PROGRAMME BOOK

ICM2E 2022

THE 6TH INTERNATIONAL CONFERENCE ON MATHEMATICS AND MATHEMATICS EDUCATION

SEPTEMBER 3rd – 4th, 2022

Mathematics Department,

Faculty of Mathematics and Natural Science,
Universitas Negeri Padang

icm2e.fmipa.unp.ac.id/icm2e2022

PAPER GUIDELINES AND ABSTRACTS

The 6th International Conference on

Mathematics and Mathematics Education (ICM2E 2022)

MATHEMATICS DEPARTMENT
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNIVERSITAS NEGERI PADANG SEPTEMBER, 3rd- 4th
2022

THE COMITTEE OF INTERNATIONAL CONFERENCE ON MATHEMATICS AND MATHEMATICS EDUCATION (ICM2E 2022)
MATHEMATICS DEPARTMENT
FACULTY OF MATHEMATICS AND NATURAL SCIENCE
UNIVERSITAS NEGERI PADANG

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RUNDOWN WEBINAR
The 6th International Conference onMathematics and Mathematics Education
September 3rd - 4th, 2022

Tema: Innovative Research of Mathematics and Mathematics Education to Face the 4th Industrial Revolution Challenges

Day/date	Time	Activity	Moderator/ PIC
Saturday/3rd Sept 2022	07.30– 08.00	Preparation	Committee
	08.00 – 09.30	Opening:	MC: Ronal Rifandi, S.Pd., M.Sc.
		National Anthem of Indonesia	Commitee (IT)
		Reciting the Holy Qur'an	Silvi Rizky Rahayu,
		Welcoming Speech by: 1. The Chief of Committee 2. Dean of Faculty of Mathematics and Natural Sciences 3. Rector of UNP	Dr. Devni Prima Sari, S.Si.,M.Sc. Dr.Yulkifli, S.Pd.,M.Si Prof. Ganefri, Ph.D
		Do'a	M Faiz Jihadi Akbar
		Break	Committee
	Plenary Keynote Speakers		
	09.30 – 10.00	Prof. Paulo Canas Rodrigues, Ph.D The Federal University of Bahia, Brazil	Dina Agustina, S.Pd., M.Sc.
	10.00 – 10.30	Live Discussion	
	10.30 – 11.00	Dr. John Wilson The University of Adelaide, Australia	Shinta Sari,S.Pd.,M.Ed
	11.00 – 11.30	Live Discussion	
	11.30 – 13.30	Break/Lunch	Committee
	13.30 – 14.00	Prof. Hadi Susanto Khalifa University, Abu Dhabi, UAE	Rara Sandhy Winanda, S.Pd.,M.Sc.
	14.00 – 14.30	Live Discussion	
	14.30 – 15.00	Dr. Goh Khang Wen INTI International University, Malaysia	Defri Ahmad, S.Pd., M.Si
	15.00 – 15.30	Live Discussion	
	15.30 – 16.00	Coffe break	Committee

Day/date	Time	Activity	Moderator/ PIC
	16.00 – 16.30	Prof. Dr. Ahmad Fauzan,M.Pd.,M.Sc. Universitas Negeri Padang	Dra. Fitrani Dwina, M.Ed.
	16.30 – 17.00	Live Discussion	
			MC: Ronal Rifandi, S.Pd., M.Sc.
Sunday/4th Sept 2022	08.00 – 09.00	Preparation	Committee
	09.00 – 15.00	Offline Parallel Session (Class 1 – 4)	Moderator: 1. Dr. Devni Prima Sari, S.Si.,M.Sc. 2. Defri Ahmad, S.Pd.,M.Si. 3. Shinta Sari, M.Ed. 4. Sri Novia Martin, M.Pd
		Online Parallel Session (Class 1 – 4)	Moderator: 5. Dr.Yulyanti Harisman, M.Pd 6. Ronal Rifandi, S.Pd., M.Sc 7. Maulani Meutia Rani, S.Pd.,M.Pd 8. Rara Sandhy Winanda, S.Pd.,M.Sc. 9. Dina Agustina, M.Sc. 10. Saddam Al Aziz, S.Pd.,M.Pd 11. Khairani, S.Pd.,M.Pd 12. Trysa Gustya Manda, S.Pd.,M.Pd

Class : Class 1
Moderator : Dr. Devni Prima Sari, S.Si., M.Sc
Topic (Section) : Mathematics (Offline)

Name	Institution	Article Title
Corina Karim	Universitas Brawijaya	A Note on Generalized Strongly p-Convex Functions of Higher Order
Delsi Kariman	Universitas PGRI Sumatera Barat	On Graded Simple Modules Over Leavitt Path Algebras
Dr. Sa'adatul Fitri, S.Si., M.Sc	Universitas Brawijaya	Initial Coefficients for Beta-Bazilevič Functions
Suhadi Wido Saputro	Institut Teknologi Bandung	On Independent [1,2]-Sets of Comb Product Graphs
Khozin Mu'tamar	Universitas Riau	Time-Varying Logistic Model for Infected Population of Covid-19 Using Constrained Particle Swarm Optimization

A Note on Generalized Strongly p-Convex Functions of Higher Order

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Abstract

Generalized strongly p-convex functions of higher order is a new concept of convex functions which introduced by Saleem *et al.* in 2020. The Schur type inequality for generalized strongly p-convex functions of higher order also studied by them. This paper aims to revise Schur type inequality for generalized strongly p-convex functions of higher order by Saleem *et al.* in 2020. In order to revise it, we show that it's contradiction is true. This study showed that Schur type inequality for generalized strongly p-convex functions of higher order by Saleem *et al.* is not valid and we give the correct Schur type inequality for generalized strongly p-convex functions of higher order.
Keywords: Schur type inequality; p-Convex functions; Stongly convex of higher order

Time-Varying Logistic Model for Infected Population of Covid-19 Using Constrained Particle Swarm Optimization[1]

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Abstract

Logistics models are widely used to analyze population growth, including the spread of COVID-19. However, the model uses parameters whose values are constant, and the population growth rate over time is not always constant. This article discusses mathematical modelling for population growth infected with the COVID-19 virus using a logistic model with non-constant parameters. The proposed model uses time-varying parameters in two forms: polynomial and trigonometric functions. The constant value for each parameter function is determined using Constrained Particle Swarm Optimization, modified by greedy search to determine the candidate solution in a feasible and bounded interval. The simulation is carried out using daily case data of the COVID-19 virus for 2020-2021.

Keywords: logistic model, time-varying parameter, particle swarm optimization, covid-19.

On Graded Simple Modules Over Leavitt Path Algebras

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Abstract

Let E be a directed graph, K be any field, and let $L_K(E)$ be the Leavitt path algebra corresponding to E with coefficients in K. Among the graded simple modules over $L_K(E)$ induced by the sink, Laurent vertex, infinite emitter, and infinite path, we characterize the c-prime modules and study their projectivity.

Keywords: c-Prime modules, Graded simple $L_K(E)$-modules, Leavitt path algebras, Projective modules, Projective resolution.

Initial Coefficients for Beta-Bazilevič Functions

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Abstract

For $\beta \geq 0$ and $0 \leq \alpha \leq 1$, we introduce the class $\mathcal{B}_1^{\beta}(\alpha)$ of Beta-Bazilevič functions defined for $z \in \mathbb{D}$ by

$$Re\left\{\beta\left[\frac{zf'(z)}{f(z)^{1-\alpha}z^{\alpha}}+\frac{zf''(z)}{f'(z)}+(\alpha-1)\left(\frac{zf'(z)}{f(z)}-1\right)\right]+(1-\beta)\left[\frac{zf'(z)}{f(z)^{1-\alpha}z^{\alpha}}\right]\right\}>0.$$

$\mathcal{B}_1^{0}(\alpha)$ is the class of $B_1(\alpha)$ Bazilevič functions, and $\mathcal{B}_1^{\beta}(0)$ is the class of $\mathcal{M}(\alpha)$ Alpha-Convex functions. We studied the initial coefficients for functions in $\mathcal{B}_1^{\beta}(\alpha)$. We also solved the Fekete-Szegö problems.

Keywords: Bazilevič functions, Alpha-Convex functions, initial coefficients, Fekete-Szegö problems.

On Independent [1,2]-Sets of Comb Product Graphs

Bagas Adi Waskita[1] and Suhadi Wido Saputro[2]

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Abstract

Let G be a finite, simple, and undirected graph. Let S be a subset of V(G). The set S is called an independent dominating set of G if every two distinct vertices in S is not adjacent each other and every vertex in V(G)\S is adjacent to a vertex in S. If an independent dominating set S of G satisfies every vertex in V(G)\S adjacent to at most two vertices, then S is called an independent [1,2]-set of G. The [1,2]-independent number of G is the minimum cardinality of independent [1,2]-sets of G. In this paper, we consider a graph which is obtained by the comb product between two connected graphs. Let o be a vertex of H. The comb product between G and H in vertex o, is a graph obtained by taking one copy of G and |V(G)| copies of H, and identifying the i-th copy of H at the vertex o to the i-th vertex of G. In this paper, we provide all properties of G and H such that the comb product graph between G and H has an independent [1,2]-set. We also provide the [1,2]-independent number of comb product graph G and H for some connected graphs H.

Keywords: comb product, independent [1,2]-set, [1,2]-independent number, independent dominating.
AMS Subject Classification: 05C69; 05C76

Class : Class 2
Moderator : Defri Ahmad, S.Pd., M.Sc
Topic (Section) : Computer Science & Statistic (Offline)

Nam	Institution	Article Title
Arief Fatchul Huda	UIN Sunan Gunung Djati Bandung	Gaussian Kernel Naïve Bayes Classifier on Hadith Corpus
Iin Almeina Lubis	STMIK Royal Kisaran	Analysis of Tx And Rx Ultrasonic Sensors in the Application of Levitation Technology Using the Victor Mini Ic Driver
Kwardiniya Andawaningtyas	Universitas Brawijaya	Analysis of Insurance Customer Factors to Renewal Using Hybrid AHP-FTOPSIS
Dedi Rosadi	Universitas Gadjah Mada	Improving Machine Learning Prediction of Forest Fire Occurrence in Peatlands for Unbalanced Data using ADASYN approach
Fadhilah Fitri	Universitas Negeri Padang	Comparison of Public Speaking Anxiety Level of Science Students and Education Science Students in FMIPA UNP
Utriweni Mukhaiyar	Institut Teknologi Bandung	The Modified Weight Matrix of Multivariate Generalized STAR Model

Gaussian Kernel Naïve Bayes Classifier on Hadith Corpus

Arief Fatchul Huda [1], Yulia Dwi Lestari [2]
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Abstract

The development of Arabic texts from electronic documents used in many applications, resulting in a fast and accurate method of text classification is very important. Classification is a method of grouping by building a model of grouping data. The data used in the form of hadith. In this final project will discuss the classification of texts with the naïve bayes and the naïve bayes kernel. Naïve Bayes is a method of calculating probabilities and kernel Naïve Bayes is a naïve Bayes method by giving kernel functions to these methods by giving a higher probability value for each small probability value. This thesis aims to process the documents and then group the documents that have been processed. Analyzing the kernel functions entered into the naïve bayes method, comparing the two naïve bayes methods and the naïve bayes kernel, which kernel functions are suitable for use in this study, which one is better in terms of the accuracy and accuracy of the method in classifying text. From this research result, a better method used for the document classification process is the naïve Bayes kernel method.

Keywords: Naive Bayes, Gaussian Kernel, Hadith, Arabic text, Classification

Analysis of Tx And Rx Ultrasonic Sensors in the Application of Levitation Technology Using the Victor Mini Ic Driver

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ABSTRACT

The ultrasonic sensor is a sensor that functions to read the distance of an object, with a working system the waves sent by the transmitter will be reflected by the object and received by the receiver so that the length of sending waves and receiving waves is converted into distance form. By combining the working system of the ICL298 mini victor driver, ultrasonic TX and RX transducers, Arduino controllers and appropriate sketch commands, levitation technology can be designed. Levitation is a technology that is able to make a medium or object float. Objects that are made to levitate can be made to levitate with a magnetic system working opposite poles, or based on sound waves. The levitation discussed today is a levitation technique by utilizing ultrasonic waves sent by the TX transducer and RX ultrasonic sensor with a supply voltage of 12VDC. There are 5 TX and 5 RX that will be supplied with a voltage of 12VDC/2A through the minivictor, so that the ultrasonic waveform will be analyzed if the TX and RX are facing each other, slightly side by side until the speed of propagation and the waveform will be analyzed.
Keywords: Levitation Technology, TX and RX Transducers, Floating Objects

Analysis of Insurance Customer Factors to Renewal Using Hybrid AHP-FTOPSIS

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ABSTRACT

Human life is full of uncertainties that have enormous risks. Insurance is one way that can help humans reduce this risk. The human need for insurance causes competition among insurance companies in Indonesia to be very competitive. Competition between insurance companies is influenced by several factors, one of the factors is having customers who do insurance renewals. This study aims to determine the factors that influence customers to renew using the Analytical Hierarchy Process (AHP) method and to rank customers' favorite insurance using the Fuzzy Technique for Order Preference by Similarity to Ideal Solution (FTOPSIS) method. The results of the analysis using this method concluded that the main factors that influence customers in making renewals are features with sub-criteria for health protection needs. Meanwhile, the customer's favorite insurance ratings for extending are Takafullink Salam Cendikia with a closeness coefficient of 0.645, Takaful Al-Khairat with a value of 0.563, Takaful Dana Pendidikan with a value of 0.552, and Takafullink Salam with a value of 0.341.
Keywords: Insurance, Renewal, AHP, FTOPSIS

Improving Machine Learning Prediction of Forest Fire Occurrence in Peatlands for Unbalanced Data using ADASYN approach

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Abstract

It is known that only a small number of studies is available for modeling peatlands fire occurrences in Indonesia. In our previous study, it was applied various machine learning approaches for prediction of the forest fire occurrence in the peatlands area using some classification methods. It is found that in the previous empirical study using data from South Kalimantan Province, we found that the datasets are unbalanced between the two classes of data, i.e., the occurrence of fire hotspots and the nonoccurrence of fire hotspots areas. In this paper, to improve the performance of the classification method, we consider balancing the data using what so called ADASYN (Adaptive synthetic sampling approach for imbalanced learning). All computations are done using open-source software R

Keywords: peat lands fire occurrence, unbalanced data, ADASYN

Comparison of Public Speaking Anxiety Level of Science Students and Education Science Students in FMIPA UNP[4]

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Abstract

Public speaking anxiety often occurs in students. This makes it difficult for them to present both in front of the class and in a larger audience. This study will show the level of public speaking anxiety of students at the Faculty of Mathematics and Natural Sciences, Padang State University. The sample used in this study were 300 students from 11 study programs. The sample will be classified into science and education studies. Then, the data will be compared with each other to see if there is a difference between pure science students and education science students.
Keywords: Public_speaking_anxiety, Anxiety_level, Student, Comparison.

The Modified Weight Matrix of Multivariate Generalized STAR Model

Utriweni Mukhaiyar[1*], Metra Volisa[2], Sandy Vantika[1], and **Gantina Rachmaputri[3]**

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Abstract

A space-time model can be designed to predict the space-time data cases with various variables. The Multivariate GSTAR model was constructed to predict several variables and locations simultaneously with a sequence of observations based on time. The weight matrix was built by modifiying the inverse distance and correlation between cases at each observation location. The obtained model be estimated using the least-square method. The process stationary examination be executed through residual test, parameter matrix eigenvalue, and inverse autocovariance matrix approach. Further, the model is applied to predict COVID-19 infected, death, and recovery cases for all provinces on the island of Sumatra. The results showed that the Multivariate GSTAR (1;1) model was very well applied in predicting death cases in the province of Bangka Belitung Islands and Bengkulu.
Keywords: COVID-19, Multivariate GSTAR, Weighted Matrix, Least Squares, process stationary.

Class : Class 3
Moderator : Shinta Sari, S.Pd.,M.Ed
Topic (Section) : Mathematics Education (Offline)

Name	Institution	Article Title
Shinta Sari	Universitas Negeri Padang	Game-Based Learning Approach on Students' Motivation in Mathematics Learning: A Systematic Review of Literature
Ali Asmar	Universitas Negeri Padang	Improving 21st Century Skills in Geometry Learning Through Problem Based Learning
Delva Yona Sastrawati	Universitas Islam Negari Mahmud Yunus Batusangkar	CREATIVE THINKING PROCESS OF STUDENTS WHO HAVE RATIONAL PERSONALITY TYPE BASED ON WALLAS MODEL IN MATHEMATIC PROBLEM SOLVING
Fathur Rahmi	Universitas Islam Negeri Sjech M. Djamil Djambek Bukittinggi	Testing to Teach or Teaching to the Test: Exams Requiring Higher Order Thinking Skills Encourage Greater Mathematical literacy
Rafi Putra	Padang State University	Development of Teaching Materials Based on Android-Assisted Problem Based Learning Models to Improve Mathematical Problem Solving Ability of Class VIII Students
Daniel Joseph P. Benito	Ateneo De Manila University	Using Mathematics to Analyze Institutional Gains and Tradeoffs in Implementing a National Feeding Program
Daniel Joseph P. Benito	Ateneo De Manila University	Mathematics as a Tool for Social Awareness and Empowerment: A Case Study from the Philippines

Game-Based Learning Approach on Students' Motivation in Mathematics Learning: A Systematic Review of Literature

Shinta Sari [a)], Sri Elniati, and Sri Novia Martin

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Abstract. In the past few years, mathematics education research has dramatically transformed from teacher-centered pedagogy to a learner-centered approach. Because game-based learning strongly emphasizes "hands-on" and "minds-on" activities in mathematics classrooms, it has become one of the most promising instructional approaches. However, there have not been many review studies in mathematics education that have attempted to track down the educational games used and how they have helped students become more motivated. Thirty-five publications were examined for examples of educational games used in math classes between 2017 and 2022 to close the gap. The reviewed articles were indexed by Scopus and downloaded from the Google Scholar search engine. For all the analyzed studies, a systematic analysis was used to determine the objectives, educational game designs and execution, and the focal areas for the mathematics content. According to the findings, instructional games help students retain their studied content while having fun.

Improving 21st Century Skills in Geometry Learning

Through Problem Based Learning

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Abstract

The era of globalization has had a fairly broad impact in various aspects of life, including the demands in the administration of education. One of the real challenges is that education should be able to produce human resources who have complete skills. The basic skills of reading, writing, and arithmetic are absolutely not enough to be able to compete in the 21st century which is full of challenges. The education carried out must be able to prepare students to be able to compete in the global community. The 21st century skills studied are critical thinking skills and collaboration skills. The role of mathematics as a basic science can be seen in the large demands on mathematical skills that must be possessed, especially in facing the 21st century. Many efforts can be made to improve thinking skills critical thinking of students at school, one of which is the Problem Based Learning (PBL) Model. This study was conducted with the aim of describing the profile of the 21st century skills of students in problem-based learning. This research is a qualitative descriptive study with the subject of 6 students taking the Field Geometry course. at UNP, which is differentiated based on the level of mathematical ability, namely 2 students with high abilities, 2 students with moderate abilities and 2 students with low abilities. In this study, data were collected through tests and interviews for critical and critical thinking skills. laboratory. Tests and observations for critical thinking skills, peer observation and assessment for

collaboration skills. The research data were analyzed and obtained the following results, the profile of the 21st century skills of students in problem-based learning are: 1) Students with high abilities have good critical thinking skills, and students with moderate and low abilities have sufficient critical thinking skills, 2) The percentage of student collaboration skills 48% are in the very good category, 36% are in the good category, and the rest are in the sufficient category.

Keywords**:** *21st Century Skills, Geometry Learning, Problem Based Learning*

CREATIVE THINKING PROCESS OF STUDENTS WHO HAVE RATIONAL PERSONALITY TYPE BASED ON WALLAS MODEL IN MATHEMATIC PROBLEM SOLVING

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Abstract

This study discusses the creative thinking process of rational personality type students based on Keirsey's personality dimensions. The stage used is the creative thinking process according to Wallas. This research is qualitative descriptive research with the research subject of one 8th grade student who has a rational personality type. Data collection techniques in this study used questionnaires, tests, and interviews on geometry material. This study found that rational personality type students have creative thinking processes, namely preparation, incubation, illumination, and verification.

Keywords*: Creative Thinking Process, Wallas Model, Rational Personality Type*.

Testing to Teach or Teaching to the Test: Exams Requiring Higher Order Thinking Skills Encourage Greater Mathematical literacy

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Abstract

Learning with habituation give the HOTS test is believed to be able to improve students' mathematical literacy skills at the end of the subject matter. HOTS is one of the higher order thinking skills. Several theoretical perspectives predict that higher-level tests will encourage not only deeper information by students in preparing for exams but also better memory for core information. To test the effect of HOTS habituation on mathematical literacy, exams were given to students who took the HOTS test continuously at every learning with students who had never taken the HOTS test during the learning. Results confirmed this prediction, with students in the habit of doing the HOTS test continuously during learning condition demonstrating higher performance mathematical literacy and a deeper understanding of the material being taught.

Keywords: HOTS, mathematical literacy.

Development of Teaching Materials Based on Android-Assisted Problem Based Learning Models to Improve Mathematical Problem Solving Ability of Class VIII Students

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Abstract

This study aims to produce teaching materials for problem-based learning models assisted by adroid to improve students' mathematical problem solving skills that are valid, practical, and effective. This is motivated by the low mathematical problem solving ability of junior high school students from previous Research. The research procedure is guided by the Plomp development design . The development model studied by Plomp is the initial investigation phase, the development or prototyping phase, and the research phase. The population in this study were students of class VIII SMPN 2 Bonjol. The data collection instrument was an initial investigation phase instrument with interview guidelines, student opinion questionnaires, student test sheets. Instrument for validity test. Instrument for practicality test. Instrument for effectiveness test. The results of this study indicate that the assessment of the material aspect by mathematics education is 86.67%, for linguists it is 93.75%, and for educational technology experts it is 80%. So that it gets an average score of 86.81% with very valid criteria. Based on the results of the practicality test of teaching materials by teachers and students, they got an average score of 86.78% with this score included in the very practical criteria. The score obtained from the teacher practicality test is 85% and the student practicality test is 88.57%. While the results of the test of the effectiveness of teaching materials based on problem-based learning models by providing problem solving tests obtained 86.78% of students who meet completeness, this shows that teaching materials based on problem-based learning models assisted by Android have been effective. So it can be concluded that teaching materials with problem-based learning models assisted by android to improve students' mathematical problem solving skills are valid, practical and effective for class VIII SMPN 2 Bonjol.

Using Mathematics to Analyze Institutional Gains and Tradeoffs in Implementing a National Feeding Program

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Abstract

The achievement of the multi-dimensional impact of a national school feeding program critically depends on its effective implementation. We utilize game theory to analyze the interactions among stakeholders, such as the state, local government, and third-party organizations, and the dynamics of their underlying interests and incentives that may facilitate or hinder cooperation. We explore some coordination paradigms and model the utility functions for each player. Our analysis shows that any partnership between stakeholders creates greater value compared to if they work individually.
Keywords: game theory, cooperative games, utility function, school feeding, malnutrition

Mathematics as a Tool for Social Awareness and Empowerment: A Case Study from the Philippines

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Abstract

We explore the use of mathematics as a tool for students to develop awareness of the living conditions of communities in a rural Philippine province and to help them recognize their agency to stimulate change. Groups of college students in a general mathematics course were given household survey data from the province. Each group built a profile of the community to identify their needs and vulnerabilities, and crafted recommendations that may contribute to the development planning of the community. [78 words]
Keywords: mathematics, statistics, social issues, data-driven policy, rural, development

Class : Class 4
Moderator : Sri Novia Martin, M.Pd
Topic (Section) : Mathematics Education

Name	Institution	Article Title
Khairudin	Universitas Bung Hatta	STEM-Oriented Problem Posing Model's Expert Validation to Improve Problem Solving Skill and Self Regulated Learning
Sri Novia Martin	Universitas Negeri Padang	Game-Based Learning Approach on Students' Motivation in Mathematics Learning: A Systematic Review of Literature
Mukhni	Universitas Negeri Padang	Basic Teaching Skills of Mathematics Education Students in Micro Learning Practice of School Mathematics Course
Marfuah	Balai Besar Guru Penggerak D.I. Yogyakarta	Teachers' Restriction in A Matrices Task: A Praxeological Analysis
Chara Deanna F Punzal	Ateneo de Manila University	Learning From/With Teachers in Implementing Social Justice in Mathematics Education
Chara Deanna F Punzal	Ateneo de Manila University	ProbSET: Embedding Filipino Values in Conceptualizing a Collaborative Problem-Solving Professional Development Program across the Country
Rita Novita	Universitas Bina Bangsa Getsempena	Why Are Student Teachers Still Struggling in Rational Number? An Overview of Ontogenic Learning Obstacles

STEM-Oriented Problem Posing Model's Expert Validation to Improve Problem Solving Skill and Self Regulated Learning

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Abstract

Problem Solving Skill (PSS) and Self Regulated Learning (SRL) were still low, especially in the Calculus course, so a learning model is needed is to activated students to asking questions and to solve the problems well. The objective of the research was to analyze the validity of the STEM-oriented Problem Posing model(SPACE) which could improve PSA and SRL in Calculus courses. The research method used descriptive methods use Aitken-V to validate SPACE model by expert. Based on the results of the preliminary research show that Calculus learning should emphasized students involvement through some activities. Next at Prototyping phase obtained the abbreviated syntax namely SPACE(simulation, Posing, Action, Communication, Evaluation), social system, reaction principle, support system, instructional impact and accompaniment which were designed to follow the steps of the SPACE model. Based on results of the expert validation were obtained the SPACE model is valid. This can be seen from the criteria for the validity of the V-Aitken value above 0.4. The conclussion is each aspect in the model book, lecturer manual, and student guidebook that were in the valid criteria, so that the model can be used for learning Calculus.

Keywords: Learning Model, Problem Posing, STEM, Validity, Calculus.

The Development of Integrated Teaching Materials Educational for Sustainable Development in Quadrilateral Material for Class VII

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Abstract

Global problems such as environmental problems occur a lot today. Global problems cannot be solved quickly, but effective and planned steps are needed, one of which is through education. Education must be able to facilitate students to care about environmental problems, one way is to integrate ESD in learning, including in mathematics learning in schools. The purpose of this study is to design a teaching material that supports the achievement of ESD goals in mathematics learning. Teaching materials can be used if they meet three criteria, namely valid, practical and effective. To test these criteria, a Research and Development (R &D) study was carried out with a research design according to Plomp. According to Plomp, there are three stages in designing a teaching material, namely the *preliminary phase*, *prototyping and development phase* and *assessment phase*. Based on the results of the study, information was obtained that the teaching materials had met the valid criteria in the aspects of content feasibility, readability, presentation and graphics. Teaching materials have also met practical requirements in terms of ease of use, time suitability and the usefulness of teaching materials for students. Teaching materials have also met the effective criteria, namely that teaching materials help students in understanding concepts. So that it can be concluded that teaching materials can already be used in learning

Keywords: Teaching materials, Educational Sustainable Development, Mathematics

Basic Teaching Skills of Mathematics Education Students in Micro Learning Practice of School Mathematics Course

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Abstract. This study aims to describe basic teaching skills of sixth Semester students enrolled at Micro Learning Practice of School Mathematics Course in Mathematics Education study program. Basic teaching skills are the most pivotal aspect that should be possessed by students of Mathematics Education study programme or pre-service teacher, thus they could conduct the learning process well. The basic teaching skills consist of questioning skill, reinforcement skill, variation skill, explanation skill, opening and closing skill. Furthermore, this research is a quantitative descriptive study with purposive sampling technique to determine 13 students as sample. The research instrument used was an assessment sheet of practice. The study result showed that in the first practice, average students had good basic teaching skills scored 7.44, while in the second practice; there is an increase of the score to 7.92 with good category as well. The increase of the score occurred because of the reinforcement delivered by the lecturer during the course.

Teachers' Restriction in A Matrices Task: A Praxeological Analysis

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Abstract. In this study, the Anthropological Theory of Didactics was utilized to investigate the praxeological restrictions teachers experienced in finding the solution to a mathematical modeling problem connected to matrices. We investigated how the question's praxeology affects the teachers' responses, as mathematicians and as educators, using both written tests and interviews. A significant proportion of the 270 mathematics teachers of vocational high schools in Indonesia who participated in this study had difficulty justifying their answers. The research findings show that the praxeological nature of the question contributes to teachers' unpreparedness to solve it, despite the fact that the question is common in mathematics scholarly institutions. Our praxeological analysis also suggests a modification of the problem that teachers can use to teach students how to model mathematical ideas using matrices. This study recommends understanding what restricts or encourages teachers' praxeology concerning a mathematics task as one of the initial steps in attempts to develop mathematics teacher professionalism

Learning From/With Teachers in Implementing Social Justice in Mathematics Education

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Abstract

As part of a pilot study, two public senior high school teachers in the Philippines implemented investigations that integrated social justice issues in their mathematics classes. Learnings emerging from the teachers' classroom experience are discussed here based on the teachers' interviews. Both teachers and students welcomed the social justice infused activities. But it was found that mathematics teachers will require more support in terms of training and resources for facilitating discussion of social issues in their classroom.

Keywords: Social justice in mathematics education; teacher agency; supporting teachers' contextualization; critical thinking.

ProbSET: Embedding Filipino Values in Conceptualizing a Collaborative Problem-Solving Professional Development Program across the Country

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Abstract

Despite problem-solving being an essential practice in mathematics, there are limited professional development programs in the Philippines that are sustainable for less populous regions. Existing programs are rarely collaborative wherein teachers receive support while learning and teaching non-routine problem-solving. ProbSET, a program for public school teachers, aims to address these gaps. By incorporating *bayanihan* in its design, ProbSET's objectives are rooted in Filipino values to build and empower a network of trainers that foster contextualized learning experiences in their communities.

Keywords: Non-routine problem-solving, professional development program, Filipino values

Why Are Student Teachers Still Struggling in Rational Number? An Overview of Ontogenic Learning Obstacles

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Abstract

Learners construct an understanding of a mathematical object through various meaningful processes closely related to each learner's various learning experiences. This construction will then be used by learners in studying further objects and other concepts in learning mathematics. For pre-service elementary teachers (PSTs), this meaning is significant considering their role as teachers who will teach and explore some mathematical concepts to their students. However, PSTs' interpretation of rational numbers has not been entirely successful. This study aims to explore and investigate the factor that causes difficulty for PSTs in understanding rational numbers. Ontogenic Learning Obstacles became the main topic to be researched. The case study qualitative research method was used in this study, which involved 122 PSTs in two private universities in Indonesia. Data collection was carried out using questionnaires and in-depth interviews with purposive participants. Data analysis was carried out descriptively through data reduction, data presentation, and concluding. The study revealed that both internal (including motivation and interest) and external factors (including instructor performance) influenced the ontogenic learning obstacle experienced by PSTs. More than 60% of participants were classified as low and very low in their internal factors. Then, more than 70% of participants argued that the teacher performance related to teaching method and aid greatly influenced their understanding of studying rational numbers. In expansion, this study agrees that the participants' previous experience of learning rational numbers is another factor that causes obstacles to studying rational numbers in college. Keywords: Preservice elementary teachers, Rational number, Ontogenic learning obstacles.

Class : Class 5
Moderator : Fridgo Tasman S.Pd., M.Sc
Topic (Section) : Mathematics Education (Online)

Name	Instituti	Article Title
Atika Nur Sabrina	Universitas Negeri Semarang	Analysis of Mathematical Representation Ability Viewed from VARK Learning Style on Pythagorean Theorem
Rohati Rohati	Universitas Jambi	Exploring Students' Strategies in the Problem-Solving Process on Number Pattern Material
Fertilia Ikashaum	Institut Agama Islam Negeri Metro	Design Of Digital Teaching Books Using Realistic Mathematics Education (Rme) Approach On Statistics Materials
Yulyanti Harisman	Universitas Negeri Padang	Gestures of Special Needs Students in Completing Addition and Subtraction Operations through Proton–Electron Media
JAKA FANDRIFO	Universitas Negeri Padang	Pengembangan Media Video Pembelajaran Matematika Dengan Model Blended Learning Untuk Meningkatkan Komunikasi Matematis Peserta Didik SMP Kelas VII
Rafki Nasuha Ismail	Universitas Negeri Padang	Analysis of the Use of E-Learning Based on LMS for Schools as Online Learning Media
Dewi Murni	Universitas Negeri Padang	Elementary Linear Algebra Teaching Material Development Based on REACT Strategy to Improve Ability Student Communication And Problem Solving
Diah Ayu Agustina	IAIN Metro	Development Of Authentic Assesment Instruments On Mathematics Story Question At Smp It Insan Mulia Batanghari
Irwan	Universitas Negeri Padang	The Development of Flipbook on Integral Topic for 11th Grade Students in Indonesia

The 6th International Conference on Mathematics and Mathematics Education (ICM2E 2022)
Universitas Negeri Padang, West Sumatera Indonesia
Hybrid Conference, September 3rd – 4th

Analysis of Mathematical Representation Ability Viewed from VARK Learning Style on Pythagorean Theorem[9]

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Abstract

The purpose study was to describe the mathematical representation ability in terms of VARK learning style on the pythagorean theorem. The method used is a qualitative method. The researcher found that the research subjects understood the concept of the pythagorean theorem and were able to use symbolic representations to solve problems. But unfortunately, students are not able to draw visual representations so students only guess the formula. In addition, the researcher found that students during online learning had more initiative.
Keywords: mathematics representation, VARK, pythagorean theorem

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Exploring Students' Strategies in the Problem-Solving Process on Number Pattern Material

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Abstract

Many researchers have researched the problem-solving process in learning mathematics. This study investigates students' strategies in solving mathematical problems related to number pattern material. Data were collected from the results of solving 4 number pattern problems given to 32 eighth-grade students in junior high school. Students selected to solve the problems given are students with high mathematical abilities based on the assessment of the mathematics teacher. The findings show four strategies they often apply during problem-solving: guest and test, look for a pattern, make a list, and draw a picture. The guest and test strategy is the most widely applied of the four strategies in solving number pattern problems.

Keywords: Guest and test strategy, number pattern problem, problem-solving, strategy use.

DESIGN OF DIGITAL TEACHING BOOKS USING *REALISTIC MATHEMATICS EDUCATION* (RME) APPROACH ON STATISTICS MATERIALS

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Abstract

Digital Textbook Design Using *Realistic Mathematics Education* (RME) Approach on Statistics Material. Good learning must begin with good design as well. Learning design with textbooks, familiar to students so it is easy to learn. Digital format in accordance with the development and conditions of the times. Meanwhile, RME helps students understand mathematical concepts in statistical material that is considered difficult. The purpose of this study was to determine the role of digital textbooks with the RME approach in helping students understand statistical material and to determine student learning trajectories in statistics material using digital textbooks with the RME approach. This research was conducted at SMP Negeri 3 Metro with 35 students of class VIIIA studying statistics. This study uses *Design Research* as the method. Pre-survey questionnaires, interview guides, HLT validation sheets and digital textbooks, WhatsApp groups, Google Classroom, individual Assignment answer photos, and research notes were used as instruments. As a result, digital textbooks using the RME approach play a role in building students' language and concepts for statistical material, while the learning trajectory is to understand data, take quizzes, answer guided questions in WhatsApp groups, and do individual assignments.

Keywords: Learning Design, Digital Textbook, RME, Statistics Material

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Gestures of Special Needs Students in Completing Addition and Subtraction Operations through Proton–Electron Media

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Abstract

Gestures have only become a concern in recent years. The gesture serves to understand one's thoughts in solving problems if verbal communication is inadequate. This study explores the gestures that appear in students with special needs in the material. The type of research used is qualitative research with an explorative, descriptive method. Six students with special needs with a mixed class of deaf and mentally retarded were used as subjects in this study. The research instrument used was a video of the learning process. The data obtained were audiovisual recordings of six students with special needs who were deaf and mentally retarded in understanding the material for addition and subtraction operations with the help of proton and electron media. The data were analyzed by looking at any gestures during the learning process. The study results show that almost all of the motions that appear are gesturesrepresentational by type iconic. This gesture describes a particular object or concept using the arm or hand that can be accompanied by speech. Sometimes the motion shown by students is correct, but what is spoken is incorrect. This implies that teachers must pay attention to student gestures during the learning process and listen to verbal communication from students.

Pengembangan Media Video Pembelajaran Matematika Dengan Model Blended Learning Untuk Meningkatkan Komunikasi Matematis Peserta Didik SMP Kelas VII

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ABSTRACT

The purpose of this research is to produce learning instruments Blended Learning model that valid, practice and effective in improving mathematical communication skills for 7st grade junior high school students. Learning instruments that developed were Learning Implementation Plan (RPP), Learning Video, and Student Worksheet (LKPD) for 7th grade junior high school. This research is a development research with Plomp model that consists of three phase namely preliminary research, prototyping phase and assessment phase. The preliminary research phase aimed to collect the data that being the base of characteristics of the developed learning instruments. In prototyping phase, researcher designed and evaluated the prototype by using formative evaluation steps. The subject of field test in this study were 7th grade students at SMPIT AL-BINA Dharmasraya in 2022/2023 academic year. The analysis result of validation sheets for RPP, Learning Video, and LKPD show that learning instruments that developed are valid in terms of construct and term of content. The learning instruments developed are also practical in terms of feasibility and ease of use. This is based on the analysis result of questionnaires for students and learning implementation observation sheets. In addition, the learning instruments developed have also been effective in improving students' mathematical communication skills based on the data on the results of the mathematical communication skills test that has

been implemented, which is 77.2% of students have obtained scores above the KKM determined by the school, that 75.

Keywords: *Learning Video, Mathematical Communication Skills, Blended Learning Model*

Analysis of the Use of E-Learning Based on LMS for Schools as Online Learning Media

Rafki Nasuha Ismail, Ahmad Fauzan, Yerizon

ABSTRACT

The article aims to analyze the need for an e-learning system customized to the needs of the junior high school level, a case study of t schools in SMPN 8 and SMPN 26 Padang. E-learning is analyzed using a Learning Management System (LMS) according to user requirements. Learning Management System (LMS) is one of the ways used by schools to support and manage online learning so that the teaching-learning process continues well during and after the Covid-19 pandemic. The research method used in this study is a semi-descriptive quantitative method. The research subjects were 60 grade VIII junior high school students who were taken by purposive sampling. The instruments used are questionnaires and interview guidelines, and literature studies. Data collection was carried out using google Forms, WhatsApp, and a literature study. Test the validity of research data using triangulation techniques. The data were analyzed through data reduction activities, presenting data, and drawing conclusions. Based on the results of the research from the questionnaire, the level of LMS usage was quite significant. This is shown by the level of users of LMS applications such as Google Classroom, Edmodo, Padang Geschool, and LMS used by junior high schools which are very useful as online learning media, especially during the pandemic. The results of teacher interviews showed that with this LMS application, the learning and communication system between teachers and students can run well, it can also be used as a web-based test by utilizing the facilities available in the LMS application. From the results of the literature study, it was found that the theory of applying LMS supports the learning system with online learning media.

Key Words: Analysis, Learning Management System (LMS) Online Learning Media.

Elementary Linear Algebra Teaching Material Development Based on REACT Strategy to Improve Ability Student Communication And Problem Solving

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Abstract

Elementary Linear Algebra (ALE) is a compulsory subject for students majoring in mathematics and is the basis for several other courses. Most of the students still do not master the material well. One way to, overcome this problem is to apply the REACT strategy (Relating, Experiencing, Applying, Cooperating Transferring) and supported by relevant teaching materials. The purpose of the first year of research is to design and create an ALE teaching material based on the REACT strategy that is valid and practical through testing on a limited sample. This research method is Research&Development (R&D) which is to produce a certain product and test

its effectiveness. This research was conducted in four steps, namely: gathering information, planning, developing the initial form of the product, and initial field testing on a limited sample The result of the research is a Linear Elementary Algebra teaching material based on the REACT strategy to improve students' mathematical communication skills and problem solving abilities

Keywords: REACT , communication skills, problem solving, teaching material.

DEVELOPMENT OF AUTHENTIC ASSESMENT INSTRUMENTS ON MATHEMATICS STORY QUESTION AT SMP IT INSAN MULIA BATANGHARI

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Abstract

This research aims to produce an Authentic Assessment on Mathematics Story Problems based on the validity and practicality of the product on the circle material. Type of this research is Research and Development (R&D). This research was designed by following the stages of the ADDIE development model, namely Analysis, Design, Development, Implementation, and Evaluation. The research was conducted with a limited trial method because the research was conducted after final exam. The research instrument used to an expert validation questionnaire for the validity aspect and a teacher/user response questionnaire fo the practical aspect. The result of the research show that quality of the product produced based on aspect of validity has met the very valid criteria. The value of validation by evaluation experts obtained and overall average value of 88,46%. In the practical aspect, based on the questionnaire given to 2 mathematics teachers, it has met the very practical criteria. Overall average value obtained from teacher's response questionnaire is 83,33 % in the very practical criteria.

Keywords : Authentic Assesment Instrument Development, Math Story Questions, Circle.

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The Development of Flipbook on Integral Topic for 11th Grade Students in Indonesia[14]

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Abstract

This study aimed to produce flipbook on integral topic for 11th grade student that are valid and practical. The type of the research is design research with development model used is Plomp model. The subjects of this study were 11th grade students at Sekolah Menengah Atas Pembangunan Laboratorium Universitas Negeri Padang, Padang. The research instruments were interview guides, observation sheets, validity sheets, student practicality sheets, and teacher practicality sheets. This research has produced a very valid and very practical flipbook.
Keywords: flipbook, integral, practical, valid.

Class : Class 6
Moderator : Ronal Rifandi, S.Pd., M.Sc
Topic (Section) : Mathematics Education (Online)

Name	Institution	Article Title
Radiusman	Universitas Mataram	Is the Process of Abstraction on the Concept of Fractions Going Well? A Study on a Primary School Student
Kelly Angelly Hevardani	Universitas Negeri Padang	Use of GeoGebra in Mathematics Learningm
Nining Setyaningsih	Universitas Muhammadiyah Surakarta	Students' Ability in Solving Linear Program Problems Based on APOS Theory Reviewed from Prior Knowledge
Rino Richardo	Universitas Negeri Yogyakarta	School Status and Level on Mathematics Achievement : A Secondary Analysis
Eka Puspita Sari	The University of Adelaide	The Role of Numeracy in Financial Literacy: A Case Study from Indonesia
Ester Juniati Laoli	Universitas Negeri Padang	The Validity of Edutainment-based Interactive Media With the Nuances of Nias Culture to Improve Mathematical Problem Solving
Isra Hidayati	Universitas Negeri Padang	Hypothetical Learning Trajectory of the Trigonometric Ratios Based on Contextual Teaching And Learning with The Nuances of Melayu Riau Ethnomathematics
HELMA	Universitas Negeri Padang	Predicting Students' Mathematical Reasoning Ability Based on Final Grades
Saddam Al Aziz	Universitas Negeri Padang	Online Math Solver as an Application Solution to Improve Student Understanding in Modeling Problems and Solving Math Problems

Is the Process of Abstraction on the Concept of Fractions Going Well? A Study on a Primary School Student

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Abstract

This descriptive qualitative study aims to look at the process of primary school students' abstraction in understanding the concept of fractions. The abstraction process in this study focuses on procept, which is an activity that applies processes and concepts owned by students in solving fractional problems. The subject of this study is a primary school student who has moderate mathematical ability and studied fractions. The data collection was carried out by tests on fractions and interviews. The data analysis was carried out by collecting all the data, which then would be organized to select the important data for the purpose of this study. The results showed that the subject's abstraction process did not go well. The subject does not yet have the correct concept of fractions, resulting in an improper completion process, especially understanding the multiplication of a fraction by an integer. In addition, the results also show that the subject preferred to use an answer description rather than using symbols in solving the problem of fractions.

Keywords: Abstraction, procept, fractions.

Use of GeoGebra in Mathematics Learning

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Abstract

In the current era of globalization, technology has a very important role in the world of education. The application of technology-based learning media that provides a visual appearance can make it easier for students to learn mathematics. This type of research is descriptive research. This study aims to describe various research results about the benefits of using GeoGebra in learning mathematics. GeoGebra is a dynamic, free, and multi-platform mathematics software that combines geometry, algebra, tables, graphs, statistics, and calculus in one easy-to-use package that can be used for all levels of education. GeoGebra is very useful as a medium for learning mathematics with a variety of activities, including (1) as a medium for demonstrations, simulations, and visualizations, (2) as a tool for constructing mathematical concepts, (3) as mathematical exploration and discovery, (4) as software for building teaching materials, and (5) for solving or verifying mathematical problems. So, it can be concluded that the use of GeoGebra can help students visualize and understand mathematical material.

Keywords: GeoGebra, Mathematics

Students' Ability in Solving Linear Program Problems Based on APOS Theory Reviewed from Prior Knowledge

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Abstract

This research was conducted due to the weak ability of students to solve linear program problems. The subject of this study was class 9 SMA Negeri 1 Gondang. Data collection is carried out through tests, documentation and interviews. Data analysis is carried out by data reduction, data presentation and verification. Based on the results of the study, student with high prior knowledge has all indicators of APOS theory, while with medium prior knowledge only has the indicators of action, process and object and student with low prior knowledge only has the action and process indicators. Thus, the students' prior knowledge take part in solving problems.

Keywords: *problem solving, APOS Theory, **L**inear **P**rogram, initial ability*

School Status and Level on Mathematics Achievement : A Secondary Analysis

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Abstract

This study aims to determine differences in mathematics achievement based on status and level in junior high schools in the Province of the Special Region of Yogyakarta, Indonesia. This study uses a quantitative approach. The study involved 558 junior high schools. This study uses secondary data based on the results of the Regional Education Assessment for Mathematics in 2021. The analysis technique uses a two-way Analysis of Variance (ANOVA). The results of the analysis show that public schools' mathematics achievement is better than private schools, but there is no interaction between school status and level of mathematics achievement.

Keywords: Status, Grade, Mathematics, Achievement, Private, Public

The Role of Numeracy in Financial Literacy: A Case Study from Indonesia

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Abstract

As part of Indonesia's '*Gerakan Literasi Nasional',* financial literacy is becoming of the most important 21st-century skills in Indonesia. Educators are encouraged to develop and implement financial literacy programmes. However, Indonesia does not have a specific financial literacy curriculum. Instead, it is embedded in several subjects, such as economics and mathematics. As a mathematics teacher, it is important to me to know what numeracy skills are correlated to financial literacy. This study will explore the relationship between financial literacy and numeracy by measuring the relationship between financial literacy and numeracy levels among students and financial literacy practitioners in Indonesia (N = 25). This study will use stratified random sampling method. This study will have several implications. Namely, 1) This study will have a positive impact by providing essential information for schools, teachers, and individuals, related to the role of numeracy skills to enhance financial literacy, 2) This study will give a recommendation to policymakers related to future revision on financial literacy curriculum and programmes. This study is ongoing and preliminary results will be presented.

Keywords: financial literacy, numeracy skill, quantitative literacy, mathematics education

The Validity of Edutainment-based Interactive Media With the Nuances of Nias Culture to Improve Mathematical Problem Solving Skills

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Abstract

This study aims to produce an interactive media based on Nias culture nuanced edutainment that is valid for class X Vocational High School students on the topic of trigonometry. The developed media are equipped with Learning Implementation Plans, Student Worksheets, Assessment Sheets that are useful for supporting teachers and students in the learning process. The development of this media uses the type of research and development with the Plomp model. The stages of this media development research consist of several phases including the initial investigation phase, the prototype phase and the assessment phase. The language in this article is the validity stage by experts who are at the prototype development stage. The instrument used in this research is validation which contains aspects of content, linguistic aspects and aspects of presentation (awakening, color, balance, form, cohesiveness, program quality). The results of the validation of edutainment-based interactive media by experts are in the valid category.

Keywords: interactive media, edutainment, quantum teaching and learning, mathematical problem solving, plomp model

Hypothetical Learning Trajectory of the Trigonometric Ratios Based on Contextual Teaching And Learning with The Nuances of Melayu Riau Ethnomathematics

Isra Hidayati, Armiati

Abstract

This study aims to produce a valid hypothetical learning trajectory (HLT) for class X senior high school on the topic of trigonometric ratios. The developed HLT based on contextual teaching and learning with Melayu Riau nuences. HLT is developed by combining two types of design research, namely the Plomp model dan the Gravemeijer and Cobb model. Based on the combination of the two models, the stages of this research consist of : (1) the initial investigations stages, (2) the development or prototyping stage, and (3) the assessment stage. The focus of this research is validity by expert in stage of protoype development. Aspects that are assessed at the validation stage are content aspects, graphic aspects, and language aspects. The average value of HLT validation by experts is 3,41 and is in the valid category

Predicting Students' Mathematical Reasoning Ability Based on Final Grades

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Abstract

Students must carry out an analytical process, so that students' reasoning develops on the given problem. Research shows that students' reasoning abilities can be improved. However, it has not been studied whether the reasoning ability can be seen from the results of the final exam. It is important to know the reasoning ability of students. For this reason, the purpose of this study is to predict students' reasoning abilities on a given problem based on the final grades obtained. The approach method used is inverse regression. After a theoretical review of inverse regression, it is possible to form a model and estimate intervals on students' reasoning abilities.
Keywords: Reasoning, ability, final grade

Online Math Solver as an Application Solution to Improve Student Understanding in Modeling Problems and Solving Math Problems

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Abstract

Commonly people think that online math solver are cheting program. In fact, online math solver can be used in the learning process. This study aimed to describe the online math solver as an application to improve student understanding in modeling problems and solving math problems. This study used descriptive method that concluded online math solver is effective as an application to improve student understanding in modeling problems and solving math problems.
Keywords: online math solver, application, technology, student understanding

Class : Class 7
Moderator : Maulani Meutia R, M.Pd
Topic (Section) : Mathematics Education (Online)

Name	Institution	Article Title
Eka Pasca Surya Bayu	UNP/UMSB	Development Of Hypotetycal Learning Trajectory With Etnomatics Based On Realistic Mathematic Education Approach
Hendra Syarifuddin	Universitas Negeri Padang	Needs Analysis of E- Module Based on Activity, Classroom Discussion, and Exercise (ACE) Cycle Approach in Basic Algebra Course
Luthfia Ulva Irmita	SMA Wardaya	DEVELOPMENT of MATH BLIND GAME WITH VOICE AND QR CODE AS LEARNING MEDIA FOR BLIND STUDENTS
Weni Novita Sari	Universitas Islam Negeri Mahmud Yunus Batusangkar	MATHEMATICAL COMMUNICATION ABILITY OF HIGH SCHOOL STUDENTS BASED ON SELF-CONCEPT ON GEOMETRY MATERIALS
Endah Wulantina	State Institute for Islamic Studies of Metro	Ethnomathematics In Lampung: Eksploration of Lampung Traditional Cakes as Mathematics Learning Resources
Afifah Zafirah	Universitas Negeri Padang	The Exploration Hypothetical Learning Trajectory (HLT) Based on Realistic Mathematics Education (RME) Approach for Student in Junior High School
Dian Nesya Putri	Universitas Negeri Padang	FACTORS AFFECTING HIGH SCHOOL MATHEMATICS LEARNING OUTCOMES IN ONLINE LEARNING USING PATH ANALYSIS
Rini Melani	Universitas Pendidikan Indonesia	Analysis of Mathematics Textbooks for Grade VII Junior High School Reviewed Based on Theory of Didactical Situations
Edwin Musdi	Universitas Nrgeri Padang	Improve Mathematical Problem Solving Ability of Class VII Junior High School Students Using Mathematics Learning Devices Based on PBL

DEVELOPMENT OF HYPOTETYCAL LEARNING TRAJECTORY WITH ETNOMATICS BASED ON REALISTIC MATHEMATIC EDUCATION APPROACH

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ABSTRACT

Learning mathematics always requires development in the learning resources used, one of which is the development of the Hypotetycal Learning Trajectory (HLT). The difficulty of students in understanding the subject matter, especially the Two Variable Linear Equation System (SPLDV) because it has not led to the problems encountered in real life. The learning designed by the teacher also does not support so that students can understand the concept well, because the learning flow is not in accordance with the characteristics of students. in the end this condition causes low student learning outcomes. For this reason, it is necessary to develop HLT which can increase students' knowledge in an integrative way to support the introduction of a valid, practical, and effective culture. The development of HLT with ethnomathematics based on the Realistic Mathematical Education (RME) approach is the solution chosen to improve student learning outcomes.
Keywords: Hypotetycal Learning Trajectory (HLT), Ethnomathematics, Realistic Mathematical Education (RME) Approach

Needs Analysis of E- Module Based on Activity, Classroom Discussion, and Exercise (ACE) Cycle Approach in Basic Algebra Course

Hendra Syarifuddin, Yerizon, Rafki Nasuha Ismail

Abstract

The purpose of this article is to analyze student needs for e-modules with the Activity, Classroom Discussion, and Exercise (ACE) learning cycle approach in Basic Algebra course at the Mathematics Education Study Program, Universitas Negeri Padang. This study uses mixed methods involving students who take Basic Algebra courses in the semesters of Jan - June 2021 to collect, describe, and interpret the data. Data were collected through observation sheets, questionnaires, interviews and document analysis. The design of E module based on the ACE learning cycle approach consists of three steps. The first step in this cycle is the concept map activity. This activity encourages students to prepare topics to be discussed in class. The next step is class discussion which provides a social context in which students can work together to solve math problems. Finally, the exercises are assigned as homework. In this section, students practice solving math problems and writing reflective journals. The results showed that (1) students wanted practical learning materials so they could be used anywhere and anytime. Today's students are in the digital native world, already having a smart phone that is connected to the internet. Generally, students have smart phones, the greater the opportunity to implement e-Modules in learning. (2) the learning process has not facilitated students' learning with the ACE learning cycle. Based on the results of the needs analysis, the researcher recommends the development of e-modules based on the ACE learning cycle to develop their understanding of concepts and procedures, problem solving skills and mathematical communication skills.
Keywords: Activity, classroom discussion, exerciseCycle Approach e-module, Basic Algebra

DEVELOPMENT of MATH BLIND GAME WITH VOICE AND QR CODE AS LEARNING MEDIA FOR BLIND STUDENTS

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Abstract

Math is a lesson that is difficult for children in Indonesia to understand. Especially in children with visual or blind disorders. This disorder makes it difficult for metematics to study, for in matematics it takes sight to read material to enhance the learning system. This study was developmental research that aimed to describe the result of instructional media development of math blind game with voice and QR code and describe their understanding after using math blind game with voice and QR code as learning media at special needs elementary school. The subject of this study is blind students grade 4th – 6th . The research model used was ADDIE development model (analysis, design, development, implementation, and evaluation). Data were collected using test and questionnaire to know their understanding of math blind game with voice and QR code as lerning media. The result showed that blind students responded positively with an average score of SUS score 83,75 (grade A). Therefore, it can be concluded that math blind game with voice and QR code can be used in teaching and learning activity to improve blind students' understanding about matematics.
Keyword: *Blind students, Math Blind Game, Math education, QR Code*

MATHEMATICAL COMMUNICATION ABILITY OF HIGH SCHOOL STUDENTS BASED ON SELF-CONCEPT ON GEOMETRY MATERIALS

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Abstract

This study aims to describe the mathematical communication skills of students who have high, medium, and low self-concepts on geometry material. This research is qualitative research with a descriptive method. The subjects of this study were all students of class XII IPA. The main instrument in this study is the researcher, while the supporting instruments are questionnaires, tests, and interview guidelines. Data analysis techniques used are data reduction, data presentation, and concluding. This study found: 1) students who have high self-concept can master written text, drawing, and mathematical expressions; 2) students who have moderate self-concept only master written text and drawing; and 3) students who have low self-concept have not mastered written text, drawing, and mathematical expressions.

Keywords: mathematical communication skills, self-concept, geometry

Ethnomathematics In Lampung: Eksploration of Lampung Traditional Cakes as Mathematics Learning Resources

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Abstract

This research aims to explore activities related to mathematical concepts in making Lampung traditional cakes consisting of Sekubal Cakes, Tat Cakes and Legit Lapis Cakes. This research is a descriptive qualitative with an ethnographic approach. The data collection techniques were carried out through observation, documentation, and interviews with resource persons who understood the process of making Lampung traditional cakes. This research found that the mathematical concepts used in making cakes traditional of Lampung are congruence and similarity, division, tube, beam, circle and rotation.
Keywords: Congruence and similarity, Ethnomathematics, Geometry, Legit Lapis Cakes, Sekubal Cakes, Tat Cakes

The Exploration Hypothetical Learning Trajectory (HLT) Based on Realistic Mathematics Education (RME) Approach for Student in Junior High School

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Abstract

This study aimed to create hypothetical learning trajectory (HLT) on based on the Realistic Mathematics Education (RME) approach. The HLT consists of the goal of learning, students' activity and thinking process of student that will be used to understand a consept of social arithmetic. This study used a design research methodology that consisted of three cyclic processes, namely the initial design phase, the experimental teaching phase, and the retrospective analysis phase. The subjects of this study were three students of grade seven in junior high school in Indonesia who were selected based on high, medium, and low groups. The collecting data used observations, interviews, video recordings, and analysis of student works. The results of this study indicate that the learning process which is arranged based on activities in HLT sequentially has been able to encourage students to think mathematically so that they are able to construct knowledge and improve their understanding of social arithmetic subject. The teacher showed how to find a guide to create a mathematical learning process, where students must be active and dare to express their opinions so that they understand the social arithmetic concepts being studied.

Keywords: hypothetical learning trajectory, realistic mathematics education, social arithmetic

FACTORS AFFECTING HIGH SCHOOL MATHEMATICS LEARNING OUTCOMES IN ONLINE LEARNING USING PATH ANALYSIS

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ABSTRACT
The Covid-19 pandemic has had an impact on various fields, one of which is education. As a result of this policy, the education sector such as schools and higher education stopped the face-to-face learning process. Instead, the learning process is carried out online which can be carried out from the homes of each student. The obstacle when learning online is the habitual pattern of teaching and learning for students and educators who are accustomed to conventional learning. The purpose of the study was to determine the factors that influence high school mathematics learning outcomes in online learning. The research method used is quantitative research with a survey method using a questionnaire. Test the validity and reliability of the questionnaire before the study. The data used in this research are primary data and secondary data. Primary data were obtained from questionnaires that would be distributed to students in two schools in Padang City and Bukittinggi City. Secondary data was obtained from the value of the students who were sampled in this study. The number of samples in this study were 403 students. Analysis of the data used is path analysis with classical assumption testing that must be met, including normality test, multicollinearity test, heteroscedasticity test and autocorrelation test. The results of the study show that online learning difficulties are internet connection, learning motivation, cost, interest in learning and learning independence, and the factors that influence mathematics learning outcomes in online learning are internet connections.

Keywords: online learning, learning difficulties, path analysis

Analysis of Mathematics Textbooks for Grade VII Junior High School Reviewed Based on Theory of Didactical Situations

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Abstract

Textbooks are essential in implementing the curriculum because they are one of the primary sources of learning in teaching and learning activities. This study analyzed the presentation of square and block topics in mathematics textbooks for grade VII junior high school students. This research used qualitative research methods. There were four books analyzed in this study to collect data. One book was published by the Ministry of Education and Culture and three books were published by private publishers. The aspect analyzed in this book is the suitability of the material's content with the Theories of Didactical Situations. This theory demands that students be allowed to think to gain meaningful knowledge. The results of this study generally show that some presentations of topics do not provide opportunities for students to construct their knowledge, so the author makes alternative designs based on the theories of didactical situations. This design is expected to be an alternative solution in the form of learning design as a material for evaluation and improvement in the presentation of square and rectangular topics in textbooks for grade VII junior high school students.
Keywords: Didactical Situations, Mathematics Textbooks, Junior High School.

Improve Mathematical Problem Solving Ability of Class VII Junior High School Students Using Mathematics Learning Devices Based on PBL "

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Abstract

This study aims to improve students' mathematical problem solving abilities using PBL-based learning device. This research is a Research and Development (R & D). The development of learning devices in this study uses the Plomp model, which consists of three stages, namely the preliminary stage, the prototype-making stage and the assessment stage. This learning device was made and tested on 26 students of UPTD SMPN 3 Kec. Lareh Sago Halaban. The results showed that the learning tools in the form of RPP and PBL based LKPD for class VII were valid, practical, and effective. In addition, the effectiveness of RPP and LKPD to improve problem solving skills is 83.87%. Based on this, it can be concluded that PBL-based learning device for class VII semester II on rectangular and triangular flat shapes are valid, practical and effective and can be improved mathematics students mathematical problem solving.
Keywords: Learning Tools, PBL, Problem Solving Ability

Class : Class 8
Moderator : Rara Sandhy Winanda, S.Pd., M.Sc
Topic (Section) : Mathematics (Online)

Name	Institution	Article Title
Bella Arisha	UIN Sulthan Thaha Saifuddin Jambi	Applied of Model Vehicle Sharing System with Modified Model Passive Regulation Lower Bound for Mobility Improvement
GHAITSA ZAHIRA SHAFA	Universitas Islam Indonesia	K-MEANS CLUSTERING ANALYSIS BASED ON THE 2021 HUMAN DEVELOPMENT INDEX COMPONENTS IN REGENCIES/CITIES JAWA TENGAH
Baki Swita	Universitas Bengkulu	On Super Edge Magic Total Labeling of Graph B[(4,12),(3,n),2]-Cycle Books
Bibit Waluyo Aji	Diponegoro University	Application of Mamdani Fuzzy Inference System with Centroid Methods for Prediction of Carbon Dioxide Emissions from Cars
Nafis Saiful Arsyi	Sebelas Maret University	On The Strong Metric Dimension of Generalized Petersen Graph ã€–GPã€—_(n,1) and K_mâŠ™P_n Graph
Mia Siti Khumaeroh	UIN Sunan Gunung Djati Bandung	Dengue Transmission Model with Vector Control in Aquatic and Non-aquatic Phases
Rara Sandhy Winanda	Universitas Negeri Padang	Mathematical Modelling of Diabetic Type 2 with Effect of Life Style
Amada Ukik Firdausi	Universitas Diponegoro	On Constructing Edge Irregular Total k-Labeling of Sierpinski graph
Rizky Rosjanuardi	Universitas Pendidikan Indonesia	Topology of Disjoint Union of Dual c-Convex Subgroups
Nurul Imamah Ah	Brawijaya University	Dynamical Analysis on a Model of Predator Prey with Switching and Allee Effect
Wuryansari Muharini K	University of Brawijaya	Fractional Analysis on an Aflatoxin Spread Model

Applied of Model Vehicle Sharing System with Modified Model Passive Regulation Lower Bound for Mobility Improvement

Bella Arisha

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Abstract

In this paper use model vehicle sharing system. Formulate modified model passive regulation lower Bound. This research focused on One-Way Vehicle Sharing System. It is the system that user can rent and return vehicle at any station. The modified model passive regulation lower bound aims to minimize total of excess time for all user so there are vehicle in initial station an there are parking space in destination station. So the user do not need to wait to long until vehicle available in initial station and parking space available in destination station. In the real life often there is no vehicle to rent and there is no parking space to park vehicle that had been rented. So in this paper will analyze total excess time for all users. Model formulated as Mix Integer Linear Programming. To formulate and solve model used Lingo. 17. The result show minimum total excess time for all users is 10,25 minutes.

Keywords : One-Way Vehicle Sharing System, Model Passive Regulation Lower Bound, Mix Integer Linear Programming, Mathematical Programming.

K-MEANS CLUSTERING ANALYSIS BASED ON THE 2021 HUMAN DEVELOPMENT INDEX COMPONENTS IN REGENCIES/CITIES JAWA TENGAH

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Abstract

Human development, which aims to create social welfare, is quite needed by a country. One of the important indicators that can be used to measure efforts to improve the quality of human life is the Human Development Index (HDI). The concept of measuring human development is carried out using a three-dimensional approach, namely the dimensions of a long and healthy life, the dimensions of knowledge, and the dimensions of a decent standard of living. If life expectancy is an indicator that represents the healthy dimension, then the knowledge dimension is represented by the indicators of average years of schooling and expected years of schooling. Meanwhile, the dimension of a decent standard of living is represented by the indicator of per capita expenditure. According to BPS, Indonesia's human development index status is still relatively high, with an average of 0.89 percent, although in 2020 it experienced a slowdown due to the COVID-19 pandemic. The purpose of this study was to group districtsand cities in Jawa Tengah based on the HDI component using the k-means clustering method. This study resulted in 3 clusters, each with different characteristics. Cluster 1 is a group of regions with the lowest scores on the four HDI components. Then cluster 2 is a group of regions with moderate HDI component characteristics, while cluster 3 has the highest HDI component number of

characteristics when compared to clusters 1 and 2. The cluster analysis of the HDI component in 2021 did not experience a significant difference with the previous year. The average size of each cluster formed has increased compared to the previous year. The results of this study are expected to be taken into consideration by the government to further improve programs that are able to build HDI scores in some areas that still have HDI values below the average.

Keywords: K-Means Clustering, Cluster, Human Development Index, Jawa Tengah

On Super Edge Magic Total Labeling of Graph B[(4,12),(3,n),2]-Cycle Books

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Abstract

Graph labeling plays an important role in mathematics since it gives a fundamental knowledge to various applica tion in real life such as communication network, cryptography, and technology information. One of interesting research topic in this area is super edge-magic total labeling of cycle books. A graph G is called (x,z)-cycle books $B[(x,m),(z,n),r)]$ if G consists of m copies of cycles of order x and n copies of cycles of order z with a common path P_r. Super edge-magic total labeling of graph (x,z)-cycle books $B[(x,m),(z,n),2)]$ is an open problem. This research investigate super edge magic total labeling of graph $(4,3)$-cycle books $B[(4,12),(3,n),2)]$. The results of this research show graph $(4,3)$-cycle books $B[(4,12)(,3,n),2)]$ admit super edge-magic total labeling for any positive integers n. These results are proved by a modus ponens and modus tolens proof method.

Keywords: graph labeling, super edge-magic total labeling, cycle books.

Application of Mamdani Fuzzy Inference System with Centroid methods for Prediction of Carbon Dioxide Emissions from Cars[27]

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Abstract

Carbon dioxide or CO_2 emissions are the main component of Greenhouse Gases that can increase the Greenhouse Effect. With the increasing concentration of CO_2 in the atmosphere, it will cause more heat waves to be reflected from the earth's surface and then absorbed by the atmosphere. This will result in an increase in the average temperature of the earth or a global warning. Based on the description above, it is necessary to predict the amount of CO_2 emissions produced by vehicles which in this study are cars. So that it can be predicted the magnitude of the environmental burden caused by these transportation activities. In calculating the contribution of CO_2 generated by the car, it is done by applying the Mamdani Fuzzy Inference system with Centroid method. From the study conducted, the Mamdani fuzzy inference system model with the Centroid method in predicting carbon dioxide emissions from cars obtained an accuracy of 0.901 for the r square score and 18.22 for Root Mean Square Error

Keywords: Fuzzy set, Fuzzy inference system, Centroid Method, Carbon Dioxide Emissions

On The Strong Metric Dimension of Generalized Petersen Graph $GP_{n,1}$ and $K_m \odot P_n$ Graph

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Abstract

Let G be a connected graph with vertex set $V(G)$ and edge set $E(G)$. For every pair of vertices u and v in $V(G)$, the interval $I[u,v]$ between vertex u and *vertex* v is the collection off all vertices that belong to some shortest $u - v$ path. A vertex s in set S where S is subset of $V(G)$ strongly resolves two vertices u and v if u belongs to a shortest $v - s$ path or if v belongs to a shortest $u - s$ path. A vertex set S of G is a strong resolving set of G if every two distrinct vertices in G are strongly resolved by some vertex in set S. The strong resolving set of G with minimal cardinality is defined as strong metric basis and the strong metric dimension $sdim(G)$ of a graph G is defined as the cardinality of strong metric basis. In this research we determine the strong dimension metric of complete graph with corona operation by path graph and generalized petersen $GP_{n,1}$ graph with $n \geq 3$. The method thst used in this research is literature study. We obtain the strong metric dimension of complete graph

with corona operation by path graph is $sdim(K_m \odot P_n) = m$ for $m \geq 3$ and $n = 1$, and $sdim(K_m \odot P_n) = 2m$ for $m \geq 3$ and $n \geq 2$. The strong dimension of generalized Petersen graph $GP_{n,1}$ is $sdim(GP_{n,1}) = n$ for $n \geq 3$.

Keywords: *generalized petersen graph, $K_m \odot P_n$ graph, strong dimension metric, strong resolving set*

Dengue Transmission Model with Vector Control in Aquatic and Non-aquatic Phases[1]

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Abstract

Dengue Hemorrhagic Fever (DHF) is a disease caused by the dengue virus, which is transmitted through the bite of female mosquitoes Aedes Aegypti and Aedes Albopictus. Currently, Dengue Haemorrhagic Fever remains one of the endemic diseases in several countries. Vector control is one of the key strategies for reducing the number of dengue infections. In this study, a host-vector model of dengue transmission will be analysed involving vector control in aquatic and non-aquatic phases. Equilibrium points, basic reproduction numbers, system stability, and control effects were analyzed and simulated to provide insight into the dynamics of dengue transmission. The results show that the combination of controls in aquatic and non-aquatic phases can significantly reduce the incidence of DFH.

Keywords: Dengue Hemorrhagic Fever, dengue transmission, vector control, aquatic and non-aquatic, mosquitoes.

Mathematical Modelling of Diabetic Type 2 with Effect of Life Style[30]

Rara Sandhy Winanda[1] [31], Dina Agustina[2] , Defri Ahmad[3] , Media Rosha[4]

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Abstract

Diabetes is a condition that can be brought on by social, environmental, and/or genetic causes. An individual who is prone to diabetes develops the disease as a result of socio-environmental or lifestyle factors. On the one hand, social interaction has a significant impact on lifestyle. On the other hand, the birth diabetes genetic condition is primarily brought on by genetic factors. Analytical and numerical methods are used to analyse this model. In this study, we observe stability near to steady states. While MATLAB is used to conduct the numerical simulation.

Keywords: Mathematical_modelling, Diabetic_modelling, Stability_analysis, Lifestyle_modelling

On Constructing Edge Irregular Total k-Labeling of Sierpinski graph

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Abstract

For a simple graph G with the vertex set $V(G)$ and the edge set $E(G)$, a total labeling $\mathbf{f}$: $\mathbf{V(G)} \cup \mathbf{E(G)} \rightarrow \{\mathbf{1}, \mathbf{2}, \ldots, \mathbf{k}\}$ is called an edge irregular total k-labeling if for any different edges xy and $x'y'$ in $E(G)$ their weights are distinct. The weight of edge xy is the sum of the label of edge xy, labels of x, and y. The smallest **k** for which the graph $G(V, E)$ admits an edge irregular total k-labeling is called the total edge irregularity strength of $G(V, E)$ and denoted by $tes(G)$. In this paper, we determine the exact value of the total edge irregularity strength of Sierpinski graph $S(n, 3)$.

Topology of Disjoint Union of Dual c-Convex Subgroups

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Abstract. Suppose $(G, +, R)$ is a cyclically ordered abelian group. In this article is discussed a parallel definition of order ideals for cyclically ordered abelian group G. Finally we obtained a topology for the space $X(G)$ of disjoint union of duals of c-convex subgroups of G.

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Dynamical Analysis on a Model of Predator Prey with Switching and Allee Effect[33]

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Abstract

We consider a model representing an interaction between prey and predator, where preys live in two different habitats and experience Allee effect in the second habitat. The dynamical analysis which is performed to the model shows that the system has three equilibria which need to meet existence conditions, while their stabilities are determined by using Routh Hurwitz criterion. The positivity and the boundedness of the solution are also shown. The analytical result is supported by numerical simulation.

Keywords*: *predator prey model, switching, Allee effect, dynamical analysis

Fractional Analysis on an Aflatoxin Spread Model

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Abstract

A fractional model describing the concentration changes of aflatoxin in plants, animals, and humans, which spread through food and animal feed is discussed. Dynamical analysis including determination of equilibrium point, its existence condition, and its stability is carried out. It is shown that there are four equilibrium points, with existence conditions for the three points. The existence as well as the stability conditions depend on basic reproduction number. Numerical simulations which are carried out support the results of dynamical analysis.

Keywords: aflatoxin, fractional, animal feed, basic reproduction number, equilibrium stability

Class : Class 9
Moderator : Dina Agustina, S.Pd.,M.Sc
Topic (Section) : Statistics (Online)

Name	Institution	Article Title
Nanda Arista Rizki	Universitas Mulawarman	Analysis of Mathematics Teacher's Comprehension on Ethnomathematics in the Context of the Kutai Tribe in terms of Ethnicity and Gender
Afifah Zahrunnisa	Islamic University of Indonesia	Comparisonal Analysis of Fuzzy Time Series Methods Ruey Chyn Tsaur And Stevenson Porter in Export Forecasting of Central Java Province
Enita Dewi Tarigan S.Si., M.Si	Universitas Sumatera Utara	INVESTMENT SELECTION ANALYSIS DURING THE COVID-19 PANDEMIC
Dedi Rosadi	Universitas Gadjah Mada	A comparative study of LSTM, GRU, and Conv-LSTM network model in forecasting COVID-19 new cases in Indonesia
Dedi Rosadi	Universitas Gadjah Mada	Dependent Nearest Neighbor (dNN) method to improving the performance of categorical data classification
Aldrich Ellis C. Asuncion	Ateneo de Manila University	Detecting Localized Systematic Fraud in the 2022 Philippine National Elections
Ulfasari Rafflesia	Universitas Gadjah Mada	Robust K-Means Clustering for Modeling the Spread of Coronavirus Disease in Indonesia
Riry Sriningsih	Universitas Negeri Padang/ITS	Modification of Multivariate Adaptive Regression Spline and Generalized Poisson Model Using Maximum Likelihood Estimation (MLE)
Affiati Oktaviarina	Universitas Brawijaya & Universitas Negeri Surabaya	Conditional Posterior Distribution of Generalized Space Time Autoregressive Model (1,1)

Analysis of Mathematics Teacher's Comprehension on Ethnomathematics in the Context of the Kutai Tribe in terms of Ethnicity and Gender

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Abstract

Mathematical literacy is still an interesting issue discussed in mathematics education in Indonesia. Learning through an ethnomathematical approach can answer the challenges of mathematical literacy in the context of the local culture. Kutai Kartanegara Regency, which is the majority of the Kutai tribe, can be investigated how the mathematical literacy ability of the math teacher through the activity of designing mathematical literacy questions in order to develop ethnomathematical-based learning. The population in this study were literacy scores and designing scores from junior high school mathematics teachers in Kutai Kartanegara Regency. The sample of this research were literacy scores and designing scores from 28 teachers who are research subjects. This study aims to obtain the models that describes the teacher's assessment score both literacy and designing scores when viewed from the ethnic and gender variables. The data analysis used were analysis of variance (anova) models for each assessment score. Each assessment score data was fitted into anova models such as 1-way anova, 2-way anova without interaction, and 2-way anova with interaction. The best anova model was selected based on the smallest AICc. Based on the results of the research that the best model for literacy score data was 1-way anova model when gender as the independent variable. AICc value for this model was 205.40 with a weight of 80%. The female teachers have higher literacy scores than the male teachers. Meanwhile, the best anova model for designing score data was 2-way anova with interaction where the AICc value and AICc weight were 200.04 and 52%, respectively. Designing scores were influenced by ethnic variables and their combinations with gender. Teachers with the Kutai ethnicity have higher scores than teachers of other ethnicities. The combination of ethnicity and gender variables influences the designing score more.
Keywords: Mathematics teacher's comprehension, Anova, Ethnomathematics, Kutai Tribe.

Comparisonal Analysis of Fuzzy Time Series Methods Ruey Chyn Tsaur And Stevenson Porter in Export Forecasting of Central Java Province

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Time series data is used as a description of the state or nature of variables in the past for forecasting the value of that variable in the future period. Forecasting is certainly very important to use in various fields, one of which is in the economic field. Exports from Central Java show an increasing trend, which indicates that the economy of Central Java will continue to grow. The growth of the economy certainly needs to be supported also through sources of funds. One of them is to attract Foreign Investment to invest in Indonesia. Export value needs to be controlled by developing the right strategy. This strategy can be realized if investors, policy makers, and economic actors know the condition of the future export value. Fuzzy Time Series forecasting method is a method without the need to fulfill assumptions as in other methods. The author is interested in comparing the Fuzzy Time Series method that has been developed, namely Ruey Chyn Tsaur and Stevenson Porter using export value data in Central Java in January 2012-February 2022. Forecasting results from the Ruey Chyn Tsaur Fuzzy Time Series method one period ahead in March 2022 amounted to 1052.5 million US$. As for the Fuzzy Time Series, Stevenson Porter has not been able to predict outside the data period, so it must be combined with the DES method from Holt with forecasting results of 823,8476648 million US$. Ruey Chyn Tsaur's Fuzzy Time Series method is the best method because it has a smaller MAPE value than the Stevenson Porter method of 6.91% and 11.54%, respectively.

Keywords: Forcasting, Fuzzy Time Series, Ruey Chyn Tsaur, Stevenson Porter, Export

INVESTMENT SELECTION ANALYSIS DURING THE COVID-19 PANDEMIC

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Abstract

The effect of COVID-19 cause many to seek a type of investment that has a low risk. Gold, stock, deposit and foreign exchange are the frequent investment choices, since it is capable of providing proportional profit or above the level of inflation rate. The profit of each choices itself is different according to the level of risk and time that are used to invest. The main purpose of this paper is to analyze the investment selection that is done during the pandemic of COVID-19. This analysis is done by comparing Linear Regression Model, Non Linear Regression Model and time series in order to choose investment that gives optimal profit. The selected model is the best model based on the smallest RMSE value. Every investment choice certainly has its own profit and weakness. The return of each type of investment will also be different based on the risk level and time that are used to invest. Prediction of investment selection becomes important to learn in order to know the type of instrument investment which gives the most most profitable return.

Keywords: Investment, Linear Regression, Non Linear Regression, Time Series

A comparative study of LSTM, GRU, and Conv-LSTM network model in forecasting COVID-19 new cases in Indonesia

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Abstract

The Coronavirus Disease 2019 (COVID-19) pandemic has emerged as one of the biggest challenges faced by researchers, especially in public health system. Since the virus spread and mutates quickly, strategies are needed so that the public health system doesn't collapse due to overcapacity. Modeling and forecasting accurately the COVID-19 daily new cases is very important to understand and help carry out risk management for the outbreak control. In this paper, we present a comparative study between Long Short-Term memory (LSTM), Gated Recurrent Unit (GRU), and Convolutional Long Short-Term Memory (Conv-LSTM) to forecast the number of COVID-19 daily cases in Indonesia based on daily confirmed cases from September 1st, 2020 to August 31th, 2021. The result is Conv-LSTM model produces better performance than other methods. Here we also provide 7 day out-of-sample forecast for daily cases from September 1st to September 7th, 2021 using each model.

Keywords: COVID-19 daily new cases, forecasting, Long Short-Term Memory (LSTM), Gated Recurrent Unit (GRU), Convolutional Long Short-Term Memory (Conv-LSTM)

Dependent Nearest Neighbor (dNN) method to improving the performance of categorical data classification

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Abstract

Classification analysis is a method used to predict classes or categories based on data class has been determined previously. The k-Nearest Neighbor (kNN) method is one of the most widely used methods in classification analysis due to the ease and simplicity of the algorithm. This strategy, however, is not without flaws, the determination of k which is difficult to determine and the determination based on the value of k results in a data being classified into a certain class, even though it has a long distance. The Dependent Nearest Neighbor (dNN) method is a method that determine the nearest neighbor based on similarities and dependencies. In the dNN method, the closest selected neighbor is a sample that is in the Dependency Region (DR). DR is an area formed from the parameters of the radius and an angle. This study aims to compare the performance generated by kNN and dNN using three datasets. Based on the analysis that has been done, the accuracy produced by the dNN method is greater than the kNN method.

Keywords: classification, kNN, dNN, performance

Detecting Localized Systematic Fraud in the 2022 Philippine National Elections

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Abstract

Based on existing election fraud detection methods, we apply different parametric generative models to the May 2022 Philippine national elections. Our analysis shows that because of how these parametric models rely on vote concentrations, the models are inconclusive at a national level, and must be adapted to lower levels of aggregated election data. In particular, preliminary results suggest that further analysis of the elections should compare vote distributions in individual provinces and investigate election fraud at the local level.
Keywords: election fraud, generative models, fraud detection, anomaly detection, national elections

Robust K-Means Clustering for Modeling the Spread of Coronavirus Disease in Indonesia

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Abstract

The Indonesian government has taken several policies to break the chain of transmission of the COVID-19 virus infection since the spread of this virus variant was first discovered in March 2020 in Indonesia. One of them is to require everyone to get vaccinated. This national vaccination program has been started since early January 2021 until now and expected to be one of the solutions to control the spread of covid-19 in Indonesia. This paper presents robust k-means to show the cluster of the spread of coronavirus disease in Indonesia after the implementation of the vaccine policy for Indonesian citizens. The k-means algorithm is considered to be the most important unsupervised machine learning method in clustering. It is a widely used partitional clustering algorithm in practice but it does not perform well in the presence of outliers. The variables considered in this study are the number of deaths, the number of recovered patients and the number of patients. Experimental comparisons are made with the basic k-means algorithm and robust k-means algorithm. The experimental results show that robust k-means algorithm in this paper has a better clustering effect in terms of accuracy and stability.

Keywords: robust, k-means, outliers, clustering, COVID-19

Modification of Multivariate Adaptive Regression Spline and Generalized Poisson Model Using Maximum Likelihood Estimation (MLE)

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Abstract

This paper discusses the formation of a multivariate adaptive generalized Poisson regression spline (MAGPRS) model which is a modification of the model between the multivariate adaptive regression spline (MARS) and generalized Poisson regression (GPR). Based on the formation of the model, then the estimation of model parameters is determined using the maximum likelihood estimation (MLE) method and is applied to the data on the number of cases of dengue hemorrhagic fever in Java. The results obtained are estimates of model parameters that are not closed form. Therefore, it was solved by the Bernd Hall Hausman (BHHH) numerical method.
Keywords: Bernd Hall Hall Hausman algorithm, generalized Poisson regression, maximum likelihood estimation, multivariate adaptive regression spline.

Conditional Posterior Distribution of Generalized Space Time Autoregressive Model (1,1)

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Abstract. Space time data is often used in research. One of the statistical methods used to model space time data is Generalized Space Time Autoregressive (GSTAR). Least squares method of estimating GSTAR parameters that has been used by many previous researchers. The weakness of this method is that there are assumptions that must be met, such as the error assumption that must be independent between locations. Bayesian can be used as an alternative method to estimate GSTAR parameters. One of the advantages of the Bayesian estimator is that it can be used on models that do not meet the assumption of an independent error between locations. The research purpose is to find marginal posterior distribution of GSTAR (1,1) model. The prior distribution used in the research is a combination of the Multivariate Normal and Wishart distribution.
Keywords: ***GSTAR, least square, prior, posterior, multivariate normal, wishart***

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Class : Class 10
Moderator : Saddam Al Aziz, S.Pd., M.Pd.
Topic (Section) : Mathematics Education (Online)

Name	Institution	Article Title
Muhammad Iqbal	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	PROMETHEE METHOD FOR MEASURING EMPLOYEE PERFORMANCE INDICES
Havid Syafwan	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	Comparison of Double Moving Average And Double Exponential Smoothing Methods For Unemployment Forecasting In North Sumatra
Saddam Al Aziz, S.Pd., M.Pd.	Universitas Negeri Padang	Needs Analysis On EDI-MOMS (Interactive Digital E-book Based On Online Multimedia Math Solver) Equipped with Math Solver Using Flip PDF Corporate Edition 3D
Saddam Al Aziz	Universitas Negeri Padang	The Analysis of Mathematics Teacherâ€™s Interest Using PIECES Framework on The Use of Padlet Integrated by Online Math Solver as E-Learning
Rolly Yesputra	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	Design and Analysis of Kindergarten Student Security Devices Using RFID and Based on IoT
Masitah Handayani	Sekolah Tinggi Manajemen Informatika dan Komputer ROYAL	VIKOR Method Analysis in Performance Assessment of Education Personnel
Hambali	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	APPLICATION OF TREND MOMENT METHOD IN FORECASTING WEB-BASED ANIMAL FEED INVENTORY
Nurul Rahmadani	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	Dynamical Analysis on a Model of Predator Prey with Switching and Allee Effect
Zulfi Azhar	STMIK Royal Kisaran	Implementation of RASTA Rice Assistance Groups Using K-Means Clustering Method

PROMETHEE METHOD FOR MEASURING EMPLOYEE PERFORMANCE INDICES

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ABSTRACT

Termination of Employment is a complex problem related to unemployment, criminality, and employment opportunities. At the end of each year, the company evaluates to improve the organization's performance. Promethee method was used in this study with criteria consisting of timely attendance, fingerprint attendance, administrative tasks, field tasks, work results, time efficiency, finances, attitudes to superiors, attitudes to subordinates, emotional control, behavior, self-confidence, loyal to work, able to work under pressure, skills and knowledge. Data Transformation is carried out to meet the criteria value's fundamental assumptions so it can be processed. The purpose of this study is to measure the performance index of employees who are eligible for promotion or termination. Research obtains the results of ranking employees with the highest and lowest scores as support for training decisions or appreciation for employees.
Keyword : Promethee, Employe, Performance, Promotion, Decisions

Comparison of Double Moving Average And Double Exponential Smoothing Methods For Unemployment Forecasting In North Sumatra

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Abstract

This study aims to determine the best equation method and model for forecasting the number of unemployed in North Sumatra Province in 2022. This study uses secondary data from the Central Statistics Agency (BPS) of North Sumatra Province where the actual data is taken for 22 years from 2000 to 2021. The results of this study are the best parameters of each method were for the Double Moving Average method with an average time parameter of 6 periods and the Double Exponential Smoothing method with a parameter = 0.5. The 6-period Double Moving Average accuracy test shows a MAPE value of 15.85% while Double Exponential Smoothing with = 0.5 indicates a MAPE value of 16.45%. This study concludes that the best forecasting model for the number of unemployed in North Sumatra Province in 2022 is to use the 6-period Double Moving Average method to forecast the number of unemployed in 2022 as many as 449240 people.

Keywords: Forecasting; Unemployment; Double Moving Average; Double Exponential Smoothing method.

Needs Analysis On EDI-MOMS (Interactive Digital E-book Based On Online Multimedia Math Solver) Equipped with Math Solver Using Flip PDF Corporate Edition 3D

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Abstract

Interactive digital e-books must contain various information such as text, images, and videos so that graphics only convert print into pdf format electronic books like those that are circulating in general. The innovation for this problem is EDI-MOMS (Interactive Digital E-book based on Multimedia Online Math Solver) which is equipped with Math Solver using Flip PDF Corporate Edition 3D. Based on the analysis of student needs, the key additional important component needed in the module compared to modules in general is the explanation of the material in the form of videos. The type of research is development research with the Plomp development model.

Keywords: edi_moms, online_math_solver, flip_pdf_corporate_edition_3d

The Analysis of Mathematics Teacher's Interest Using PIECES Framework on The Use of Padlet Integrated by Online Math Solver as E-Learning[44]

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Abstract

This study aimed to analyze mathematics teacher's interest on using Padlet integrated by online math solver as e-learning. The subject of this study is mathematics teacher from Painan. This study started by training and workshop in three weeks. The instrument that used to gather the data is questionnaire using PIECES(Performance, Information and Data, Economic, Control and Security, Efficiency, and Service) framework. Based on data analysis the conclusion is the teachers have high interest and the workshop is important to them.
Keywords: flipbook, integral, practical, valid.

Design and Analysis of Kindergarten Student Security Devices Using RFID and Based on IoT

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Abstract: Kindergarten educational institutions need to implement good security tools to protect their students. It is very important to check the identity of the student's parents. This is to avoid the risk of kidnapping and violence against children. So it is necessary to make a prototype tool to identify the identity of the introduction and pick-up of students by using student identification cards. The research began by making a prototype of a student safety device with an identity card equipped with a microcontroller-based RFID, programming, and measuring device performance. This tool is equipped with RFID and ESP8266 on a web server via an LCD monitor installed in the school waiting room and online via the internet network. Whenever there is activity on the device, the device will notify via SMS to the parent's number. The accuracy rate of reading RFID data is 90% based on sensor measurement results. Each reading of data will be stored in the database. Overall the tool works well.

Keywords: Kindergarten, RFID, ESP8266, IoT

VIKOR Method Analysis in Performnace Assessment of Education Personnel

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Abstract

In addition to educators (lecturers), other resources owned by a university are educational staff. The role of TENDIK influences the progress of higher education so that competent TENDIK are entitled to an appreciation based on their performance. Objective performance appraisals motivate TENDIK to work even more complicated because they will get rewards. The VIKOR method chosen helps in the decision-making process by comparing several criteria with some alternatives. Based on the seven criteria assessed, initiative, innovation, communication, adaptability, motivation, cooperation, and independence, using the VIKOR method, the selected education staff is A1 (Misriadi) with a Qi value of 0.10.

Keywords: VIKOR Method, Performance, Assessment, Education Personnel

APPLICATION OF TREND MOMENT METHOD IN FORECASTING WEB-BASED ANIMAL FEED INVENTORY

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Abstract

The problem of availability of one type of animal feed that accumulates or lacks stock results in losses experienced by the owner of UD. Robintangta because sales recording is done manually. So the author does forecasting calculations by paying attention to sales trends using the trend moment method, which is applied in making PHP and MySql programming language applications. The result makes it easier for owners to determine the stock of animal feed that is sold for the next period.
Keywords: Forecasting, Inventory, Trend Moment Regression, PHP, MySql

ANALYSIS OF MAUT METHODS IN DETERMINING RECIPIENTS FOR THE HOPE FAMILY PROGRAM (PKH)

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Abstract

The Family Hope Program (PKH) aims to improve living standards through education, health, and social welfare services. However, selecting the recipients is often considered not right on target, due to data that is not up to date and there are no right-targeted criteria. Therefore, a decision-making system using the MAUT method is needed in determining the recipients of the Family Hope Program assistance for education services in Petatal Village, Batubara Regency with 8 criteria. With the application of the MAUT method, it is found that A3 is the most appropriate to receive PKH assistance.
Keywords : MAUT Method; PKH; The Hope Family Program

Implementation of RASTA Rice Assistance Groups Using K-Means Clustering Method

Zulfi Azhar

The government assists by distributing prosperous rice to the poor through the village government through BULOG. Process of identifying the recipients of RASTA assistance help is still manually. Problems arise in data processing, especially in prioritizing and classifying the provision of assistance to the poor in the village of Air Teluk Hessa, Air Batu District, and Asahan Regency. In data processing, the value of each criterion needed to be a benchmark for selecting residents who are the main priority for assistance. That study, using the K-means clustering method with qualitative data on population data classified as poor based on adjusted criteria for determining the acceptance of RASTA assistance. The results of this study found 2 clusters, namely cluster 1 had 37 people, and cluster 2 had 13 people. This method resulted in grouping the number of residents as priority recipients of RASTA assistance in Air Teluk Hessa Village, Air Batu District, and Asahan Regency.

Keywords: assistance, k-means clustering, criteria, the population is classified as poor, RASTA

Class : Class 11
Moderator : Khairani, S.Pd.,M.Pd
Topic (Section) : Computer Science (Online)

Name	Institution	Article Title
Ahmad Muhazir	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	POVERTY LEVEL PREDICTION ANALYSIS BASED ON BPS DATA USING SIMPLE MOVING AVERAGE METHOD
Mardalius	STMIK Royal Kisaran	Geographic Information System for Covid-19 Vaccine Distribution With Laravel Framework
EDI KURNIAWAN	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	Usability Heuristic Study of the Website Interface of Asahan University, Indonesia
IQBAL KAMIL SIREGAR	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	IMPLEMENTATION OF THE ELECTRE METHOD AND MULTIFACTOR EVALUATION PROCESS METHOD DETERMINATION OF SINGLE TUITION RECIPIENT
Bachtiar Efendi	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	IoT-Based IoT-Based Control of PDAM Tirta Silau Piasa Distribution Pipe Leaks
Muhammad Ardiansyah SS	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	ANALYSIS AND ESTIMATION OF GAS EMISSIONS FOR MOTOR VEHICLES BASED ON MACHINE LEARNING
Yori Apridonal M	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	Employee Recruitment Data Mining Application Using the Naive Bayes Algorithm
William Ramdhan	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	Mapping Cases of Violence against Children and Women Using the K-Means Algorithm
Patricia Alexandra Robalo A.	University of Beira Interior	Estimation using Gamma distribution in Bi-additive models
Sahren	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	Analysis Of Intelligent Load Balancing On Software Defined Network Architecture

POVERTY LEVEL PREDICTION ANALYSIS BASED ON BPS DATA USING SIMPLE MOVING AVERAGE METHOD

Ahmad Muhazir,Widiarti Rista Maya, Elfitriani, Nurkarim Nehe,Harmayani

Abstract

Data on the poverty rate in Indonesia is very important because it can be used as a parameter of the prosperity of the Indonesian people and can also be an evaluation for the government. BPS is in charge of presenting real data through survey and census results and the data presented by the Central Statistics Agency is often delayed. To overcome the delay, predictions are made using the simple moving average method to extract and identify potential and useful knowledge information stored in large databases.

Geographic Information System for Covid-19 Vaccine Distribution With Laravel Framework

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Abstract

Corona Virus Disease 2019 (Covid-19) has been declared a pandemic by the World Health Organization (WHO). The spread of the Covid-19 virus is growing every day. Indonesia is one of the countries with the highest number of cases of the Covid-19 virus. The spread of Covid-19 in Indonesia does not only occur in the capital city, but has spread to all provinces since one month after the announcement of the Covid-19 case. To reduce the number of Covid-19 cases, one of the efforts to break the chain of transmission of the Covid-19 virus is vaccination. Covid-19 vaccination services spread throughout Indonesia carried out in government-owned and private health service facilities in the form of puskesmas or sub-health centers, clinics, and hospitals. The distribution of the Covid-19 vaccine in various vaccine service facilities requires a good distribution of the Covid-19 vaccine. Geographic Information Systems (GIS) have a broad role, can be applied to various natural phenomena that occur. Not only the issue of urban planning and regional planning, but also being able to map the distribution of the Covid-19 vaccine. Through the help of the Geographic Information System application, the distribution of the Covid-19 vaccine in each region can be easily seen on a map view. The Covid-19 vaccine distribution map can be made statically or dynamically (real time), depending on the provision of data and input...

Keywords: *GIS, Covid-19, Vaccine*, .

Usability Heuristic Study of the Website Interface of Asahan University, Indonesia

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Abstract

Since the Covid-19 pandemic broke out, the internet and websites have become a priority in supporting academic services at Indonesian universities, especially at Asahan University. A website's service quality can be optimized by studying the user interface's usability and convenience. This research involves experts as evaluators to evaluate usability problems on the Asahan University website based on heuristic principles. The results of this study can be used as a reference for recommendations for improvement in website development for the better.

Keywords: Human-Computer-Interaction; Usability; Heuristic Evaluation; Website; User Interface;

IMPLEMENTATION OF THE ELECTRE METHOD AND MULTIFACTOR EVALUATION PROCESS METHOD DETERMINATION OF SINGLE TUITION RECIPIENT [49]

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Abstract

The system can solve a problem in decision-making accurately and on target. Many problems can be solved by using a decision support system, one of which is the determination of the provision of single tuition fees to deserving students using the Electre method and the Multifactor Evaluation Process method. This research will produce a system that can determine the recipient of the Single Tuition Fee in the hope of being able to provide according to the target based on the assessment of pre-determined criteria. The system will search by making decisions according to the method used; once obtained, the system will display accurate decisions

Keywords: Implementation, Decision Support System, Single Tuition Fee

IoT-Based IoT-Based Control of PDAM Tirta Silau Piasa Distribution Pipe Leaks

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Abstract

PDAM Tirta Silau Piasa Asahan To detect and control leaks in the water distribution pipe, a prototype system was designed using 2 flow meter sensors, 2 moisture sensors, and 2 solenoid valves. Based on the test, the system works if the humidity sensor and flow meter detect a leak. The leak causes the water discharge to be less than 30 L/second. Leak messages are sent to cellphones and LCD screens within 5 to 8 seconds after being detected.

Keywords: IoT, Pipe Leakage, Asahan PDAM, Flow Meter Solenoid Valve Hygrometer

ANALYSIS AND ESTIMATION OF GAS EMISSIONS FOR MOTOR VEHICLES BASED ON MACHINE LEARNING

Muhammad Ardiansyah Sembiring[1,a)], Raja Tama Andri Agus[2)], Mustika Fitri Larasati Sibuea[3)], Ulfah Syuhada Nasution[4)], Rika Nofitri[5)]

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Abstract. The increasing population, accompanied by the development of technological advances, especially in the world of transportation, has led to the creation of vehicles of various types and the increase in CO2 gas emissions resulting from the combustion of vehicle fuels. The need for estimation efforts to determine the estimated CO2 gas emissions produced by vehicles with different engine sizes, cylinders and fuel consumption. Machine learning-based estimation using a regression model. There are seven regression models, including (1) Linear Regression, (2) Support Vector Regression – Linear, (3) Support Vector Regression – RBF, (4) Decision Tree Regression, (5) Random Forest Regressor, (6) Gradient Boosting Regression, and (7) NLP Regressors were compared in this study. We will look for the best model with the best accuracy value. The Gradient Boosting Regression model has a better accuracy increase in 4 accuracy tests with training and test data ratios of 90:10, 80:20,70:30 and 60:40. As a result, the Gradient Boosting Regression method has an accuracy rate of 98% with an RMSE of 5.89426278 at a data test ratio of 90:10 and 96% at a data test ratio of 70:30 with an RMSE of 11.29584732.

Keywords: Machine Learning; Estimation; Gas Emissions; Motor Vehicles.

Employee Recruitment Data Mining Application Using the Naïve Bayes Algorithm

Yori Apridonal M

ABSTRACT

In a company, employees are the main movers of the company and the role of an employee is very important to help run business processes in the company. PT. Kumala Gasindo Lestari recruits employees who are deemed to meet the qualifications required by the company. However, there are several obstacles in the employee recruitment process, where the file selection process and data collection of prospective new employees before the test are to determine a decision because the process is still manual and employee recruitment must be right on target because if it is wrong in the hiring decision it will cause performance that is not by management. company. The concept of data mining will make it easier to overcome these problems, so the classification method can find models that distinguish concepts or data classes to be able to estimate the class of an object. Therefore, the Naive Bayes algorithm can predict future opportunities based on previous experience. In this study, researchers took 41 data on prospective employees, using 4 criteria, namely Graduates, Salary Demand, Work Experience, and Classification. The results of this research are expected to help PT. Kumala Gasindo Lestari in determining the appropriate and effective recruitment of employees.
Keywords: Data Mining, Naïve Bayes Algorithm, Prediction, Employee Recrutment

Mapping Cases of Violence against Children and Women Using the K-Means Algorithm

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Abstract

Violence against women is still largely shrouded in various legal systems, economics and religious values as well as violent traditions or customs to reveal the violence experienced. The high rate of violence against children and women in Asahan Regency requires special attention by the Office of Population Control, Family Planning, Women's Empowerment and Protection (P2KBP3A) in Asahan Regency to provide different and more focused and focused handling of areas with high levels of violence against children and women in the household. Data mining is a data search process in order to gain knowledge of the discovery of data on violence against children and women in households in Asahan Regency. Computing the K-Means Algorithm which is used to cluster areas prone to acts of violence against children and women in the household. This research uses data on violence against children and women in the household sourced from the P2KBP3A Office of Asahan Regency with a time span of 2016-2021 with variables of physical violence, psychological violence, sexual violence, neglect, categories of children and categories of women which are then divided into 3 clusters, namely high, medium and low clusters. Then the results obtained are cluster 1 (C1) with 5 sub-districts of moderate violence, cluster 2 (C2) with the lowest amount of violence as many as 18 districts and cluster 3 (C3) with the highest amount of violence as much as 2 sub-districts. Based on the results of clusters against cases of violence against children and women in the household, it became a solution in helping the Office of Population Control for Family Be Empowering Women and Protection (P2KBP3A) of Asahan Regency carry out different handling focused and focused on the results of cluster analysis in each sub-district in the district. Asahan District.

Keywords: Data Mining, K-Means, Clustering, Child and Women Violence, P2KBP3A

Estimation using Gamma distribution in Bi-additive models

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Abstract

In our work, we present an application in the field of mixed models, where we introduce bi-additive models. For that, we consider the case in which the components of the vector of the random part of the models are distributed as Gamma distribution. We simulate the vectors from the random part and their estimates achieve good precision.

Keywords: Cumulants, Confidence Ellipsoids, Edgeworth Expansion, Gamma distribution, Mixed models.

Analysis Of Intelligent Load Balancing On Software Defined Network Architecture

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Abstract

Increased scalability of network usage demands maximum performance. This condition is difficult to meet if you only use one server. To overcome this, the solution used is artificial intelligence load-balanced on the Software-Defined Network (SDN) architecture with an artificial neural network. SDN's artificial intelligence will be able to make intelligent decisions to distribute network traffic to multiple servers. The results of the analysis show that the intelligent load-balanced performance at SDN is feasible and can be proposed.

Keywords: Artificial Intelligent; Load-Balanced; Network Traffic; Neural Network; SDN; Server;

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Class : Class 12
Moderator : Trysa Gustya Manda, S.Pd.,M.Pd
Topic (Section) : Computer Science (Online)

Name	Institution	Article Title
Afrisawati	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	The Combination of AHP and Smart Methods in the Selection of Laying Chicken Types
Dewi Anggraeni	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	IMPLEMENTATION OF DATA MINING TO PREDICT STUDENT GRADUATION USING C4.5 ALGORITHM METHOD
Guntur Maha Putra	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	Mapping of Crime Prone Areas in Batubara Districts Using The K-Means Method
Irianto	Sekolah Tinggi Manajemen infomatika dan Komputer Royal	Decision making in determining the most desirable chili using FMCDM
Samsul Arifin	Universitas Bina Nusantara	Designing Information Mapping Regarding Covid-19 Vaccination
Samsul Arifin	Universitas Bina Nusantara	A Systematic Literature Review: Analysis and Improvement of Walmart Supply Chain
Samsul Arifin	Universitas Bina Nusantara	Application of Waterfall Methods in a Product Registration Monitoring System
Selly Pratiwi	Indonesia Defence University	Data Mining on Usage Trends of Lithium Ion Batteries: Review Article
NASRUN MARPAUNG	Sekolah Tinggi Manajemen Informatika dan Komputer Royal	IMPLEMENTATION OF THE SCRUM METHOD IN E-SKPI APPLICATION DEVELOPMENT

THE COMBINATION OF AHP AND SMART METHODS IN THE SELECTION OF LAYING CHICKEN TYPES

Afrisawati

Abstract: Chicken eggs are a staple food for Indonesian people as the easiest complement to animal needs in the daily menu. Therefore, the need for chicken eggs is increasing day by day. This is also in line with the increase in local independent chicken farmers in the villages. To produce chicken eggs that have high quality and productivity, a method that uses technology is needed. So far, what has happened to laying hens in determining the type of chicken that is kept is still using the traditional way of prioritizing the cheapest price for laying hens. By using the expected combination method from AHP and SMART, laying hens can be more objective in choosing types of laying hens that have high productivity so as to increase financial benefits for laying hens.

Keyword: Laying hens, SPK, AHP, SMART

IMPLEMENTATION OF DATA MINING TO PREDICT STUDENT GRADUATION USING C4.5 ALGORITHM METHOD

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Abstract: Students graduating on time are an important indicator for a higher education institution in supporting campus accreditation. Several factors cause students to graduate on time or not graduate on time, namely the origin of the previous student's school and student interest. The purpose of this study is to predict student graduation based on the origin of the previous student's school and student interest so that higher education institutions can get the basis for decisions that will be taken in the future. The method used in analyzing student data and supporting criteria for predicting student graduation is the C4.5 algorithm. Then for the decision tree classifier this research uses data mining.

Keywords: C4.5 Algorithm; Data Mining; Student Graduation Prediction

Mapping of Crime Prone Areas in Batubara Districts Using The K-Means Method

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Abstract

Crime is a complicated problem that has a wide impact on all levels of society. This study tries to develop an information system that can display and map the number of crimes that occurred in Batu Bara Regency in Grouping. The method used is K-Means Clustering where grouping is done to determine the level of vulnerability of an area. The grouping is taken based on the density of the crime scene from the crime that occurred so that the resulting output is expected to make it easier for users to distinguish the level of vulnerability between one area and another. The results of this study indicate that security in Batu Bara Regency tends to be vulnerable around the city center, while suburban areas with relatively low population density tend to be safer. In terms of time, the crime with the highest identity occurred late at night.
Keywords: Crime, Mapping, K-Means, Clustering

Decision making in determining the most desirable chili using FMCDM

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Abstract

Indonesia is a country that has a majority population of farmers. Asahan Regency, which is located in North Sumatra Province, has chili commodities that are cultivated by farmers. farmers must be able to know the type of chili that consumers are interested in so that they do not experience losses at harvest. FMCDM is a method that can assist in determining the type of chili that consumers are interested in, where all criteria are converted into all numbers.

Keywords: Chili; Decision Making; Fuzzy Multi Criteria Decision Making;

Designing Information Mapping Regarding Covid-19 Vaccination

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Abstract. Vaccination against COVID-19 has become the main focus in preventing an increase in COVID-19 cases. Governments in each country are trying to spread vaccinations evenly for their people, including in Indonesia. The implementation of vaccination in Indonesia is distributed from the central government to each local government, with the hope that people in each region can immediately get a COVID-19 vaccination, people can easily get vaccinations by visiting public health facilities such as health centers and regional hospitals. Although vaccination has been socialized since 2020, sometimes people are still confused about finding the location of health facilities that provide COVID-19 vaccination services, therefore a system is needed that can make it easier for people to find the location of vaccination service providers. By applying a Geographic Information System (GIS) to data on health facilities providing COVID-19 vaccination services, it is hoped that it will make it easier for people to find the location of health facilities providing vaccination services. The mapping is done by creating a dashboard for the distribution of health facilities providing vaccine services per sub-district that focuses on the DKI Jakarta Province. The dashboard of the distribution of vaccination service locations provides a search feature as well as complete information about health facilities providing vaccination services.

A Systematic Literature Review: Analysis and Improvement of Walmart Supply Chain

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ABSTRACT

Walmart is a company that has a base of producing and distributing products. The development of the supply chain that is currently developing makes Walmart should know andunderstand the latest issues or challenges which are faced by the company in managing its supply chain. This study aims to analyze the use of optimal strategy or planning for Walmart so that it can organize well. Walmart implemented a vendor-managed inventory model used bysuppliers to access data from the company's system. Another Walmart strategy was to form theapplication that specifically aims to always provide information about sales data and reload stock in the storage sector. This study proposed a supply chain system that uses FIFO (First InFirst Out) method. This method is a method to send the first product in as the first product outto be shipped, so that the first product out is a product which has good condition and no damage on the product.

Application of Waterfall Methods in a Product Registration Monitoring System

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Abstract. Registration of a new product is one of the tiring jobs if done manually. In a company, the product registration process starts from collecting registration data until finally obtaining a Marketing Permit Number (NIE) certificate. Unfortunately, the process of getting NIE is not done just once but repeatedly. This is what makes researchers develop a system that monitors the product registration process. The system created will be called Product Registration Monitoring phase 2 (Promon-2). Promon-2 itself is a development of the previous version by adding a validation feature. Making this system is done by the Waterfall method. The waterfall method itself is used because the process carried out in making this system needs proper design so that the system will not experience major updates regularly. The choice of the waterfall model is also because a rapidly changing system will mess up documents or the ongoing registration process. The results of the Promon-2 system can be said to be running well according to feedback from users, namely PT. Kalbe Farma Tbk.

Keywords: Registration, monitoring process, validation, Waterfall methods

Data Mining on Usage Trends of Lithium Ion Batteries: Review Article

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Abstract

Lithium-Ion Battery (LIB) technology plays a very important role and continues to develop, it's in line with the continuous development of portable electronic, energy storage technology, electric vehicles, and the greening of grids issue. Research and Development of LIB's are very interdisciplinary and consists of many specialized and innovative processes and numerous influencing factors. In contrast to more established sectors, the processes and their interactions are not well understood yet. For this reason, an appropriate analytical method is needed to support the development and mastery of LIB technology as a capable energy storage technology in the future. Data mining is the process of analyzing data to find hidden patterns from data sets can represent large data into the information in the form of patterns that have meaning for decision support. Therefore, this article presented a theoretical approach to Data Mining processes to describe trends in LIB's which are very useful as initial data to support the implementation of Research and Development of battery technology, Technology Readiness Level (TRL), the availability of Natural Resources as raw materials and to support the realization of the Self-reliance of Battery Industry in Indonesia.

Keywords: Data Mining, Electric Vehicles, Energy Storage, Lithium Ion Battery

IMPLEMENTASI METODE SCRUM PADA PENGEMBANGAN APLIKASI E-SKPI

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Abstract

Technological developments also affect the achievement of accurate and good information with a good system such as the SKPI application that can assist in documenting the learning achievements and qualifications of graduates that are not contained in diplomas or transcripts. The SKPI submission process is carried out by bringing the qualification files directly to the study program, which requires students to come to campus. It becomes an obstacle because it is less effective in terms of time management and has to wait for the results of the files to be received or not. The information system for Diploma Companion Certificate (E-SKPI), which users can access online, will greatly facilitate graduates to submit existing competency qualification documents. In addition, it also reduces the study program in managing and processing qualifications submitted by students and graduates. In designing this application, a good design model must be completed on time and structured so that it can be completed quickly and well, producing features that suit its users' needs. One model that can be used is Agile SCRUM. Qualitative methods explain research based on facts from a phenomenon of the studied object. Then, the Agile Scrum development model will be used in the application development process. SKPI application development using the scrum method is divided into several stages: Product Backlog, Sprint Backlog, Sprint Planning, Sprint, then Daily scrum meeting and Product Increment. So that the selection of the scrum development method is more appropriate because it is dynamic and flexible by obtaining work that is effective and efficient in terms of time and is structured in working on the required features.
Keywords: SCRUM; Development; SKPI,