developed based on the the fact that almost all students do not read the upcoming lecture materials, causing failure of learning strategy planned and finally the students' comprehension becomes low. Integration PBL and RQA is called PBLRQA leraning strategy. This article reports the development and validation of the PBLRQA strategy. The research using 4D model (Define, Design, Develop, and Dissemination). The result of research showed that this learning strategy and its learning instrument to be a valid strategy and learning instrument of metacognitive skills empowerment. Teacher can use this strategy in other lectures and consider with the learning material characteristics.

**Keywords:** Metacognitive skills, thinking skill, self-regulated learner, learning strategy, development and validation



## Analyzing Students' Problem Solving Difficulties on Modern Physics

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### Abstract

Problem solving was the most important skill which physicists should have. A research about problem solving skill in physics instruction was significantly essential because physics students have to comprehend concepts and recognize how to cohere it. By those comprehensions, students would be ingenious to solve the physics problem. The purpose of this study was to analyze students' problem solving skill which is based on problem solving step by Polya. The study was an initial research for the next developing research about implementation of a learning model in physics instruction to increase the students' problem solving skill. Subjects of research were consisted of 31 college students of physics education department, who had taken modern physics course. Data was analyzed by using described qualitative method. The research revealed these following conclusion: (1) college students had difficulty to comprehend the problems and hard to plan a solution (2) lecturer should apply a model of learning which train the students' problem solving skill in physics such as cooperative problem solving model.

**Keywords:** *problem solving skills, modern physics, Polya*



## Development of Authentic Assessment Tools in Physics Science Learning

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### Abstract

This research aims to develop authentic assessment in science physics learning class first senior high school. In addition this study aims to improve graduate (teacher): (1) Designing assessment to support the quality assurance and quality control of graduates, (2) To produce effective authentic assessment tools, practical and proper to use in High School Physics Science learning, (3) To increase the ability for student graduate to compose a scientific works (thesis) in good quality, (4) Publish scientific work in international and national accredited journal. Method used in this research development, is develop tools authentic assessment in High school physics science learning. Besides, this method selected for achieve the goals and objectives of research, that is facilitating and guiding student graduate candidates Master of Physical Education in finishing their thesis related to Authentic assessment development tools in the areas of Cognitive, Affective, and Psychomotor learning science in physics to be used as guidelines for assessment of thorough, objective, and fair issues. The procedure of this study refers to the development model by Thiagarajan, Semmel, and Semmel known as four-D model that is define, design, develop and disseminate. The results of this study is to obtain product authentic assessment tools first class senior high school semester in the cognitive, affective and psychomotor that have been validated by experts. in the field of physics learning evaluation and the users and through empirical validity (try out)), the result is stated that the Authentic Assessment Tools that have been developed are valid, practical and feasible to use to measure learning outcomes Physical Science first class senior high school.

**Keywords:** development, authentic assessment, learning physics.



## Development Authentic Psychomotor Assessment Instrument in High School Physics Learning

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### Abstract

The purpose of this research is (1) to develop the authentic assessment tool of psychomotor domains based on Curriculum 2013 in science teaching of Physics grade X SMA using 4-D model. (2) Produce an authentic, effective and effective authentic assessment tool in the psychomotor domain used in Physics Science lesson. This research uses reseach and development (R & D) method which refers to 4-D development model that define, design, develop and disseminate. The test subjects of authentic assessment tool psychomotor domain is the students of class X SMA Negeri 1 Gorontalo which amounted to 36 people. The feasibility, effectiveness and practicality of authentic assessment tools of the psychomotor domain are based on validators' opinions, teacher responses and research data. The results of this study indicate that: (1) Authentic assessment tools of the psychomotor domain ie performance appraisal instruments and project appraisal instruments are valid and reliable based on the validator's opinion. (2) Authentic assessment tools of the psychomotor domain ie performance appraisal instruments and project appraisal instruments are valid and reliable based on field trial data. The teacher's response to the developed performance appraisal instrument obtained the percentage of effectiveness rate of 88.50% with "excellent" interperatation while the developed project appraisal instrument obtained a percentage of effectiveness rate of 85.31%. (3) The teacher's response to the developed performance appraisal instrument obtained the percentage of practical level of 83.17% with "good" interperatation while the developed project appraisal instrument obtained a practicality percentage of 88.13% with "excellent" interperatation. Based on the stages that have been done, it can be concluded that the authentic assessment tool developed psychomotor domain is feasible, effective and practical use.

**Keywords:** Authentic Assessment, Psychomotor, Physics Science Lesson



## Development of Basic Natural Science Study Materials to Enhance Student Competencies

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### Abstract

The main objective of this research was to develop study materials for Basic Natural Science by integrating the role of Muslim scientists and inventors. Through the designed stages of the activities, an innovative and relevant Basic Natural Science study material was expected to be obtained, to enhance the three aspects of Graduate Competency Standards, namely cognition, skill, and attitude aspects. The subjects of the research were the third semester students of Faculty of Teacher Training and Education Universitas Islam Nusantara who were taking the Basic Natural Science course. The research method that has been applied was research and development. Currently, the first stage of this research has been carried out, namely the preparation stage, which will be followed by the program development stage and the implementation stage. The outcomes that have been generated in this preparation stage were the Semester Study Plan, Students Assignment Plan, the initial design of Basic Natural Science study materials, research instruments, research rubric, and limited trials.

**Keywords:** Basic Natural Science, Muslim Scientist and Inventor, Cognition, Skill, Attitude



## Development of Authentic Affective Assessment Instrument in High School Physics Learning

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### Abstract

The aim of this research is to develop an authentic instrument of affective domain in high school physics, to produce an effective, practical and feasible authentic assessment instrument in High School Physics learning and to improve teachers' ability to designing qualified assessment to support graduate quality assurance. This research method uses four-D model approach which is tested in education unit of State Senior High School 3 of Gorontalo city. The results obtained are: First, the validity of the instrument through expert validation obtained the average coefficient of 0.75, it is meant in high validity with reliability of 0.99, and the feasibility of affective assessment instrument developed in percentage reached 86.46%. Secondly, the validity of the instrument's validity is 0.84, this is referred to in high validity with the reliability of 0.98. The practicality of development result instrument assessed by the teacher, get the average percentage of 88.19%, this percentage accumulated response from six physics teachers in State Senior High School 3 of Gorontalo city. Third, On the level of effectiveness is based on the valliadasi grains, with a significant level of 5% on a sample of 30 respondents. Level of validity reached 83.33% with the reliability of the instrument reached 0.86, or very good. Furthermore, to test the effectiveness based on student responses then obtained a percentage of 86.83%, so the instrument concluded feasible, practical and effective to use.

**Keywords:** Affective, Instrument, Authentic, Assessment.





## Implementation of Quantum Teaching Method with Tandur Techniques on Learning Physics Student Result Class XI IPA SMP PPM Al-Ikhlās

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### Abstract

This research is a pre-experiment research that aims to: (1) Know the result of physics learning of class XI IPA SMA PPM AL-IKHLAS academic year 2016/2017 after being taught by quantum teaching method with TANDUR technique from cognitive aspect. (2) To know whether the average result of physics learning after being taught through quantum teaching method with TANDUR technique has reached the criteria of classical completeness. This research variable consists of quantum teaching method with TANDUR technique as independent variable and student physics learning result as dependent variable. The design used in this research is One-Shot Case Study Design. The subjects of the study were all students of IX IPA SMA PPM AL-IKHLAS academic year 2016/2017 with 25 students. The result of deksriptif analysis shows that the result of cognitive learning of physics students after being taught through quantum teaching method with TANDUR technique is in high category. When compared with the value of KKM (Criteria completeness minimum), it is obtained that the percentage mastery learning students by 88%. The result of inferential analysis shows that the application of quantum teaching method of TANDUR has fulfilled the predetermined standard of classical completeness to the achievement of students' cognitive learning outcomes.

**Keywords:** Learning method of quantum teaching with TANDUR technique, cognitive learning result



## Development and Validation of Science Process Skill Instrument in Physics

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### Abstract

Science process skills not only a learning approach but also as a result of learning. It is a basic skills in science and a tools of scientist to investigate the world. This research focus is to develop a valid and reliable of Science Process Skills Instrument (I-KPS). This research is Research and Development (R&D). The step of this research is theoretical construction, determination of assessment objectives, construction of items indicator, items construction (1<sup>st</sup> draft), experts judgment, revising of instrument (2<sup>nd</sup> draft), the first field trial, revising of instrument (3<sup>rd</sup> draft), the second field trial, and finalization of instrument. The subject of trail is 46 student of 10th grade of High School of 1 Bajeng, Gowa Regency. The Instrument (I-KPS) specification are: (1) the type of item is essay test and completed by scoring rubrics, (2) I-KPS could be assess science process skill for high school student, and (3) purpose of this I-KPS as cognitive test of science process skill. It is developed for measuring 6 (six) indicators of science process skills. The indicators are identification variable, hypothesizing, planning the experiment, predicting, communicating, and interpreting data. The content validity coefficient is 0.96 that validated by two experts. The result of empirically validation is 44 items of science process skills instrument that valid in subject matter of newton law, gravitational force, work and energy, momentum and impulse, and harmonic motion. The reliability coefficient of I-KPS is 0.93. The conclusion is I-KPS as valid and reliable instrument as theoretically and empirically. This instrument could be measure the knowledge of science process skills that completed with scoring rubrics.

**Keywords:** I-KPS, science process skills, cognitive test, science education instrument, research and development



## Development of Senior High School Chemistry Learning Tools Based Investigation and Its Effect on Critical Thinking Skills, Metacognition, and Concept Mastery of Students for Subject Matter of Buffer Solution

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### Abstract

The aim of this research is to produce senior high school chemistry instructional tools based on investigations which is valid, practical, and effective and can empower critical thinking skills, metacognition, and mastery of chemistry concepts for students. Specific targets to be achieved is 1) acquired the senior high school chemistry instructional tool based on investigative that are potential and effective to be implemented in the chemistry learning process to empower critical thinking skills, metacognition of students, and mastery of chemistry concepts in senior high school, 2) obtained the instructional tool in the form of: Lesson Plan based on Investigation (LPI), Investigation Model Books (IMB), and test instrument and non-test on the course of senior high school chemistry class XI for subject matter of buffer solution. The method used is 1) the initial observation, 2) arranging the draft of instructional tool, 3) the development and verification of instructional tools, and try out and dissemination. The developmental phase in this research refers to the developmental model of 4-D (define, design, develop, and disseminate). Results of this research is the research in 2nd year from planning of 3 years. Subject of the research in 2nd year is chemistry teachers of SMA Makassar city and it around regency. The results of the this research in 2nd year obtained senior high school chemistry instructional tool based on investigations include: LPI, IMB, and test and non-test instruments which are valid, practical, and effective based on the results of limited trial and disseminate. The research result also shows the critical thinking skills and metacognitive of students generally are in the medium and begin to develop category, and also teachers' responds with positively category.

**Keywords:** investigation learning, critical thinking, metacognition



## Indonesian Teacher's Perception of Green Chemistry Principle: a Case Study of a Chemical Analyst Vocational School

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### Abstract

This study aims to describe the teachers' perception on Green Chemistry, an area of chemistry that focuses on the design of products and processes that minimize the use and generation of hazardous substances. The description of Green Chemistry is based on the teachers' perception of a Green Chemistry paradigm and how to integrate this perception into the chemistry learning process for their students. The perception and integration of Green Chemistry to achieve sustainable development in the field of chemistry needs to be promoted, especially among educators for spreading to their students. Data were collected by distributing questionnaires to 35 teachers in a Chemical Analyst Vocational School, Makassar, Indonesia. The questionnaire was based on the indicators related to the principles of Green Chemistry including prevention, economic atom, chemical synthesis safe, designing safer chemicals, solvents and compounds safe aides, design for energy efficiency, use of raw materials renewable, stages reduction reactions, use of catalysis, material design decomposition, instantaneous analysis for pollution prevention and chemical which are naturally more secure to prevent accidents. Data were analyzed descriptively to determine the percentage of teachers' perceptions of green chemistry in learning. The results showed that, in general, the majority (97.14%) of teachers at this Indonesian school reported knowledge of Green Chemistry but only 32.30 % were aware of the concept of Green Chemistry. Furthermore, 47.42% of the teachers think that green chemistry does not need to be put into learning curriculum and 31.38% believe need to be included in the learning process. These finding demonstrate that the concept of Green Chemistry has not been socialized among teachers of Chemical Analyst Vocational School of Makassar. For this reason, there is a need for developing a learning model in chemistry teaching that responds to our vision for a sustainable future.

**Keywords:** Teacher's Perception, Green Chemistry, Vocational School Chemical Analyst of Makassar, Sustainable Development



## Analyzes the Syntaxes of Humanistic-Algorithmic-Heuristic Science Learning Model

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### Abstract

This paper explained in detail the syntax of the Humanistic-Algorithmic-Heuristic Science Learning Model. It was obtained through research and development. In this model, there were seven syntaxes that science teachers ought to do in teaching science in the classroom. The seven syntaxes were: (1) describing the objectives of science learning humanistically, (2) generating the students' learning motivation humanistically; (3) leading the learners to understand the science contents in humanistic-algorithmic-heuristic; (4) giving guidances to the learners to master the science contents humanistically by thinking algorithmic-heuristic, (5) grouping the learners based on their temporary understanding humanistically, (6) evaluating the students' final understanding humanistically, and (7) giving a task to the learners in humanistic-algorithmic-heuristic suitable the science contents that the learners have learned. This science learning model can be a choicing to the science teachers in teaching science so the science is fun for the learners and leads to improve the the learners' learning outcomes.

**Keywords:** syntax, science learning model, humanistic, algorithmic, heuristic.



**Improving Prospective Natural Science Teachers Competences to Develop Learning Materials Based On 2013 Curriculum Through The Jigsaw Type Cooperative Learning Model**

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**Abstract**

The problems faced by prospective natural science teachers are the low competence to develop learning materials based on 2013 Curriculum. The research aims to improve the competence of prospective natural science teachers to develop natural science learning materials that includes Lesson Plan (RPP), Student Worksheet (LKPD), and Assessment Tools. The research method was used is the classroom action research (CAR) which conducted in two cycles. The subjects of this study were the students of the sixth semester who enroll in Microteaching (PPL I) course in the academic year 2016/2017 consisting of two classes, that are regular class and ICP of Natural Science Education Study Program, each class consisting of 28 students. Implementation of the classroom action research is carried out using Jigsaw type cooperative learning model, where each group member is responsible for presenting the subject matter related to the development of learning materials based on 2013 Curriculum. The instruments used are: 1) Instrument of assessment of Lesson Plan (RPP); 2) Instrument of assessment of Student Worksheet (LKPD); and 3) Instrument of attitude, knowledge, and skill assessment tools. Data analysis technique used is descriptive statistical analysis. The indicator of research success is more than 70% of students who have the ability to develop learning materials based on the 2013 curriculum with a good category. The results showed that the competence of prospective natural science teachers to develop the learning materials based on 2013 Curriculum has increased from cycle I to cycle II. The results showed that 78.5% of prospective natural science teachers have a good competence to develop lesson plan based on 2013 curriculum, 82.0% have a good competence to develop Student Worksheet, and 76.0% have a good competence to develop assessment tools based on 2013 curriculum.

**Keywords:** Competency, prospective science teacher, learning tool of science.

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## Improving Vocational High School Students Digital Literacy Skill Through Blended Learning Model

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### Abstract

The accelerated development of information and communication technology (ICT) has an impact on ease of access to digital information. Information disseminated in the digital world is not always true and valid, thus vocational students as prospective professional workers should be equipped with digital literacy skills. One effort to improve student's digital literacy skills is by applying blended learning model that combines conventional learning model (face-to-face) with online learning model based on Learning Management System (LMS). This study aims at discovering whether there is a significant difference between control classes that apply conventional models with experimental classes that apply blended learning model. The research method used was Pretest-Posttest Control Group Design with 3 experimental classes and 3 control classes. The results of this study indicate that there are significant differences in digital literacy skills between the control classes and the experimental class, which means that the implementation of blended models can improve students' digital literacy skills.

**Keywords:** Blended Learning; Digital Literacy Skills; Vocational High School



## **The Linkage between Vocational High School with Industries in The Information Technology in Malang City**

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### **Abstract**

Education is a basic strategy in developing potential human resources and empowering unprivileged individuals to get life skills and knowledge which are recognized engines of economic growth and social development in any nation. TVET holds the master key for achieving this growth because it is driven by wheels of training skilled and entrepreneurial workforce needed in workplace. Also the strength and success of TVET lies in nature of their cooperation with industries. The purpose of this study was to ascertain the linkage between vocational high school (SMK) with industries in the field of information technology in Malang City. Quantitative design with descriptive approach in four (4) public vocational high schools selected with simple random sampling method with 32 participants. School management and Information Technology teachers as the subject. The study findings showed that cooperation between vocational high schools with industries has great impact on the quality of vocational education as seen in the strong positive relationship. The study also revealed that various challenges of attaining quality vocational education in Malang. Still, the study revealed that common cooperation type that exist between SMK with industry is mainly Internship placement and job recruitment, on-job training with no significant cooperation in infrastructure.

**Keywords:** Vocational Education, School –Industries Cooperation, School infrastructure & Facilities, Teacher’s and Student’s competence & Skills, I.T, vocational high schools.

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*Makassar, 9 – 10 October 2017*





## **Utilization Visualgo.net as a Data Structure Learning Media Based on CDIO**

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### **Abstract**

On the data structure course, there are some problem appear during the learning process. The main problem that occurs is lack of comprehension data structure in theory related to implementation practical teaching. In other case, the classic teaching method considered as one of problem caused. The comparison between classic teaching method and CDIO approach are the learning result with CDIO are better because this model aims at ability to practice and innovate based on learning theory and problem which may be faced in real life. This article will discuss the general conditions and problems of classical data structure learning and completion efforts using visualgo.net as a learning media.

**Keywords:** Visualgo.net, Data Structure, CDIO



## **The Development of Information System of IT-Based Scientific Works to Improve the Quality of the Students' Final Project Publication**

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### **Abstract**

The long-term goal of this research is the development of Information System of Scientific Works at Universitas Negeri Makassar that can be accessed by various parties related to the publication of the final assignment of students anytime and anywhere without any time and location limitation so that the final assignment of students can be published and protected from plagiarism. Specific targets achieved from the development of this system is the creation of information system of scientific work that will be useful for tracking the final assignment of students and the publication of the final task of students so that plagiarism can be minimized and or prevented. This is in accordance with the Directorate General of Higher Education DIKTI No. 152/E/T/2012 on January 27<sup>th</sup>, 2012 about the Publication of Scientific Works. To achieve these objectives, the information system mining process will use the Plomp Development Model (1997) consisting of a preliminary investigation phase; design phase; realization/construction phase; test phase, evaluation and revision; and implementation phase. The development of this information system uses PHP programming language based on CodeIgniter Framework with MySQL database.

**Keywords:** Information System, PHP, CodeIgniter, Scientific Works, Universitas Negeri Makassar.



## **The Development of Android and Web-based Logical Thinking Measurement Tools as an Alternative Solution for Research Instruments**

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### **Abstract**

This type of research is research development or it is known as the *Research and Development* (R & D). The focus of this research is to develop the logical thinking measurement tool based on web and qualified Android (valid, practical, and effective) as an alternative solution for research instruments. The implementation of this research is carried out in Statistics Department at Faculty of Mathematics and Natural Sciences, Universitas Negeri Makassar. The research subjects are 3<sup>rd</sup> force students of Statistics study program. The measurement tool that will be developed is (1) *Group Assessment of Logical Thinking Test* (GALT) and (2) *Test of Logical Thinking* (TOLT).

**Keywords:** logical thinking, Web-Based, Android, GALT, TOLT.



## Design of Web-Based Lightweight Interactive Multimedia for Distance Learning

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### Abstract

Electronic learning based on Information and Communication Technology is one of the backbone behind the success of distance education because it is actually able to save cost, time, and resources. To optimize the quality of this learning, more variety and interactive content with the support of multimedia elements (such as text, images, animations, sounds and video) is required. This research proposes a design of web-based lightweight interactive multimedia application combined with a game approach to support distance learning. This media content provides basic computer networking materials for vocational high school students. This design employs web technologies based on HTML5, CSS3, and AJAX scripting that offer rich interactivity and lightweight performance. This research produces an interesting and fun learning application design that able to motivate students to self-learning.

**Keywords:** web-based, lightweight, interactive, multimedia, distance learning



## **Video Recording Feature as Speaking Skill's Assessment**

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### **Abstract**

Technology has supported English teaching and learning in all kinds of level. Even, technology becomes daily tool of learning in higher education level. It is not only used in supplying the resources but also in assessing students' works such as speaking task. This study is conducted at English Language Education Program on a case study. Two classes of Guided Speaking course were taken as the participant. Qualitative data were collected from the surveys, interviews, and video samples to report on the benefits of using video recording feature to improve EFL students' speaking confidence. The result of this study reveals the use of video recording feature to assess speaking skill. It is suggested to educators need to understand the benefits of using video recording feature as learning tools in speaking class.

**Keywords:** Video Recording Feature, speaking, assessment



## Gesture Recognition for Indonesian Sign Language (BISINDO)

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### Abstract

Sign language is different from spoken language that emphasizes both the audio and verbal aspects. There are two sign languages applicable in Indonesia, namely Indonesian Signal System (SIBI) and Indonesian Sign Language (BISINDO). SIBI converts spoken Indonesian language into sign language and follows the Indonesian language's grammatical structure complete with prefix and suffix. In contrast to SIBI, BISINDO translates one word from the Indonesian language in accordance with its context followed by an expression showing the ongoing events. We choose BISINDO rather than SIBI in line with the deaf people's suggestions and requests out there to make BISINDO as an official Indonesian sign language to replace SIBI. This research aims to develop an automatic translator application of BISINDO through computer vision technology such as Microsoft Kinect XBox and machine translation using combination of clustering and classification techniques with Time-Delay Neural Network (TDNN) method and Hidden-Markov Model (HMM). We utilize skeleton data from Kinect sensor for feature extraction. There are four kinds of skeleton features used in this study consisting of the movement of the shoulders, upper arms, forearms, and hands. The experiment results by using this methodology successfully recognize the gesture of BISINDO with an accuracy rate of over 80%.

**Keywords:** gesture recognition; Indonesian Sign Language (BISINDO); Hidden-Markov Model (HMM)



## Ambiguity in Indonesian Jokes on the Instagram “Dagelan”

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### Abstract

This study aims firstly to capture some linguistic aspects of ambiguity-based jokes and secondly to identify and explain the types of ambiguity involved in each joke. The data are 100 ambiguous jokes found on the Instagram account, “Dagelan”. The result of the study is that jokes are formed with conversation, sentences consisting of independent clauses and subordinate/dependent clauses such as adverbial clauses, relative clauses, simple sentence from independent clauses, multiple independent clauses and even some jokes are just made from smaller linguistic forms such as words, and phrases. When it comes to the types of ambiguity involved, there are 12 types of jokes such as lexical ambiguity based jokes, around 38% of the total, followed by phonological ambiguity based jokes at 19%, and lexicalization of larger unit based jokes at 11%, pragmatic ambiguity based jokes at 13%, textual cohesion based jokes at 8%, syntactic ambiguity based jokes at 5%, orthographic jokes at 2%, multiple ambiguity jokes at 2%, type of modality jokes and deictic reference jokes at 1%.

**Keywords:** ambiguous jokes, dagelan



## The Development of *Pay it Forward* Model in Foreign Language Learning to Increase Student's Self Efficacy and Academic Motivation

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### Abstract

The purpose of this study was to know the effectiveness pay it forward model in foreign language learning in increasing student's self efficacy and academic motivation. Data collection techniques were using scales and observation. Self efficacy scale used was developed by Aristi Born, Ralf Schwarzer and Matthias Jerusalem (1995) and the academic motivation scale used was developed by Vallerand (1993;1992). The total of participants was 48 students (38 women and 10 men) who have been studying in the third semester. All participants were given assent form to participate on this study. The data analysis technique used consisted of inferential statistic and descriptive statistic. Statistic inferential used was paired sample t test, and data categorization used on the descriptive statistics was developed by Azwar (2006). The finding showed that pay it forward model can increase significantly student's self efficacy and academic motivation in foreign language learning.

**Keywords:** Self-Efficacy, Academic Motivation, Learning Model, Pay it Forward Model, Foreign Language





## Theme-Based Instruction method in English Reading comprehension: Using Makassar Local Culture-Based Curriculum Contents

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### Abstract

Theme-based instruction is one kind of communicative methods used in the teaching English reading comprehension. Use of Makassar local culture-based curriculum contents as a source of instruction content incorporated in this method is assumed to be able to facilitate English reading comprehension. This study is quasi experiment. It used all state junior high schools in Makassar as population. By using the random sampling to take a sample, State Junior High School of Thirteen of Makassar, South Sulawesi, Indonesia was chosen as a sample. It aimed to determine students' English reading comprehension achievement level by comparing between the result of pretest and posttest of students' English reading comprehension performance. Besides, the study identified the contribution of theme-based instruction method towards English reading comprehension achievement in the learning of English. Questionnaire and English reading comprehension test as instruments that used to obtain the data, in which it analyzed descriptively and inferentially. Finding of study showed that the level of students' reading comprehension achievement increased because their posttest reading comprehension achievement was better than the pretest. Furthermore, this instruction method contributed 91.6% towards the learning of the students' English reading comprehension achievement.

**Keywords:** theme-based instruction method, English Reading Comprehension, Makassar Local Culture

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## The Effectiveness of Domino Card Games Media in Vocabulary Learning for German Language Students from Department of German Language

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### Abstract

The effectiveness of domino card games media in vocabulary learning for German language students at German Language Department. The aim of this research is to achieve data about the effectiveness of domino card games media in vocabulary learning for German Students. This research is a quasi-experiment research. The research design is a pre-test post-test control group design. The sampling technique used random sampling technique. Based on the sampling, the 26 students from Class A were set as the experimental group, while the 26 students from Class B were set as the control group. The data were obtained through the German Language vocabulary test in the pre-test and post-test. In this research, the data were analyzed by using t-test. The result showed 3.77 for t-value is greater than t-table of 2.009 with the significance level 0.05. From the result, it evinced the significant difference of the German language vocabulary learning between experimental group and control group. It can be concluded that domino card games media is an effective way for vocabulary learning of German Students at German language Department.

**Keywords:** Effectiveness, Domino Card Game Media, Vocabulary, German Language.



**A Language Transfer in Writing: A Case Study at  
UniversityType**  
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**Abstract**

This article describes an investigation into the learning outcomes that transferred from a university content-based English for academic purposes (EAP) course. The study was a cross-sectional qualitative case study in one of private universities in Indonesia. Data were collected over one semester from first-year students who were participating in a content-based EAP course. Data included samples of course work. Evidence emerged to indicate that learning transfer did occur from the content-based EAP course to the students' other courses. The learning transfer reflected academic language skills, particularly writing skill. Word choices in students' works showed that they did language transfer from their mother tongue. Implications of these findings for theory, practice, and future research are discussed.

**Keywords:** English for Academic Purposes (EAP); writing skill; language transfer; mother tongue



## **Andragogy Learning Models Based On Learning Communities on Music Art Education**

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### **Abstract**

This research targeting the development of learning model in college on music art education lesson. The problems in research are formulated as follows: 1) how is the process of developing learning model andragogy based learning community? 2) How is the implementation of the limited trial of model development?. The research base is based on the concept that higher education as a formal institution at the highest level, have a mission to empowerment and maintain and develop the value and structure of social order in the environment where the college is located. The development of scientific concepts, technology and art as a structure for the formation of community culture should be the main focus in the management of universities. This research uses Research and Development (R & D) development method in three stages: 1) Preliminary study 2) Development 3) Stages of product effectiveness-testing. The subjects of the study is PGSD UPP Parepare FIP UNM students, Data analysis technique is done by delphi technique and the description is limited, the development result shows the level to valid model is at good level and can be continued in small group trial stage.

**Keywords:** andragogy, learning community, music learning



## Program Evaluation Coaching on Abandoned Children Who Drop Out of School in PPSBR Makkareso in Maros District

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### Abstract

The objectives of the research are to discover (i) the descriptions of students' reaction in following the training/coaching of abandoned children who drop out of school, (ii) the implementation of students' learning in following the training/coaching of abandoned children who drop out of school, (iii) the description of the change of students' behaviors in following the training/coaching of abandoned children who drop out of school in PPSBR Makkareso in Maros District. The research was evaluative research which employed Kirkpatrick model by taking the subjects by using qualitative method. The subjects of the research where the participants of the program in Pusat Pelayanan Sosial Bina Remaja (PPSBR) Makkareso Maros as the target of the program. The research employed purposive sampling. The data of coaching program evaluation where collected by using questionnaire, interview, and observation as well as documentation which aimed to obtain more accurate data of the existed ones. The data analysis of the research covered preparation, tabulation, and implementation according to the research approach. The determination of evaluation criteria of research results was adjusted with the evaluation model employed. The result of the data analysis on the evaluation of coaching program of abandoned children who drop out of school with Kirkpatrick model reveal that : (1) the students' reactions of coaching program of abandoned children who drop out of school based on coaching material, coaching instructor, learning media, and method used is in very good category in Reaction Component Evaluation, (2) the evaluation of coaching program of abandoned children who drop out of school based on program planning, program implementation, monitoring, and evaluation is in very good category in Learning Component Evaluation, (3) the coaching program of abandoned children who drop out of school based on the change of behaviors and skills is in very good category in Behavior Component Evaluation.

**Keywords:** Evaluation program, Coaching, Abandoned Children.



## **Assessment Analysis of SMK Partnership Model with Business and Industry (DUDI) in Makassar City**

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### **Abstract**

This study aims to produce a needs analysis model of SMK partnerships with the World Business and Industry (DUDI). The type of research is research development with the end product of the partnership model of SMK with DUDI with partnership model design tool. Subjects of SMK Makassar City with subjects of Electronics Engineering, Computer Engineering, and Networking. Based on the model requirement analysis phase, the following results are obtained: resulting framework of SMK partnership model with DUDI through initial investigation by studying theoretically and requirement analysis of SMK partnership model with DUDI, namely: (1) partnership objectives; (2) partnership model; and (3) problems of SMK partnership with DUDI.

**Keywords:** SMK Partnership Model with DUDI



## Dynamics of Unit Kegiatan Mahasiswa Organization In Makassar (Case Study at STIM Nitro and STMIK Handayani)

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### Abstract

This study was conducted to determine the factors that influence the dynamics of the organization. The focus of the analysis in question is especially on students who are active in one student organization and then move to another organization on student activity unit at university in Makassar (case study on STIM Nitro and STMIK Handayani). The research methodology used is qualitative descriptive approach. Approach method is used to determine the factors that cause the move of students from the unit kegiatan mahasiswa (UKM) to the one unit kegiatan mahasiswa (UKM) to another. The results of the research analysis indicate that the reason for the students to move other SME students is due to factors: 1). communication; 2). Not relevant to the field of science. Factor Communication among fellow administrators is considered ineffective, thus causing the move of UKM. The second factor indicates that the student experience in a particular UKM will be maximized according to the field competency at the selected concentration.

**Keywords:** Organizational dynamics, unit kegiatan mahasiswa, factor analysis, move ukm



## Knowledge and Attitudes Family in the Prevention of Pulmonary Tuberculosis in Regency of Maros South Sulawesi, Indonesia

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### Abstract

Pulmonary tuberculosis is a contagious disease that is still a major health problem, both globally and in Indonesia. In the regency of Maros South Sulawesi Indonesia, incidence of pulmonary tuberculosis each year continues to increase and can result in death. Pulmonary tuberculosis is a contagious infectious disease caused by mycobacterium tuberculosis and most often manifests in the lungs. Mycobacterium tuberculosis is transmitted through droplets in the air, so that a patient with pulmonary tuberculosis is the cause of pulmonary tuberculosis transmission in the population in the vicinity. This study aims to determine the association of knowledge and attitudes to the family role in prevention of pulmonary tuberculosis in the regency of Maros. This research is a cross sectional study and the total sample of 95 families selected by purposive sampling. The result showed that family knowledge ( $X^2$  count = 3.865) and family attitudes ( $X^2$  count = 5.251) had a value of  $X^2$  count >  $X^2$  table (3.841). This study showed a significant association between knowledge and attitudes with the family role in the prevention of pulmonary tuberculosis. Suggestions for families and communities expected to constantly improve their knowledge in prevention of pulmonary tuberculosis by participating in health education activities.

**Keywords:** Pulmonary tuberculosis, knowledge, attitude





## The Roles Of Family Knowledge And Attitudes In Preventing Dengue Fever A Case Study In The Regency Of Maros South Sulawesi, Indonesia

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### Abstract

Dengue is a mosquito-borne infection that has emerged become major public health issue and can result in death in Maros, South Sulawesi, Indonesia. Dengue fever has no vaccination, and no cure. Therefore prevention through vector control is the primary method of public protection. The purpose of this study was to determine the roles of family knowledge and attitudes in preventing dengue fever in the regency of Maros. The research was conducted to assess the level of knowledge and attitude concerning dengue fever; data collection used a sample of 84 families selected by purposive sampling. The average of level of knowledge of dengue fever was 77%, and attitudes of respondent were 7%. The family knowledge ( $X^2$  count = 13.566) and family attitudes ( $X^2$  count = 26.698) had a value of  $X^2$  count >  $X^2$  table (3,841). This study showed a significant association of knowledge and attitudes, and that they were able to prevent the spread of dengue fever. Families and communities have to constantly improve their knowledge and be proactive in preventing the spread of the dengue disease through campaigns and social mobilization.

**Keywords:** Dengue fever, knowledge, attitude.



## Resolution of Conflict of Land Right Community of Customary Law Community on Foreign Investment Company in Bulukumba, South Sulawesi

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### Abstract

This research aims to know, examine and describe the essence of resolution of settlement conflict, a comprehensive approach to conflict resolution, and examine the factors currently facing the impact of the communal rights conflict on Ammatoa Kajang's customary law community at PT.PP Lonsum. This research uses normative or juridical legal research types and sociological or empirical legal research with historical assessment as a complement to the data. The type of research used due to long missed conflicts and various settlement measures has not been resolved comprehensively, requiring conflict resolution settlement. The analytical method used in this research is analytical descriptive obtained from qualitative and quantitative data about land rights conflicts of Indigenous community of Ammatoa Kajang and existence of PT.PP Lonsum in Bulukumba Regency. Result of research, that is various way of settlement of conflict to customary law rights of Ammatoa Kajang to PT.PP Lonsum both Litigation and Non Litigation be in mediation and negotiation, have not been able to resolve conflicts comprehensively so that resolution is required by using a collaborative system approach between Formal law and customary law based on the local wisdom. But in the application of the collaborative system approach, there are constraints, namely: political, cultural, social, economic and science and technology.

Recommendations, community conflicts of customary land rights are not used as political vehicles for parties for personal and group interests. In order to comply with law and human rights for customary law rights, the regulation or deregulation derives from regulating the use of the land of Hak Guna Usaha (HGU) derived from the ex-Colonial of the right erfpacht. In addition, the distribution and utilization of Corporate Social Responsibility (CSR) psychiatric company directly in contact with the surrounding community, especially customary law rights.

**Keywords:** Conflict, Land right, Resolution

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## Spiritual Intelligence, Emotion Competency, and Social Competence Against Competency of Leadership

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### Abstract

The purpose of this study is to know the effectiveness of spiritual intelligence, emotional competence, and social competence on leadership competency in Makassar City Government. The method of this study is ex-post facto research with an explanatory survey approach, the data collection technique used is a Likert scale questionnaire format involving 900 respondents, the analysis data analysis technique is the Lisrel analysis of structural equation model. The results of the study are divided into three, according to leaders, according to followers and a combination of leaders and followers. The results of the study according to the leader are spiritual intelligence having a significant direct influence on social competence, emotional competence has an indirect influence on social competence. Spiritual intelligence has a direct indirect influence on leadership competence, emotional competence and social competence having a significant direct influence on leadership competence. Spiritual intelligence significantly affects leadership competence through social competence, and emotional competence influences insignificantly on leadership competence through social competence. According to followers the decision is obtained; spiritual intelligence and emotional competence have a significant direct impact on social competence, while spiritual intelligence, emotional competence and social competence have a significant direct effect on leadership competence. Spiritual intelligence and emotional competence significantly influence leadership competence through social competence. Furthermore, according to leaders and followers are jointly in the decision; spiritual intelligence has significant direct influence, emotional competence directly affects the social competence significantly, spiritual intelligence directly affects leadership competence significantly, emotional competence directly affects leadership competence significantly and social competence directly affects leadership competence significantly. The influence of non-spiritual intelligence on leadership competence through social competence, and emotional competence over leadership competencies through social competence are both significant. The implication of this research suggests that spiritual intelligence, emotional competence, social competence become a predictable model of leadership competence that can be applied in a local context.

**Keywords:** spiritual intelligence, emotional competence, social competence, leadership competence.



## Analysis of Human Development Index of 13 Districts in West Kalimantan

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### Abstract

Human Development Index (HDI) is an indicator utilized to measure quality of human life in a region. HDI becomes a prominent aspect that can reflect achievement of income, education, and community health. West Kalimantan, one of provinces in Indonesia, is ranked 30 out of 34 provinces in terms of HDI. For that reason, conducting research about some factors considered having influence to HDI becomes crucial. The three factors in this research that are predicted giving impact to HDI are Gini Ratio, Labor Force Participation Rate, and Poverty. Data of these factors from observed districts namely Sambas, Bengkayang, Landak, Mempawah, Sanggau, Ketapang, Sintang, Kapuas Hulu, Sekadau, Melawi, Kubu Raya, Pontianak, and Singkawang will be analysed by panel regression. A best panel regression model will be obtained after checking the results of Chow, Hausman, and Lagrange Multiplier Test. Those tests are utilized to decide an appropriate model among common effect, fixed effect, and random effect. According to the result, it can be concluded that fixed effect with adjusted determination-coefficient 0.88, is a best model in this case. Poverty becomes the only one factor that is statistically significant to HDI.

**Keywords:** Borneo, longitudinal, regression, prosperity



## Estimation of Critical Illness Incidence Rates for Private Insurance Product Valuation

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### Abstract

Recent private insurance product innovation includes offering customers additional benefit on top of the traditional benefit of life insurance. For instance, critical illness insurance coverage is provided as a rider to the principal life insurance contract protecting insured should any unfortunate event related to critical illness diagnosis happen. Thus, it is prominent for customers who are considering to purchase life insurance to understand the additional value for money that such protection can offer. This paper calculates the value for money of insurance product with critical illness rider from the perspective of customers. A discrete time Markovian framework is applied in the estimation of critical illness incidence rates by age and gender. National data of the critical illness prevalence rate is obtained from the National Health and Morbidity Survey conducted by the Institute for Public Health Malaysia. As a result, the money worth ratios calculated show value less than one for both products offered by two insurance providers which indicates that customers have to pay some amount of loading in return for the insurance protection received.



**Keywords:** Life insurance, critical illness, markovian, value for money, money worth ratio

## **Life Skills Education for Children with Special Needs In Order to Facilitate Vocational Skills**

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### **Abstract**

Children with special needs generally consist of children who experience delays and disruptions in their development so that require special handling to improve the ability of children with special needs. After conducting a survey at several extraordinary schools (SLB) in Makassar, it was found that the conventional delivery of materials from teachers resulted in an uncomfortable situation so that the students' interest to learn a particular subject was very low, therefore a learning method was needed that could attract students' interest in following the lesson. Students hope to gain more knowledge and experience as study results, while teachers, on the other hand, expect that practical learning process can bring achievement in term of better cognitive, psychomotor, affective changes, and improvement of student life skill. After producing a Multimedia Based Learning model, this research carried out trial test on the developed product to several students of SLB (Sekolah Luar Biasa) in Makassar. It was found that the use of this Multimedia Based Learning Model by SLB students can develop their life skills such as personal skills, thinking skills, social skills, and vocational skills.

**Keywords:** Life skills, vocational Skills, Disability



## **Governance Structure and Shifting of Local Officials: Dutch Colonial Bureaucracy Against South Sulawesi Region 1900-1950**

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### **Abstract**

This study aims to reveal, (1) the reorganization of the Dutch colonial government structure in South Sulawesi, (2) shifts among local officials, and (3) the bureaucratisation of the Dutch colonial government in South Sulawesi during the pacific war of 1950. This study used the method of archival research and political sociology theory to reveal the dynamics of bureaucratization of the colonial government of Belama during the period 1900 to 1950.

**Keywords:** Governance structure, shifting of local officials, dutch colonial, south sulawesi



## Phenomena of Orphanage Children from NTT In Gowa District

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### Abstract

This study aimed to determine the profile of the orphanage children from NTT and its impact on orphans from NTT of development patterns orphanages in Gowa district. Selection of informants research done on purpose at 8 informants. Namely data collection techniques of observation, interviews, and documentation. Analysis of the data is qualitative analysis through the stages of reduction, presentation and conclusion. The results showed that the background of socioeconomic conditions of the family, geographic location far from the school and the lack of adequate school facilities, as well as a desire to go to school that strong of children orphanage from East Nusa Tenggara is the driving factor of their parents to wander through an intermediary agent with the hope to afford tuition and living free. However, due to some orphanage upbringing less than the maximum so that many of those who complained. Parenting authoritarian and permissive applied by orphanage children auxiliaries including target children home from NTT quite an impact on the development of psychological, sociological, and on the education of orphans from NTT because generally they go abroad to Gowa still considered children so that attention and affection of supervisors and administrators of nursing as a surrogate is still very necessary, but it is less visible in the life at the orphanage.

**Keywords:** phenomenon, and orphanage





## Law Analysis: Content and Implementation of Biased Regional Regulation of Human Rights in South Sulawesi, Indonesia

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### Abstract

The aim of this research is to find out how the biased regulation on human rights are implemented. The specific aims are (1) to find out the normative standards of regional law which are biased against human rights, (2) to understand the implementation model of the biased regulation on human rights. The research method is qualitative approach by analyzing various regional regulations both in province and in districts towards the normative and sociological law analysis. This research is a normative-descriptive aims to make systematic description of regional regulation normatively and factual. The data obtained using documentation techniques and interviews. The findings are (1) The content of regional regulations tends to be biased against human rights. As the evidence, (i) regional regulations in Bulukumba, Pangkep and Palopo districts related to the implementation of human rights in its consideration do not put the Law Number 39 of 1999 on Human Rights as an umbrella of the implementation; (ii) the Rules to formulate a Regional Regulation, PP (Government Regulation) Number 1 of 2001 and Kepmendagri (Ministry of Home Affairs regulation) Number 23 of 2001 as legal instruments do not contain the obligation of public involvement in formulating the Ranperda (regional regulation plan); (iii) The lack of "juklak" and "juknis" (technical guidelines) that are sufficiently detailed in the implementation of each regulation; (2) Implementation of Regional Regulations on Human Rights in the regions is (i) The absence of some institution and resources that specifically implement and monitor the implementation of the regulations; (ii) The inconsistency of understanding of the content of regional regulations between the government and the community; (iii) Lack of socialization or dissemination therefore the regulations tend to be fast-paced, and less attention to the living conditions of local communities.

**Keywords:** Content, Implementation, Regional Regulation, Bias on human rights



## Developing Supporter Community of Makassar Football Association (PSM)

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### Abstract

This research reveals about the supporter community of the Macz Man and Laskar Ayam Jantan dari Timur in providing support in Makassar. Supporter communities of Makassar Football Association (PSM) have rights and obligations and play an important role in coordinating fellow supporters who can control aggressive behavior. This research is aimed to develop supporter community of Makassar Football Association. Informants in this study are a community of supporters of the Macz Man and Laskar Ayam Jantan dari Timur with 15 informants in total. The type of research is descriptive qualitative research using survey method with policy research approach. Data analysis techniques using qualitative data analysis starting with collecting; testing, sorting, categorizing, evaluating, comparing, synthesizing and reflecting recorded data, and also reviewing raw and recorded data from interviews, observations and documentation. The results of this study indicate that the development of football supporter community should be free from the interests and involvement of political objectives. supporter communities of PSM are able to build social relationships, understand social behavioral factors, maximize their contribution to the progress of the community, psychosocial form in providing support that prioritizes culture, organization, loyalty and always wisely embodied with aggressive, religious, innovative and fanaticism by upholding the value of sipakatau, sipakainge and sipakalebi.

**Keywords:** community, supporters, organization, culture, loyalty



## **The Effect of Night Futsal Sport Towards Serum Malondialdehyde (MDA) Level of Young Adults**

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### **Abstract**

There are various factor which can influence serum malondialdehyde level of young adults, and night futsal sport was predicted as one of factors which can influence it. The purpose of study was to examine the effect of night futsal sport towards serum malondialdehyde level of young adults. This study used experiment approach by using pretest and posttest control group design. The subjects were 20 individuals selected using purposive sampling technique. Serum malondialdehyde level of participants were measured before doing night futsal sport, and it remeasured after doing the activity. The data were analyzed by inferential statistics which consisted of normality test and paired sample t test. The data analysis result showed that sig value (0,878) was bigger than (0,05), and based on the comparation of pre and post test data, it can be concluded that night futsal sport did not influence significantly serum malondialdehyd level of the participants.

**Keywords:** sport, night futsal, malondialdehydee (MDA)



## The Effect of Evening Futsal Sport on the Level of Cortisol Serum in Young Adults

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### Abstract

In the general, futsal sports are done during the day. However, busyness in the life and modern culture now, most people switch to doing futsal sports at evening. The research aimed to find out the effect of evening futsal sport on the level of cortisol serum in young adults. The research was quasy experiment using pretest and posttest control group design. The research was conducted at the Beex Indoor Futsal field in Makassar. The number of samples was 18 people selected by purposive sampling. The data were analyzed by Wilcoxon test. The results of the research indicate that on evening futsal sport had no significant effect on the level of cortisol serum ( $p = 0.678$ ). The conclusion of this research, there was no significant change of cortisol serum level on evening futsal sport. The significant is determined by value  $p < 0.05$ .

**Keywords:** Sport, evening futsal, cortisol



## Abdominal Stretching Exercise in Decreasing Pain of Dysmenorrhea among Nursing Students

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### Abstract

Dysmenorrhea is common among young women and could interfere studying concentration. This pain could be reduced by stretching. The study purpose was to determine the decrease of dysmenorrhea pain rate after being given abdominal stretching exercise on nursing students at STIKES Tanawali Persada, Takalar, Indonesia. A quasi-experimental study by pre-test post-test control group design on 96 random sampling samples consisting of 48 stretching intervention and 48 controls group. Abdominal stretching was given for 15 minutes, two times a week, for three weeks. Data analysis uses the tests of Mann-Whitney, Wilcoxon, and McNemar. The pain scale difference between intervention with control group on pretest was not significant ( $p$  value = 0,210), but posttest was significant with  $p = 0,001$ . A significance pain difference between the pretest and posttest intervention groups ( $p = 0.001$ ). The difference in pretest and posttest control group pain was not significant ( $p = 0.068$ ). Overall, there was a marked decrease in the difference in pain value between the intervention groups and the controls with  $p = 0.000$ . This pain reduction was not affected by age of menarche and menstrual period. Therefore, Abdominal stretching exercises suggested for young women to deal with primary dysmenorrhea in a non-drug manner.

**Keywords:** Dysmenorrhea; abdominal stretching; pain intensity

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## **The Effect of Organizational Preparedness Resources Officer Disaster Management Agency (BPBD) District. Jeneponto in the Face of Disaster in the District Jeneponto**

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### **Abstract**

In the Map of Disaster Risk in South Sulawesi province, the whole area of Jeneponto regency (all subdistricts) is considered at risk from geologic as well as climate disaster. This study aims to analyse the influence of organization resources including personnel, facilities, and funding on the alertness of the personnel of Local Agency for Disaster Management in Jeneponto regency in managing disaster in Jeneponto Regency. The research used a survey method with the cross sectional study design. It was intended to observe the research subject in the same time. The research involved 32 samples who worked as personnel in the Local Agency for Disaster Management of Jeneponto Regency. The data were analysed using the Chi Square test. The personnel ( $p=0.019$ ) and facility ( $p=0.030$ ) variables influence in the preparedness of the personnel in the managing disasters, while funding variable (0.408) does not have an effect. The personnel variable is the most dominant variable, compared to facility and funding variables. It is important for the Local Agency for Disaster Management of Jeneponto Regency to pay attention on the completeness of facilities and infrastructures as they provide the main support in the preparedness of the personnel. Availability of funding is also very important as it determines the operational process of all activities in the Local Agency for Disaster Management. The agency should also arrange periodical trainings for the personnel to improve their quality in dealing with disasters.

**Keywords:** Preparedness, Local agency for Disaster Management of Jeneponto Regency, Organizational Resources



## Utilization of Support Vector Machine Method to Classify Malignancy Types of Breast Cancer

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### Abstract

Machine learning is a process that includes the design and development of algorithms by computers to develop behaviors based on a database to obtain information with a variety of destinations, one of them is classification. Classification is procedure of data rate to include it in a particular class from other classes that are available. One method used is a Support Vector Machine classification method, which can be used on a separable data-linear or linear-no separable by utilizing the kernel functions. The data used in this research is data of Breast cancer patients by malignant category. Breast cancer data category Benign/Malignant characteristics which allow for classification by using the Support Vector Machine. The are 110 patients who became samples, 43 people are malignant breast cancer sufferers and 67 people are benign breast cancer sufferers. As for the research results obtained that the plot is based on data obtained that data cannot be separated linearly, so it needs to be brought to the N dimension by utilizing the functions of the Kernel with certain parameters. Kernel function that generates optimal accuracy is Sigmoid Kernel with the parameters  $\sigma = 0.05$  and Polynomial with parameter  $p = 0.05$  and  $p = 0.5$ .

**Keywords:** Machine learning, support vector machine, kernel function, breast cancer, benign/malignant



## Relationship between Mosquito Breeding Place Eradication and Dengue Hemorrhagic Fever in Puskesmas Payung Sekaki Pekanbaru

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### Abstract

The objective of this study is to know the relationship between Mosquito Breeding Place Eradication (PSN) 3M Plus and DHF incidence in the work area of Puskesmas Payung Sekaki Pekanbaru. The design of this study was an observational study with a case-control approach, in which cases and controls samples ratio were 1:2. The number of sample in this study was 40 cases and 80 controls. The data source consists of primary data and secondary data. Data analysis was performed using bivariate analysis with chi square statistic test and association size of odds ratio (OR). Based on statistical test results, the variables that have been shown to be related to DHF incidence are the practice of draining container ( $p=0,01$ ;  $OR=2.18$ ), the practice of burying used goods ( $p=0.032$ ;  $OR=2.6$ ), the existence of mosquito net ( $p=0.01$ ;  $OR=3.03$ ), the habit of hanging clothes ( $p=0.012$ ,  $OR=2.79$ ), and the habit of using mosquito repellent ( $p=0.011$ ;  $OR=4.11$ ). The practice of closing container have no significant relationship with DHF incidence. The variables related to DHF incidence in the work area of Puskesmas Payung Sekaki Pekanbaru is the practice of draining container, the practice of burying used goods, the existence of mosquito net, the habit of hanging clothes, and the habit of using mosquito repellent. Variables unrelated to DHF incidence in the work area of Puskesmas Payung Sekaki Pekanbaru is the practice of closing container. To reduce the incidence of DHF, the government and public have to actively play role in the prevention and eradication of DHF through the PSN 3M Plus continuously.

**Keywords:** Dengue hemorrhagic fever, PSN 3M Plus





## Arbi Care as an Educational Game to Improve Knowledge in Diarrhea Prevention among Preschoolers

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### Abstract

Diarrhea is still the second highest cause of death in children under five in the world. Innovation programs continue to be sought to reduce the number of child deaths due to diarrhea and help diarrhea prevention in Indonesia. This study aimed to examine the effectiveness of educational games called as Arbi Care on diarrhea prevention towards the knowledge of healthy behavior among preschoolers. This study used pre-post test control group design involving 120 participants whom fit the inclusion criteria. Participants were randomly divided into a control group of 60 participants and the intervention group consists of 60 participants. Data were analyzed using one-way MANOVA test. The results showed there were significant mean differences in knowledge of healthy behavior to prevent diarrhea between control group and intervention group. There was also a different increased inclination of mean score which is intervention group score higher than control group. Arbi Care is effective in improving the knowledge of healthy behavior to prevent diarrhea among preschoolers. Thus, Arbi Care is recommended to be the model to help prevent diarrhea in children using educational game.

**Keywords:** diarrhea, knowledge, educational



## Multi-Layer Perceptron for Sleep Stage Classification

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### Abstract

Sleep Apnea is a sleep disorder that causes decreasing or even stopping of breathing during sleep. One way to detect whether a person has the disorder or not, then it can be done by conducting a sleep test (polysomnography). Polysomnography provides overall body activity during sleep. Polysomnography records every process of breath changes, muscle tension, brain waves, eye movements that occur in sleep from awake to the patient has dreams and finally wakes up. Once polysomnography is obtained, then the doctor will analyze it. One of the targets of the analysis conducted is sleep stage classification. It takes a long time if done manually. Therefore, it needs an application that automatically to make classification efficiently. It is the main reason for this research that must be done. Specifically, this research applies Multi-Layer Perceptron (MLP) to classify the sleep stage. The results show that MLP has a higher performance than Naïve Bayes, Bayesian Networks, K-Nearest Neighbors, and Decision Tree.

**Keywords:** Multi-layer perceptron, sleep apnea, polysomnography, sleep stage classification



## Microalgae Growth and Morphology of *Skeletonema costatum* On Physiological Stress Nutrient Silicon (Si)

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### Abstract

One type of microalga that can be cultivated as biodiesel raw material candidate is *Skeletonema costatum*. This study aims to determine the effect of nutrition physiological stress on the growth and morphology of microalgae *Skeletonema costatum*. The results showed that the highest cell density control of 1,150,000 cells / ml at 72 hours and the lowest cell density in the treatment of stress that without the provision of Si of 550,000 cells / ml. Based on Dunnet test there was no significant difference between the growth of *S. costatum* the treatment of stress control treatment with 25% Si and 50% Si stress, but there was a significant difference in growth between the control and the treatment of stress Si 75% and 100%. *Skeletonema costatum* microalgae morphology can be seen that with the increasing stress of nutrient Si indicates cell lysis much experience.

**Keywords:** Growth, morphology, *skeletonema costatum*, physiological stress, silicon



## Lead Contamination and its Target Hazard Risks due to Aquatic Habitats and Food Consumption among School Children in Makassar Coastal Area Indonesia

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### Abstract

Distribution of Lead for certainty of their suitability for consumption and other domestic uses from the sea water; bottom sediment, biota for *anadara trapezia* sp. and crab were widely polluted the coastal area of Makassar. This research aimed to investigate the lead (Pb) accumulation both in aquatic and terrestrial habitats and assess the potential target hazard risks (THQ) of seafood and food consumption from the coastal area of Makassar. Water column, sediment, shell (*anadara trapezia* .Sp and crab) soil and snack food samples were collected in one time collection. Then, in terrestrial we collected surface soil and snack food sold in the school children. Those samples were analyzed using Varian AA240FS Atomic Absorption Spectrophotometer. In addition, the potential health risks assessment were determined using target hazard quotient (THQ) equation from EPA formulation. Results revealed that the lead distribution concentration in aquatic in water column, sediment, shells, crab, were ranged from 0.12 to 0.21 mg L<sup>-1</sup>, 6.03 to 8.00 mg kg<sup>-1</sup> dw, and 1.22 to 2.90 mg kg<sup>-1</sup>ww, 1.02 to 2.91 mg kg<sup>-1</sup>ww, respectively whereas in terrestrial of soil and food were range from and 5.00 to 37.40 mg kg<sup>-1</sup>dw, 0.01 to 0.90 mg kg<sup>-1</sup> dw. The magnitude values of target THQ for water column, sediment, shells and crab were in the range of 0.004 to 0.032, 0.026 to 0.038, 0.003 to 0.019 and 0.011 to 0.021, respectively whereas THQ of soil and school snack food were in the range of 0.002 to 0.015, 0.006 to 0.018 All those levels have not been exceeded the limit standard or < 1 for potential health risks which mean safe for consumption.

**Keywords:** Water column, sediment, shells, surface soils, snack food, target hazard quotient



## Cost Effectiveness Analysis Based through Nutrition Intake and Nutritional Status in Kidney Failure Patients who Underwent Hemodialysis and Non-hemodialysis Therapy

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### Abstract

The high cost of care for patients with kidney failure is a serious problem and requires cost effective planning. Patients undergoing hemodialysis often lack nutritional intake and nutritional status. The aims of study was to analyze and assess the magnitude of the costs incurred for patients with renal failure who undergo advanced age hemodialysis therapy through nutritional intake and nutritional status. The study data were collected simultaneously at Dr. Wahidin Sudirohusodo Hospital Makassar through cross sectional study. Qualitative and quantitative approach with descriptive comparative analysis and activity based costing method. The results revealed that the leading cause of renal failure was based on the primary diagnoses of the disease, ranging from hypertensive renal disease, and comorbidities such as non-insulin dependent diabetes, acute sub endocardial myocardial, aneurysm of artery of upper extremity and other acute renal failure. Through calculation method Activity Based Costing (ABC), financing activity is lower, but cannot be denied that there is variable cost per patient perceived kidney failure. Nutritional intake and nutritional status showed comparison with the Cost Effectiveness Analysis method that there was a difference between hemodialysis and non-hemodialysis patients of IDR 1,998,000, - this means that in non-hemodialysis group more effective than hemodialysis group.

**Keywords:** Cost effectiveness analysis; nutrition intake, nutrition status

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## Effect of Service Quality and Customer Satisfaction Patients in General Hospitals of Makassar City Region

Hamka

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### Abstract

Quality of service and patient satisfaction have a very close relationship. Quality hospital services will provide patients with satisfaction and be the beginning of building a strong relationship for a long period of time. The quality of service in supporting the implementation of the procedure has not been applied maximally. One of them is the lack of professionalism in providing services and information facilities that are still considered inadequate. This study aims to examine and determine the effect of service quality on patient satisfaction in RSUD Daya Makassar. Data collection techniques that the authors use is an analytical survey with descriptive analysis approach verifikative. Data analysis method using Likert scale and sampling using non probability sampling. The population of this research is inpatient in RSUD Daya Makassar with method of determination of sample by using slovin method. Service Quality at Makassar General Hospital of all indicators, research results show the quality of service procedures at RSUD Daya Makassar with good quality. So this shows that tangible, reliability, and assurance variables affect patient satisfaction and empathy variables and responsiveness does not affect the patient satisfaction. Although tangible, reliability, and assurance variables have an effect on patient satisfaction, the Makassar General Public Hospital must maintain or even improve these three variables and for empathy and responsiveness variables that have no effect on patient satisfaction, the RSUD Daya tries to pay attention to the shortcomings by looking at how employees pay attention to patients or see how to respond to a patient's wants or needs.

**Keywords:** service quality, customer satisfaction



## **The Authority of Indonesian Local Government in Tourism Management: “A Case Study of Tourism Management in Berau Regency, East Kalimantan Province”**

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### **Abstract**

*In this era of decentralization, there has been a transfer of authority from central government to local government. As a result, some aspects of tourism management have been transferred to local level, even though the transfer of authority does not apply to sub-district level. This study uses the authority of Berau local government in tourism management to illustrate this. Using a descriptive case study which focuses on 7 sub-districts in Berau Regency, the data were taken by personal observations made through visits and in-depth interviews with the regent and 7 chiefs of the sub-districts as the key informants. It was found that the Berau local government does not give direct authority to the sub-district offices to manage tourism in local areas. They are required to coordinate with the tourism department in the Berau Regency. This leads to delays in tourism development. This can be seen in public facilities which are not properly maintained, and potential tourist attractions which are not recognized as such, and have not been taken over and maintained by the government. It is suggested that the Berau local government should transfer authority to the sub-district offices for the sake of efficiency since they possess greater understanding of their areas of duty.*

**Keywords:** Authority, local government, tourism management, indonesia



## **Employee Recruitment Fraud Prevention with the Implementation of Decision Support System**

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### **Abstract**

Recruitment of employees within a company is very important to support the productivity process within the company, large companies often perform recruitment of employees on a regular basis and prospective employees who are co-organized to get in a company using many ways that is not appropriate, to overcome this problem implementation decision support becomes a good solution to reduce fraud in terms of employee recruitment selection and assist policy makers to select the best candidates for employees that fit the needs of the company.

**Keywords:** Recruitment employee, fraud prevention, decision support system





## Legal Understanding in Field of Educator Profession (Study on Civic Teacher as Participants on PLPG Rayon 124 UNM year 2017)

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### Abstract

This research aims is to know legal level understanding of Civic teacher as participants on Pendidikan dan Pelatihan Profesi Guru (PLPG) Rayon 124 UNM year 2017. The type of this research is descriptive research. The sample of the research was Civic teachers at first generation with amount 31 people who came from South Sulawesi and West Sulawesi province that spread in 17 district. The results of the research showed that teacher level understanding about legislation rule in the field of educators' profession was not adequate if PLPG graduation criteria is used as assessments standard. It means most of civic teacher does not understand yet the legal substance which related to legislation in the field of professions educators, it realized that one of teacher professionalism development indicator is that teachers know and understand every laws / policies in the field of education particularly related to their job as a teacher, so that every personal teachers show their attitude and awareness to the legal.

**Keywords:** Knowledge, legal understanding, teacher as professional educator.



## Analysis of Influencing Factors Social Environment and Generic Strategies toward Performance of the Banking Sector in Indonesia

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### Abstract

The social environment is a challenge for the banking industry in Indonesia. The dynamic changes of the social environment influence the strategy and performance in the global competition of the banking sector in Indonesia. The objectives of this study are 1) to analyze the influence of the social environment on generic strategies, 2) to analyze the influence of generic strategies on bank performance, and 3) to analyze the influence of the social environment on the performance of the banking sector. Surveys are conducted on 101 banks through a set of questionnaires, which are given to the bank and collected directly by the researcher as well as by post to the president director and director of the banks in Indonesia. Data that have been collected are analyzed by using descriptive analysis, analysis of variance (ANOVA), and linear structural relationship (LISREL) using structural equation models (SEM). The results of this study show three paths that influence the social environment, generic strategies, and the performance of the banking sector in Indonesia. First, the social environment that consists of public knowledge about banking, lifestyle society and distribution of public income has a significant influence on the generic strategies, which are low cost and focus. Second, low cost generic strategies and focus have a significant influence on the financial and organizational performance, while the social environment that consists of public knowledge about banking, lifestyle society and distribution of public income has a significant influence on the financial and organizational performance. Therefore, it is important for decision makers of the national banking sector to develop a strategy to enhance profitability and competitiveness of banks given the current competition.

**Keywords:** social environmental, generic strategies, performance, banking



## Implementation of Islamic Law in Realizing Marriage Registration at the Office of Religious Affairs of Makassar City

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### Abstract

The purpose of this study is to conduct the governance of marriage recording in the religious affairs office of Makassar City so that the public is aware that the marriage must have legality and there is no remorse between husband and wife due to marriage that is not registered because it appears that the public understanding that marriage is considered legal according syara ' even if not registered in the office of religious affairs. Targets to be achieved in order to realize the governance, then the arrangement of recording marriage in the office of religious affairs of Makassar and tightened its supervision so that no person playing so that marriage records can run in accordance with Islamic law. The method used is a qualitative approach that is a research procedure that produces descriptive data in the form of expression of the subject or behavior observed then analyzed to obtain the correct results. The approach used in this research is administrative, juridical, and theological normative. The results showed that marriage registration in Makassar City runs in accordance with the rules of Islamic law. The average number of marriages annually reaches 9969 events. The number shows a very high number in terms of the number of marriage events each year. While the number of marriage isbat only ranged in the number 1 event every month in each district. This indicates that marriage events in each subdistrict office are registered by PPN so as not to provide opportunities for those who want to take advantage. However, in the event of marriage isbat, the KUA finds a way out so that the marriage can be registered by court decision to obtain recognition from the State. The marriage is done based on the guardian nashab is in the range of 1249 numbers every month and there is no judge in the recording of marriage. This figure shows the public awareness of how important the role of guardians in marriage so as not to provide opportunities outside the PPN record that can harm the community. As for the practice of polygamy and mixed marriage and no cases found in KUA. This indicates that Registration is only done once in marriage events as long as there is no court tribunal about the divorce decision and gives no chance of marriage sirri Because of the tightness of registration which is done by PPN on marriage event. Thus it can be said that Law Number 1 Year 1974 on marriage can be implemented in Makassar City based on Islamic law..

**Keywords:** islamic law



## Model Development of Food Types Various and Cakes Based on Local and Ecopreneurship

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### Abstract

This research is the Primary Research of Higher Education of Agriculture-Food Field, is the second topic on RIP-UNM that is The Superior Research of Entrepreneurship Field, aims to deeply examine various models of food/cake based on local and ecopreneurship, to provide training and community empowerment, develop entrepreneurship, fostering the home industry to empower the community. The main purpose of PDUPT is the institution of the university to carry out its research plan through topics. The ultimate goal is to generate new models, theories, methods, policies on the field of excellence in entrepreneurship at UNM. PDUPT is provided by DRPM to help accelerate the achievement of Rentra in the form of basic findings to create sustainable research excellence. PDUPT election due to RIP, Vision UNM and field of science / expertise of the researcher. This research and development is in the form of experiments in laboratory and field, designed four years (2018-2021). Aims to Develop a Model of Types Various of Food and Cake Local-Based and Ecopreneurship, one of Entrepreneurship's Excellence Research Fields at UNM with leading topics a, b, c, e, j. The first year, was implemented Models Prototype Development of various types of food /cake in the laboratory. The second year, application of prototype model, development of training model for home industry, entrepreneurship teaching materials, training using prototype model of laboratory product. The third year, training development and fostering of home industry. The fourth year, evaluation meta of the results of research as comprehensively. The subjects of the research are chosen purposively five students from different regions will develop 10 kinds' model of food / cake based on local and ecopreneurship. The 10 models of different food / cake are developed from local ingredients of fruits, tubers, vegetables that are abundant in season and environmentally destructive, processed into productive and marketable for people's livelihoods. Students become agents of product developers, reformers, home industry developers in the region. Data were collected by organoleptic test, document analysis, observation, questionnaire, interview, FGD, and analyzed by descriptive and qualitative. The result is 10 kinds of product models that are trained in the community for home-industry of food various models / cake based on local and ecopreneurship and entrepreneurial learning materials for PKK students. Research results are evaluated and then used as the basis for further research design.

**Keywords:** Model development, types various of food/cake, based on local and ecopreneurship.



## Mapping of Poverty Characteristics, Based on the Quality of Fisherman's House, Bajo Tribe, South Halmahera, Indonesia

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### Abstract

The problem of poverty is one of the national and international problems that require serious attention. This study aims to describe the characteristics of poverty, especially the Bajo Tribal fisherman's residence and mapping the characteristics of poverty of the Bajo fisherman residence of South Halmahera Regency. This research is survey research, with proportional random sampling technique. The results showed that there is influence of fisherman's income on their house condition. In addition, it was found that the poverty characteristics of the Bajo Tribe's fisherman residence consisted of two categories, namely: semi permanent house building quality as much as 54,83% and emergency as much as 32,25%. The results of this paper is expected to be an input in determining the policy, especially in addressing the problem of handling poverty, especially in managing housing or residence of the poor.

**Keywords:** Mapping, Poverty Characteristics, Bajo Tribe, South Halmahera

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## Development Model of Community College (CC) Curriculum Management Bases on Pre-Eminent Potency of District and Public Requirement

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### Abstract

This research aim to validation of gauging model of management of community college (CC) curriculum bases on pre-eminent potency of district and requirement of public. This research applies quantitative approach of planning non experimental type survey. Population at this research is lecturer and instructor community college 128 people. Management attribute of Community college curriculum applied as variable manifest in this research consisted of fourteen indicators. To test is manifest variables be valid indicators and reliabel in explaining construction of management variable of curriculum CC, hence data is analysed with engineering confirmatory factor analysis (CFA) applies software LISREL 9.10. Result of analysis CFA indicates that fourteenth of component or indicator from management of CC curriculum expressed is valid and reliabel. Known that factor loading or standardized loading factor ( $\lambda$ ) from each variable is observed is ranging from 0.56 to 3.01 and t-value centres around 2.34 up to 10.68. Factor loading value fulfills receiving criterion that is  $\lambda \geq 0,50$ . The same as to t-value which also fulfills receiving criterion because the value  $\geq 1,96$ . Meanwhile, result of calculation variable reliability manifest from management of curriculum CC shows reliability 0,904. This value fulfills criterion receiving reliability  $\geq 0,70$  so is concluded that gauging model reliability from management latent variable of curriculum CC is good.

**Keywords:** management of curriculum, confirmatory factor analysis, model gauging, community college (CC)



## The Knowledge of Entrepreneurship, Self Efficiency, and Preparation of Instrumentation to the Entrepreneurial Intension and Its Impact In Entrepreneurial Preparation

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### Abstract

The objective of this research are to: (1) examine the structure of causal relationship among to the entrepreneurial knowledge (X1), self-efficacy (X2), readiness instrumentation (X3), the intention of entrepreneurship (Y), and readiness to become entrepreneurs (Z); and (2) find the direct and indirect effects of a couple of variables of these five variables. This study uses ex post facto approach to which is conducted in both public and private vocational schools majuring mechanical engineering in Makassar. The population was all XII grade students totaling 366 students with a sample of 180 students. The data were collected by using questionnaires and documentation. The data was analyzed using descriptive and path analysis decomposition model. Based on the data analysis and discussion it is concluded that: (1) X1, X2, X3 contributed significantly to the Y and the impact on the Z; (2) the results of the analysis of pathways shown the value of path coefficients in sequence:  $\beta_{41} = 0.372$ ,  $\beta_{42} = 0.349$ ,  $\beta_{43} = 0.417$ ,  $\beta_{51} = 0.244$ ,  $\beta_{52} = 0.362$ ,  $\beta_{53} = 0.252$ , and  $\beta_{54} = 0.344$  with a residual value  $\epsilon_1 = 0.419$ , and  $\epsilon_2 = 0.294$ . To sum, the variable X1, X2, and X3 simultaneously contributed for 58.1% to variable Z. Also, the variables X1, X2, X3, and Y simultaneously contibuted for 70.6% to variable Z.

**Keywords:** Entrepreneurial knowledge, self-efficacy, readiness instrumentation, the intention of entrepreneurship, readiness entrepreneurs



## Employability Skill Development of Mechanical Engineering Students Through Project Based Learning In Vocational High School In South Sulawesi

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### Abstract

Embedding employability skills in learning requires a learning model that allows effective in improving employability skills of students Learning model that if able to meet these expectations is project based learning. This study aims to determine the contribution of project based learning to employability skills of students of SMK Package Engineering Skills Engineering in South Sulawesi. This research uses quantitative approach with non experimental design with sample size 325 students. Data collection uses questionnaires to obtain data on project-based learning implementation and employability skills. The data of the research were analyzed by using descriptive analysis and regression analysis which previously conducted normality and linearity test. Based on the results of the research is known that the implementation of project based learning model contributes to the development of employability skill students of machining engineering SMK 59.8%.

**Keywords:** Employability Skill, Project Based Learning, Vocational High School Students







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