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The 2016 Jambi International Seminar on Education (JISE)

THEME : Sharing Power, Valuing Local Cultur, and Achieving Success in Education



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PREFACE

We are very pleased to introduce the proceedings of the 2016 Jambi International Seminar on Education (JISE) in Jambi, Indonesia which was held on *April 3-4, 2016*. It was the primary forum for the presentation of research results in the fields of Education. The 2016 JISE with the theme "*Sharing Power, Valuing Local Cultures, and Achieving Success in Education*" had brought professionals, researchers, policymakers, lecturers, teachers, and under/graduate students to engage and collaborate with colleagues from various institutions and outside Sumatra and Indonesia to discuss not only successful practices but also challenges faced in the area of education and to build professional networks focused on the education related research and knowledge.

The 2016 Jambi International Seminar on Education (JISE) tracks covered: *Educational Policy* (educational management and administration; educational leadership; language policy; multicultural education policy; teacher education policy; bilingual education policy; school leadership policy; educational technology policy) *Language and Education* (languages education and applied linguistics (ESL/TESL/TEFL); linguistics and pedagogy; multilingual societies; language arts and literature). *Educational Structures* (primary, secondary, and higher education; adult and lifelong learning; technology enhanced and distance learning; curriculum research and development; economic management of education; institutional accreditation and ranking; organizational learning and change; special education, learning difficulties, disability; student learning, learner experiences and learner diversity; distances learning; science education).

In the event, the seminar was highly successful. The 169 presented papers consisting of 63 English papers and 106 Indonesian/Malay papers maintained the high promise suggested by the written abstracts and the programme was chaired in a professional and efficient way by the session chairmen who were selected for their international standing in the subject. The proceedings consist of two parts: One consists of 63 English papers and the other one consists of 106 Indonesian/Malay papers. These Proceedings provide the permanent record of what was presented. We wish to thank the authors whose work is the body of the proceedings. Finally, it is appropriate that we record our thanks to all of the people who were involved directly and indirectly in this event.

Jambi, Indonesia

Amirul Mukminin, PhD.

The 2016 Jambi International Seminar on Education (JISE) Chair

Welcoming Words

Prof. JohniNajwan, SH. MH., PhD. *Jambi University Rector*

On behalf of Jambi University, We are deeply honored to welcome you to the 2016 Jambi International Seminar on Education (JISE) in Jambi, Indonesia organized by The Educational Management Alumni Association and Master's Program in Education Management- the Graduate School, Jambi University in cooperation with the Government of Jambi City. The 2016 Jambi International Seminar on Education (JISE) tracks cover various topics such as Educational Policy (educational management and administration; educational leadership; language policy; multicultural education policy; teacher education policy; bilingual education policy; school leadership policy; educational technology policy) Language and Education (languages education and applied linguistics (ESL/TESL/TEFL); linguistics and pedagogy; multilingual societies; language arts and literature). Educational Structures (primary, secondary, and higher education; adult and lifelong learning; technology enhanced and distance learning; curriculum research and development; economic management of education; institutional accreditation and ranking; organizational learning and change; special education, learning difficulties, disability; student learning, learner experiences and learner diversity; distances learning; science education). We believe that this event not only brings professionals, researchers, policymakers, lecturers, teachers, and under/graduate students from inside and outside Indonesia, but also strengthens our future relationship to improve human and country development. Thank you.

H. Syarif Fasha, SE, ME, *the Mayor of Jambi City, Jambi, Indonesia*

Dear guests, on behalf of Jambi City, we are very privileged to welcome you to the 2016 Jambi International Seminar on Education (JISE) in Jambi, Indonesia organized by The Educational Management Alumni Association and Master's Program in Education Management- the Graduate School, Jambi University in cooperation with the Government of Jambi City. We hope that you will enjoy not only the seminar but also the city of Jambi and its attractiveness. Jambi City is one of the oldest cities in Sumatra, Indonesia. Jambi City is a city in Indonesia, capital of Jambi province, on the island of Sumatra. The city is a busy port on the Batang Hari River and an oil- and rubber-producing centre. The city is located 26 km from the ruins of Muaro Jambi, an important city in the ancient Sriwijaya kingdom. Jambi City was denoted as the administrative capital of the Jambi autonomic area by the Governor of Sumatra on 17 May 1946. In 1956, Jambi City was given its city status, and eventually became the capital of Jambi province on 6 January 1957. Again welcome to Jambi City and enjoy your time.

Dr. Yusrizal, MSc. PhD. *The Graduate School Director, Jambi University*

Dear professionals, researchers, professors, lecturers, teachers, and under/graduate students, our desire is to extend a gracious and inclusive welcome to all of you to the 2016 Jambi International Seminar on Education (JISE) in Jambi, Indonesia organized by The Educational Management Alumni Association and Master's Program in Education Management- the Graduate School, Jambi University in cooperation with the Government of Jambi City. We hope that all of you will enjoy the seminar and will take a lot of advantages from this event as its topics cover various areas in education starting from the specific ones to the general ones. Also, we hope you will enjoy the historical graduate school campus and the city of Jambi. Thank you very much.

Prof. Dr. RahmatMurbojono, M.Pd. *The Chair of Master's Program in Education Management- the Graduate School, Jambi University*

On behalf of Master's Program in Education Management- the Graduate School, Jambi University, I wish you all a convivial welcome. We are going to have a cheery and enjoyable time together during the 2016 Jambi International Seminar on Education (JISE) in Jambi, Indonesia organized by The Educational Management Alumni Association and Master's Program in Education Management- the Graduate School, Jambi University in cooperation with the Government of Jambi City. We hope you will find interesting papers and presentations during our event. We also hope that this event is a place to start and strengthen our future relationship. Enjoy the seminar and our attractive city, Jambi.

TABLE OF CONTENTS

Preface	ii
Welcoming Words	iii
Prof. JohniNajwan, SH, MH., PhD, Jambi University Rector.....	iii
H. SyarifFasha, SE, ME, <i>the Mayor of Jambi City, Jambi, Indonesia</i>	iii
Dr. Yusrizal, MSc. PhD. <i>The Graduate School Director, Jambi University</i>	iv
Prof. Dr. RahmatMurbojono, M.Pd. <i>The Chair of Master's Program in Education Management</i>	iv
Table of contents	v-ix
Keynote Speakers' Profiles.....	x-xiv
Education Matters: Intellectual, Economic, Social, Political, and Cultural Advantages, AMIRUL MUKMININ AND SANTI HENDRAYANI	xv-xvii
Mapping the Impact of Teaching Practice Program on Student Teachers' Efficacy, DAIRABI KAMIL, PhD. & Dr. AHMAD JAMIN	1-7
Ethnic Relations Module Based On Understanding Student Thinking Maps, Quality Teaching and Teacher Education in Ipoh Teachers Training Institute Malaysia, DR. KAMARUDDIN BIN ILIAS, Mr. MUBIN BIN MD NOOR, and MsROSHIDAH ABDUL RAHMAN	8-13
I Find It Easy To Learn English When: Lecturers' Perspective, RATNA RINTANINGRUM, PhD.	14-21
Creative Mind Through Music Education AtTeacher's Training Institute Malaysia: A Retrospective, Mr. MUBIN BIN MD NOR & Dr. KAMARUDDIN ILIAS	22-26
Reviews of Teaching English For Specific Purposes (Esp) At University, Dr. SRI YULIANI, M.Pd	27-30
The Application of Group Investigation To Improve Speaking Skill Of The First Year Students At FKIP UIR Pekanbaru, MIRANTI EKA PUTRI, S.Pd., M.Ed., & AFRIZAL, S.Pd., M.Pd	31-35
English Pre-Service Teachers' Challenges in Devising Learning Activities Component of Lesson Plans, ROBI TRI WAHYUDI	36-42
Monitoring Educational Policy Outcome, MARDALENA	43-44
Challenges Encountered by English Teachers in Teaching English Language Skills for Young Learners: Elementary School Teachers' Voices, ROZANITA HARAHAH, S.Pd and DIANA OKTAVIA, S.Pd	45-53

Implementation Of Realistic Mathematics Learning At Smpn 16 Bengkulu City, DR. SALEH HAJI, M.PD	54-60
Development Entrepreneurship Inventory Model : New Concept, RESMI DARNI	61-73
Development Model Vocational Interest Test: A New Concept, VITRIANI	74-80
Teaching Speaking through SpongeBob Cartoon Video Dubbing in the EFL Classroom :A Classroom Action Research at One State Islamic High School in Jambi, SITI AZIMATURAHMI, S.Hum, NIDA AULIA, S.Pd and SITI HUMAIROH, S.Pd	81-83
Sex, Ethnic and Morphosyntactic Features Errors in Narrative Writing, SASTIKA SELI, SUPRIYADI, and LIDYA YULIANI	84-90
The Comparison of Student's Ability between Graduate Junior High School (SMP) and Islamic Junior High School (Mts) in Using Preposition into Sentence at Tenth Grade of Senior High School (SMAN 10) Muaro Jambi, RAHMAH	91-96
Visiting Real Places as an Object in Writing Descriptive Text to Secondary Level Students in EFL Classroom, ARDAYATI	97-99
Educational Policy: Voices from Local English Teachers and Students towards National Exam in Indonesia, MEITIA EKATINA	100-106
Study on Clothes Traditional marriage Minangkabau, NOFRA WENTI	107-111
Grammatical Errors Made by the Students at Sumber Harta Public Junior High School of Palembang Speaking Activities, AYUOKTAVIANI	112-114
ICT in Education: The Emergence of ICT Implementation in ELT Classroom, DEWI SYAFITRI, M.Pd.	115-117
Economic Education Dept UIN Sultan Syarif Kasim Riau, DICKI HARTANTO, MM	118-124
Using Reader's Theater to Improve Students' Speaking Performance and Reading Comprehension, MUNJIANA	125-131
The Effectivity of Interactive Multimedia Application toward the Hiragana Learning (A research in Citra Nusantara Vocational School Bekasi). Dr.Dra. RESTOENINGROEM, MPd. and ROSIANA FEBRIANTY SILALAH, S.S	132-136
An Analysis of Students' Ability in Writing a Paragraph By Using Three Kinds of Coherence at Third Semester of English Department in STKIP YPM Bangko, ELMAIDA	137-139

The Teachers Perception Analysis about the Managerial And Supervision Principal Competency in Implementation Of Madrasah Management Aspects, <i>ASMENDRI</i>	140-143
The Implementation of Teaching Conception in Teaching English: English Teacher's Challenges in Jambi, Indonesia, <i>AHMAD IZZATH, S.Pd, MASBIROTONI, S.Pd., M.Sc.Ed. and NUNUNG FAJARYANI, S.Pd., M.Pd</i>	144-151
Teachers' Perceptions on Students' Classroom Misbehavior, <i>FITRIA KAMELIA</i>	152-158
An Analysis of Students' Ability to Use Adjective Clause in Sentences At Third Semester of Students' English Department of STKIP YPM Bangko, <i>HERYSA OKTAWATI</i>	159-162
Practicalities of Module for Study Computer Network Systems in Engineering Education Study Program in Informatics and Computer FKIP Bung Hatta University, <i>ERIL SYAHMAIDI</i>	163-169
A Preliminary Study of The Development of Problem-Based Learning Model With Realistic Mathematics Education Approach (RME) to improve communication skills and mathematical disposition Vocational Students in Padang, <i>RIVDYA ELIZA</i>	170-177
Using Schemata Strategy on Reading Comprehension, <i>NOVIRIANI</i>	178-180
Understanding Teachers' Perspective of Professional EFL Teacher, <i>FRISCILLA WULAN TERSTA and FIRMAN</i>	181-185
Projects Based Learning Model on Mathematics Instructional media to Increase Students' Creativity and learning Independence, <i>ISNANIAH</i>	186-192
Analysis of Mastering Space Geometry Of Mathematics Education Department Students At Stain Bukittinggi, <i>ISNANIAH AND M.IMAMUDDIN</i>	193-200
Policy Making Process, <i>YESI ELFISA</i>	201-202
Students' Reading Comprehension and Group Resume Strategy at One Islamic Junior High School in Sarolangun: An Action Research, <i>KASPUL ANWAR, S.PD and UMMU AFLAH, S.PD</i>	203-206
Enhancing Students' Vocabulary Items in Writing Descriptive Text through Lexical Relations: Antonymy, Synonymy and Hyponymy, <i>PEBRINA PIRMANI and WINDA JANUARISTA</i>	207-209
The Effective Classroom Management in Teaching English, <i>SRI MARMOAH</i>	210-215
Teaching EFL Writing in Junior High School: The Use of the cooperative type think- pair- share (TPS) and Students' Writing at One Junior High School in Bojonegoro, <i>SAYIDA KHOIRATUN NISAK</i>	216-219

Using On-Line Journal Articles to Teach English to Master Program Students of Islamic Educational Management, <i>SUSWATI HENDRIANI</i>	220-222
Language Learning Strategies in Learning English at One Private Bilingual Junior High School in Jambi City, <i>SUTARNO, S.Pd</i>	223-229
Quality of Bricks with Mixed Cowdung's and Implementation Of Learning Physics of pressure to approach contextual Teaching and Learning (Ctl) in SMP state 1 Lubuklinggau, <i>YASPINYOLANDA, M.Pd.Si</i>	230-239
Free Education, Its Implementation and Condition in The Field Study of Educational Cost Policy in Jambi, <i>YURNI</i>	240-243
Teaching English across Different Learning Styles: Students' Learning Styles and English Achievement at One English Department Public College in Padang, <i>YUSNETA NOVALIANA</i>	244-250
The Effect of Metacognitive Self-Monitoring Strategies on Students' Reading Comprehension Viewed From Reading Motivation, <i>RESI SILVIA</i>	251-256
A Qualitative Analysis Of Difficulties Faced by the Students in Writing Essay at Batanghari University, <i>KHIDAYATUL MUNAWWAROH, M.Pd</i>	257-261
Writing Strategies among EFL Undergraduate Students: A Survey Study at One Public University in Jambi, <i>LUTHFIANI, AZHARIA KHALIDA, and GEBY WIRA PRATIWI</i>	262-266
The Tone of EFL Learners' Argumentative Essays, <i>YANRI RAMDHANO, MONALISA, and JAMALUDDIN</i>	267-272
Efforts to Improve Learning Outcomes ICT Arias Method Using the Topic Number Systems, in- UIN-Medan North Sumatra, <i>MUHAMMAD IHSAN, IRWAN YUSTI, and YAHFIZHAM</i>	273-277
Contextual Learning based Quantum Learning in Teaching Math, <i>NOVIANTI MANDASARI</i>	278-281
The Design of <i>Fiqh</i> Index Application as Learning Media by Using Programming Language, <i>SUPRATMAN ZAKIR and SUCI WULANDARI</i>	282-288
Language Potential, Communicative Competence, Culture-Character Adaptation, and the English Language Teaching-Learning, <i>ADZANIL PRIMA SEPTY and YENITA YATIM</i>	289-295

The Influence of Cooperative Learning Team Assisted Individualized (Tai) Type to the Students' Learning Motivation and English Reading Comprehension at STIK BinaHusada Palembang, <i>ARIEF PAMUJI, M.Pd and AGUS WAHYUDI, M.Pd</i>	296-299
The Correlation among Attitude, Reading Comprehension, and Writing Achievement of English Education Study Program Students of Sriwijaya University, <i>ARIEF PAMUJI, M.Pd</i>	300-307
The Use of Acrostic Poems in Teaching Vocabulary and Writing, <i>BASTIAN SUGANDI</i>	308-311
Learning English as a Foreign Language in Multilingual Societies, <i>DR. EFFENDY GULTOM, MA.</i>	312-319
The Acceptance of Web 2.0 Tools in 21 st Century Learning Environment, <i>ABDUL HADI MAT DAWI, PhD, LEE SIONG THEAM, and MOHAN PALANIANDY</i>	320-326
Study on ICARE Learning On Online Tutorial (Review of the Mathematical Problem Solving Ability), <i>YUMIATI and ENDANG WAHYUNINGRUM</i>	327-334
Learning from a Story: Teaching Strategies and Struggles of One Character "Mr. Han" in the Film Karate Kid, <i>ADANG RIDWAN, SS</i>	335-338
An Instructional Design Model Development Project-Based Learning at Vocational Student in Mechanical Engineering Department, <i>Muhibbuddin, NizwardiJalinus and Syahril</i>	339-346
Awareness Of Power, Belief, And Culture In A Text: Students' perception On Critical Literacy At One Public University In Jambi, <i>ROZALIA, S.Pd., FAILASOFAH, SS., M.Pd., and MUKHLAS ABRAR, SS., M.Hum</i>	347-354
Students Intercultural Communication Competence (Thailand Pattani Students in Indonesian Campus State Islamic University of Sunan GunungJati Bandung), <i>IHSANA EL KHULUQO, PhD. and DADAN ANUGRAH, PhD.</i>	355-360
The Development Model of Face-to-Face Lecture Mpsi to The Blended Learning Model, <i>RISWAN</i>	361-365

IMPLEMENTATION OF REALISTIC MATHEMATICS LEARNING AT SMPN 16 BENGKULU CITY

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Abstract This study aims to determine the implementation of realistic mathematics learning at SMPN 16 Bengkulu City. The implementation are: 1. planning, 2. Approach/method, and 3. evaluation. This study is a descriptive research. The results of this study as follows: Teaching Planning based on RML created by teacher is good. The implementation of mathematics teaching based on PMR is dynamic. Students active in mathematics. While teachers provide direction and guidance to the students. Evaluation of teaching mathematics based on RML stimulate students to complete. Students are able to make different models and strategies in solving contextual problems.

Key words: Realistic Mathematics Learning (RML)

Introduction

Realistics Mathematics Education (RME) is an approach to learning mathematics with emphasis on the significance of science mathematics (Wijaya, 2012). This approach views mathematics as a human activity. So mathematics as a mathematical process that relies on the activities of the students in performing the invention, is not a product that is accepted by the students to memorize. RME was first developed in the Netherlands in 1970 by Hans Freudenthal. According to Freudenthal, mathematics should be taught by associating them with the reality that corresponds to the experience of students and relevant to the community (Suryanto, 2010).

By using RME in mathematics, students in the Netherlands were able to win various mathematics competitions in the international mathematics Olympic event. The results of the study in Puerto Rico said that the achievement of students who take realistic mathematics learning programs that are in the 90th percentile to the top (Saragih, 2007). In Indonesia RME was developed under the name of Pendidikan Matematika Realistik Indonesia (PMRI).

Haji (2005) research results mentions that the problem solving and understanding of the students taught through realistic mathematics learning better than students taught through regular learning. Saragih (2007) research results found that students taught through realistic mathematics learning (RML) has the ability to think logically better than students taught through regular learning. Eriadi (2008) research results states that students who are taught through realistic mathematics learning has the ability mathematical understanding better than students taught through regular learning. Implementation PMRI at Elementary School various regions in Indonesia resulted in an understanding of mathematics and activity of students better than students taught through regular learning (Suryanto, 2010). The schools are located in Yogyakarta, Bandung, Jakarta, Surabaya, Malang, Palembang, Lampung, Jambi, Banjarmasin, Padang, Bali, Medan, Aceh, Semarang, Jakarta, Makassar.

Mathematics learning in junior high school Bengkulu city experiencing problems in the aspects of planning, implementation of learning and evaluation. Planning aspects of learning, some teachers do not make a Teaching Plan (TP). Aspects of the implementation of learning. The

learning approach used by teachers, students less attractive. Because learning is boring and one-way interaction. Aspects of evaluation, given the problems of a procedural nature, less develop the creativity of students (Haji dan Abdullah, 2014). Application of realistic mathematics learning need to be developed at the junior level, in order to improve the quality of learning in mathematics. The RML applicaation of the aspects of pllanning, implementation of learning, and evaluation.

The Research Problem:

1. How mathematics teaching planning based on RML?
2. How implementation of mathematics teaching based on RML?
3. How implementaion of mathematics teaching evaluate based on RML?

Method

This study was a descriptive study. Because describe the implementation of mathematics teaching based on RML. It described is a lesson plan, learning implementation, and evaluation. According Ruseffendi (1988), descriptive research is research using observation, interviews or questionnaires regarding the current situation.

1. The Research Subject

The research subject are students of Class VII SMPN 16 Bengkulu City, consist of 32.

2. Instruments

A key instrument is the researchers themselves. According to Creswell (2010), the researcher as a key instrument in qualitative research. While, complementary instruments consisted of questinnaire, guidelines interview, and guidelines observation.

3. Research Design

The research is qualitative research. According to Creswill (2010), qualitative research is a method to explore and understand the meaning that comes from social or humanitarian problems.

4. Data Analysis

Data on the lesson plan, the implementation of learning and learning evaluation analyzed qualitatively. According Seiddel in Moleong (2010), the process of qualitative data analysis as follows: a. record data in the field, b. collecting, sorting, classifying, synthesize, summarize, and create the index, and c. Create a category, find

patterns and relationships, and concludes the findings.

Result and Discussion

Mathematics Teaching Planning Based on RML

Lesson planning is very important to be prepared by a teacher, before he taught in the classroom. Learning plan provides guidelines for teachers in teaching so that learning is most effective. According Harjanto (2008), palnning is a projection of what is required in order to achieve objectives.

Learning plan contains various components and activities required in the implementation of learning. According to Anwar and Harmi (2010), the learning plan includes: a. Learning Objectives, b. Learning Materials, c. Step-by-step learning activity, d. Learning Resources, and e. Assessment.

expected results, and e. Identification of alternative strategies and the necessary equipment.

Teaching Planning based on RML is a learning plan that includes the characteristics of RME. Realistic mathematics approaches have five characteristics as follows: (1) The use of context, (2) The use of models, (3) The use of student's own productions and constructions, (4) The interactive character of teaching process, and (5) The intertwinement of various learning strands (De Lange, 1987). in learning activities in Learning Program Plan includes a description of problems related to contextual, usage models, aktivitas students in conducting discovery and reflection, students discussed, and the teacher as a facilitator and guide students. In addition, the RPP also contains a variety of learning resources and media are needed for students in learning activities. TP contains many questions open-ended problem.

Things that need to be broken down as follows:

- a. The activities of students in the process of mathematical horizontal, ranging from contextual issues, modeling, and the use of strategies in solving problems.
- b. Problem contextual better known by students

- c. Step-by-step guidance of teachers, ranging from the presentation of the contextual problems to the students discover the concept.
- d. The reflection, from the beginning to the end of the lesson.
- e. Various possible strategies students in resolving a problem.

The implementation of Mathematics Teaching Based on RML.

Realistic mathematics learning is an approach to learning mathematics where the student should learn mathematics by mathematizing subject matter from realistic situations and by mathematizing reviews. Reviews their own mathematical activity (Rusmussen, 2000). Starting from a contextual problem given by the teacher, the students tried to solve the problem while finding various concepts in matematika. The mathematics of the student through discussion and guidance of teachers. According to Wijaya (2012), the process is a process mematematikakan mathematical context. The process consists of horizontal and vertical mathematical processes (De Lange, 1987). Horizontal mathematical process relates to the identification of mathematical concepts based on regularity and its relationship with contextual

issues, while the process is a process of vertical mathematical formalization (Wijaya, 2012).

The mathematical process is part of the invention concept and troubleshooting performed by students with the guidance of teachers. The invention activity, do students in solving contextual problems. According Gravemeijer, K.P.E. (1994), the problem is a matter of presenting contextual or environmental conditions are realistic for students. Examples of contextual problems as follows. A number of pencils will be given to 25 students. Any leftover get 8 pencils. How many pencils to be received by each student, when pencils were given to 40 students (Saragih, 2007). Through discovery, the students made a model of the problem and specific settlement strategy. One of the models and strategies that made the student is he in linking students with many pencils each student. Answer one student is 5 pencils received by each child.

Math activities of students in solving problems and in finding a variety of mathematical concepts, ranging from mathematics horizontal (informal mathematics) to vertical mathematics activities (formal mathematics) shown in the following diagram.

Multiplication

Realistic

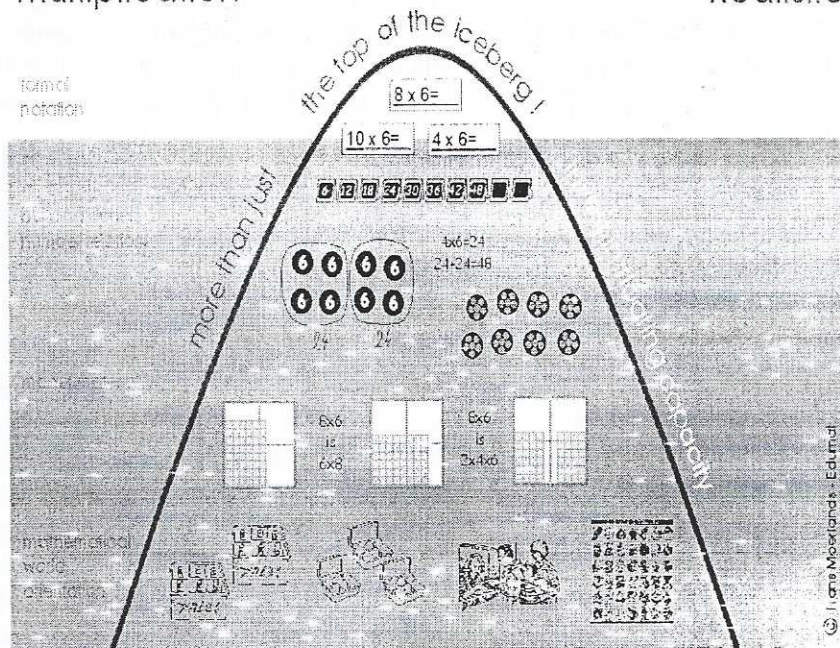


Figure 1. Mathematics Activities based on RML
(Suryanto, 2010)

A total of 78%, the students perform mathematical activities maupu horizontal solve problems in finding the concept of multiplication of numbers. While 22% of students are less precise in horizontal mathematical activities. A total of 62%, the students perform a vertical mathematical activity in discovering the concept of multiplication of numbers. While 38% of students are less precise in vertical mathematical activities in discovering the concept of multiplication of numbers. Activities of teachers and students' learning of mathematics-based on RML preformance as follows. Topics covered about Numbers Denomination. Contextual problems as follows. Mother

Yumiati trade in the school cafeteria SMPN 16 Bengkulu City. He sold two types of cakes that pie and cake apem. The two types of cakes are placed in second place. The first place to load as many as 8 patties and 8 apem cake. 2nd place patties contain as many as 12 and 12 apem cake. When finished selling, mother Yumiati calculate cakes were sold and left. How much pie and cake apem sold? How much pie and apem remaining?

Students discuss with their friends to solve the problem. While teachers facilitate and guide the activities of the students. The students went to Mrs. Yumiati in the school cafeteria, to ask

about merchandise cake. Students noted, many cakes have been sold and are still left. One group of students made a model of the problems result merchandise mother Yumiati cake in the form of a table. In the table includes a description of: a. Many pie first before sale, b. Lots of pie that has been sold, c. Many of the remaining pie, d. Comparison between many patty pie sold by many initially, and e. Comparison between many patty is left with a lot of pie first. Through the model table, the students use the strategy by comparing the many cakes were sold or cake are left with a lot of cake first. Finally, the students find the concept of fractions. These findings strengthen previous findings, that through RML, students can find the formula circumference and area of a rectangle (Khasanah in Suryanto, 2010). Similarly, the ability to apply math concepts to increase from 71.21% to 78.79% (Prabowo in Suryanto (2010)). Master directed and appreciated the effort and the discovery of such students.

Implementation of mathematics teaching based on RML takes place dynamically. Students are actively involved directly in the conduct of mathematics to solve the problem and to find a concept. As many as 92% of students are active in participating in the learning of mathematics. Students were in discussions with friends in the group. Earti research results in Suryanto (2010), the interaction between students and between students and teachers is most effective in realistic mathematics learning. Students do real object manipulation. Students conduct a reflection about the things he had done. So that 86% of students enjoy learning mathematics. According Chotijah in

Suryanto (2010), students have a positive attitude towards mathematics after obtaining realistic mathematics learning. In addition, teachers work well in directing and membimbing students in doing mathematics activities. The teacher explains the contents of the contextual issues, things that must be found to the class, which must be answered by the students, how to use the media, and how to perform mathematical activity. Teachers also guide students in discussion and activity guide students in doing mathematics. Guidance teachers to students in the activities of solving problems or finding a mathematical concept is still very dominant, especially for students who have the ability of low and medium. While students who have a high ability to earn a little guidance. A total of 83%, low-ability students who obtain guidance from the teacher. A total of 57%, students are capable of being obtained guidance of teachers. A total of 11%, high-ability students gain the guidance of teachers.

Constraints faced by teachers and students in implementing the PMR-based mathematics instruction as follows. Less learning time. Motivate students to actively take part. Completeness of materials learning. Changing the way the teacher-centered Learning to be a way of learning centered on the student.

Evaluation of Teaching Mathematics Based on RML

Evaluation is a systematic and ongoing process to determine the quality of something, based on the considerations and specific criteria in order to make a decision (Arifin, 2012). Quality of the object in question is the value and

meaning. So that the PMR-based evaluation of mathematics learning is a process that is systematic and ongoing to determine the quality of teaching mathematics based on PMR at the considerations and specific success criteria, in order to make a decision about the learning of mathematics.

Objective evaluation of teaching mathematics based on RML to know the students' ability to perform mathematical activity (strategy) to solve contextual problems and in finding a variety of mathematical concepts. Moreover, to know the results of learning mathematics. According Keilough and Kellough in Sweringen (2006), the purpose of evaluation to assist learners in identifying their strengths and weaknesses, determine the effectiveness of learning strategies, and provide the data to make a decision.

Evaluation of teaching mathematics based on RML about the form of contextual motivate students to complete with a variety of strategies. The correct answer from the contextual remedy matter can be only one or more than one. As a matter of contextual below, about a cake seller. Mother Yumiati sells two types of cakes that pie and cake apem. The two types of cakes are placed in second place. The first place to load as many as 8 patties and 8 apem cake. 2nd place patties contain as many as 12 and 12 apem cake. When finished selling, mother Yumiati calculate cakes were

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sold and left. Previously, he had already recorded many cakes to be sold. Through these activities, students may find the concept of fractions. Problem contextually related to everyday life can motivate students to complete. Students are challenged to solve the problem. A total of 94%, the students are motivated to solve problems. A total of 81%, the students find the concept of fractions through problem-solving questions.

Problems based on RML allows students to make a variety of models and problem-solving strategies. The models created problems of students shaped drawing circles, lines, and tables. Some 56% of the model line-shaped, circular 24%, and 20% in the form of tables. While the general to the particular strategy as much as 62% and a specific strategy to the public as much as 38%.

Conclusion

The results of this study as follows teaching Planning based on RML created by teacher is good. The implementation of mathematics teaching based on RML is dynamic. Students active in mathematics. While teachers provide direction and guidance to the students. Evaluation of teaching mathematics based on RML stimulate students to complete. Students are able to make different models and strategies in solving contextual problems.

Tingkat Satuan Pendidikan. Bandung: Alfabeta.

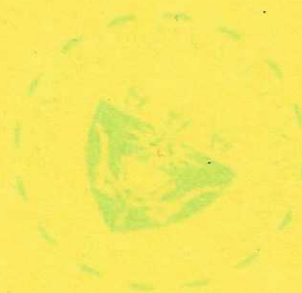
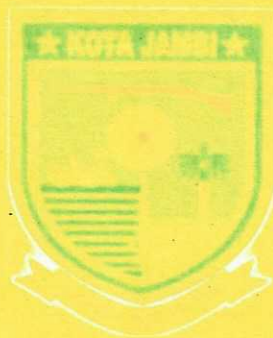
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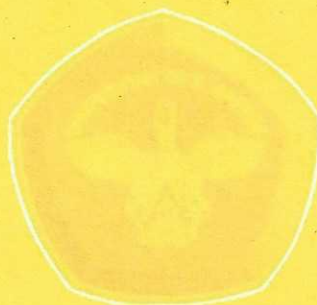
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