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Realistic Mathematics Education Model Includes Characteristic to Improve the Skill of Communication Mathematic

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Abstract

The type of this study is development by using Plomp model with 5 phase that is modified into Preliminary investigation, Design, and realization/ contruction, test, evaluation, and revision. The developed instrumen includes: Syllabus, Lesson Plan, Student Test Book, Worksheet, and Mathematic Communication Skill Test.The field experiment is undertaken to the VII graders students of Al Azhar 23Junior High School Semarang. The data is gained through the observation sheet, interview and test. The result is processed descriptively, using completeness experiment, effect experiment, comparison experiment and development experiment to find out the lesson effectivity.The implementation of this instrumen are (1) the average score of classroom mathematic communication skill of the experimental class students reaching more than the passing grade so the average experimental class is complete, with t = 13.82 > 1.72 = ttable and completely classical, with Z = 2.35 > 1.64 = Ztable, (2) mathematic communication skill, attitude and curiosity effect to mathematic communication skill equal to 89.2%, (3) the experiment of classroom problem solving is better than control class with score 84.86 and 79.9, (4) the average of mathematic communication skill is improved 0.41 so the lesson and the instrumen is efective.

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INTRODUCTION

Learning is actually a "change" that takes place inside a person after a learning activity. This is similar to Hudojo (1988: 1) who said that a person learns when in the person occurs a process of activity that resulted in a change of behavior.Learning is an obligation of everyone. One of the most popular areas of learning is in the field of mathematics.

According to Depdiknas (2007) one of the goals of learning mathematics is to have an attitude of appreciating the use of mathematics in life, that has a curiosity, attention, and interest in learning mathematics.

In general, during this time, the mathematics learning is more focused on the aspect of calculation only. It is not surprising that based on various studies; they show that learners in general can perform a variety of mathematical calculations, but show less encouraging results related to its application in everyday life. Mathematical learning should not only include the mastery of mathematical concepts, but also relate to their application in everyday life. Applied math abilities, such as collecting, presenting, analyzing and interpreting data, also communicating it are necessary for the students to master.

NCTM in Principles and Standards for School Mathematics (2014) revealed problem-solving abilities, reasoning and proof capabilities, communication skills, connection skills, and mathematical representation skills are key aspects of mathematical competence that learners must possess while studying math. According to Wimbarti (2012) mathematics is one (if not the only) subject at the primary school level that is most feared by learners, mathematics is a compulsory subject at the level of elementary school to high school in Indonesia. Still according to Wimbarti , based on UNESCO data, the quality of mathematics education in Indonesia is ranked 34 out of 38 countries observed. Another data that shows low mastery of math learners in Indonesia can be seen from the results of the survey done by *The Program for International Student Assessment* (2010), the ability of mathematics learners in Indonesia is in position 61 out of 65 countries. Based on TIMSS (2011) data, the average ability of Indonesian learners in each domain is still far below neighboring countries such as Malaysia, Thailand and Singapore. The lowest average percentage achieved by Indonesian learners is on the cognitive domain at the reasoning level of 17%. Low math ability of learners on reasoning domain needs more attention.

Many theories and experts state how important the problem-solving ability, as NCTM in Haghverdi, et al (2011) suggests that problem solving should be the focus of mathematics learning. The reality is, it is relatively inconsistently applied in mathematics classes in Indonesia. The learning process that occurs so far only the educators initiate, deliver and end the lesson without any updates, it is done continuously so it becomes a routine. Students who feel bored and lost interest will not be able to follow the lessons well, so that the ability of learners cannot develop optimally. The ability, ideas and creative ideas of learners hampered because of the limitations of educators and their methods in teaching mathematics.

One of the competences of mathematical ability that must be achieved is the mathematics communication. Mathematics communication is not only associated with mathematical understanding, but it is also closely related to the improvement of problem-solving skills. According to Forrest (2008), mathematics communication is the ability to express mathematical ideas through speech, writing, demonstration, and paint them visually in different types; the ability to understand, interpret, and assess ideas presented in writing, orally, or in visual form; the ability to construct, interpret and connect various representations of ideas and its relationships.

There are various forms of mathematics communication (LACOE, 2004), for example (1) reflecting and clarifying thoughts about mathematical ideas, (2) linking everyday languages with math languages using symbols; (3) using the skills of reading, listening, interpreting, and evaluating mathematical ideas, and (4) using mathematical ideas to make conjectures and make convincing arguments.

Educators have a very important role in designing learning in the classroom so that learners have varied opportunities to communicate mathematically. The task of writing is one of the ways to establish mathematical communication skills. The writing assignment is defined as the task for learners to organize, summarize, and communicate their thoughts in writing.

Writing can also improve the memory of concepts and provide opportunities for learners to reflect their thoughts. The task of writing can also include the disclosure of what has already been

known or what the learners have not understood yet. In addition, the task of writing can also be a problem solving provided by educators. Problem solving involves several strategic capabilities such as coordinating various information or mathematical ideas and using them to solve problems.

The problems as described above occurred in many schools, included in Islamic Junior High School Al Azhar 23 Semarang. Based on observations made by researcher in the academic year 2015/2016 in Islamic Junior High School Al Azhar 23 Semarang and interviews with educators, the following data is obtained.

First, the learning activities of mathematics are still centered on educators. This can be seen when educators explain the material, the students tend to be passive, just listen, afraid to ask questions and argue.

Secondly, the implementation of cultural education and character development of the nation has not been fully integrated in the learning process in the classroom, especially the character of curiosity.

Third, in the mathematics lesson, in the comparison material, the average score of students' daily test is 61. This achievement is still far below the determined KKM that is 71.

Achievement of learning is still very low and the students' activeness in the learning process is absolutely needed, they are the problems that must be solved soon. To overcome these problems, educators must be able to create a fun learning atmosphere for learners. Fun learning activities can be created by educators using various learning models and relevant learning media. In addition, educators should also try to develop students' mathematics communication skills so that they can solve the problems given.

The alternative to improve the learning achievement of the mathematics learners is Realistic Mathematics Education (RME) learning model that is focused on giving learners' daily life problems. According to Van den Heuvel-Panhuizen and Drijvers (2014), although it is now more than forty years from the start of RME development as a specific domain instruction theory, RME can still be seen as a work in progress. It is never considered fixed and completed in mathematics education theory. Nor is it an integrated approach to mathematics education. It means that over the years different emphases have been put on different aspects of this approach and the people involved in RME development are primarily researchers and developers of mathematics education, and mathematics educators.

Based on the principles of learning in the RME, the MKPBM Team (2001: 130) suggested some points that can be used as guidance regarding the application of the RME approach in learning:

a. How 'educators' convey contextual mathematics as the starting point of learning.
b. How 'educators' stimulate, guide and facilitate so that the procedures, algorithms, symbols, schemes and models created by learners lead them to arrive at formal mathematics.
c. How 'educators' give or direct classes, groups and individuals to create free production, creating their own way of solving problems or interpreting contextual problems, resulting in various approaches/methods of completion or algorithm.
d. How 'educators' make the class works interactively so that there is interaction between them, among learners in small group and among groups in presentation, also among learners and the educators.
e. How 'educators' make connections between topics and other topics, between concepts with other concepts, and between symbols with other symbols in a series of mathematical topics.

In learning RME, learners are encouraged or challenged to work actively and even expected to construct or build their own knowledge. It is one of the principles in RME that is also called "re-invention" and belongs to the notion of "constructivism". In RME learners are given initial problems that are "contextual" or in accordance with the reality or environment faced by learners in their daily life or problems that really understandable or easily imaginable by learners. Then, learners are asked to communicate and construct their own understanding about the character or definition or theorem or model. In the end, it is expected to give the learners possibility to more easily understand math that is actually an abstract object.

Based on the results of research Rudiono et al (2015) showed that student learning results that follow RME-based mathematics learning is better than the student learning results that follow conventional mathematics learning. In research conducted Dalyana (2004) it can be concluded that 1) learning tools with RME approach can create conditions that enable learners to learn actively during the learning activities, 2) the analysis results of the ability of educators in managing learning process show that educators are able to manage learning

activities by using RME learning material well 3) the results of the questionnaire data analysis of learners towads learning process show that in general the learners respond the component and learning activities positively by using RME learning material.

In the study of Sugiman and Kusumah (2010), it is concluded that. 1) the mathematics problem-solving ability of learners who are taught by RME education is higher than the mathematics problem-solving ability of learners who are taught with convensional learning. 2) By using RME education, improving students 'mathematics problem solving abilities at school level A is higher than improving students' mathematical problem solving skills at C and B level schools.

Mujib (2010) stated that. 1) Mathematics learning process at PMRI school as follows. (a) Educators try to start learning by providing contextual problems, learners are actively involved in learning using models (props), (b) Learning centers on learners, educators actively explain concepts, educators provide opportunities for learners to find solutions in their own way; (c) Interaction is only one-way from educators to learners, there is an interaction among learners. In non-PMRI schools (a) Educators actively transfer knowledge to the learners' minds that passively accept it; (b) Learners are less active just keep silent, listen what is conveyed by educators; (c) The interaction of educators and learners is only one way that is from educators to learners; 2) Students' interest in PMRI schools (a) Educators give motivation in learning math so that the learners are happy and not bored; (b) Learners are interested in learning math because educators motivate them to find and use strategies to solve problems in their own way; In non-PMRI schools; (a) Educators hardly ever motivate learners to find other ways (alternatives) to solve problems; (b) Learners get bored quickly and less interested in learning math because it is difficult; 3) The thinking process/ reasoning of learners in PMRI schools; (a) Learners can find their own way and start thinking critically. Problem-solving patterns vary; (b) Learners are brave to explain their ideas and express their opinion. In non-PMRI schools; (a) Learners tend to result oriented, not process oriented, in solving the problems with one way, same thoughts, generally formal. (b) Learners are not able to explain the ideas smoothly.

Implementation of learning by using Realistic Mathematics Education (RME) model with Culture Education and Nation Character (Pendidikan Budaya dan Karakter Bangsa (PBKB) to improve the mathematics communication ability of comparative problems can be realized by a lesson plan or learning scenario. Realistic Mathematics Education (RME) scenario in general as a potential motivator for learners in discussing in group to solve various problems that exist in textbooks as well as on LKPD, and end with confirmation by the educator together with the learners. Thus, every step and stage of learning to make learners accustomed and skillful in using the ability of mathematics communication.

Based on the descriptions stated above, the purpose of this study is developing mathematics learning research using Realistic Mathematics Education model with Culture Education and Nation Character (Pendidikan Budaya dan Karakter Bangsa (PBKB) to improve the mathematical communication.

METHOD

The type of research used in this research is mixed methods of concurrent embedded model with quantitative research as the primary method. The population in this study is the seventh grade students of Islamic Junior High School Al Azhar 23 Semarang the second semester of the academic year 2015/2016. Sampling in this study using cluster random sampling technique, which is randomly select two classes of population. Using this technique, two classes of samples were obtained, namely class VII B as experimental class taught by RME learning model with PBKB and class VII C as control classes taught by conventional learning model.

Instrument of data collection used in this research is validation sheet of lesson plan to get lesson plan data validity, sheets of students 'attitude questionnaires to obtain data on learners' opinions on the RME lessons with PBKB, sheets questionnaire characters curiosity to get the data of curiosity characters, sheets of observation of mathematics communication skills to obtain data on mathematics communication skills, and tests of mathematics communication skills to obtain the value of mathematics communication skills of learners.

Learning tools and research instruments are said to be valid and can be used if each tool and instrument are at least having good criteria.

Learning tools and research instruments that are validated in this research include syllabus, RPP (lesson plan), LKPD, BAPD, and TKKM.

The analysis of the test items used in this research is the validity, reliability, discriminating power and difficulty level. Based on the analysis results, 8 questions out of all questions meet the criteria.

Quantitative data analysis consists of initial data analysis and final data analysis. Based on the result of preliminary data analysis, it is found that the initial data of the experimental class is normally distributed, has a homogeneous variance and there is no difference of initial ability between the two sample classes. On the other hand, the final data analysis after RME with PBKB learning using normality test, homogeneity test, equality test average, classical completeness test, comparison test, influence test and gain test of Gain.

RESULTS AND DISCUSSION

The learning quality of RME with PBKB is measured based on three stages in learning, that is: (1) lesson plan; (2) learning process; and (3) learning result assessment. Quality of learning is reviewed qualitatively and quantitatively. At the stage of lesson plan researchers make learning tools and research instruments. Learning tools and research instruments are said to be used if each tools is at least good.
The recapitulation of validation data is presented in Table 1.

Table 1. The average value validation results

LEARNING TOOLS	VALIDATOR 1	2	3	4	5	AVERAGE	EXPLANATION
Syllabus	4.75	4.70	4.80	4.65	4.60	4.73	Excellent
RPP(lesson plan)	4.40	4.80	4.85	4.70	4.70	4.69	Excellent
BAPD	4.35	4.80	4.90	4.60	4.55	4.66	Excellent
LKPD	4.29	4.86	4.93	4.64	4.64	4.68	Excellent
TKKM	4.50	4.70	4.80	4.70	4.90	4.68	Excellent

Based on validation of learning tools that include syllabus, RPP (lesson plan), BAPD, LKPD and TKKM, all of them are excellent. From these results it can be concluded that the tools are valid and can be used for research.

Stage of assessment of learning could be seen from students response towards learning and effectiveness of learning. Based on the results of students questionnaire, it was obtained that the majority of students felt that the learning had been implemented properly also the response of the educator. Overall, positive responses were also given by the educators on the RME with PBKB learning tools. Based on the response of learners and educators, it can be concluded that learning tools meet the practical criteria.

The final data analysis results showed that the experimental class data and control class were normally distributed and had homogeneous variance.

The first hypothesis test using the One Tail Test - Right Side, we obtained t_{hitung} = 13.82 whereas t_{tabel}= 1.72. Because $t_{hitung} > t_{tabel}$ then it can be concluded that the average mathematics communication ability of learners in RME with PBKB class reached more than 71. The result of second hypothesis test analysis by using one sample Z test, we obtained Z_{hitung}= 2.35 whereas Z_{tabel}= 1.64. Because $Z_{hit} > Z_{tab}$ then it can be concluded that the proportion of classical completeness of learners in classes taught by RME learning model with PBKB was more than 80%. In addition, the percentage of learners who reached KKM was 100%.

Based on the hypothesis test using two variances test (F test), we got F value F_{hitung} = 1.02, whereas F_{tabel} = 2.45. Because $F_{hitung} < F_{tabel}$ then it can be concluded that the variance of the mathematics communication ability of the experimental class and the control class is different. Because the variance of the ability is different, we used T test to compare the

means for two groups. We obtained the t' = 3.5, whereas t_{tabel} = 2.53. Because $t_{hitung} < t_{tabel}$ then we can conclude that the average ability of mathematics communication skills taught by RME with PBKB is better than the average ability of mathematics communication skills taught by conventional learning.

Based on the result of observation, we obtained subjects with an increase in curiosity as many as 16 students with moderate improvement category, 3 students with low increasing of curiosity, 1 student did not increase and 1 student decreased.

The fourth hypothesis test using multiple regression test, we obtained *R Square* 0,892 or equal to 89.2%, it means that the mathematics communication skill and curiosity character influence 89.2% towards mathematics communication skill value. The fifth hypothesis test using the normalized gain test obtained an average increase in the experimental class of 0.41. It means that the average increase in mathematical communication ability for the experimental class treated with RME model with PBKB had increased by 0.41, or could be categorized in moderate increase.

From the results of research and calculation, we could get some information (1) the learning process using *RME* with PBKB completed clasiccally, (2) the test result average of mathematics communication ability in experiment class was better than in control class, (3) the mathematics communication skills of learners increased, and (4) there was positive influence between mathematics communication skills and students' curiosity character with the mathematics communication test result. Therefore, it can be concluded that the learning process using RME model with PBKB is considered to be effective.

CONCLUSION

Based on the result and discussion, we obtained conclusions as follows: (1) the results of the learning tools development with RME model with PBKB is valid, (2) the results of the learning tools development with RME model with PBKB is practical, (3) the results of the learning tools development with RME model with PBKB to increase the learners' mathematics communication ability is effective.

Subjects with their curiosity tendencies need stimulus in order to experience an increase, while the subjects with low increase, or fixed, or decrease in curiosity character need to look for the causing factors.

RME learning needs to be applied so that the students are more interested in the learning material. Students will better understand what they will learn and its use in real life. Further research as research development for different material is needed.

REFERENCES

Akker, V. D. J. 1999. Principles and Methods of Development Research.

http://projects.edte.utwente.nl/smarternet/version2/cabinet/ico_design_principles.pdf(diunduh 6 Desember 2012).

Anwar, N. M. et al. 2012. "Relationship of Creative Thinking with the Academic Achievements of Secondary School Students". International Interdisciplinary Journal of Education, Vol. 1, Issue 3

Arikunto, S. 2009. Dasar-dasarEvaluasiPendidikan (EdisiRevisi). Jakarta: BumiAksara.

BSNP. 2007. Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia No. 22 Tahun 2007 tentang Standar Proses untuk Satuan Pendidikan Dasar dan Menengah. Jakarta: BSNP.

Crain, William. 2007. Teori Perkembangan (Konsep dan Apilkasi). Yogjakarta: Pustaka Pelajar

Dalyana. 2003. Pengembangan Perangkat Pembelajaran Matematika Realistik Pada Pokok Bahasan Perbandingan di Kelas II SLTP. Tesis Magister Pendidikan: Universitas Negeri Surabaya.

Departemen Pendidikan Nasional. 2006. Permendiknas No. 22 Tahun 2006 tentang Standar Isi. Jakarta: Badan Satuan Nasional Pendidikan.

Fauzi, Amin. 2002. Pembelajaran Matematika Realistik Pada Pokok Bahasan Pembagian di SD.Tesis Magister Pendidikan: UniversitasNegeri Surabaya.

Fernandez, M. et al. 2001. Re-conceptualizing "Scaffolding" and the Zone of Proximal Development in the Context of Symmetrical

Collaborative Learning. Journal of Classroom Interaction, Volume 36 No. 2. Hal 40-54.

Fitriyani. 2012. Blak-blakan Bahas MapelMatematika. Jakarta: CabeRawit.

Forrest, D.B. 2008. "Communication Theory Offers Insight into Mathematics Teachers' Talk". Jurnal the Mathematics Educator, 18(2): 23 – 32.

Hake, RR, 2003, Analyzing Change/Gain Scores. USA, Dept. of Physics Indiana University. Hobri. 2010. Metodologi Penelitian Pengembangan (Aplikasi pada Penelitian Pendidikan Matematika). Jember: Pena Salsabila.

Hudojo, H. 1988. Mengajar Belajar Matematika. Jakarta: Depdikbud.

Kementerian Pendidikan dan Kebudayaan. 2012. "PISA (Programme for International Student Assessment).

http//litbang.kemendikbud.go.id/detail.php?id=215. Diunduh 14 November 2013 pukul 13.15.

KementerianPendidikandanKebudayaan. 2012. "TIMSS (Trends in Mathematics and Science Study): http//litbang.kemendikbud.go.id/detail.php?id=215. Diunduh 14 November 2013 pukul 13.17.

Kementerian Pendidikan dan Kebudayaan. 2016. Matematika Kelas VII Buku Guru. Jakarta : Kementerian Pendidikan dan Kebudayaan.

Kementerian Pendidikan dan Kebudayaan. 2016. Matematika Kelas VII Buku Murid. Jakarta :KementerianPendidikandanKebudayaan

Krathwohl, D. R. 2002. A Revision of Bloom's Taxonomy: An Overview. Journal Theory Into Practice, Vol 41(4)

LACOE (Los Angeles County Office of Education). Communication.http://teams.lacoe.edu. 2012.

Maher. C. & Martino,A.1997. "The Develompment of The Idea of Mathematical Proof: A 5-Year Case Study".Journal for Research in Mathematics Education, 7 (2), 194-214.

Mujib. 2010. Perbandingan Antara Proses PembelajaranMatematikadanStrategiMenyelesaikanMasalahtentangPecahanolehSiswaSekolahDasar di Sekolah yang Mengimplementasikan PMRI dan Yang TidakMengimplementasikan PMRI. Tesis. Surakarta: UNS.

Mulyasa, E. 2009. Implementasi Kurikulum Tingkat Satuan Pendidikan Kemandirian Guru dan Kepala Sekolah. Jakarta: Bumi aksara.

Nugraha, Putra. 2012. Cakrawala Matematika untuk SMP dan MTS kelas VII. Surakarta: Putra Nugraha.

NCTM. 2013. Principles and Standards for School Mathematics. http://www.nctm.org/standarts/content.aspx?id=322. Diunduh 9 Desember 2013 pukul 14.01.

Nieveen. et al. 1999. Prototyping to Research Product Quality. In jan van den akker et al. Design approaches and tools in education and training (eds): 125-135.

PISA. 2010. Program for International Students Assessment. http://www.nces.ed.gov/PISA09. Diunduh 5 Oktober 2013 pukul 13.05

Polya, G. 1973. How to Solve It. A New Aspect of Mathematical Method (2nd Ed). New Jersey: Princeton University Press.

Retnaningsih, Siti Eka dkk. 2015. Matematika SMP Islam Al Azhar kelas VII. Jakarta: Yayasan Pesantren Islam Al Azhar.

Ruseffendi, ET. 1992. Penilaian dan Hasil Belajar Siswa Khususnya dalam Pengajaran Matematika. Bandung: Tarsito.

Sardiman. 2004. Interaksi dan Motivasi Belajar Mengajar. Jakarta: Raja Grafindo Persada.

Silver, E. A. 1997. "Fostering Creativity through Instruction Rich inMathematical Problem Solving and Problem Posing". The International Journal on Mathematics Education, Vol 29(3): 75-80

Soedjadi, R. 2000. KiatPendidikanMatematika di Indonesia. Dirjen Dikti. Jakarta Depdikbud.

Soedjadi, R. 2001. Pemanfaatan Realitas dan Lingkungan Dalam Pembelajaran Matematika . Makalah disajikan pada Seminar Nasional RME di Jurusan Matematika FMIPA UNESA 24 Februari 2001.

Soedjadi, R. 2001. Pembelajaran Matematika Berjiwa RME (suatu pemikiran rintisan kearah upaya baru) Makalah: Surabaya.

Soedjadi, R. 2002. Pembelajaran Matematika Realistik (Hand Out). PPs. Universitas Negeri Surabaya.

Sudjana.2005. Metoda Statistika. Bandung: Tarsito.

Sugiyono. 2010. Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D. Bandung: Alfabeta.

Suherman, E.2003.Evaluasi Pembelajaran Matematika. Bandung: JICA UPI.

Sukestiyarno, YL. 2005. Modul Kuliah SPSS. Semarang: PPs Unnes.

Sumarmo, U. 2003. Pembelajaran Matematika untuk MendukungPelaksanaan Kurikulum Berbasis Kompetensi. Makalah. Bandung: UPI.

Sup, K. L. et al. 2003. "A Development of the Test for Mathematical Creative Problem Solving Ability". Journal of the Korea Society of Mathematical Education Series D: Research in Mathematical Education Volume 7 No. 3. Hal 163–189

Sutrisno, J. 2009. PengembanganPerangkatPembelajaranMatematikadenganStrategiThink Talk Write melalui Model Creative Problem Solving padaMateriBangunDatarSegiempat. Tesis. Semarang: Program PascaSarjana UNNES.

Thiagarajan, S., D. S. Semmel, and M. I. Semmel. 1974. Instructional Development for Training Teachers of Exceptional Children, A Source Book. Blomington: Indiana University.

Tim MKPBM. 2001. StrategiPembelajaranMatematikaKontemporer. Bandung. UniversitasPendidikan Indonesia (UPI).

Van den Heuvel-Panhuizen, M., &Drijvers, P. 2014. Realistic Mathematics Education. In S. Lerman (Ed.), Encyclopedia of Mathematics Education (p:521-525). Dordrecht, Heidelberg, New York, London: Springer. Doi: 10.1007/978-94-007-4978-8_170

Wahyuni, A., Ayu, A. W. T., &Budiman, S. (2013). "Peran Etnomatematika dalam Membangun Karakter Bangsa". Prosiding. ISBN : 978- 979-16353-9-4, MP-113-118.

Zaenuri, H. Suyitno, Rokhman, F., &Suyitno, A. (2017). Developing of Supplementary Books of Mathematics Teaching-Learning Process Based on Coastal Culture for JHS Students. International Electronic Journal of Mathematics Education Volume 12(4), 421-430.