PAPER GUIDELINES AND ABSTRACTS

ICM2E

The 5th International Conference On Mathematics and Mathematics Education

"Developing Mathematics, and Mathematics Educational Researches Oriented to Sustainable Development Goals"

Padang
September 25th-26th 2021

ORGANIZED BY

UNIVERSITAS NEGERI PADANG · UNP ·

PAPER GUIDELINES AND ABSTRACTS

The 5th International Conference on

Mathematics and Mathematics Education (ICM2E 2021)

MATHEMATICS DEPARTMENT
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNIVERSITAS NEGERI PADANG
SEPTEMBER, 25th-26th 2021

THE COMITTEE OF INTERNATIONAL CONFERENCE ON MATHEMATICS AND MATHEMATICS EDUCATION (ICM2E 2021)
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FACULTY OF MATHEMATICS AND NATURAL SCIENCE
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RUNDOWN WEBINAR
The 5th International Conference on Mathematics and Mathematics Education
September 25th - 26th, 2021

Day/date	Time	Activity	PIC/Moderator
Saturday/25th Sept 2021	07.30– 08.00	Preparation	Committee
	08.00 – 09.30	Opening:	MC: Rara Sandhy Winanda,S.Pd.,M.Sc
		National Anthem of Indonesia	Commitee (IT)
		Reciting the Holy Qur'an	Fardathil Aini
		Welcoming Speech by: 1. The Chief of Committee 2. Dean of Faculty of Mathematics and Natural Sciences 3. Rector of UNP	Dr. Suherman Dr.Yulkifli, S.Pd.,M.Si Prof. Ganefri, Ph.D
		Do'a	Drs. Mukhni, M.Pd
		Break	Committee
	Plenary Keynote Speakers		
	09.30 – 10.00	Dr. Sitti Maesuri Patahuddin, University of Canberra, Australia	1. Dra.Fitrani Dwina,M.Ed. 2. Dr. Armiati, M.Pd
	10.00 – 10.30	Live Discussion	
	10.30 – 11.00	Dr. Nor Zila Abd Hamid, Fakulti Sains dan Matematik, Universiti Pendidikan Sultan Idris	1. Dr. Devni Prima Sari, S.Si.,M.Si 2. Dr. Yarman, M.Pd
	11.00 – 11.30	Live Discussion	
	11.30 – 13.00	Break/Lunch	Committee
	13.00 – 13.30	Dr. AriefGusnanto, University of Leeds, Leeds, England, United	1. Defri Ahmad, S.Pd.,M.Si

Day/date	Time	Activity	PIC/Moderator
		Kingdom	2. Fridgo Tasman, S.Pd.,M.Sc
	13.30 – 14.00	Live Discussion	
	14.00 – 14.30	Prof. Dr. Yerizon, M.Si, Universitas Negeri Padang	1. Ronal Rifandi, S.Pd., M.Sc 2. Trysa Gustya Manda, S.Pd.,M.Pd
	14.30 – 15.00	Live Discussion	
Sunday/26th Sept 2021	08.00 – 09.00	Preparation	Committee
	09.00 – 15.00	Parallel Session	Moderator: 1. Dr.YulyantiHarisman, M.Pd 2. Nurul Afifah Rusyda, S.Pd.,M.Pd 3. Maulani Meutia Rani, S.Pd.,M.Pd 4. Trysa Gustya Manda, S.Pd.,M.Pd 5. Khairani, S.Pd.,M.Pd 6. Saddam Al Aziz, S.Pd.,M.Pd 7. Dina Agustina, M.Sc. 8. Ronal Rifandi, S.Pd., M.Sc

Class : Class 1
Moderator : Dr. Yulyanti Harisman, M.Pd

Pukul	Nama	Institusi	Judul Makalah
09.00 – 10.00	Gusti Rada, S.Pd	Universitas Negeri Padang	The cause of the decreased activeness of students in learning mathematics online during the covid-19 period
	Beni Junedi	Universitas Bina Bangsa	Assessment of Mathematics Self Efficacy and Mathematics Achievement in Online Learning
	Novi Yendra	Padang State University	Development of Problem Based Learning (PBL) Learning Tools to Improve Mathematical Problem Solving Ability of Class VIII SMP/MTs Students. Master's Program in Mathematics and Natural Science Education, Padang State University
10.00 – 11.00	Silvia Fitriani	Universitas Negeri Padang	Development Of Learning Tools Based On Learning Cycle 7E Assisted By Mind Mapping For Problem Solving For Junior High School Students
	Ahmad Fauzan/Wita Tri Yanti	Universitas Negeri Padang	The Roles of MathematicalCognition-based Learning Design in Improving a Slow Learner Understanding about Numbers
	Supriadi	Universitas Pendidikan Indonesia	Endog-endogan games of fractional number ideas in ethnomathematics learning

11.00 – 12.00	Dian Permata Sari	Universitas Negeri Padang	Development of Mathematics Learning Devices Using Brain Based Learning Models to Improve Mathematical Creative Thinking Ability of Class X High School Students
	HELMA	Universitas Negeri Padang	The Effect of Using Flow Proof in Conducting Preliminary Analysis in Real Analysis Courses to Improve Mathematics Problem Solving
	Edwin Musdi	Universitas Negeri Padang	Improve Problem-Solving Skills with Using Learning Trajectory Based On Realistic Mathematics Education

THE CAUSE OF THE DECREASED ACTIVENESS OF STUDENTS IN LEARNING MATHEMATICS ONLINE DURING THE COVID-19 PERIOD

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Abstract

The covid-19 pandemic requires that various fields in daily life undergo system changes, one of which is the field of education that implements an online learning system. In fact, the practice of online learning is not maximal in face-to-face learning in class, especially in mathematics. Online learning seems sudden because of Covid-19 so that the preparation for implementing it is not optimal and students feel unprepared for its implementation. This causes a decrease in the activeness of students in learning mathematics. The results of observations in one high school in Riau province show that the average student activity in class is only 6.7% during online learning. This study aims to dig deeper into the causes of the decreased activeness of students in learning mathematics during online learning. This type of research is qualitative research. The data collection technique used is snowball with the research instrument used is an interview guide. The research subjects consisted of high school students who participated in online learning. The data collected were analyzed descriptively qualitatively. The technique to guarantee the validity of the data is triangulation. The results of the study showed several causes for the decreased activity of student in learning mathematics online during the covid-19 period, namely: (1) unstable internet network and difficulty buying internet quota; (2) Online learning takes place in a monotonous manner; (3) Difficulty learning independently; (4) Lack of confidence because they rarely interact with classmates.
Keywords: Online Learning, snowball.

ASSESSMENT OF MATHEMATICS SELF EFFICACY AND MATHEMATICS ACHIEVEMENT IN ONLINE LEARNING

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Abstract

Online learning is a solution to the learning system during the covid 19 pandemic. Online learning is learning that is done using applications that are connected to the internet or a network. Online

learning is carried out by means of face-to-face interaction or indirect interaction between lecturers and students using various learning platforms. The interaction between lecturers and students indirectly changes the habit of direct interaction in learning. This has a psychological impact on both lecturers and students. Psychologically perceived by students in the form of lack of self-confidence of students in their ability to learn mathematics and anxiety in understanding mathematical material well. This study aims to examine the concept of student self-confidence in mathematics and student learning outcomes in mathematics, how to assess and measure student mathematics self-confidence and student learning outcomes in online learning. This research is a literature study. Data were collected by reviewing the literature to understand the concept, formulating indicators to measure students' mathematical self-confidence and student learning outcomes. The results of the study were the arrangement of indicators, questionnaires and a measurement scale for students' mathematical self-confidence and student mathematics learning outcomes.
Keywords: Mathematics self-efficacy, mathematics achievement, online learning

DEVELOPMENT OF PROBLEM BASED LEARNING (PBL) LEARNING TOOLS TO IMPROVE MATHEMATICAL PROBLEM SOLVING ABILITY OF CLASS VIII SMP/MTS STUDENTS. MASTER'S PROGRAM IN MATHEMATICS AND NATURAL SCIENCE EDUCATION, PADANG STATE UNIVERSITY.

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Abstract

The results of the preliminary analysis obtained information that students' mathematical problem solving abilities were still low. This is because students are less actively involved in the learning process and the learning tools used have not met the needs of students to look more active in the learning process. The research objective is to develop a Problem Based Learning (PBL) based learning tools with valid, practical, and effective criteria. The learning tools developed are Learning Implementation Plans (RPP) and Student Worksheets (LKPD). This research is a development research using the Plomp model which consists of three phases, namely the preliminary research phase, the development or prototyping phase and the assessment phase. In the preliminary research stage, needs analysis, curriculum analysis, student characteristics analysis, and concept analysis were carried out. At the prototype stage, PBL-based LKPD is designed, then formative evaluation includes self-evaluation, one-to-one evaluation, and small group evaluation to determine the validity and practicality of the product. At the assessment stage, an assessment is carried out with limited practicality and effectiveness tests on class VIII students at MTs PPM Al-Kautsar Muhammadiyah Sarilamak. Practical data were obtained from students' practicality questionnaires. Effectiveness data obtained from student learning outcomes in the form of a final test to see students' mathematical problem solving abilities. The results showed that the PBL-based learning tools were valid in terms of content and constructs. Practical because they are easy to use and understand, the allocated allocations are very efficient, interesting, and contribute to learning. Based on the results of the students' mathematical problem solving ability tests with an average completeness of 83% % of the students' scores above the KKM, which is 75. effective.

DEVELOPMENT OF LEARNING TOOLS BASED ON LEARNING CYCLE 7E ASSISTED BY MIND MAPPING FOR PROBLEM SOLVING FOR JUNIOR HIGH SCHOOL STUDENTS

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Abstract

With the information collected through observations, interviews, and preliminary analysis, students' mathematical problem-solving skills is not optimal.This is due to the fact that (1) learning resources and learning media are still of a generic type, and (2) teaching materials used by teachers have not greatly aided pupils in understanding topics (3) students have not been optimal in solving problem solving problems.Based on this problem, the researchers developed a learning tool based on the 7E learning cycle assisted by mind mapping. Elicit, engage, explore, explain, elaboration, evaluation, and extend are the phases of the 7E learning cycle.This study uses the Plomp development model to conduct development research. The Plomp model has three stages: preliminary analysis (Preliminary Research), development or prototyping (Development or Prototyping Phase), and evaluation (Assessment Phase). Needs analysis, curriculum analysis, idea analysis, and student analysis are all performed at the preliminary stage. A formative evaluation was conducted throughout the prototype development stage, which also included self-evaluation, expert review, one-on-one evaluation, small group evaluation, and field testing. The subjects in this research were SMPN1 Sutera seventh-grade students. Based on the research, learning tools in the form of RPP and LKPD based on the 7E learning cycle are aided by mind mapping to help students solve valid, practical, and effective mathematics problems. Valid in terms of content, presentation, language, and graphics, practical in terms of implementation, time, and simplicity of use, and helpful in helping students solve mathematical problems.

THE ROLES OF MATHEMATICAL COGNITION-BASED LEARNING DESIGN IN IMPROVING A SLOW LEARNER UNDERSTANDING ABOUT NUMBERS

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Abstract

This study aims to improve the ability of a slow learner in number sense by using a mathematical cognition-based learning design. This study used a single-subject research method with an ‘A-B-A’ design. The subject in this study was one slow learner who was in grade 3 of elementary school. Collecting data in this study through the analysis of the students’ works.The data was then analyzed using visual analysis of the data graph, namely, under and between conditions. The results showed the students' number sense ability in the baseline phase A with an average score of 3.3. That is, slow learners have not been able to judge large numbers 0-9. In the intervention phase, students get an average of 54. The ability of students' number sensecan assess large numbers but is not accurate in estimating many objects. The condition of students in the baseline A phase by obtaining an average of 89.6 number sense abilities, slow learners can compare and assess large numbers 0-9.

These results indicate that the mathematical cognition-based learning design can improve number sense ability of the slow learner.

Endog-endogan games of fractional number ideas in ethnomathematics learning

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Abstract

The purpose of this paper is to examine the development of fractional number ideas and abilities of second to sixth grade elementary school students through Sundanese ethnomathematics learning.This descriptive qualitative study applied weight gained tendency of counted wordsresult from NVIVO oninterview result to fifty-six elementary school students as respondents. This research involved 56 random second to sixth grade students in elementary school in Sundanese ethnomathematics learning setting.The results showed that Sundanese ethnomathematics learning with *Endog-Endogan* games has proven to be useful for elementary school students because it can develop the fractional number calculation of elementary school students. The Boolean search supported counted words percentage result found that fluency and flexibility statements by 10.5 from all interviews uttered by respondents and 9.2 words on creative thinking among talks. The traditional games help students to create ideas of mathematic contextually by involving interestinggames in fractional number calculation learning activities.

Development of Mathematics Learning Devices Using Brain Based Learning Models to Improve Mathematical Creative Thinking Ability of Class X High School Students

Dian Permata Sari[1], Ali Asmar[2] , Edwin Musdi[3] dan I Made Arnawa[4]

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Abstract

Mathematical creative thinking is an essential mathematical ability that needs to be mastered and developed by students who study mathematics. Although this creative thinking ability is one of the important abilities and must be mastered by students, there are still many students who find it difficult to solve problems that can encourage the development of students' creative thinking skills, so it is necessary to develop learning tools that can help improve students' abilities. creative thinking of students. Learning according to these characteristics is Brain-Based Learning. This study aims to design a valid and practical learning tool in the form of RPP and LKPD based on Brain-Based Learning in class X SMA students. The development research was carried out using the Plomp development model. The Plomp development model consists of three stages, namely the preliminary research stage, the development or prototyping stage and the assessment stage. The result of this

research is that mathematics learning tools are obtained using the Brain Based Learning model for the material of the sine and cosine rules for class X SMA semester II in the form of valid and practical RPP and LKPD.

The Effect of Using Flow Proof in Conducting Preliminary Analysis in Real Analysis Courses to Improve Mathematics Problem Solving

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Abstract

Real analysis helps students in gaining experience to think logically and systematically. Students often feel frustrated when proving a given problem. This problem is caused by students failing to organize their thinking logically and systematically. One alternative solution to overcome this problem is to use flow proof in the preliminary analysis. Through research using flow proof in Real Analysis learning at the Mathematics Department, Universitas Negeri Padang, it can improve students' ability to organize their thoughts logically and systematically.

Keywords: Real Analysis, preliminary analysis, flow proof, problem solving.

IMPROVE PROBLEM-SOLVING SKILLS WITH USING LEARNING TRAJECTORY BASED ON REALISTIC MATHEMATICS EDUCATION

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Abstract

Problem-solved skills are considered important because these abilities are basic abilities in learning mathematics. Realistic Mathematics Education (RME) is an approach that can improve students' problem-solved skills, because the RME uses contextual problems. This study aims to look at the effectiveness of RME-based learning trajectory to improve mathematical problem-solving skills in grade VIII SMP specifically on circle topics. This study refers to the Plomp research model which consists of three stages, namely: Preliminary Research, Development or Prototyping Phase, and Assessment Phase. This research instrument used observation sheets, student worksheets, and problem-solved skills test questions. To see the effectiveness of the learning flow is done by giving questions at each meeting and carrying out tests after the field test. This research involves five meetings with sub topics that have been designed. Based on the research that has been done, it is found that RME-based learning trajectory is effective to improve students' mathematical problem-solving skills.
Keywords Problem-Solved Skills, Learning Trajectory, RME, Circle

Class : Class 2
Moderator : Khairani, S.Pd.,M.Pd

Pukul	Nama	Institusi	Judul Makalah
09.00 – 10.00	FADHILAH ASFIANI RANGKUTI	Universitas Negeri Padang	THE EFFECT OF COOPERATIVE LEARNING WITH THINK-TALK-WRITE TECHNIQUES ON THE MATHEMATICAL COMMUNICATION ABILITY OF HIGH SCHOOL STUDENTSÂ IN PANYABUNGANÂ Â DISTRICT
	Afrizal, S.Si	Universitas Negeri Padang	The Effect of Motivation and Independent Learning Against Mathematics Learning Outcomes of High School Students in UNP Laboratory Development
	Anggi Angguna Fadjri	Universitas Negeri Padang	Development of learning tools based on contextual approach to improve mathematical problem solving ability of students in class VIII SMP
10.00 – 11.00	YOSA FITRIANI	Universitas Negeri Padang	The Development Of A Device To Learning Mathematics Based Discovery Learning To Enhance The Capacity Of The Solution Of The Problems On Any Material Class XI
	Dr. Irwan, M.Si	Universitas Negeri Padang	Development of Learning Media Based on Eliciting Activities (Meas) Approach (Case Studies at Small Group Evaluation Stage)
	TRICKY YANDRI	Universitas Negeri Padang	The Influence of Student Learning Methods and Teacher Teaching Methods on Mathematics Learning Achievement of Class VIII SMPN 2 Pasaman

11.00 – 12.00	Ninik Puspita Rahayu	Universitas Negeri Padang	The Influence of Motivation and Independence of Learning on The Mathematic Student Learning Outcomes of Class VIII SMPN 12 Padang
	Hanif Jafri	Universitas Negeri Padang	Development of Mathematics Learning Devices Based on the Discovery Learning Model to Improve Problem Solving Ability of Class X High School Students
	Drs. Mukhni, M.Pd.	Universitas Negeri Padang	Students' Errors Analysis Based On Castolan Stages in Solving Vector Grade X at SMA Negeri 1 Ampek Angkek

THE EFFECT OF COOPERATIVE LEARNING WITH THINK-TALK-WRITE TECHNIQUES ON THE MATHEMATICAL COMMUNICATION ABILITY OF HIGH SCHOOL STUDENTS IN PANYABUNGAN DISTRICT

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ABSTRACT

This study aims to determine whether the improvement in mathematical understanding and communication skills of students who receive cooperative learning with *Think -Talk-Write* (T TW) technique is better than students who receive conventional learning. The research was conducted using experimental methods and *randomized pretest-posttest control group design* . The population in this study were all students of class X SMA State 2 Plus Panyabungan . A sample of 63 students was taken from two classes X , respectively as the experimental class and the control class. The experimental class received cooperative learning with the T TW technique , while the control class as a comparison received conventional learning. To obtain the required data, an instrument is used in the form of a mathematical communication ability test. Data analysis was carried out quantitatively for pretest and posttest data . From the pretest data the average value of the experimental class was 10.77 while the average value of the control class was 11.72. For the posttest value, the average score was 26.1 in the experimental class and 20.96 in the control class. Data on the class experimental and control class distribution is the norm l and homogeneous so that a hypothesis test in the form of t-test t value obtained by using SPSS 15 is nlai sig 0:00 because of significant value <0.05 then reject H_0 , thank H_1 so that in hypothesis testing The research results obtained are : the improvement of mathematical communication skills of students who receive cooperative learning with T TW technique is better than students who receive conventional learning.

Keywords: cooperative learning, the effect of TTW, Mathematical Communication

THE EFFECT OF MOTIVATION AND INDEPENDENT LEARNING AGAINST MATHEMATICS LEARNING OUTCOMES OF HIGH SCHOOL STUDENTS IN UNP LABORATORY DEVELOPMENT

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Abstract

This ex post facto study aims to describe the effect of motivation and learning independence on students' mathematics learning outcomes. The population of this study was students of class XI SMA UNP Laboratory Development. The research sample consisted of 49 students who were selected purposively. The research data was collected through the provision of motivation and learning independence questionnaires and mathematics tests. The collected data were analyzed by a multiple linear regression test. The results showed no significant effect of learning motivation and independence on students' mathematics learning outcomes, either individually or together. Of all students with high learning motivation, only 20% of students have high mathematics learning outcomes, while for students with low learning motivation, only 4% of students whose mathematics learning outcomes are low. The same thing is also found for the effect of independent learning on mathematics learning outcomes. One of the factors that influenced this finding was the lack of control from the researcher when students filled out questionnaires and took tests because all data collection processes were carried out online.

DEVELOPMENT OF LEARNING TOOLS BASED ON CONTEXTUAL APPROACH TO IMPROVE MATHEMATICAL PROBLEM SOLVING ABILITY OF STUDENTS IN CLASS VIII SMP

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Abstract

The problems found in the field are the low ability of students to solve problems, the preparation of mathematics learning tools that are still not in accordance with the characteristics of students. For this reason, a research development of mathematics learning tools has been designed. The purpose of this study was to describe the characteristics of Contextual approach based learning tools to improve the valid, practical and effective ability of class VIII students in semester I of SMP. The learning tools developed are the Learning Implementation Plan (RPP) and Student Worksheets (LKPD). This research is a development research with the Plomp model which consists of three stages, namely the preliminary research phase, the development or prototyping phase and the assessment phase. At the development stage, the design and assessment of learning tools is carried out through the stages of formative evaluation. The field test subjects involved in this study were students of class VIII SMPN 4 Payakumbuh Academic Year 2021/2022. The instruments used were RPP validation sheets, LKPD validation sheets, teacher response questionnaires, student response questionnaires, learning implementation observation sheets and tests. Before the instrument is used to collect data, the instrument is validated by a validator.

The Development Of A Device To Learning Mathematics Based Discovery Learning To Enhance The Capacity Of The Solution Of The Problems On Any Material Class XI

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Abstract

This research aims to produce a device based learning math discovery learning, valid practical and effective and to increase the ability to problem solving mathematical sophomores. high school studentsA device pembalajaran developed was a plan the implementation of the learning (RPP) lesson plans and worksheets students (LKPD). financial statementsModel of development that is used in this research is a model plom consisting of three phase the phase of earlier investigation (preliminary research), prototype development phase (prototyping phase), and the assessment phase (asseement phase).Preliminary investigations on phase data collection was done with the aim as a guideline in designing a device. learningPhase development aims to develop a prototype of learning so as to produce valid, learning devices practical and effective through the evaluation which is, formative own evaluation (self-evaluation), evaluation one to one (one-to-one) evaluation. Phase assessment was done by giving the tests which aims to measure the effectiveness of the device of learning in improving the ability to problem solving mathematical. studentsTest subject in this study is the sophomores high school students and teachers who teach at the eleventh grade school year 2020 / 2021.An instrument used during the study is the observation, guidelines, the survey, sheets of validation, learning devices and test the ability to problem solving mathematical. studentsThe result showed that the device of learning mathematics resulting fulfill valid, category practical and effective both in terms of appropriateness and validity.In other words, a device that developed can be used as a reference in learning math oriented to the ability of solving a problem in high school.

Development of Learning Media Based on Eliciting Activities (MEAs) Approach (Case Studies at Small Group Evaluation Stage)

Irwan

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Abstract

Learning media is used in Senior High School such as lesson plans and worksheets still can be developed in order to improve students' mathematics problem-solving abilities during this time. One of the ways to overcome these problems is by developing learning media of mathematics based on Model Ecliting Activities (MEAs) approach that is valid, practical, and effective. The purpose of this research is in order to produce learning media based on Model Ecliting Activities (MEAs) approach to improve students' mathematics problem-solving abilities. This research used Plomp's model with several phases, namely the beginning of the investigation phase such as needs analysis, curriculum analysis, students analysis, concept analysis; the prototype phase is carried out by designing media based on the Model Ecliting Activities (MEAs) approach, then formative evaluation is carried out to determine validity, and practicality of the product; assessment phase is carried out with an assessment of practicality and effectiveness. From the observation of the small group evaluation, it was found that steps of the MEAs approach are not optimal yet. The students are difficult to make a problem from the condition that has been given to them. Besides that, it was also found improving students' mathematics problem-solving abilities hasn't achieved satisfactory results. It is based on the result of the assessment's answers in worksheets and students' mathematics problem-solving abilities are still low. It shows that worksheets are designed still need to be revised in parts concerning the MEAs approach steps and questions are used to bring up students' mathematical problem-solving abilities.

The Influence of Student Learning Methods and Teacher Teaching Methods on Mathematics Learning Achievement of Class VIII SMPN 2 Pasaman

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Abstract

The mathematics learning outcomes of Class VIII SMPN 2 Pasaman students tend to be low. It is suspected that the cause is the way students learn and the teacher's teaching methods are not good in the mathematics learning process. This is supported by the results of interviews with several students that obtained information indicating that in terms of student learning methods were not good and interviews with teachers also obtained information that teachers were not good at teaching due to the pandemic *covid-19*. Through this study, we want to reveal empirically, whether student learning methods and teacher teaching methods have a significant effect on mathematics learning achievement for class VIII students at SMPN 2 Pasaman. The purpose of this study was to determine whether there was an effect of student learning and teacher teaching methods on

mathematics learning achievement. This type of research is a combination of *Ex Post facto* research and descriptive research. The population of this study were all students of class VIII at SMPN 2 Pasaman with a total of 80 people. The research sample taken is the entire population as many as 80 people. The research data were analyzed descriptively using descriptive statistics and multiple linear regression tests, with student learning and teacher teaching methods being independent variables and student learning achievement in mathematics being the dependent variable. The results showed that: there was a significant effect of student learning and teacher teaching methods on mathematics learning achievement of class VIII SMPN 2 Pasaman. The magnitude of the influence of the way of learning and teaching methods of teachers on students' mathematics learning achievement is 10.7% while 89.3% is influenced by other variables outside this study.
Keywords: student learning methods, teaching methods, learning achievement.

The Influence of Motivation and Independence of Learning on The Mathematic Student Learning Outcomes of Class VIII SMPN 12 Padang

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Abstract

The math learning results of students of class VIII SMPN 12 Padang tend to be low. Allegedly the cause is the motivation and independence of learning students in learning mathematics is still not good. This research aims to uncover empirically, whether the motivation and independence of learning mathematics students significantly affect the mathematical learning outcomes of class VIII SMPN 12 Padang. Type of this research is a combination of Ex Post Facto research and descriptive research. The population of this study is all students of class VIII in SMPN 2 Padang with a total of 248 people. The study sample was 91 people who were taken by purposive sampling, where the sample was taken based on the class in which the teacher taught. Research instruments in the form of questionnaires and tests. Data analysis of research results is analyzed descriptively using descriptive statistics and multiple linear regression test, with motivation and student learning independence as independent variables and the mathematic student learning outcomes as dependent variable. The results showed that motivation and independence of learning together had a significant effect on the learning outcomes of class VIII SMPN 12. The result of R-square is 0,361, it showa that 36% of the variation in learning outcomes can be explained by learning motivation and learning independence. While the remaining 64% is explained by other causes examined in this study.
Keywords*: Learning motivation, Learning Independence, Learning Outcomes*.

Development of Mathematics Learning Devices Based on the Discovery Learning Model to Improve Problem Solving Ability of Class X High School Students

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Abstract

This study aims to develop learning tools based on discovery learning methods that have valid, practical, and effective characteristics in order to improve the problem solving abilities of students in class X SMA. The learning tools developed include lesson plans (RPP) and student worksheets (LKPD). The subjects of this research are students of class X SMA Negeri 1 Tanjung Raya. This research is a development research carried out with the Plomp development model. The Plomp development model consists of three stages, namely the preliminary analysis stage, the prototype development stage, and the assessment stage. In the preliminary stage, needs analysis, curriculum analysis, concept analysis and student analysis are carried out. At the prototype development stage, a formative evaluation was carried out consisting of self-evaluation, expert/expert review, one-on-one evaluation, and small group evaluation. Based on the development that has been carried out, obtained learning tools in the form of RPP and LKPD mathematics based on the discovery learning model for class X SMA semester 1 that are valid, practical and effective. Valid from the aspect of content, presentation, language, and graphics. Practical in terms of implementation, time, convenience and use. And effective in terms of its potential impact on the problem solving ability of students.
Keywords: Discovery Learning, Problem Solving, Plomp Development Model

Students' Errors Analysis Based On Castolan Stages in Solving Vector Grade X at SMA Negeri 1 Ampek Angkek

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Abstract

This paper analyze students' error at X MIPA 4 SMAN 1 Ampek Angkek and it cause in solving vector based on Castolan. Type of research is descriptive with qualitative approach. Data analysis through reduction,display and conclusion. The result showed that 1)66,66% of students did conceptual error in vector operation, 33,33% in measuring the angle between two vectors, also 55,55% in orthogonal vector. 2)44,44% of students did procedural error in measuring the angle between two vectors. 3)11,10% of students did technical error in identify three collinear points. The cause are students' carelessness and don't rechecking the answers.

Keywords: Students' error analysis, castolan stages, conceptual error, procedural error, technical error.

Class : Class 3
Moderator : Trysa Gustya Manda, S.Pd.,M.Pd

Pukul	Nama	Institusi	Judul Makalah
09.00 – 10.00	Rika Rahmawaty	Universitas Negeri Padang	THE VALIDITY OF CPS BASED LEARNING DEVICE TO IMPROVE THE MATHEMATICAL PROBLEM SOLVING SKILLS STUDENTS GRADE VIII
	Fadhilaturrahmah	Universitas Negeri Padang	THE VALIDITY OF MATHEMATICS LEARNING DEVICES BASED CONSTRUCTIVISM APPROACH TO IMPROVE THE STUDENT REASONING ABILITY IN GRADE 8
	Suherman	Universitas Negeri Padang	TheÂ DevelopmentÂ Flipbook Explainer of Transformation Geometry
10.00 – 11.00	Eka Pasca Surya Bayu	Universitas Negeri Padang/**Universitas Muhammadiyah Sumatera Barat**	HYPOTHETICAL LEARNING TRAJECTORY FOR STATISTICAL MATERIALS PACKAGE A LEVEL 2 BASED ON REALISTIC MATHEMATIC EDUCATION
	Dewi Murni	Universitas Negeri Padang	Validity and Practicality of Elementary Linear Algebra Teaching Materials Based on REACT to Improve Student's Mathematical Communications and Problem Solving Skills
	Ali Asmari	Universitas Negeri Padang	Effect of Independent Student Learning on Problem Solving Using The Worksheet Geometry Based on PjBL

11.00 – 12.00	Aniswita	Universitas Negeri Padang	Students' Conceptual And Procedural Knowledge On Integration: Reflections on Calculus Learning
	Fauziah Putri	Universitas Negeri Padang	THE DEVELOPMENT OF MODULE BASED ON ARCS (ATTENTION, RELEVANCE, CONFIDENCE, SATISFACTION) IN NUMBER MATERIALS FOR STUDENTS OF CLASS VII MTS
	Suci Nadia Ramadhani	Universitas Negeri Padang	The Practicality of Mathematical Learning Tools (RPP and LKPD) based on RME Approach on Student Grade X SMA/MA to Mathematical Communication Ability

THE VALIDITY OF CPS BASED LEARNING DEVICE TO IMPROVE THE MATHEMATICAL PROBLEM SOLVING SKILLS STUDENTS GRADE VIII

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Abstract

This research is part of the research on the development of cps mathematics tools to improve mathematical problem solving abilities of eighth grade students of junior high school, and aims to assess the validity of teaching materials through two stages. First, self-evaluation is done by involving other peer students. The results showed that the mathematical tools can be continued to the expert review stage with minor revisions. Second, the expert review was carried out by the researcher by asking for an assessment from five experts. The results of this study indicate that the mathematics jar material is valid.

Keywords: *Mathematics Learning Tools, Model Creative Problem Solving, Mathematical Problem Solving Skills*

THE VALIDITY OF MATHEMATICS LEARNING DEVICES BASED CONSTRUCTIVISM APPROACH TO IMPROVE THE STUDENT REASONING ABILITY IN GRADE 8

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Abstract

This research is part of a research on the development of learning tools based on a constructivist approach to improve the reasoning abilities of 8th grade junior high school students which aims to assess the validity of the device through two stages. The first stage is self-evaluation, where the researcher assesses the learning tools developed with the self-evaluation instrument. The results showed that there was a slight improvement in the learning tools so that they could proceed to the expert review stage. Expert review, namely learning tools validated by five experts. The results show that the learning tools developed are valid.

Keywords – constructivism approach, reasoning ability, validity

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THE DEVELOPMENT FLIPBOOK EXPLAINER OF TRANSFORMATION GEOMETRY

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Abstract

This study aims to develop e-module teaching materials using a flipbook application in the transformation geometry course. In this study, an Explainer Flipbook will be developed. The flipbook that contains further explanations about the material written in the book, so that the ideas that are written in the book can be optimized. The method in this study was carried out using the Research & Development Plomp model, which is based on the objectives, which includes 4 stages, namely, 1) Investigation stage, 2) Design stage, 3) Construction stage, 4) Test, Evaluation and Revision stage. Based on the phases carried out, transforming geometry teaching materials are produced in the form of an explainer flipbook that is valid in content and language, is interesting, and practical.

Keywords: E-module, flipbook explainer, transformation geometry

HYPOTHETICAL LEARNING TRAJECTORY FOR STATISTICAL MATERIALS PACKAGE A LEVEL 2 BASED ON REALISTIC MATHEMATIC EDUCATION

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Abstract

Learning requires a learning path that develops students' thinking gradually so that the material obtained can be meaningful. There is no exception for learning in Package A level 2 which is a dual class equivalent to grade 4, grade 5, and grade 6 elementary school. One of the efforts that educators can do is to design a Hypothetical Learning Trajectory (HLT). The purpose of this activity is to develop HLT based on the Realistic Mathematical Education (RME) approach for Package A level 2. The mathematics material chosen for HLT development is statistics, because this material is available at every grade level in multiple grades. The context used is the experience of students in the family, school, and community environment such as the number of siblings, the number of students in the class, height, weight, and others.

Keywords : Hypothetical Learning Trajectory (HLT) , Realistic Mathematic Education (RME) , Package A Level 2

Validity and Practicality of Elementary Linear Algebra Teaching Materials Based on *REACT* to Improve Student's Mathematical Communications and Problem Solving Skills

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Abstract

Most of the student learning outcomes in Elementary Linear Algebra are not satisfactory. The characteristics of ALE courses are that they contain interrelated and abstract concepts that need proof. . Some of the causes of the problem is that students have not been able to see the relationship between concepts and have not been able to apply them in problem solving and have not used discussion groups in learning. The purpose of this study was to determine the validity and practicability of ALE teaching materials based on the REACT strategy that improve students' mathematical communication and problem solving skills. The research method used is R & D which is a method to produce a particular product and test the effectiveness of the product. Data collection instruments in the study included validity test sheets, practicality test sheets. The data analysis technique used is descriptive statistical analysis. The result of the research is that REACT-based ALE teaching materials are valid and practical.

Keywords: Elementary Linear Algebra, *REACT*, valid and practical

Effect of Independent Student Learning on Problem Solving Using The Worksheet Geometry Based on PjBL

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Abstract

The Independent learning and problem-solving abilities of students who are still weak are the backgrounds of this research. This study aims to determine the effect of student learning independence on student problem-solving abilities through the application of the worksheet based on Project Based Learning at Universitas Negeri Padang. This study uses One-Shot Case Study research design. The data analysis technique used simple linear regression analysis. The regression coefficient of the questionnaire score (b) is 0.715 with a significant level of 0.05. Because the regression coefficient (b) is positive (+). So there is a positive influence between learning independence (X) on students' problem-solving abilities (Y). The close linear relationship between X and Y can be seen from the correlation coefficient r = 0.148 which means that it is close to 0, then the linear relationship between X and Y is weak. The conclusion is that learning independence has an effect on problem-solving abilities through the use of the worksheet based on Project Based Learning in the Spatial Geometry course.

Keywords: Independent Student Learning, Worksheet, Project Based Learning, Problem Solving,

Students' Conceptual And Procedural Knowledge On Integration: Reflections on Calculus Learning

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Abstract

This study aims to describe the procedural and conceptual knowledge on integral topics. Data were collected from 30 students who were randomly selected from 120 students of the mathematics education study program who took an integral calculus course. Data were analyzed by categories from student's work. The results showed that most of the students had a fairly good knowledge of procedural aspects. Students can determine the integral of a function using the basic theorems of calculus and can use the right integration technique for some given functions. On the other hand, students' conceptual knowledge is still very low. Students do not understand the meaning of the definite integral as the limit of the Riemann sum and build a definition of the integral. Integral calculus learning is expected to increase students' conceptual knowledge in addition to their procedural knowledge.

Keywords: conceptual knowledge, procedural knowledge, integral calculus, learning reflection

THE DEVELOPMENT OF MODULE BASED ON ARCS (ATTENTION, RELEVANCE, CONFIDENCE, SATISFACTION) IN NUMBER MATERIALS FOR STUDENTS OF CLASS VII MTS

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Abstract

Learning activities pandemic Covid-19 can not be fully implemented by every student in the school, so the students were divided into two groups to come to a school that turns day per week. This condition requires teaching materials that can teach students themselves at home . Various learning resources are very important to support learning activities during the Covid-19 pandemic, especially those that can teach students independently. Learning resources available at MTs Muhammadiyah Padang Panjang include textbooks from various publishers or teaching materials made by teachers. However, the available learning resources have not been able to make students learn independently . This is obtained from the results of interviews with teachers in Mathematics at MTs Muhammadiyah who said that students were still unable to understand learning materials and do assignments without teacher guidance or help from friends. In addition, students feel less confident about the tasks that have been made. To maximize student independence in learning, a structured independent teaching material is needed . In addition, based on the results of the questionnaire analysis of learning difficulties in the number material, an average of 40.13% of students still have difficulty in the number material. Based on the problems above, an ARCS-based module was developed (Attention, Relevance, Confidence, Satisfaction) so that it can facilitate students' independent learning by presenting learning materials that contain learning motivation according to the

ARCS component. The development of this module aims to determine the level of validity and practicality of ARCS-based modules on the Numbers material.
This research and development uses the Plomp development model which consists of three stages, namely: (1) Preleminary Research Phase, conducted with teacher interviews, student needs analysis, curriculum analysis, and concept analysis, (2) Prototyping Stage, which consists of Prototype 1 with conduct self evaluation and expert review by validating the module to the validator, then revising it according to the validator's suggestion. Prototype 2 was tested in small groups which also provided improvements to prototype 3, namely field test. (3) Assessment phase by providing a practical response questionnaire to determine the practicality of ARCS-based modules on the Numbers material.
The results of the research and development of the module that were carried out, it was found that the ARCS-based module met the very valid criteria, namely in the 80 V100 range in terms of the feasibility aspects of content, language, presentation, and graphics with a final score of 83.98%. So that the ARCS-based module on number material is feasible to use with a slight revision according to the advice of the validator. The results of the practicality assessment of the module by the teacher were stated to be very practical with a score of 88.67%. Meanwhile, from student assessment, an average score of 82.86% was obtained . From the assessment of teachers and students obtained an average final score of 85.76% which meets the very practical criteria in the range of 80 V100. So that the ARCS-based module is very practical to use in learning mathematics on Numbers material.

Keywords: Module, ARCS, Number Material

THE PRACTICALITY OF MATHEMATICAL LEARNING TOOLS (RPP AND LKPD) BASED ON RME APPROACH ON STUDENT GRADE X SMA/MA TO MATHEMATICAL COMMUNICATION ABILITY

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Abstract

It was aimed to describe the extent to which the ease of use of learning tools (RPP and LKPD) based on the RME approach was tested on small group stage students. The small group stage is part of a series of stages in the Plomp Development Model. The description of the practicality of this development product is also supported by quantitative data with a practicality value of 88.97%.

Keywords: RME Approach; Mathematical Communication Ability; Mathematical Learning Tools; Practicality.

Class : Class 4
Moderator : Maulani Meutia R, S.Pd., M.Pd

Pukul	Nama	Institusi	Judul Makalah
09.00 – 10.00	DARA FILDA	Universitas Negeri Padang	DESIGNING HYPOTHETICAL LEARNING TRAJECTORY BASED ON REALISTIC MATHEMATICS EDUCATION IN LEARNING REFLECTION USING MOTIF OF BATIK RIAU
	Fitria Oulina Ali	Universitas Negeri Padang	Curriculum analysis of the fashion design program in the learning design development of SPLDV topic based on a realistic mathematics education approach
	Puput Wahyu Hidayat	STKIP Muhammadiyah Muara Bungo	IMPROVEMENT OF STUDENT LEARNING OUTCOMES USING NHT MODEL IN LEARNING MATH CLASS III SD NEGERI 38/II PAUH AGUNG KECAMATAN LIMBUR LUBUK MENGKUANG
	Dr. H. Yarman, M.Pd.	Universitas Negeri Padang	Mathematical Communication Ability Viewed from the Learning Style of Class VII Students of SMP Negeri 7 Padang
	Dr. Elita Zusti Jamaan, MA	Universitas Negeri Padang	Studentsâ€™ Perceptions of The Effectiveness of Online Learning in English For Mathematics at Mathematics Education Program

10.00 – 11.00 10.45 – 12.15	Eryta Gusma Ahmad	Universitas Negeri Padang	Developing Intructional Design of Statistics Material Based on Realistic Mathematics Education (RME) to improve Mathematical Communication Ability and Learning Independence for Junior High School Grade VIII students
11.00 – 12.00	Supriadi (ICM210027)	Universitas Pendidikan Indonesia	Sundanese ethnomathematics in fractional number learning with Engklek games in pre-service students: Didactical design findings
	Ronal Rifandi	Universitas Negeri Padang	A Need Analysis of Developing STEM Based Students Worksheet in Multivariate Calculus Course
	Ronal Rifandi	Universitas Negeri Padang	Description of Biology Freshman Attitude Towards Mathematics

DESIGNING HYPOTHETICAL LEARNING TRAJECTORY BASED ON REALISTIC MATHEMATICS EDUCATION IN LEARNING REFLECTION USING MOTIF OF BATIK RIAU

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Abstract

This research have purpose to design student learning trajectories in learning reflection using motif of batik Riau as context in learning process. The method used in this research is design research with steps of preliminary design, prototyping phase, and assessment phase. This research focused on the second step, because the result of this research is the design of student learning trajectories based on realistic mathematics education in learning reflection with the steps are students drawing motif of batik Riau loosely, students drawing motif of batik Riau with pre-aggred rules, students writing the first point and the result point of reflection, and students finding the formula of reflection.

Keywords: Hypothetical Learning Trajectory, Realistic Mathematics Educations, Design Research, Reflection, Batik Riau.

CURRICULUM ANALYSIS OF THE FASHION DESIGN PROGRAM IN THE LEARNING DESIGN DEVELOPMENT OF SPLDV TOPIC BASED ON A REALISTIC MATHEMATICS EDUCATION APPROACH

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Abstract

This study aims to analyze the curriculum to understand and determine the relationship between the basic competence of mathematics and the basic competence of the productive subjects in the fashion design program on the SPLDV topic. This study is part of the research on the Plomp model development. Curriculum analysis conducted to obtain information in developing mathematics learning designs in the form of Hypothetical Learning Trajectory (HLT), teacher and student books based on the Realistic Mathematics Education (RME) approach. From the curriculum analysis result, it is obtained that the basic competence of mathematics on the SPLDV topic is related to several productive subjects in the fashion design program. Therefore, it is belived that the context learned in productive subjects can be used as an initial problem in the mathematics learning process on the SPLDV topic.

Keywords: Hypothetical Learning Trajectory, Realistic Mathematics Education, SPLDV topic, Fashion Design Program

IMPROVEMENT OF STUDENT LEARNING OUTCOMES USING NHT MODEL IN LEARNING MATH CLASS III SD NEGERI 38/II PAUH AGUNG KECAMATAN LIMBUR LUBUK MENGKUANG

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Abstract

The background of this research is the low student learning outcomes, the application of the learning approach that is not precise, and the learning with the NHT Model has never been carried out in SD Negeri No. 38 / II Pauh Agung. This study aims to improve the process and results of learning mathematics class IIII SD Negeri No. 38 / II Pauh Agung, by applying the NHT Model.This type of research is a classroom action research (CAR) which consists of four stages, namely planning, action, observing and reflecting which are carried out collaboratively between practitioners and observers. The research was conducted at SD Negeri No. 38 / II Pauh Agung. The subjects of this study were 20 grade III students. The research was conducted for 2 cycles. Each cycle consists of 2 meetings. Data collection techniques used test methods, observation sheets and documentation. The data analysis technique is descriptive qualitative and quantitative. The results showed that learning using the NHT Model could improve the process and student learning outcomes. The results of these studies are: 1) the learning process by the teacher from 56.82% in cycle 1 increased to 79.55% in cycle 2, 2) Student learning outcomes increased from an average of 67 in cycle 1 to 86 in cycle 2.

Keyword: learning outcome, NHT, PTK

MATHEMATICAL COMMUNICATION ABILITY VIEWED FROM THE LEARNING STYLE OF CLASS VII STUDENTS OF SMP NEGERI 7 PADANG

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Abstract

Mathematical communication is very important and must be owned by every student because it is a means that can be used to solve mathematical problems.The purpose of this study was to describe the mathematical communication skills of students with visual, auditory, and kinesthetic learning styles in solving math problems in class VII SMP Negeri 7 Padang.Students' mathematical communication skills are measured based on indicators of mathematical communication skills.The results showed that the mathematical communication skills of students with visual learning styles were better than auditory, and auditory was better than kinesthetic.

Keywords: Mathematical communication skills, visual, auditory, and kinesthetic learning style

Students' Perceptions of The Effectiveness of Online Learning in English For Mathematics at Mathematics Education Program

Elita Zusti Jamaan[1], Arnellis[1], Fitrani Dwina[1,] Fridgo Tasman[1]

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Abstract

This study aims to investigate the perception of students about their online lecturers' in their learning English for Mathematics (EFM). The full implementation online learning raises various perceptions from both lecturers and students. This study used a quantitative descriptive analysis method with a research instrument in the form of a questionnaire distributed online by google form. A questionnaire with 27 items was used to collect data from 76 randomly selected respondents from Mathematics Education who attendance in EFM course. The data were analyzed by utilizing descriptive quantitative analysis with percentage technique and inferential statistics, i.e., independent samples t-test and One-Way ANOVA were employed in data analysis. Based on the descriptive data analysis, it was found that the findings indicate that the students had a positive perception about their lecturers' EFM. The findings of the current study may lead to policies with regard to the shortages in the internet connection and the e- learning devices were the main obstacles that students encountered in attending online learning. The study also revealed that there was no significant difference in the perception of students about their lecturers' EFM. by their class

DEVELOPING INTRUCTIONAL DESIGN OF STATISTICS MATERIAL BASED ON REALISTIC MATHEMATICS EDUCATION (RME) TO IMPROVE MATHEMATICAL COMMUNICATION ABILITY AND LEARNING INDEPENDENCE FOR JUNIOR HIGH SCHOOL GRADE VIII STUDENTS

Eryta Gusma Ahmad[1], I Made Arnawa[2*], Ali Asmar[3*], Edwin Musdi[4]

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Abstract

This research started from the low mathematical communication skill of students and independent learning in solving mathematical problems related in daily life.. Students' learning independence is still lacking, which is the reasons for conducting this research. The purpose of this study is determine the effectiveness of the development of learning design through statistical concepts using the Realistic Mathematical Education (RME) approach to mathematical communication skills implemented in HLT (Hypothetical Learning Trajectory), teacher books and student books are valid and practical. The method used

combination of the Plomp design research model and the Gravemeijer & Cobb model, which consists of 3 phases, there are the preliminary research phase (preparing for the experiment), the development phase (development or prototyping phase/design experiment) and the assessment phase (assessment phase/retrospective analysis). The research subjects were students of class VIII MTs. The data collection technique used posttest test from small group students. The results of the posttest test of students reached a value above the KKM (75) with an average of 87.96 and the average student learning independence during the learning process reached 76.07 with a good category. Therefore, the development of learning design based on Realistic Mathematics Education is effective for students' mathematical communication skills in statistical material and can increase students' learning independence.
Keywords: Mathematical Communication Skill, Learning Independence, Developing Intructional Design, Statistics, Realistic Mathematics Education (RME)

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Sundanese ethnomathematics in fractional number learning with *Engklek* games in pre-service students: Didactical design findings

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Abstract

This research's purpose is to propose the implementation of Sundanese ethnomathematics learning with *Engklek*games to get better creative thinking abilities of pre service elementary school teacher education students using teaching materials compiled with the Didactic Design Research method. This research tried to compiled potential different cultural and educational background of student to obtain proper teaching materials. The research subjects used were 78 pre-service elementary school teacher education students as the respondents in which they were grouped based on educational background; namely science or non-science, and cultural backgroundby Serang,Banten and Riau, Sumatera culture.Basedon educational background, 45 respondents were the natural science classstudents and 33 respondents were notnatural science class students. They consisted of 39 Sundanese and 39 non-Sundanese respondents. The data were obtained by the learning obstacles test instrument, initial didactic design and didactic design revision practice.This study obtained that different cultural and educational background faced the same difficulty in creatingoriginality and flexibility of image models in the representation of mathematical fractional number learning number ideas. The initial didactic design was followed by a didactic design revision in Sundanese ethnomathematics learning with *Engklek* games succesfully predict the participants response. The materialspotentially could enhance elementary students' mathematical creative thinking skills in fractional number learning.

A Need Analysis of Developing STEM Based Students Worksheet in Multivariate Calculus Course

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Abstract

Science, Technology, Engineering, and Mathematics (STEM) Education have become a trending topic to be discussed among educational experts nowadays. It is argued that its implementation in teaching will improve the quality of the education its self. One way of integrating STEM into learning is to use it as a basis in developing learning medias. One kind of media that can be developed using the integration of STEM is students' worksheet. Therefore, this study analyses the need of developing STEM based students worksheet in a particular course in mathematics department, namely Multivariate Calculus. This study is descriptive research using survey method. The data were collected through questionnaire. The collected data was analyzed by using percentage technique.

Description of Biology Freshman Attitude Towards Mathematics

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Abstract

Mathematics is the queen of the sciences. This term arises because mathematics is related and needed by all branches of science. For this reason, mathematics is a subject that is studied from an early age to the college level. But in reality, there are still many students who are constrained in learning it. One thing to note is about math attitude. In this study, it will describe the attitude towards mathematics of new students majoring in Biology. This is necessary to provide an overview for lecturers who will teach mathematics courses in Biology about students' perceptions of mathematics. Through this, lecturers are expected to be able to design appropriate learning in order to achieve the desired goals. This study is descriptive research using survey method. The subject of this research is a new student majoring in Biology at Padang State University who will take a mathematics course for biology in 2020. The data were collected through questionnaire.

Keywords: attitude towards mathematics, Short form atmi,

Class : Class 5
Moderator : Defri Ahmad, S.Pd.,M.Si

Pukul	Nama	Institusi	Judul Makalah
09.00 – 10.30	Syelfia Dewimarni	Universitas Putra Indonesia YPTK Padang	Android-Based Statistical Learning Media Design
	Lili Rismaini	Universitas Putra Indonesia"YPTK" Padang	E-MODULE PRACTICALITY WITH PROBLEM SOLVING LEARNING MODEL IN MATHEMATICS SUBJECTS GRADE VIII STUDENTS OF SMPN 2 RANAH PESISIR
	Rahmat Hidayat	Universitas Negeri Padang	E-module development using 3D PageFlip Professional media to improve math problem solving skills of SMP Negeri 1 Padang Panjang
10.45 – 12.15	Saddam Al Aziz, S.Pd., M.Pd.	Universitas Negeri Padang	Need Analysis of Learning Video Integrated Screen Recording Veikk Pen Tablet in Calculus Course
	Yunisa Astuti	Universitas Negeri Padang	Development of Mathematics E-Module Using Scientific Approach integrated Islamic Values for Integrated Islamic Junior High School
	Chelsi Ariati S.Pd.	Universitas Pendidikan Indonesia	How does Quizizz Application as a Media for Mathematic Online Lessons during Pandemic Covid-19?

	Saddam Al Aziz	Universitas Negeri Padang	Analysis of Student Perceptions of Learning Videos for Calculus Courses In The New Normal Era, Covid-19 Pandemic
	Mirna, S.Pd., M.Pd.	Universitas Negeri Padang	Analysis of Students' Worksheet in Mathematics for Junior High School by Teachers in Tanah Datar Region

Android-Based Statistical Learning Media Design

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Abstract

Pandemics that impact Indonesia make very significant changes to learning methods that have been carried out. Learning that was usually implemented in face-to-face learning switched to distance learning online. It is also concerned with the implementation of learning at Putra Indonesia University YPTK Padang which requires lecturers to be more creative in developing their learning media. This type of research is Research and Development (R&D). The development model used Plomp development model, consists of 3 stages, namely the initial investigation stage (preliminary research), prototyping phase and evaluation phase (assessment phase). This research resulted in a prototype design. The resulting learning media design is an android-based learning medium in statistics course. Materials made based on the semester learning plan (RPS). This Statistical learning media also uses Concept Map Techniques with the aim that the material concepts given at each meeting become clearer and more conceptualized.

Keywords: Learning media, Android, Statistics, Concept Map

E-MODULE PRACTICALITY WITH PROBLEM SOLVING LEARNING MODEL IN MATHEMATICS SUBJECTS GRADE VIII STUDENTS OF SMPN 2 RANAH PESISIR

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Abstract

This research is motivated by learning that is still a teacher center. This research aims to produce E-Modules with a valid and practical problem solving learning model in mathematics learning. This type of research is development research with the selected development model which is Smith and Ragan model. The conclusion of this study is that at the validity stage obtained an average of 87.14% with very valid criteria, at the practical stage get a result of 82.80% with very practical criteria, this shows that the assessment of E-modules with problem solving learning models that have been developed can help facilitate in mathematics defense.

Keywords: E-module, Problem solving Learning Model

E-module development using 3D PageFlip Professional media to improve math problem solving skills of SMP Negeri 1 Padng Panjang

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Abstract

Students' problem solving skills are still low, this is because students are weak in solving problem solving problems and teaching materials used in the teaching and learning process have not helped students much in understanding math problems. Utilization of technology is one form of innovation in mathematics learning, such innovation can be the use of e-module 3D PageFlip Professional. The combination of features in PageFlip Professional's 3D softwere will make it easier for students to understand math materials and improve their problem solving skills. Based on this problem, researchers developed an e-module using 3D PageFlip Professional media to improve students' problem solving skills. This research is a development research conducted with plomp development model. Plomp model consists of three stages, namely preliminary research phase, development or prototyping phase and assessment phase. In the preliminary stage, needs analysis, curriculum analysis, concept analysis and student analysis are carried out. At the stage of prototype development is carried out formative evaluation consisting of self evaluation, expert review, one to one evaluation, small group evaluation, and assessment phase. The subject of this study was a grade VIII student at SMP Negeri 1 Padang Panjang. Based on the development that has been implemented, e-module obtained using 3D media PageFilp Professional to improve the mathematical problem solving of students are valid, practical and effective. Valid in terms of content, presentation, language, and graphing, Practical in terms of implementation, time, ease of use and effective in improving the ability to solve mathematical problems of learners.

Need Analysis of Learning Video Integrated Screen Recording Veikk Pen Tablet in Calculus Course

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Abstract

In the new normal era, lecturers must make more efforts so that the implementation of learning continues as much as possible. Based on a questionnaire given to 35 students, as many as 91.2% of students need a video tutorial by lecturers to learn just to give modules and independent assignments. This type of qualitative research, which aims to analyze student needs for learning videos. Data collection techniques in this study are interviews and questionnaires. Meanwhile, the data analysis technique used in this research is descriptive.

Keywords: Learning Videos, Veikk Pen Tablet, Calculus.

Development of Mathematics E-Module Using Scientific Approach integrated Islamic Values for Integrated Islamic Junior High School

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Abstract

The results of mathematics study of students in integrated Islamic Junior High School are not optimal with data obtained based on observation, interview, documentation and analysis of needs. Learning in the industrial revolution 4.0 requires optimal use of technology in mathematical learning, one of which is by using e-modules that can be operated on smartphones. The 2013 curriculum requires a scientific approach in the classroom. This study aims to produce mathematical e-modules using an integrated scientific approach of Islamic values that meet valid, practical and effective criteria. Scientific approach steps are observing, questioning, gathering information, processing information, drawing conclusions and communicating. This development research was conducted using Plomp model, consisting of three phases, namely preliminary research, development or prototyping phase and Assessment Phase.The subject of this study was a grade VII student of SMPIT Generasi Rabbani Kota Bengkulu. The results of the study based on the evaluation of five expert assessments, obtained a total average score of 89.10% or very valid criteria, based on practicality tests obtained an average score of 86.15% or very practical criteria and effectiveness tests obtained 83.33% of learners who obtained completion, this shows that the math e-module meets the criteria very valid, very practical, and very effective to improve the results of mathematics learners.

The 5th International Conference on Mathematics and Mathematics Education (ICM2E 2021)
Universitas Negeri Padang, West Sumatera Indonesia
Webinar , September 25th – 26th 2021

How does Quizizz Application as a Media for Mathematic Online Lessons during Pandemic Covid-19?

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Abstract

The Covid-19 pandemic has had an impact on various fields of life, namely education. The Covid-19 pandemic condition requires every student to do online learning or study from home. Learning media is needed that can attract students' interest and motivation in learning mathematics. The purpose of this study was to determine the application of the Quizizzas online mathematics learning media. This type of research is qualitative research. The subjects of this study were students of class X at one of the senior high schools in Riau. Respondents in this study amounted to 114 students. This study uses a questionnaire instrument on the implementation of tests using Quizizz in online mathematics learning. The data analysis technique used is data reduction, data presentation, and conclusion. From the results of student responses, it can be concluded that the learning media in the form of Quizizz is easy and fun to use, helps students recall the material they have learned, helps find out what material they don't know, improves understanding, increases student learning motivation because there are scores from other participants, and increase their curiosity about the materials studied in mathematics. So the Quizizz application is recommended as an alternative media for learning mathematics during online learning.

Keywords: Quizizz, Online Learning, Learning Media Application.

Analysis of Student Perceptions of Learning Videos for Calculus Courses In The New Normal Era, Covid-19 Pandemic

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Abstract

Online learning in the new normal era takes place more optimally if students learn not only based on modules or assignments, but also equipped with learning videos. Therefore, a qualitative descriptive study was conducted that described the perceptions of students in calculus courses related to the learning videos given. Research data were collected using questionnaires and interviews. It is concluded that learning videos are needed by students in understanding the lecture material. This is because with the video, learning feels like a face-to-face class and the description of the material on the video is easier to understand than just a module.

Keywords: Learning Videos, Perception, Calculus.

Analysis of Students' Worksheet in Mathematics for Junior High School by Teachers in Tanah Datar Region

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Abstract

Students' worksheet is one of media that is used by teachers to facilitate students to study independently. Based on information of questionnaire, shows that it does not able to facilitate students to study independently. It is needed the efforts to increase teachers' competence in designing students' worksheet, that is started by analyzing students' worksheet which is designed by teachers at school. The results of analyzing show that students' worksheet do not able to fulfill the criteria from Ministry of Education and Culture Indonesia, such as there is no appropriate between learning outcomes and basic competence, indicator and material; support

information do not able to inspire students to answer or do the assignment; and the problems do not able facilitate scientific approach.
Keywords: analysis, mathematics teacher, students' worksheet.

Class : Class 6
Moderator : Nurul Afifah Rusyda, S.Pd.,M.Pd

Pukul	Nama	Institusi	Judul Makalah
09.00 – 10.00	Rurisman	UniversitasNegeri Padang	Article 1: Study Ethnomathematics : Investigation of mathematical ideas on Minangkabau Traditional Songket in PandaiSikek Article 2: Development of mathematics Learning Devices Base on Ethnomathematics to improve mathematical ability on tranformasi material in Grade 9 Junior High School
	RAFKI NASUHA ISMAIL	UniversitasNegeri Padang	Analysis of Students' Motivation Profiles and Self-Regulation in Online Mathematics Learning Junior High School at Padang City
	ARNELLIS	UniversitasNegeri Padang	Analysis of Concept Understanding Students' in Real Analysis Course by Using Realistic Mathematics Education Approach
10.00 – 11.00	Muntazhimah	UniversitasMuhammadiyah Prof. Dr. Hamka	Mathematical Reflective Thinking in Terms of Mathematical Reciliency of Pre-service Mathematics Teacher
	Sri Novia Martin	STKIP Adzkia	The Analysis of Reflective Thinking Skill of Mathematics Education Students on Mathematical Problem Solving

	FitriAndriani	Universitas Negeri Padang	PENGEMBANGAN PERANGKAT PEMBELAJARAN BERBASIS KECERDASAN MAJEMUK UNTUK MENINGKATKAN KEMAMPUAN BERFIKIR MATEMATIS PESERTA DIDIK SMP KELAS VII (PRELIMINARY RESEARCH)
11.00 – 11.40	Elsa Firstga Safitri	UniversitasNegeri Padang	ANALISI KEMAMPUAN PEMECAHAN MASALAH MATEMATIS PESERTA DIDIK DALAM MENYELESAIKAN SOAL MATERI SISTEM PERSAMAAN LINIER TIGA VARIABEL (SPLTV) KELAS X SMA.
	Mujahidawati	UNIVERSITAS JAMBI	The Analysis of University Student's Higher Order Thinking Skills (HOTS) in the Differential Equation Course In The Time Of Covid 19

Study Ethnomathematics : Investigation of mathematical ideas on Minangkabau Traditional Songket in PandaiSikek

Rurisman

Abstract

The concept of mathematics sometimes emerges naturally from the culture of a society without going through previous formal education. Mathematics that is integrated with culture will make a great contribution to learning mathematics. This study aims to prove a mutual relationship between mathematics and culture. In this research, researchers used qualitative approach with an ethnographic method. Instruments in this research is a human instrument, the researcher is directly related to the research and act as data collectors through library data collection, interviews, observations and documentation. Data analysis techniques are carried out by data reduction, data presentation and data analysis. The result of the research is to reveal a matematic activities and geometry patterns in SongketPandaiSikek pattern of minangkabau. This research shows that there is a relationship between mathematics and culture.

Development of mathematics Learning Devices Base on Ethnomathematics to improve mathematical ability on tranformasi material in Grade 9 Junior High School

Rurisman

Abstract

A good learning devices will deliver students to have good mathematical ability. Mathematics and culture are something that cannot be separated. But it is still not widely known by students. Even though learning carried out by linking culture and mathematics can increase the interest and motivation of students in learning. However, existing tools still do not link mathematics and culture, despite using contextual problems. Because of Therefore, Ethnomathematics-based learning tools were developed PandaiSikeksongket woven cloth. This research aims to develop Ethnomathematics-based learning tool for Geometry Transformation Weaving songketPandaiSikek in Grade IX Junior High School. Learning tools that developed referring to the transformation material. The quality of the device developed are assessed based on aspects of validity, practicality, and effectiveness. This research is a development research using the Plomp model which consists of the Preliminary Research, Prototyping and Assessment Phase. At stage Preliminary research, curriculum analysis, student analysis and analysis concept. The Prototyping stage is the stage for designing the device learning consisting of prototype 1, prototype 2, prototype 3. Prototype 1 carried out self evaluation and expert review. Experts review donein order to see the validity of the learning devices. On prototype 2 was tested one-to-one (One-to-One Evaluation) with testing the validated device to three students with different abilities. In prototype 3, a group trial was conducted small by piloting a validated device to six students with different abilities. The last stage is assessment phase to see the effectiveness of learning devices by looking at the results learn students. The subjects of this study were students of class IX SMP Negeri 1 Banuhampu. The results of this study indicate that the learning devices Ethnomathematical Transformation Geometry based on songket woven cloth PandaiSikek in SMP Class IX is already valid. The device also meets the practical criteria based on the results of questionnaires and interviews. Based on the final test conducted indicates that the device is in the effective category. So, canconcluded that the resulting device is valid, practical and effective.

Analysis of Students' Motivation Profiles and Self-Regulation in Online Mathematics Learning Junior High School at Padang City

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Abstract

The condition of the pandemic has had a direct impact on the world of education so that it has to change the pattern of the learning system. Online learning is one way in the teaching and learning process that utilizes the internet in the delivery of learning. Teachers are required to be able to use various learning platforms (WhatsApp, Google Classroom, Padang G-School, Pesonaedu A-Class) to describe students' learning motivation profiles and Self-Regulation. The purpose of this study was to describe of motivation profiles in students' self-regulationin online mathematics learning. This research uses descriptive qualitative method involving respondents who had attended online learning at SMPN 8 Padang, SMPN 25 Padang, and SMP DEK Padang. Data collection techniques used in this study were questionnaires, semi-structured interviews, distributed via Google Form and Whatsapp. From link to measure learning motivation towards online learning mathematics. Data analysis used Cluster analyses was performed to identify the number of profiles showing similarpatterns of motivation in an online course.and the Miles & Hubert analysis model which consists of three stages, namely data reduction, data display, and conclusion drawing and verification. Overall, the study results revealed that motivationprofiles related with the students' self-regulation in online mathematics learning. Students can be motivated to learn from online learning carried out with various platforms different methods used by teachers as a response to online learning.

Keywords: Online Mathematics Learning, Motivation Profiles, Self-Regulation

Analysis of Concept Understanding Students' in Real Analysis Course by Using Realistic Mathematics Education Approach

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Abstract

This research focus on describing students' concept understanding of real analysis by realistic mathematics education (RME) approach. Method of research is descriptive qualitative which conducted in Mathematics Study Program University.Negeri Padang The data collected by usinginterview withWhatsApp and Zoom meeting, observation sheet, and questionnaire is distributed via Google Form. Realistic Mathematics Education usedby the lecturer to deliver the material of real analysis. In this case the lecturer introduced threeprinciples of RME such as guided reinvention, didactical phenomenology, and self-developedmodel to the concept understanding Students'. The result shows that concept understanding students are able tounderstand the definition and theorem of material real analysis by using RME. The students' can understand or proof any problem andtheorem related to definition of matter of real analysis

Keywords: Concept Understanding, Realistic Mathematics Education, Real Analysis

Mathematical Reflective Thinking in Terms of Mathematical Reciliency of Pre-service Mathematics Teacher

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Abstract

The purpose of this study was to examine the reflective thinking ability of pre-service mathematics teacher in terms of their mathematical resilience. This research was a descriptive study with qualitative data analysis. The findings in this study indicate differences in mathematical reflective thinking ability of pre-service mathematics teacher in terms of their mathematical resilience abilities. The difference in the level of mathematical resilience turns out to be the basis that distinguishes the reflective thinking ability of pre-service mathematics teacher.

Keywords: reflective thinking ability, pre-service mathematics teacher, mathematical resilience

The Analysis of Reflective Thinking Skill of Mathematics Education Students on Mathematical Problem Solving

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Abstract

Reflective thinking skill is one of the higher-order thinking skills that must be mastered by students, especially students of Mathematics Education. The purpose of this study was to analyze the reflective thinking process of students in solving mathematical problems. This research was qualitative. The research subjects were 14 students of the Mathematics education study program of STKIP Adzkia. Data were obtained from the results of tests and interviews. The data were analyzed in three steps: data reduction, data presentation, and conclusion. The results of the study indicated that: (1) students had difficulty identifying the concepts used in solving mathematical problems; (2) Students had difficulty choosing the right method to solve mathematical problems; (3) Students had difficulty applying other related concepts in solving Mathematics problems; (4) Students did not check the correctness of the answers, and (5) Students were not accustomed in making a conclusion.

PENGEMBANGAN PERANGKAT PEMBELAJARAN BERBASIS KECERDASAN MAJEMUK UNTUK MENINGKATKAN KEMAMPUAN BERFIKIR MATEMATIS PESERTA DIDIK SMP KELAS VII (PRELIMINARY RESEARCH)

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Abstrak

The problem encountered in the field is that students' mathematical critical thinking skills are not satisfying yet. Students' mathematical critical thinking skills can be improved by using multiple intelligence-based learning tools. The purpose of this study was to determine the process and the results of the development of learning tools based on multiple intelligence in improving students' mathematical thinking skills. This is a development research. The development model used is the Plomp model which consists of three phases, namely the preliminary research phase, the development or prototyping phase, and the assessment phase. This thesis only discusses the preliminary research phase. The instruments used in this research are student questionnaires, teacher interview guidelines, field notes, preliminary test question sheets. The results of data analysis in the preliminary research phase showed that 1) there is a lack of mathematical critical thinking skills, 2) Students have various kinds of abilities, 3) There are differences in students' learning styles, 4) There is a lack of teaching tools used by the teacher so that the students are not able to improve their critical thinking mathematically, 5) there is lack of students participation in the learning process, 6) It is difficult for students to understand the language used in the learning resources.

Keywords: Multiple Intelligences, Mathematical and Critical thinking ability

ANALISI KEMAMPUAN PEMECAHAN MASALAH MATEMATIS PESERTA DIDIK DALAM MENYELESAIKAN SOAL MATERI SISTEM PERSAMAAN LINIER TIGA VARIABEL (SPLTV) KELAS X SMA.

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ABSTRACT

This study aims to analyze and describe mathematical problem solving skills in the material for the Three Variable Linear Equation System (SPLTV), in the online learning process during the Covid-19 pandemic. Problem solving ability is a basic ability that must be possessed by participants in learning mathematics. This study analyzes students' problem solving abilities based on mathematical problem solving indicators based on the Polya procedure. This study uses a descriptive qualitative research method with data processing techniques carried out in analyzing the data results, namely, by assessing students' answers based on the problem-solving ability indicator questions according to Polya by being given 4 questions. The subjects in this study were 33 students of class X SMA Negeri 2 LubukBasung in the 2020/2021 academic year. Then six subjects were taken to analyze their mathematical problem solving abilities. Based on the results of the study obtained data that students who have very high abilities by 15%, as many as 5 people. Students who have high abilities are 10 people or 30%, students with moderate abilities are 22% or as many as 7 people. Students with low abilities are 18% or as many as 6 people, students with very low abilities are 15% or as many as 5 people. The results of the analysis of problem solving abilities, there are errors in problem solving abilities, including: not describing what elements are known, being asked from the problem, the planning process for solving problems that are not systematic, errors in calculations, and not making conclusions from problem solving.

Keywords: Problem Solving Ability, Online Learning, SPLTV.

The Analysis of *University* Student's Higher Order Thinking Skills (HOTS) in the Differential Equation Course In The Time Of Covid 19

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Abstract

21st century learning has undergone many very rapid changes. The change is that education not only prepares students' skills so that they are only ready to compete in the world of work, but also education is able to shape HOTS thinking skills and superior character of students. HOTS thinking skills should be facilitated for students. So that students not only have the ability to achieve competence but are able to solve problems with more critical, open, and creative thinking. So it is very important to think about HOTS to be improved, where at this time during the covid-19 pandemic, lecturers find it difficult to measure HOTS in students. This study conducted distance learning (PJJ) due to the emergence of the Covid-19 pandemic that hit all countries in the world. Indonesia is one of the countries affected by the spread of the corona virus (covid-19) which is spread in 203 countries in the world. This study aims to describe. This study aims to determine the HOTS ability of students in the differential equation course during the Covid-19 pandemic. This study uses a descriptive qualitative approach. The subjects in this study were students specializing in differential equations, totaling 10

students from each class. The instruments used are the 4C ability test and interview test sheets. Based on the research results, it is known that the students' HOTS ability in the differential equations course is low. This can be seen from the results of the overall percentage of achievement indicators in the aspect of analytical ability (C4) of 45% at the low level; the aspect of the ability to assess/evaluate (C5) by 40% is at a low level; aspects of the ability to create / create (C6) by 35% are at a low level; Based on these results, it can be concluded that the HOTS ability of students in the differential equations course is low and the online learning process is not efficient. Therefore, we must find solutions to support online learning by increasing students' HOTS abilities in differential equations courses during the covid-19 pandemic

Keywords: Analysis, Higher Order Thinking Skills (HOTS), Differential Equation Course, Covid-19 Pandemic.

Class : Class 7
Moderator : Dina Agustina,S.Pd., M.Sc

Pukul	Nama	Institusi	JudulMakalah
09.00 – 10.30	HengkiHarianto	UniversitasNegeri Jakarta	SEIR Mathematical Model of the Tuberculosis Spreads with the Vaccination Effect
	EldiNuzanSyahputra	Andalas University	STEP-SELECTION FUNCTIONS FOR MODELING THE SUMATRAN TIGER (Pantheratigrissumatrae) MOVEMENT POST TRANSLOCATION AND RELEASE
	RizkiAzmirwan	Universitas Dharma Andalas	MODEL SEIR EFEKTIVITAS VAKSINASI COVID-19 TAHAP I DI PROVINSI SUMATERA BARAT DENGAN METODE RUNGE KUTTA ORDE 4
	AHMAD SYARIF	UniversitasAndalas	Exact soliton solutions of a discrete modified Korteweg–de Vries equation using tanh method
10.30 – 11.30	RaraSandhyWinanda	UniversitasNegeri Padang	Dynamical Analysis of Viral Infection with Cytotoxic T Lymphocytes Responses
	RirySriningsih	UniversitasNegeri Padang	Mathematical Model of the Spread of HIV-AIDS with Different Rate of Transmission in Each Subpopulation
	Ariana Putri	UniversitasNegeri Padang	Solution Of Multiple Strains Tuberculosis Dynamics Model Using Homotopy Perturbation Method

SEIR Mathematical Model of the Tuberculosis Spreads with the Vaccination Effect

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Abstract

Tuberculosis is a disease that attacks the human respiratory system caused by Mycobacterium Tuberculosis. Tuberculosis is the cause of death in developing countries, one of them is Indonesia. The government has strived to decrease the number of death cases of Tuberculosis disease with the vaccination program as one of the ways. Vaccination is used to prevent the spread of disease. Mathematics has an important role in dynamic studies of an epidemic which formed in mathematical modelling. This research is carried out by estimating the SEIR model parameter with the spread of data. Mathematical Modeling is analyzed by disease equilibrium point, basic reproduction number (R_0), and model stability. Research methods using nonlinear equations and next-generation matrix. This paper aims to analyze model stability from Tuberculosis spreads and determine the minimum boundary of vaccination provides which can be prevented and controlled. The results are: $R_0 > 1$ when without vaccinationcondition, $R_0 < 1$ when vaccination provides condition. Thus, the number of people who have to be vaccinated is 90% from birth population. Therefore, Tuberculosis can be reduced.

Keywords*:Tuberculosis, Mathematical Modelling, SEIR, Vaccination*.

STEP-SELECTION FUNCTIONS FOR MODELING THE SUMATRAN TIGER (Pantheratigrissumatrae) MOVEMENT POST TRANSLOCATION AND RELEASE

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Abstract

In this paper, we discuss the application of step-selection functions to model the movement of the Sumatran tiger (Pantheratigrissumatrae) post translocation and release to GiamSiak Kecil-Bukit Batu Biosphere Reserve (CGGSK-BB), Riau Indonesia. Understanding how the tiger moves for habitat selection in the new location is a crucial conservation action. The data used in this study are the coordinates of the tiger's movements which were observed from July 31 to September 16, 2019. The data was obtained from Global Positioning System (GPS) collar attached to the tiger. The data is then processed to obtain habitat type, time, land type, and proportion of available habitat occupied. Based on the statistical analysis, it was found that the tropical rain forest is the most preferred habitat for the tiger during the day and night. On the other hand, barren deserts, rocks and swamps were found to be avoided by the tiger.

Keywords: Step-selection functions, Sumatran tiger (Pantheratigrissumatrae), GPS collar, habitat selection.

MODEL SEIR EFEKTIVITAS VAKSINASI COVID-19 TAHAP I DI PROVINSI SUMATERA BARAT DENGAN METODE RUNGE KUTTA ORDE 4

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Abstrak

Sudah lebih dari 1 tahun dunia menghadapi suatu wabah penyakit yaitu penyakit Covid-19, yang disebabkan oleh virus *SARS-CoV-2* yang merupakan golongan dari virus Corona. Berbagai penelitian telah dilakukan untuk mengatasi wabah berbahaya ini. Model matematika yang pertama kali memperkenalkan dan membahas penyebaran penyakit menular adalah model yang diusulkan pada tahun 1760 oleh Daniel Bernoulli, yang digunakan dalam pencegahan penyakit cacar. Model ini membagi populasi kedalam tiga kelompok, yaitu *Susceptible* (kelompok yang sehat, tetapi rentan terinfeksi penyakit), *Infected* (kelompok yang terinfeksi penyakit), dan *Recovered* (kelompok yang sembuh dari penyakit). Penelitian model SIR ini kemudian dilanjutkan oleh Kermack dan McKendrick pada tahun 1927, dimana pada penelitian ini dihitung suatu nilai penentu apakah suatu populasi bebas atau terinfeksi dari penyakit. Namun model SIR ternyata belum memodelkan sepenuhnya dari model penyakit Covid-19. Terdapat model SEIR dimana pada model ini ditambahkan pengaruh parameter E (*exposed*) yang merupakan representasi masa inkubasi dari penyakit terkait. Model SEIR sebelumnyas udah pernah digunakan untuk memodelkan beberapa penyakit menular yaitu penyakit campak, cacar air. Penelitian ini menggunakan model SEIR yang dimodifikasi menjadi SEIRV untuk memodelkan penyebaran Covid-19 Tahap 1 di Provinsi Sumatera Barat. Untuk memodelkan permasalahan ini digunakan metode numeric Runge Kuttaorde 4 yang memiliki tingkat keakuratan lebih tinggi dari metode numeric lainnya.

Kata*Kunci :*Covid-19, Model SIR, Model SEIR, RungeKuttaOrde 4

Dynamical Analysis of Viral Infection with Cytotoxic T Lymphocytes Responses

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Abstract

Immune response to the viral infection plays an important role in eliminating or controlling the disesase after human body is infected by virus. In this paper, we investigate the dynamical behaviour of virus and the immune system (CTL) using nonlinear model. This model has three steady states and their stability is regarding on its reproductive number. The system transitions from one equilibrium to the next as the basic reproductive number, R0, increases. When R0 increases even further, we show that periodic solutions may arise from the third equilibrium via Hopf bifurcation. Homotopy Perturbation Method is applied to the model. The results can be used to explain the dynamics of viral infection and CTL interaction.

Keywords: Viral Infection, Homotopy Perturbation Methods, Nonlinear Dynamics.

Mathematical Model of the Spread of HIV-AIDS with Different Rate of Transmission in Each Subpopulation

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Abstract

HIV is a virus that can cause AIDS. This virus attacks white blood cells which can damage the immune system, so infected individuals will be easily attacked by various diseases.HIV-AIDS can cause death. It is very easily spread through sexual contact between an infected individual and a susceptible individual. Until now, there is no cure or vaccine for the HIV-AIDS virus. This study discussed a mathematical model of the spread of HIV-AIDS with different rates of transmission in each subpopulation. The goal is to construct the model and its' analyzes. The results are a mathematical model of the spread of HIV-AIDS in a population with different rates of transmission in each subpopulation, 2 equilibrium points consisting of a disease-free equilibrium point and an endemic equilibrium point. The stability of the disease-free equilibrium point is unstable and the stability of the endemic equilibrium point is stable. This means that, in the population there will always be infected individuals with HIV-AIDS. For this reason, it is necessary to conduct counseling about the dangers of HIV-AIDS in the community in the hope of reducing the number of HIV-AIDS cases in the population.

Keywords: equilibrium point, HIV-AIDS, mathematical model.

Solution Of Multiple Strains Tuberculosis Dynamics Model Using Homotopy Perturbation Method

Ariana Putri

Abstract

Multiple strains of tuberculosis is one of the transmission mechanisms of tuberculosis. In this article, we discuss two-strain tuberculosis model include drug-sensitive strains and drug-resistant strains. The model is a non-linear system of differential equations that has four variables. The model analysis technique used to resolve the model is the homotopy perturbation method. In homotopy perturbation method, the solution is the sum of an infinite series that converges quickly to an exact solution.

Class : Class 8
Moderator : Ronal Rifandi, S.Pd.,M.Si

Pukul	Nama	Institusi	JudulMakalah
09.00 – 09.40	FitriMudia Sari	UniversitasNegeri Padang	MODELING OF INFANT MORTALITY IN WEST SUMATRA PROVINCE USING GENERALIZED LINEAR MIXED MODEL
	Marta Sundari	DepartemenStatistikadanSains Data, InstitutPertanian Bogor	Modeling the Influence of Climatic Factors on the Number of Dengue Hemorrhagic Fever (DHF) Patients in DKI Jakarta 2017-2020 using the Generalized Linear Mixed Model (GLMM)
09. 40 – 10.20	Junita	UniversitasNegeri Padang	PENGEMBANGAN PERANGKAT PEMBELAJARAN BERBASIS KECERDASAN MAJEMUK TERINTEGRASI KETERAMPILAN 4C DALAM PENCAPAIAN KOMPETENSI PESERTA DIDIK KELAS VIII SMP/MTs
	Devni Prima Sari	UniversitasNegeri Padang	Improved PGA discretization using K-Medoids

MODELING OF INFANT MORTALITY IN WEST SUMATRA PROVINCE USING GENERALIZED LINEAR MIXED MODEL

[1]Fitri Mudia Sari, [2]Khairil Anwar Notodiputro, [3]Bagus Sartono

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Abstract

The Infant Mortality Rate (IMR) is an indicator commonly used as an index of economic development, an indicator of the quality of life, and the main component of determining the life expectancy of a society. IMR can be observed as longitudinal data, a combination of cross-section data and time-series data, where the same cross-section unit is observed at different times. When the data is repeatedly observed with a specific interval of time, then the time will correlate or not mutually exclusive. To overcome this, time is used as a random effect, so the appropriate method used is the Generalized Linear Mixed Model (GLMM). This study aims to model infant mortality data using the GLMM and look at the variables that affect the number of infant deaths in West Sumatra. Based on the results of the analysis, the number of low birth weight babies, the percentage of births assisted by non-medical personnel, the percentage of households that have access to proper sanitation services, the percentage of households that have adequate drinking water sources, the percentage of poor people, the number of health workers, and the number of health facilities has a very significant influence on infant mortality in the province of West Sumatra.

Modelingthe Influence of Climatic Factors on the Number of Dengue Hemorrhagic Fever (DHF) Patients in DKI Jakarta 2017-2020 using the Generalized Linear Mixed Model (GLMM)

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ABSTRACT

The number of DBD patients in DKI Jakarta in 2017-2020 is counted data so Poisson regression can be used to modellling the relationship between climatic factors and the number of DBD patients. However, in its application, this model has violated the overdispersion assumption so that handling is carried out using the Generalized Linear Mixed Model (GLMM) with Poisson regression and Negative Binom regression. The GLMM model was used to accommodate the random effects of measurement time and measurement location. For both models, the Autoregressive 1 (AR1) variance matrix is used because there is a strong correlation between observations and previous observations. The GLMM model with Negative Binom regression is considered the best model because it has a lower AIC value than the GLMM model AIC with Poisson regression. In this model, only the variables of average temperature per month and average humidity per month have a significant effect on the number of DBD patients in DKI Jakarta in 2017-2020 at the 5% significance level.

Keywords: GLMM, Poisson distribution, Poisson regression, BinomNegatif regression, Autoregressive 1 (AR1)

PENGEMBANGAN PERANGKAT PEMBELAJARAN BERBASIS KECERDASAN MAJEMUK TERINTEGRASI KETERAMPILAN 4C DALAM PENCAPAIAN KOMPETENSI PESERTA DIDIK KELAS VIII SMP/MTs

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Abstract

Learning tools in the form of Learning Implementation Plans (RPP) and Student Worksheets (LKPD) used in mathematics learning have not been optimal in achieving student competencies according to the demands of the 2013 curriculum. This is due to the unavailability of learning tools that facilitate students' multiple intelligences. The learning process has also not developed the 4C skills required in 21st century learning. This study aims to produce a learning tool based on multiple intelligences integrated 4C skills in the achievement of valid, practical and effective student competencies. The intelligence that is integrated in the RPP and LKPD is the dominant intelligence possessed by students obtained through multiple intelligence tests including linguistic, logical-mathematical, visual-spatial, intrapersonal and interpersonal intelligence. 4C skills developed through LKPD and RPP consist of collaboration, communication, critical thinking, and creativity skills.This development research uses the Plomp model which consists of 3 stages, namely, preliminary, prototyping and assessment. The research subjects were students of class VIII SMPN 1 Lembah Melintang. Validation was carried out by experts in mathematics education, educational technology, and Indonesian language. The practicality of learning devices is seen from the results of observations, interviews, and student practicality questionnaires. The effectiveness of learning tools is seen from the competence of students which consists of aspects of attitudes, knowledge, and skills.The results of the analysis of the validity of the data indicate that the learning tools based on the integrated multiple intelligences of 4C skills produced have met the valid criteria in terms of content and constructs. Learning tools are practical in terms of implementation, convenience and processing time. Learning tools have also been effective as seen from the increase in spiritual and social attitudes as well as student learning outcomes. Based on these results, it can be concluded that the mathematics learning tools based on multiple intelligences integrated 4C skills in achieving the competencies of class VIII SMP/MTs students that have been produced can be declared valid, practical and effective.

Keywords: Multiple Intelligences, 4C Skills, Competence Achievement

Improved PGA discretization using K-Medoids

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Abstract

There are several efforts to mitigate earthquake disasters. One is to do regional planning following earthquake hazard studies, such as using seismic hazard analysis. The hazard that occurs later is in the form of ground acceleration in the bedrock, which is defined by the PGA (Peak Ground Acceleration) value. PGA is a continuous variable, so variable discretization is carried out. This process is done to reduce memory usage and thus improve knowledge representation as data is simplified to understand. With the application of mining techniques or retrieval methods, it becomes faster and perfect. K-Means is a method that performs data grouping with a partition system; in addition to grouping, K-means can also be used for variable discretization. However, sometimes the K-Means algorithm does not give the best results because it is sensitive to outliers. Outliers are points that differ from other data points. Based on these findings, we tried to discretize PGA by the K-Medoids method, where the data processing is done with the help of software R.

Keywords: Peak Ground Acceleration, discretization, K-Means, K-Medoids, R.