Search this site

SAINSAB

The Journal of The Association For Science and Mathematics Education, Penang

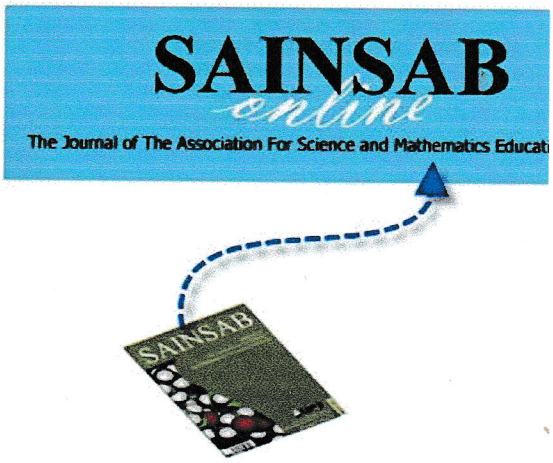
ISSN 1511-5267

MAIN MENU
About SAINSAB
Editorial Board & International Advisory Board
International Advisory Board Profiles
Guidelines for Contributors
SAINSAB Vol. 11, 2008
SAINSAB Vol. 12, 2009
SAINSAB Vol. 13, 2010
SAINSAB Vol. 14, 2011
SAINSAB Vol. 15, 2012

Webmaster: Prof. Dr. Fong Soon Fook

About SAINSAB

SAINSAB is the flagship journal of the Association for Science & Mathematics Education, Penang. *SAINSAB* publishes academically refereed articles contributing to the theory and practice of science, mathematics and educational technology education. *SAINSAB* invites primary and secondary teachers, teacher educators, preservice teachers, and others with an interest in improving the quality of teaching to submit articles. *SAINSAB* particularly values contributions from teachers who have researched their own classroom practice.



SAINSAB aims to promote the teaching of science, mathematics and educational technology in all Malaysian schools with a focus on classroom practices and contribute to the professional development of teachers. With the simultaneous launching of SAINSAB-ONLINE and ASMEP-ONLINE, we hope that the mutual sharing of classroom experiences and research results could be shared seamlessly across the region of Soth-East Asia, Asia and perhaps even globally.

Prof. Dr. Fong Soon Fook
Chief editor
SAINSAB-ONLINE

Search this site

SAINSAB

The Journal of The Association For Science and Mathematics Education, Penang

ISSN 1511-5267

MAIN MENU
About SAINSAB
Editorial Board & International Advisory Board
International Advisory Board Profiles
Guidelines for Contributors
SAINSAB Vol. 11, 2008
SAINSAB Vol. 12, 2009
SAINSAB Vol. 13, 2010
SAINSAB Vol. 14, 2011
SAINSAB Vol. 15, 2012

Webmaster: Prof. Dr. Fong Soon Fook

Editorial Board & International Advisory Board

ADVISOR

Dr. Azian T.S. Abdullah
Curriculum Development Division
Ministry of Education
Malaysia

EDITOR-IN-CHIEF

Prof. Dr. Fong Soon Fook
School of Educational Studies
Universiti Sains Malaysia
Penang, Malaysia

EDITORIAL BOARD

Prof. Dr. Rozhan M. Idrus, School of Distance Education, Universiti Sains Malaysia

Prof. Dr. Fatimah Saleh, School of Educational Studies, Universiti Sains Malaysia, Universiti Sains Malaysia

Prof. Dr. Zurida Ismail, School of Educational Studies, Universiti Sains Malaysia, Universiti Sains Malaysia

Assoc. Prof. Dr. Toh Seong Chong, Centre for Instructional Technology, Universiti Sains Malaysia

Assoc. Prof. Dr. Irfan Naufal Umar, Centre for Instructional Technology, Universiti Sains Malaysia

Assoc. Prof. Dr. Balakrishnan Muniandy, Centre for Instructional Technology, Universiti Sains Malaysia

Dr. Azidah Abu Ziden, School of Educational Studies, Universiti Sains Malaysia, Universiti Sains Malaysia

Dr. Leong Lai Mei, School of Educational Studies, Universiti Sains Malaysia, Universiti Sains Malaysia

INTERNATIONAL ADVISORY BOARD

Prof. Dr. Aye Aye Myint
Head of the Department of Educational Psychology
Yangon Institute of Education
Yangon
The Republic of Union of Myanmar

Prof. Dr. Elvira L. Arellano
Graduate School, College of Education,
Center for Research and Innovations in Science and Mathematics Education,
West Visayas State University,
La Paz, Iloilo City,
Philippines.

Prof. Dr. Somsong Suwapanich
Rajabhat Maha Sarakham University
Maha Sarakham
Thailand

Assoc. Prof. Dr. Tran Vui
College of Education,
Hue University, Hue City,
Vietnam

Assoc. Prof. Dr. Allan Leslie White
College of Arts, School of Education
University of Western Sydney,
Australia

Dr Poh Sing Huat
Sultan Hassanal Bolkiah Institute of Education (SHBIE),
Universiti Brunei Darussalam,
Brunei Darussalam

Dr. Ida Karnasih
Faculty of Mathematics and Science
State University of Medan (UNIMED)
Medan
Sumut, Indonesia

Assistant Prof. Dr. Osamah

Dr. Mohamed Ali Samsudin, School of Educational Studies, Universiti Sains Malaysia, Universiti Sains Malaysia

Dr. Chew Cheng Meng, School of Educational Studies, Universiti Sains Malaysia, Universiti Sains Malaysia

Dr. Cheah Ui Hock, SEAMEO-RECSAM,, Penang Malaysia

Ms. Foo Lay Kuan, SEAMEO-RECSAM, Penang Malaysia

Mdm. Teh Kim Hong, Teacher Education Institute, Penang Campus.

(Mohammad Ameen) Ahmad Aldalalah
Department of Educational Technology
Jadara University
Al-hai Al-Janoubi, Irbid
Jordan

Dr. Mahmood Ahmed Hassan Ahmed
Senior Instructional Development Specialist
Office of Faculty and Instructional Development
Qatar University
Qatar

Search this site

SAINSAB

The Journal of The Association For Science and Mathematics Education, Penang

ISSN 1511-5267

SAINSAB Vol. 15, 2012

FROM THE EDITOR'S DESK

First and foremost, I would like to extend my special thanks and appreciations to the Editorial Board members as well as The INTERNATIONAL ADVISORY BOARD. Through the advice and tips received from the INTERNATIONAL ADVISORY BOARD, we have responded by boldly introducing a new structure to SAINSAB-ONLINE. In this issue we proudly present to you our new approach in adding an "Interactive" component to SAINSAB-ONLINE. At the end of every page, you will notice a section for "COMMENTS AND QUESTIONS BY READERS". Readers are allowed to comment or ask any relevant questions to the authors. This bold approach is a breakaway from the conventional printed and online journals and we hope this might be a beginning to cultivate a community of learners through this practice. For a start, we sincerely hope that the authors could invite their "circle of influence" [eg students and peer groups] to read and provide intellectual comments through the section "COMMENTS AND QUESTIONS BY READERS" and in turn, we hope that there will be responses from the community of learners and authors.

University of Bengkulu
Full paper

STUDENTS' PERCEPTIONS ON THE FIELDS OF KNOWLEDGE AND NATURE OF SCIENCE
Rey G. Tantiado
West Visayas State University
Full paper

THE EFFECT OF MASECORE ON STUDENTS' MATHEMATICS ANXIETY
Harold F. Cartagena
Iloilo City Community College
Full paper

FACTORS ASSOCIATED WITH THE ATTRIBUTES AND PRACTICES OF HIGH-PERFORMING SECONDARY MATHEMATICS TEACHERS
Harold F. Cartagena
Iloilo City Community College
Full paper

THE APPROACH OF GENERATIVE-METACOGNITIVE MODEL (AGMM) TO OVERCOME MALAYSIA STUDENTS' MISCONCEPTION ABOUT MASS AND WEIGHT CONCEPT
Phang Li Lee & *Mohd Ali Samsudin
Chung Hwa Confucian Secondary School, Penang
*Universiti Sains Malaysia, Penang
Full paper

ASSESSING PRESERVICE SECONDARY SCHOOL MATHEMATICS TEACHERS' KNOWLEDGE OF THE RELATIONSHIP BETWEEN PERIMETER AND AREA
Wun Thiam Yew, *Sharifah Norul Akmar Syed Zamri & Lim Hooi Lian
School of Educational Studies, Universiti Sains Malaysia
*Faculty of Education, University of Malaya
Full paper

SAINSAB
ISSN 1511 5267 Vol. 15, 2012, pp 47-57

THE INFLUENCE OF REALISTIC MATHEMATICS EDUCATION TOWARD STUDENTS' ABILITY IN PERFORMING COUNTING OPERATION IN ELEMENTARY SCHOOL

Dr. Saleh Haji, M.Pd
University of Bengkulu, Indonesia
salehhaji25@gmail.com

Abstract

This study aimed to explore the influence of realistic mathematics education towards student ability in performing counting operation in Elementary School among different genders. Research method used quasi experimental method with factorial 2×2 design. Learning approach factor consist of 2 levels that is realistic mathematics education and conventional approach; gender factor consist of 2 levels that is male and female. Hypothesis testing used two way ANOVA test. The findings are as follow: (1) the ability in doing counting operation on integer of student who is taught by realistic mathematics education is significantly better than student who is taught by conventional approach; (2) There are no interaction between learning approach and gender toward the ability in doing counting operation on integer. The conclusion of study shows that realistic mathematics education is influential towards ability in performing counting operation. Students who are taught by realistic mathematics approach have ability in performing counting operation which is better than students who are taught by using conventional approach.

Keywords: Realistic mathematics education, counting operation, gender.

Introduction

Understand the meaning of operation and how the relation between operations on integer is mathematics standard of class 3-5 in elementary school on Number and Operation of Number, as suggested by Van de Walle (2008).

The ability to do counting operation of integer in Elementary School as basic ability to do the others operation in mathematics, such as elementary line operation on Linier Program. Student's difficulty in doing counting operation in Elementary School can influence student in doing the other counting operation in secondary school. Based on initial study which is conducted by author in several Elementary Schools in Bandung, it is found that student ability in doing counting operation is still low. Student didn't understand the concept of counting operation, student didn't have ability to solve count operation, and student were careless in doing counting operation.

Factor which cause this problem among other is using of mathematical learning approach which is used by Elementary School teacher in teaching mathematics which is less effective. When explaining mathematics material, teacher start by explaining a concept and algorithm of solving a problem by using algorithm which has been determined, then teacher finish the lesson by giving exercise problem as homework assignment. Such as approach is well known as conventional approach. According Sunoto (2002), the factor which mathematical learning achievement that is

low among other is caused by learning pattern which is implemented by teacher, lack of student's interest in learning mathematics, and teaching learning process which is less conducive. Mathematical learning approach which is done this time tend to be dominated by teacher activity, whereas students is passive. Their learning tendency is only listening and noticing teacher explanation. According Suwarsono (2001), generally mathematical teaching learning process in Indonesian schools centred on teacher activity namely teacher explain (lecturing), student listen and take a note, teacher ask, student answer, student do exercise problems with procedures showed by teacher. According Freundenthal (1971), mathematical learning which is procedural and mechanistic, such as formulation application which is done in mathematical learning tend to omit human ability in seeing intact structure and impede the creativity to occur.

This study aim to find out the influence of realistic mathematics education toward student's ability in doing counting operation in Elementary School viewed from gender.

Realistic Mathematics Education

Realistic mathematics education is an approach in mathematics learning which is based on view that mathematics as human activity (Gravemeijer, 1994). Parallel with Gravenmeijer, Freudenthal (1971) is stated that mathematics as human activity. Human activity means here comprise finding solution, organizing relevant materials, making mathematics model, problem solving, organizing new ideas and new comprehension which is in accord with context. The organization of those human activities is called *mathematization.* As an human activity, mathematics is deal with real life. Human activity in real life as source and also object from learning mathematics. According Krutetskii (1976), the real life can become object, such as buy-sell activity in market and household.

In realistic mathematics education, teacher exploit the reality and environment which are familiar for students to understand mathematics concept which is contained in this environment. Through exploitation of environment context, it is hoped that student can invent *informal* strategy in solving mathematics problem. Informal strategy invented by student can grow material comprehension meaningfully. It make the knowledge acquired can be memorized, and endurable in student mind. Result of Carpenter and Moser research (in Darhim, 2004), student tend to use informal strategy in solving mathematics problem.

Through realistic mathematics education, it is hoped that student can understand about counting operation and can do counting operation correctly. This can be happen because of teacher role in providing opportunity to student to hold discussion and interact with various components in mathematics learning activity.

Realistic mathematics education or RME have five characteristics as follow: (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; Gravemeijer, 1994).

The first characteristic reveal the importance of using context in mathematics learning. The importance of context problem can be seen from context function itself. According to Van den Heuvel-Panhuizen (in Sabandar, 2001), context function in order that problem can be solved and support the forming of various strategy. The second characteristic reveal about the importance of using the model in solving mathematics problem. Model as representation from a problem is needed to make easier this problem solving which is function as 'bridge' toward vertical mathematization activity. The third characteristic is about exploitation of construction outcome as well as student contribution in solving a problem. Student's construction and contribution are acquired through various activities, among other: construction activity, reflection, anticipation, as well as integration in mathematical learning. The forth characteristic is about the need of interaction among students as well as between student and teacher in mathematics learning. Interaction among students as well as between student and teacher in the form of negotiation, interpretation, discussion, cooperation, and evaluation among students as well as between student and teacher is interactivity activities in mathematics learning. The fifth characteristic is about the importance of interconnection among topics in mathematics as well as between topic in mathematics with another topic beyond mathematics. Interconnection among topics can make easier students to understand a concept contained in that topic.

Subsequently, RME has three principles: 1) Re-invention and progressive mathematization, 2) Didactical phenomenology and 3) Self-Developed model (Gravemeijer, 1994). Through guided reinvention principle, student is given opportunity to experience the process which is the same with mathematics scientist when invent a concept, formulation, and also algorithm of solving the problem. Through didactical phenomenology, mathematics topics which are delivered to students come from daily life phenomena. Whereas through self-developed models, students develop their own model in solving contextual problem.

Based on those characteristic and principle of RME, steps of realistic mathematics education in mathematics learning can be formulated as follow:

Step 1: Teacher condition the class in order being conducive.

Realistic mathematics education need a conducive class condition, in order that student can develop his/her ability optimally. Therefore, teacher as facilitator condition the class in order to create conducive atmosphere by managing learning infrastructure and learning atmosphere.

Step 2: Teacher deliver and explain contextual problem.

Teacher deliver and explain contextual problem, in order that student can understand contextual problem which is correct. Contextual problem which is delivered by teacher could be problem which is related with daily life and also things which can be thought by student. Theme from contextual problem is appropriated with concept and also algorithm which want to be understandable by students. In addition delivered by teacher, contextual problem can come from student.

Step 3: Student solve contextual problem

Individually or group, student solve contextual problem by their own way under teacher guidance or not. Problem solving activity centred on concept invention as well as algorithm in mathematics is done by student through invention or reinvention activity by modelling problem informally which is continued on formal solving. To obtain problem solving and concept invention or algorithm in mathematics, student always do reflection activity that is review thing that have been done in order to obtain the expected outcome.

Step 4: Conclusion Making

From group discussion or class discussion outcome, teacher direct student to make conclusion toward solving a contextual problem and make concept generalisation or algorithm which is discovered. Teacher play a role as mediator who direct discussion in order processed dynamically and democratic, so reach conclusion result collectively.

Step 5: Confirmation and Task Assignment

Conclusion result about solving from contextual problem and generalisation result from a concept or algorithm obtained is confirmed again by teacher. This is done in order that the comprehension which has been obtained by student become more solid. To make solid the knowledge as well as skill that have been obtained by teacher, so teacher give exercise problems to be done by teacher individually or group. That task accomplishment can be done in class or at home (Homework).

Research Method

This study is in the form of experiment, consist of 2 groups. The first group is given a treatment by realistic mathematics education. Whereas second group is given a treatment by conventional approach. The research design is control group design post test only, namely as follow:

R1 X 0

R2 0

Annotation:

R1 : random sampling in class experiment

R2: random sampling in control class

X: treatment in the form of realistic mathematics education

O: post test

Sample research is student of class 3A and 3B Lab School Elementary School UPI Bandung. Sampling is done by random from population. Research population is student of class 3 Lab School Elementary School UPI Bandung who is consist of class 3A, 3B, 3C and 3E.

Instrument is essay test item about counting operation on integer, which contain addition, subtraction and division operations. Before used, expert consideration and field trial test is conduct toward research instrument. Q-Cochran test is used to find out expert consideration. Q-Cochran test analysis by using SPSS for Windows 8.0 obtain value of Q-Cochran as much as 2.308 with its alpha value as much as 0.679. In 0.05 significance level, value of chi-square table, $\chi^2_{0.05}$; db 5-1 = 9.488. So value of Q-Cochran (2.308) is smaller than 9.488. This means receive null hypotheses which state that the reviewers give their consideration equally about validity from items in instrument of counting operation on integer topic.

Data is analysed by using Two Way ANOVA namely factorial 2×2 which contain 2 approach factors, namely realistic mathematics education and conventional approach. 2 gender factors namely male and female.

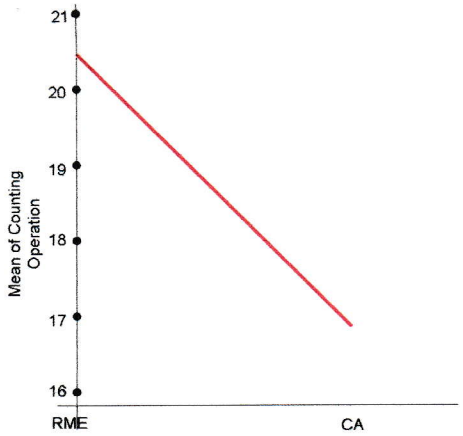
Result and Discussion

From data analysis by using Two Way ANOVA, it is obtained the ability outcome in doing counting operation of students who are taught by Realistic Mathematics Education (RME) and Conventional Approach (CA) between male student and female student as showed by Table 1 as follow.

Table 1. The Average Score of the Ability in Doing Counting Operation of Student who is taught by RME and CA

Gender	Mathematical Ability (Maximum Score)	Counting Operation (Maximum Score is 26)	
		CA	RME
Male	Mean	16.49	18.95
	%	63.42	72.88
	SD	7.25	4.42
Female	Mean	17.25	21.88
	%	66.34	84.15
	SD	5.29	3.18
Total	Mean Total	16.87	20.42
	%	64.88	78.54
	SD Total	6.27	3.80

Based on these table, it is seen that average score of students who are taught by RME (20.42) is higher that average score of students who are taught through conventional approach (16.87). It means that there is interaction of ability in doing counting operation from students who are taught through realistic mathematics education and students who are taught through conventional approach. This is corroborated by deviation standard which is obtained in both class, namely 3.80 for experiment class and 6.27 for control class. This show that counting operation ability of experiment class students is more homogeny compared with control class students. The following graphic show these difference.

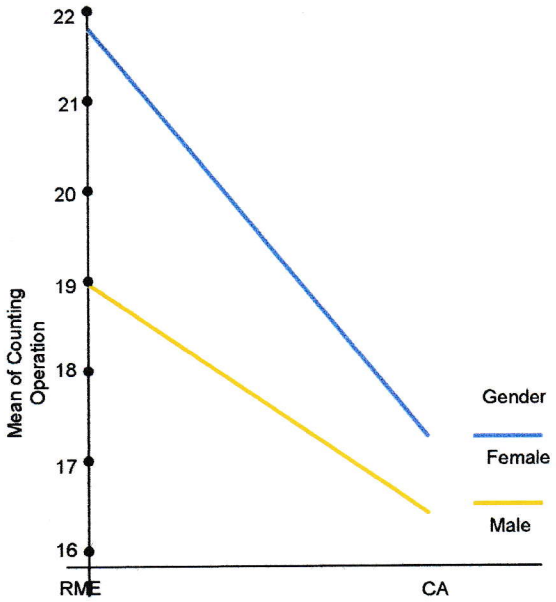


Graphic 1. The Ability in Doing Counting Operation on Integer Between Experiment Group Students and Control Experiment Students.

If it seen from gender, the ability in doing counting operation on integer of male students who are taught by realistic mathematics education is better than male students who are taught by conventional approach. Female student who are taught by realistic mathematics education is better than female student who are taught conventional approach. Because of average score of ability in doing counting operation of male student (18.95) and female student (21.88) who are taught by realistic mathematics education is bigger than the average score of ability in doing counting operation of male student (16.49) and female student (17.25) who are taught by conventional approach. It means that realistic mathematics education capable to enhance the ability in doing counting operation both in male student and as well as female student. In experiment group, the ability in doing counting operation on integer for female student is better than male student who are taught through realistic mathematics education. Because of average score of ability in doing counting operation for female student (21.88) is bigger than average score of ability in doing counting operation for male student (18.95). It means that realistic mathematics education is more capable to enhance ability in doing counting operation in female student than male student. In control group, ability in doing counting operation for female student is better than male student who is taught through conventional approach. Because of average score of ability in doing counting operation for female student (17.25) is bigger than average score of ability in doing counting operation for male student (16.49). It means that conventional approach is more capable to enhance ability in doing counting operation for female than male student.

If based on deviation standard value from the ability in understanding counting operation, so counting operation ability of male students who are taught through realistic mathematics education is homogenous compared with counting operation ability of male students who are taught by conventional approach. As for female student, counting operation ability of students who are taught through realistic mathematics education is homogenous than students who are taught through conventional approach.

Either in experiment group or control group, the ability of female student in doing counting operation in both groups is more homogenous compared with male student. The following graphic describe the ability of student's counting operation seen based on gender.



Graphic 2. Interaction of The Ability in Doing Counting Operation on Integer Toward Gender

Therefore, the counting operation ability of female student is better than male student on realistic mathematics education as well as conventional approach. Based on these, it can be concluded that there is no interaction between learning approach and gender toward the ability in doing counting operation on integer.

The accomplishment result of counting operation problems by students who are taught by using RME and students who use Conventional Approach is as follow:

1. Item 1, that is:

   a. $14 \times 3 = \ldots$ b. $\ldots \times 5 = 60$ c. $23 \times \ldots = 92$

   - The result of part **a** is obtained through two ways, that is: $14 \times 3 = 14 + 14 + 14 = 42$ and $14 \times 3 = 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 42$.
   - Part **b** is obtained through two ways, that is: $60 : 5 = 12$, so $12 \times 5 = 60$ and number as much as 5 and sum of all numbers is 60. The number referred is 12. Student write 12, 12, 12, 12, 12. So $12 \times 5 = 60$.
   - Result of part **c** is obtained through two ways, that is $92 : 23 = 4$, so $23 \times 4 = 92$ and how much the number of 23 which the result of its sum is 92, that is as

much as 4. Student write, 23, 23, 23, 23. So, 23 × 4 = 92. Whereas student who are through conventional learning use downward multiplication, that is:

14	12	23
3 ×	5 ×	4 ×
42	60	92

2. Item 2
   a. 497 + 285 = 400+200+90+80+7+5 = 600+170+12 = 770+12 = 782
   b. 163 + ... = 312
      The answer, 163 + 149 = 312, because: 312 – 163 = 149.
   c. ..... + 394 = 604
      The answer, 210 + 394 = 604, because: 604 – 394 = 210.

3. Item 3
   a. 684 – 251 = 384 + 300 – 251 = 384 + 49 = 433
   b. 475 - .....= 347
      The answer, 475 – 128 = 347, because: 475 – 347 = 128.
   c. ..... - 139 = 221.
      The answer , 360 – 139 = 221, because: 139 + 221 = 360.

4. Item 4
   a. 72 : 8 = 9
      The answer 9 is obtained by sorting '72' become equal eight part. First, number '10' is determined as much as eight numbers that is: 10, 10, 10, 10, 10, 10, 10, 10. Then the sum of the eight numbers '10' is 80 that is more than number '72'. Then the students subtract the number '10' become number '9'. Then the students reorder the number '9', such as: 9, 9, 9, 9, 9, 9, 9, 9, then the sum is 72. The number '9' is the answer from item.
   b. .....: 4 = 15
      The answer, 60 : 4 = 15.
      The way to obtain the number '60' is by determining the sum of number 15 as much as 4, that is 15 + 15 + 15 + 15 = 60.
   c. 63 : ....= 7
      The answer, 63 : 9 = 7
      The way to obtain that number '9' is by determining the same number as much as 7 numbers and the sum as much as 63. That number is '9', because: 9 + 9 + 9 + 9 + 9 + 9 + 9 = 63.

The error that happen in control group students when solving item 5 about story problem which contain division concept with non nature number quotient. This problem is "The meeting between student's parents and school staff which is attended by 42 parents. School staff need several tables and chairs for this meeting. Each tables is equipped by 4 chairs. How many tables are needed to this meeting?" The answer for control group student is 42 : 4 = 10 with remainder is 2. So, the tables which are needed as much as 10 tables. Whereas experiment group students solve this problem by drawing several tables with each table is equipped by 4 chairs and there is one table which is only equipped by 2 chairs. So, tables which are needed as much as 11 tables.

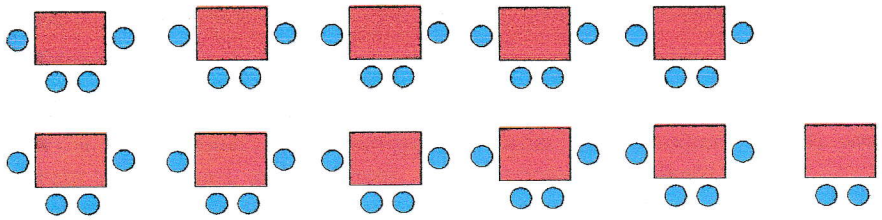


Figure 1. Table and chair which are drawn by experiment group.

Related with counting operation, student ability which can be developed through realistic mathematics education is the ability in creating a logical solving strategy through aid of drawing which is based on initial knowledge possessed by student. With those abilities, students who are taught by RME can solve a counting problem which can not be solved by students who are taught by conventional approach.

Students who are taught by conventional approach, only do vertical mathematization activity in solving problems about counting operation on integer. The example of vertical mathematization activity which is done by students who are taught by conventional approach in solving problems about counting operation that is in determining the sum of two integers by means "downward ordered" in solving item 1, that is:

$$\begin{array}{r} {\scriptstyle 1\,1}\\ 345\\ 786 +\\ \hline 1131 \end{array}$$

So, 345 + 768 = 1113

Based on work result of students who are taught by realistic mathematics education in solving problems on instrument of counting operation topic, it can be formulated the steps which they have done in solving counting operation problems as follow:

1. Breaking down the numbers.
2. Joining the numbers.

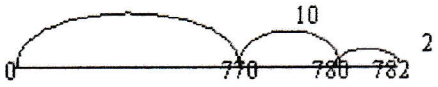
3. Obtaining the answer.

Whereas students who are taught by conventional approach, doing steps in solving problems about counting operation on integer as follow:

1. Understand the problem.
2. Doing counting based on standard algorithm.
3. Answering the problem.

Below, the difference of way to solving counting operation problem between students who are taught by using RME and CA is presented.

Table 3. The Difference of Problem Solving Steps about Counting Operation

Realistic Mathematics Education	**Conventional Approach**
Steps of Solving: 1. Break down numbers into several numbers of ones, tens and hundreds. 2. Join several numbers (by using aid of drawing). 3. Obtain the answer. Example of solving item 2a $497 + 285 = 400 + 90 + 7 + 200 + 80 + 5$ $= 400 + 200 + 90 + 80 + 7 + 5$ $= 600 + 170 + 12$ $= 770 + 12$ $= 782$  Example of solving item 2c $\ldots + 394 = 604$ The answer is obtained through way: $604 - 394 = 600 + 4 - 300 - 90 - 4$ $= 600 - 300 + 4 - 4 - 90$ $= 300 - 90$ $= 200 + 100 - 90$ $= 200 + 10$ $= 210$ So, $210 + 394 = 604$	Steps of Solving: 1. Order the numbers which will be operated downward. 2. Counting. 3. Obtain the answer. Example of solving 2a $497 + 285 =$ $\begin{array}{rrr} & 1 & 1 \\ 4 & 9 & 7 \\ 2 & 8 & 5 \\ \hline 7 & 8 & 2 \end{array}$ + Example of solving item 2c $\ldots + 394 = 604$ Student have difficulty in solving it.

From elaboration above it is apparent that, students who is taught by realistic mathematics education is better than student who is taught by conventional approach in the ability to do counting operation.

Conclusion

The conclusion of this study are as follow:

1. The ability to do counting operation on integer, student who is taught by realistic mathematics education is better than student who is taught by conventional approach.
2. There is no significant interaction between learning approach and gender toward the ability to understand counting operation on integer.

References

Darhim (2004). *Pengaruh Pembelajaran Matematika Kontekstual Terhadap Hasil Belajar dan Sikap Siswa Sekolah Dasar Kelas Awal Dalam Matematika.* Disertasi Doktor pada PPS UPI Bandung: tidak diterbitkan.

De Lange, J. (1987). *Mathematics, Insight and Meaning*. Utrecht: OW&CO.

Freudenthal, H. (1971). "Geometry between the Devil and the Deep Sea". *Educational Studies in Mathematics*, 3, 413-435.

Gravemeijer, K.P.E. (1994). *Developing Realistic Mathematics Education*. Utrecht: Freudenthal Institute.

Kruterskii, V.A. (1976). *The Psychology of Mathematical Abilities in School Children*. Chicago: University of Chicago Press.

Sabandar, J. (2001). "Refleksi dalam Pembelajaran Matematika Realistik". Makalah *Seminar Nasional tentang Pendidikan Matematika Realistik Indonesia, 14-15 November 2001*, Universitas Sanata Dharma Yogyakarta.

Sunoto, U. (2002). "Pendekatan Keterampilan Proses Melalui Metode Penemuan untuk Meningkatkan Prestasi Belajar Matematika Siswa". *Matematika, Jurnal Matematika atau Pembelajarannya.* 7(Edisi Khusus), 618-625.

Suwarsono, St. (2001). "Pembelajaran Matematika di Sekolah dalam Rangka Meningkatkan Kualitas Sumber Daya Manusia". Prosiding *Seminar Nasional Matematika, FMIPA UNY Yogyakarta.*

Van De Walle, J.A. (2008). *Sekolah Dasar dan Menengah, Matematika, Pengembangan Pengajaran*. Jakarta: Erlangga.