

The Comparative Research on Mathematics Education between Indonesia and Japan

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Abstract. This paper briefly describes some of the most important aspects of current school mathematics education in Indonesia and Japan. The school curriculums, school systems, and teacher's professional development programs in the two different of developing and developed countries are compared in order to give some insights for both of the countries.

1. INTRODUCTION

Educational systems in each country around the world have various background and national needs. But if we look closely, there would be similarities and differences in vision and mission of education across countries. It is considered that social-economic condition, politic, and culture play an important role to color the curriculum of education. Because of that to study so much differs across countries, beside similarities of course, would give the most meaningful of comparison for reflections in order to improve the quality of education.

Good questions to ask at this point are “Why is it so important to improve education?” and “How do we improve education?” In order to give fruitful information and ideas, an international comparative study indicates the necessity and direction to improve the curriculum on the case of mathematics education. School mathematics in most of counties in the world becomes one of the central issues in education. One of the important reasons to most of the students mathematics as an abstract knowledge is difficult to understand and then how to improve student's understanding of mathematics. By describing the strengths, weaknesses, and opportunities that exist at some counties, it would be worthy to study to reform mathematics education in each of the country.

2. HISTORY AND DEVELOPMENT OF SCHOOL CURRICULUM

In recent years Indonesia plans to change 1994 Curriculum with Competencies Based Curriculum, called KBK 2002. The new curriculum will be implemented in the coming year of 2004. Characteristics of KBK of mathematics are mainly on problem solving, mathematical communication and connection, as well as reasoning. The content of KBK of mathematics is seemingly reduced from 1994 Curriculum. This new

curriculum is also characterized by the international standard such as statement of objectives are concise, and performance expectation are not described in detail. This is also found in the intended of Japanese national curriculum (Eizo, 2000).

In Indonesia curriculum development of mathematics started in 1975 in which modern mathematics (new math) introduced in the schools. The previous 1968 Curriculum was still concentrated on calculation and counting. This old curriculum was focused on practice and drill, recitation, and teacher centered. Otherwise Japan has its own curriculum development. After the World War II Japan started the course of study that prescribes the curriculum, textbook and teaching contents in lower and secondary schools. So the course of study is very important in Japan. The history of the course of study in elementary school is as follows. The secondary school case is almost same or one year late than in elementary case.

1947 First Course of Study [Under the General Head-Quarter's leadership]

1951 Second Course of Study [Activity Curriculum]

1958 Third Course of Study [Systematic Learning]

1968 Fourth Course of Study [Modernization]

1977 Fifth Course of Study [Comfortableness and Fulfillment]

1989 Sixth Course of Study [Diversification, Personality]

1998 Seventh Course of Study [Zest for living]

The characteristics of Japanese of the new course of study (1998) are: raise the zest for living, reduction of the learning contents, decrease of the number of classes, comprehensive five-day school week, the class for integrated study, increase in choice learning in secondary school, change from the relative evaluation to the absolute evaluation, an mathematical activities (Practical and operational activities and problem-solving activities).

3. MATHEMATICS TEXTBOOK

Government provides mathematics textbook in both Indonesia and Japan. In Indonesia nowadays The Center of Book (Pusat Perbukuan) organize to control the quality of textbooks which are published by many publishers. This institution also decides approval system to select qualified textbook to be given to province's board of education. In Japan, after the World War II., the government introduced official approval system of textbook. Several textbook companies publish the textbook which passed the censorship of the Ministry of Education(officially, Ministry of Education, Culture, Sports, Science and Technology). Each autonomy

selects a textbook among approval textbooks. In principle after the revise of course of study new textbook are published.

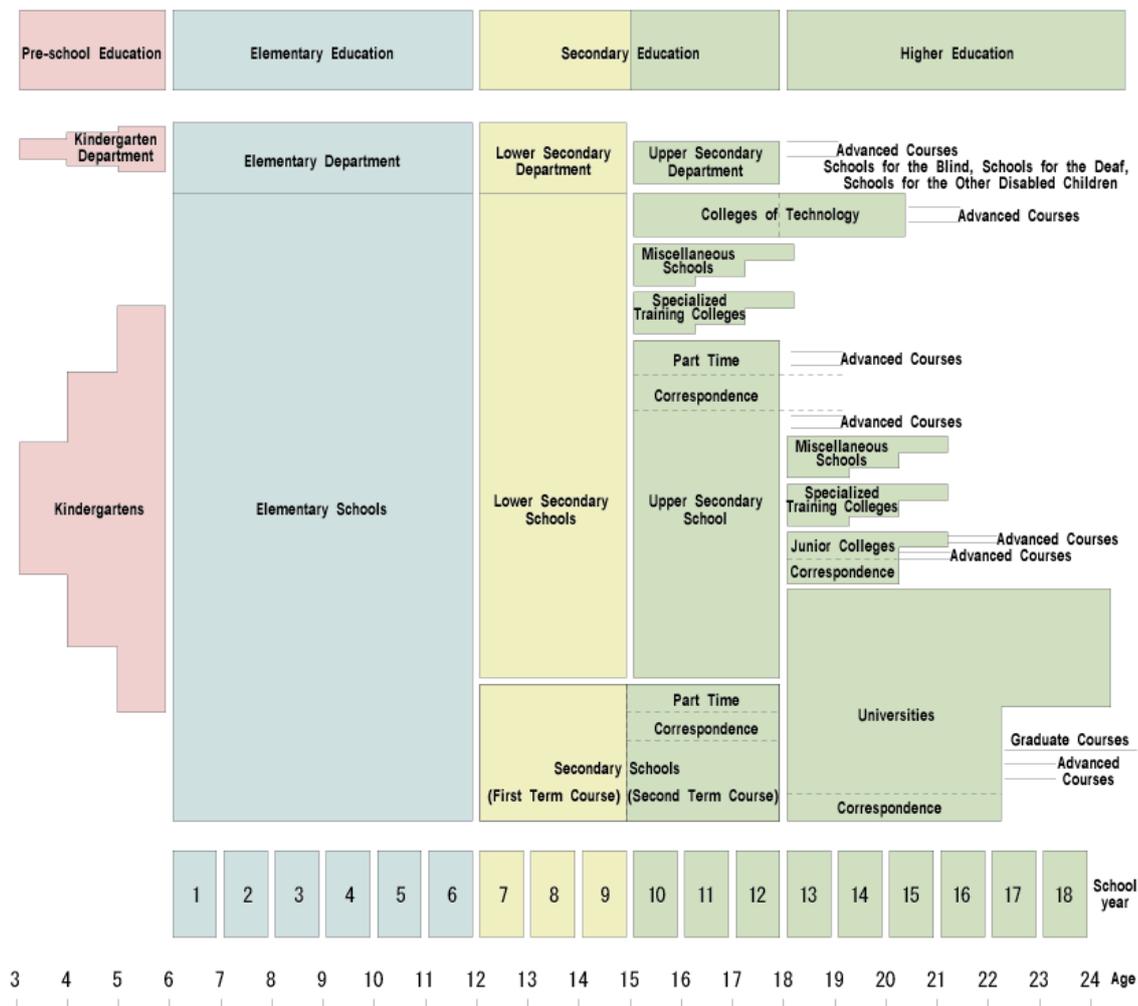
The profile of the mathematics textbooks in Indonesian and Japan indicate that Japanese books more worked-out examples, relevant illustration, devote page space to explanation of problem solving procedures, and emphasize multiple representation (Mayer, Sims, and Tajika, 1996). In the contrary, Indonesian mathematics textbooks contain many procedural exercises and more irrelevant illustrations than Japanese books.

4.SCHOOL SYSTEM

Basically educational system in Indonesia includes formal school and informal (out-of-school education). Formal school system consists of basic education, secondary education, and higher education. Apart from the levels of education above, preschool education is also provided. Out-of-school education can be held at the outside schools and provided by government and non-government agencies or community. Basic education is a general education of nine years: six years of primary and three years of junior secondary school. There are also Islamic primary school called Madrasah Ibtidaiyah and Islamic junior secondary school called Madrasah Tsanawiyah. These Islamic schools are managed and run by the Ministry of Religious Affairs. Basic education is a compulsory education that providing the learners with basic knowledge and skills.

Secondary education is available to graduates of basic education. The secondary education consists of general secondary school, vocational secondary school, religious secondary school, and special secondary school. There is also Islamic general secondary school called Madrasah Aliyah. However, higher education is an extension of secondary education consisting of academic and professional education. Academic education is mainly aimed at mastering science, technology, and research, whereas professional education is more aimed at developing practical skills. Quite similar to Indonesian system of education, Japanese system of education diagrammatically summarized as follow.

Organization of the School System in Japan



(By Ministry of Education, Culture, Sports, Science and Technology)

5. SCHOOL DATA

The following Table 1 describes school data from elementary to senior high school in Indonesia and Japan.

The data were collected in different year, i.e. at 2002 for Indonesia and 2000 for Japan.

Table 1
School Data of Indonesia and Japan

	Elementary		Junior High		Senior High	
	Indonesia (2002)	Japan (2000)	Indonesia (2002)	Japan (2000)	Indonesia (2002)	Japan (2000)
The Number of Schools	148,516	24,106	20,842	11,209	7,785	5,478
The Number of Students	25,850,849	7,366,079	7,466,458	4,103,717	3,024,176	4,165,434
The Number of Teachers	1,164,808	407,598	455,985	257,605	216,364	269,027

Now in the past few years the number of children in Japan is decreasing year by year. So the number of schools and teachers are also decreasing.

6. NUMBER OF MAHEMATICS CLASS IN SCHOOLS

The numbers of mathematics classes from elementary to high school in Indonesia and Japan are as follow.

Table 2

The Number of Mathematics Class in Elementary School

Grade		1	2	3	4	5	6
Number of classes in a year	Japan	114	155	150	150	150	150
	Indonesia	280	280	280	224	224	224

Note: For Japanese elementary school 1 class = 45 minutes

For Indonesian elementary school: grade 1 and 2, 1 class = 30 minutes

grade 3 to grade 6, 1 class = 40 minutes

Table 3

The Number of Mathematics Class in Junior High School

Grade		1	2	3
Number of classes in a year	Japan	105	105	105
	Indonesia	168	168	168

Note: For Japanese junior high school 1 class = 50 minutes

For Indonesian junior high school 1 class = 45 minutes

Table 4

The Number of Mathematics Class in Senior High School in Japan

Subject	Fundamental Mathematics	Math I	Math II	Math III	Math A	Math B	Math C
Credit	2	3	4	3	2	2	2

Note: 1 credit = 1 class in a week, 1 class = 50 minutes

Table 5

The Number of Mathematics Class in Senior High School in Indonesia

Grade	1	2	3	
			Science	Non-science
Number of classes in a year	168	168	224	0

Note: 1 class = 45 minutes

7. TEACHER

a. License System

The teacher license system both in Indonesia and Japan is lifelong. In Indonesia the license is provided educational institutions called LPTK (Lembaga Pendidikan Tenaga Kependidikan). Generally, teaching license is given to student teachers when they graduated from the LPTK university. However, in Japan there is a discussion about renewal system of license. The Japanese teacher license system is as follow.

Types of Teacher Certificate

Classification	Completion of a Master's course	Completion of an undergraduate course	Completion of a junior college course
Elementary school teacher	Advanced certificate	1 st class certificate	2 nd class certificate
Lower secondary school teacher			/
Upper secondary school teacher			
Kindergarten teacher			
Nurse teacher			
Special school teachers (for the blind, the deaf, and the other disabled)	Advanced certificate (plus general certificate for kindergarten, elementary, lower and upper secondary school teacher)	1 st class certificate (plus general certificate for kindergarten, elementary, lower and upper secondary school teacher)	2 nd class certificate (plus general certificate for kindergarten, elementary, lower and upper secondary school teacher)

- Note: 1. Different lower and upper secondary school teacher certificates are available depending on the subject to be taught. The certificate for nurse teachers is the same regardless of special school type.
 2. In addition to the general certificate, there are also special certificates and temporary certificates.

(By Ministry of Education, Culture, Sports, Science and Technology)

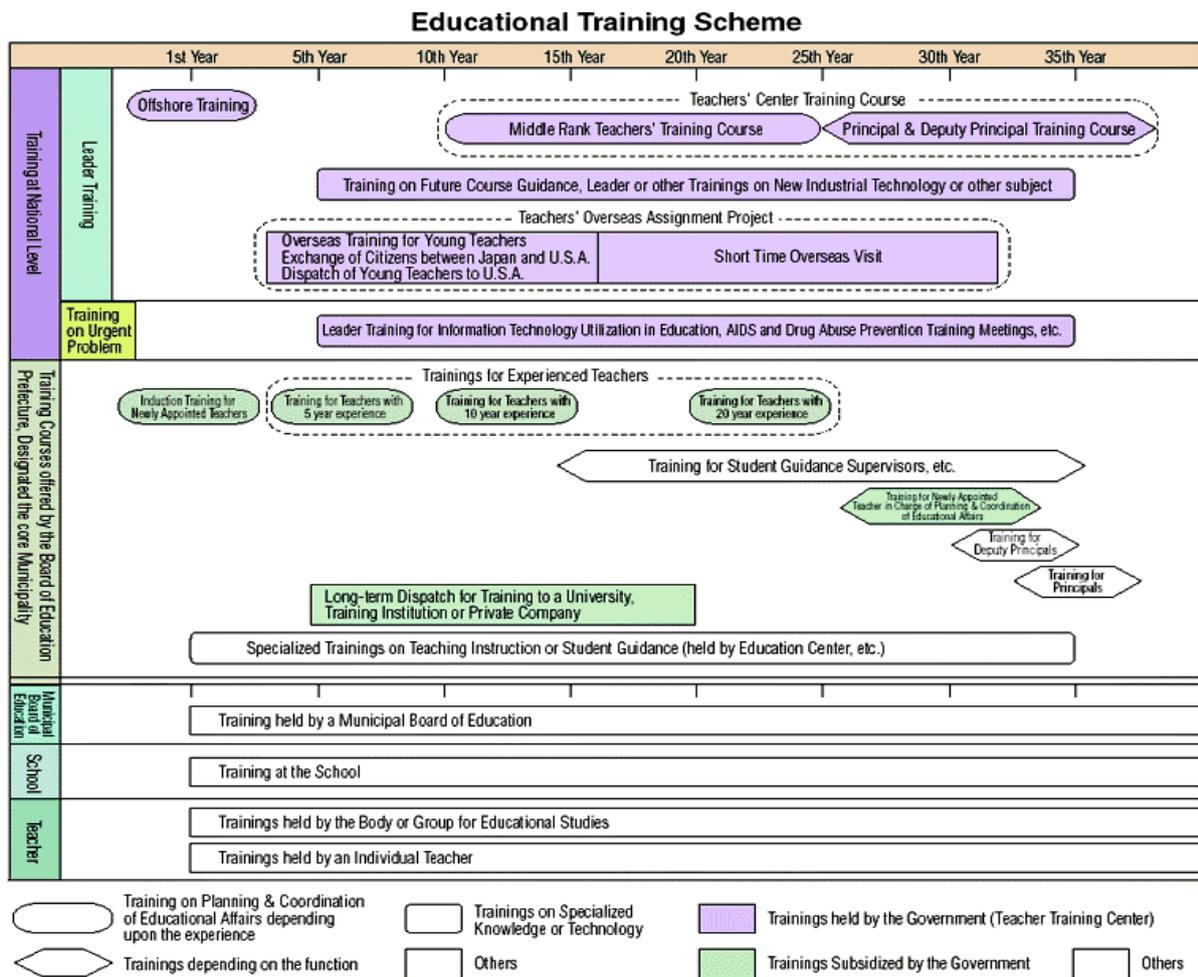
b. Employment and Examination

Teacher employment in Indonesia is now organized by local government (city or kabupaten). The examination for teacher employment is run locally. The time for examination is seemingly not annually but depend on the local needs. In Japan each prefecture does the examination of teacher employment for public schools once a year (mostly in July). Because of the decrease of number of children, the number of new teacher employment is also decreasing. So now in Japan, it is very difficult to become a school teacher for university student.

c. Professional Development System

Teacher is one of the most important educational components in both countries. Consequently, to improve the quality of educations is meant to improve teacher's professional. Teacher professional development

program in Indonesia is conducted through in-service teacher trainings by universities, local teacher association, or local board of education. In spite of the program, there is also special government program to educate teachers to higher degree. In Japan in-service teacher training is very important. Many kind of methods and opportunities of training are provided. Some main training are as follows.



8. THE SCHOOL LIFE IN JAPAN

The typical example of Japanese elementary school life is as follows.

Term: 3 terms

First term: April - July,

Summer Vacation: July - August (about 40 days)

Second term: September - December,

Winter Vacation: December - January (about 2 weeks)

Third term: January – March

Spring Vacation: March - April(2 weeks)

Dairy school life: 1 class = 45 minutes (Secondary school: 50 minutes)

8:15-8:20 Short staff meeting

8:15-8:50 Morning meeting in classroom

8:55-9:40 First class (45 minutes)

9:45-10:30	Second class (45 minutes)
10:30-10:50	20 minutes break
10:50-11:35	Third class (45 minutes)
11:40-12:25	Fourth class (45 minutes)
12:25-13:10	Lunch time (Meal service)
13:10-13:35	Break
13:35-13:55	Cleaning time (Children clean their classroom)
13:55-14:40	Fifth class (45 minutes)
14:45-15:30	Sixth class (45 minutes)
15:30-15:40	Final meeting in classroom

The time table is depends on school.

Staff meeting

Teachers (including secondary school teachers) have several kinds of staff meetings in each week. In general Japanese teachers are very busy in schools. Most of Japanese teachers go to school at 7 to 8 o'clock in the morning and go home at 6 to 8 o'clock in the evening, they sometimes work much longer (official working hours is 8 hours in a day).

9. PUBLIC CLASS, RESEARCH CLASS, AND CLASS VISIT

School and teacher activities in research are very limited in Indonesia. Meanwhile in Japan each school (including junior high school) does many kind of activities to improve teachers' teaching competence and skill. The followings are some of them.

a. Public Class

Some schools introduce several classes to the public . Many teachers of other schools visit the school to watch classes and discuss.

b. Research Class

Every elementary school has research class, in which some teachers show their class to other staffs. After class all staffs discuss about the class.

c. Class Visit

Every school introduce all classes to the public a few times in a year. Many parents visit school to watch their child's state in class.

10. THE CURRICULUM OF MATHEMATICS

Japanese curriculum (Course of Study 1998) is not described in detail and the topics are rarely repeated in the following grades. Otherwise Indonesian curriculum (KBK 2002) seems to be simple compared with the previous 1994 Curriculum, but still some topics repeated in the following grades. The contents of Japanese and Indonesian curriculum from elementary through senior secondary school are as follow.

a. Japanese Elementary School (Course of Study 1998)

Grade	Number and Calculation	Volume and Measurement	Figure	Relation in
1	1.Number (less than 100) 2.Meaning of Addition, subtraction 3.Some application of counting	1.Comparison and Measurement of length	1.Fundamental observation and construction of figure	*****
2	1.Meaning and use of number 2.Understanding and use of Addition, subtraction 3.Meaning and use of multiplication.	1.Measurement of length 2.Time in daily life	1.Fundamental observation and construction of figure(triangle and quadrangle)	*****
3	1.Understanding and use of number 2.Master and use of Addition, subtraction 3.Meaning and use of multiplication 4.Meaning and use of division 5.Soroban (abacus) calculation	1.Measurement of length, volume, weight 2.Unit, Method of measurement using scale 3.Time(day, hour, minute, second)	1.Fundamental understanding of figure	1.Data processing using table, graph(stick graph)
4	1.Deep understanding of decimal structure 2.Understanding and use of Round number 3.Deep understanding and use of division 4.Addition and subtraction of decimal 5.Understanding of fraction	1. Meaning of area 2. Understanding and measurement of Angle	1. Deep understanding of figure(isosceles triangle, equilateral triangle, circle)	1. Two quantity with the relation(table , line graph) 2. Express relations with Formula 3. Fundamental data processing
5	1.Property of natural number 2.Deep understanding of natural number 3.Meaning of multiplication and division of decimals 4.Addition and subtraction of fractions with same denominator 5.Deep understanding of Round number	1.Area of triangle, parallelogram, circle	1.Parallel and vertical of lines, parallelogram, trapezoid, diamond, the circular constant(pi)	1.Fundamental law of the four basic operations of arithmetic
6	1. Deep understanding of natural number(Multiple and measure)	1.Measurement of area of general figure 2. Volume 3.The proportion of two	1.Understanding of solid(cube, rectangular parallelepiped, corner pillar, column.)	1.Meaning of ratio 2. Two quantity with the relation(direct proportion)

	<ol style="list-style-type: none"> 2. Addition and subtraction of fractions with different denominator 3. Multiplication and division of fractions 4. Multiplication and division of 	quantity of different kind (proportion to unit, velocity)		3. Mean
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a. Indonesian Elementary School (KBK 2002)

Grade	Number and Calculation	Measurement	Geometry	Chance and data
1	<ol style="list-style-type: none"> 1. Counting and ordering numbers (less than 100) 2. Addition, and subtraction 	<ol style="list-style-type: none"> 1. Time in daily life 2. Measurement of length and weight (non-standard) 	<ol style="list-style-type: none"> 1. Fundamental observation and construction of figure 	
2	<ol style="list-style-type: none"> 1. Counting and ordering numbers (less than 1000) 2. Addition and subtraction 3. Number proficiencies 4. Multiplication and division 	<ol style="list-style-type: none"> 1. Choosing appropriate measurement tools 2. Time (hour) 	<ol style="list-style-type: none"> 1. Identifying geometrical planes 2. Elements and properties of planes 	
3	<ol style="list-style-type: none"> 1. Number sequences 2. Number operations (addition, subtraction, multiplication, and division) 3. Money 4. Fraction as part of whole 	<ol style="list-style-type: none"> 1. Unit, method of measurement using scale 2. Relationships among scales of the unit 3. Estimation 4. Measurement of angle 	<ol style="list-style-type: none"> 1. Observing planes through its properties and elements of the plane 2. Perimeter and area of the planes 	
4	<ol style="list-style-type: none"> 1. Number operations (addition, subtraction, multiplication, and division) 2. Estimation and rounding 3. Problem solving with money 4. Whole numbers and its sequence 5. Roman numbers 6. Fraction and ordering of fractions 7. Variety forms of fraction 8. Properties of arithmetical operation 9. Whole numbers operations 10. Addition and subtraction of fraction 	<ol style="list-style-type: none"> 1. Understanding and measurement of angle 2. Relationships among units of measurement (length: m, dm, cm, km, hm, etc; Weight: kg, hg, g, etc.) 	<ol style="list-style-type: none"> 1. Application of perimeter and area 2. Angle and rotation 3. Identification of space geometry 4. Shape of space geometry 	
5	<ol style="list-style-type: none"> 1. Combination of arithmetical operations 2. Understanding of degree and root of numbers 3. Addition and subtraction of fractions 	<ol style="list-style-type: none"> 1. Time and operation of using units of time 2. Unit for measurement of angle 	<ol style="list-style-type: none"> 1. Property of planes: triangles, parallelogram, trapezoid, diamond, and circle 2. Volume of simple space geometry 3. Units of volume 	

	4. Property of whole number operations 5. Fraction and ratio		4. Finding the area of planes 5. Finding the volume of simple shape spaces 6. Similarity of planes and symmetry	
6	1. The power of three and root of three 2. Combinations of number operations in fraction and problem solving		1. Introduction to coordinate system 2. Perimeter, area, and volume of solids	1. Data interpretation 2. Data representation (bar diagram, line diagram, and circle diagram)

c. Japanese Junior High School (Course of Study 1998)

Grade	Number and Formula.	Figure	Relation of Quantity
1	1. Positive and Negative Number 2. Formula using Character 3. Linear Equation	1. Plane Figure 2. Solid Figure	1. Proportion and inverse proportion
2	1. Calculation of formula using Character 2. Simultaneous equation	1. Property of Parallel lines 2. Condition of Congruity	1. Linear Function 2. Probability
3	1. Square Root 2. Polynomial expression 3. Quadratic Equation	1. Condition of Similarity 2. Pythagorean Theorem	1. Fundamental Quadratic Function

d. Indonesian Junior High School (KBK 2002)

Grade	Number and Formula.	Geometry	Probability and Statistics
1	1. Positive and Negative Number 2. Fraction and operation of fraction 3. Variables and operation of variables 4. Linear Equation 5. Ratio 6. Sets	1. Symmetry 2. Line and angle 3. Plane figures 4. Solid figures: cube, prisms, pyramids, etc.	
2	1. Operation of formula using Character 2. Line equation 3. Simultaneous equation	1. Pythagorean Theorem 2. Triangle and its lines 3. Solid figures: cone and spherics	
3	1. Logarithm 2. Linear unequation 3. Quadratic equation 4. Number patterns	Condition of similarity	Data, representation of data, and interpretation of data

e. Japanese Senior High School (Course of Study 1998)

Subject	Contents
Mathematics I	1. Equation and Inequality 2. Quadratic function 3. Figure and measurement (trigonometry)
Mathematics II	1. Formula and proof, higher dimensional equation 2. Figure and equation 3. Various functions 4. Idea of the differential calculus and the integral calculus
Mathematics III	1. Limit

	2. Differential calculus 3. Integral calculus
Mathematics A	1. Plane figure 2. Set and logic 3. The number of cases, probability
Mathematics B	1. Sequence 2. Vector 3. Statistics and Computer 4. Numerical calculation and computer
Mathematics C	1. Matrix and application 2. Formula and curve (conic section) 3. Probability distribution 4. Statistics processing

f. Indonesian Senior High School (KBK 2002)

Grade	Algebra/Analysis	Geometry/Trigonometry	Probability and Statistics
1	1. Forms of degree, root, and logarithm 2. Equation of quadratic function 3. Linear and quadratic equations system 4. Unequation	1. Trigonometry: sinus, cosines, and tangent 2. Three dimension figures 3. Circle equation 4. Trigonometry formulas	1. Statistics: data representations, mean, median, modus, etc. 2. Probability
2 (Science Progrm)	1. Polynomial expression 2. Composition and inverse of function 3. Function of limits 4. Differential calculus		
2 (Social Progrm)	1. Composition and inverse of function 2. Function of limits 3. Differential calculus		
3 (Science Progrm)	1. Integral calculus 2. Linear programming 3. Sigma Notation, number pattern, and mathematical induction 4. Matrix 5. Equation, funtion, and inequation exponential 6. Equation, funtion, and inequation logaritm	1. Vector 2. Geometry transformation	
3 (Social Progrm)	1. Integral calculus 2. Linear programming 3. Matrix 4. Sigma Notation, number pattern, and mathematical induction 5. Equation, funtion, and inequation exponential 6. Equation, funtion, and inequation logaritm		

11. THE RESULT OF RESEARCH IN JAPANESE SCHOOLS

In Japan National Institute for Educational Policy Research did a survey and an achievement test to know the result of new education under the new course of study.

Object of survey: Children of elementary schools, students of junior high schools and teachers

Object of achievement test: Children of elementary schools, students of junior high schools

Achievement test date:

Elementary school --- 2002 February 21st

(Japanese language, Social Study, Arithmetic, Science)

Junior high school --- 2002 January 24th

(Japanese language, Social study, Mathematics, Science, English)

Survey number of schools: Elementary school 3,532, Junior high school 2,539

The result of the survey

Some examples of questions and results in the survey as follows.

(1) For children and students

① Do you think that it is important to study?

(%)

	Yes	Slightly Yes	Slightly No	No	Not decide	No answer
Elementary 5 th grade	56.9	29.5	5.0	3.2	3.6	1.8
Elementary 6 th grade	53.5	33.5	5.3	3.0	3.2	1.6
Junior high school 1 st grade	43.9	38.6	7.2	4.9	4.3	1.2
Junior high school 2 nd grade	42.3	39.8	7.5	5.3	4.0	1.1
Junior high school 3 rd grade	43.0	40.2	7.3	5.1	3.5	0.9

② Do you think that it is important to study arithmetic or mathematics?

(%)

	Yes	Slightly Yes	Slightly No	No	Not decide	No answer
Elementary 5 th grade	61.2	26.7	4.5	3.7	3.0	0.9
Elementary 6 th grade	58.4	30.2	4.6	3.6	2.5	0.7
Junior high school 1 st grade	48.6	32.9	7.7	6.3	3.7	0.7
Junior high school 2 nd grade	41.4	34.9	10.2	8.8	4.1	0.6
Junior high school 3 rd grade	36.8	34.0	13.5	11.1	4.1	0.6

③ Do you like to study arithmetic or mathematics?

(%)

	Yes	Slightly Yes	Slightly No	No	Not decide	No answer
Elementary 5 th grade	29.0	24.9	19.5	21.3	4.5	0.9
Elementary 6 th grade	23.3	24.0	22.7	25.1	4.3	0.6
Junior high school 1 st grade	20.4	24.0	21.9	28.5	4.7	0.6
Junior high school 2 nd grade	18.9	23.9	22.3	29.9	4.5	0.5
Junior high school 3 rd grade	21.4	23.6	20.2	30.2	4.0	0.5

④ Do you understand arithmetic or mathematics in a class well or not?

(%)

	Well	Almost well	About half	Almost not	Not	No answer
Elementary 5 th grade	25.4	36.2	25.1	9.4	2.4	1.6
Elementary 6 th grade	21.8	35.2	27.4	11.5	3.1	1.1

Junior high school 1 st grade	16.7	33.6	27.0	15.8	5.8	1.1
Junior high school 2 nd grade	15.2	31.6	27.4	17.8	6.9	1.1
Junior high school 3 rd grade	16.6	31.7	26.9	17.4	6.6	0.8

⑤How many hours do you study at home in a week day? (%)

	Almost nothing	Less than 30 minutes	30 minutes ~ 1 hour
Elementary 5 th grade	10.6	19.1	30.1
Elementary 6 th grade	10.8	16.7	28.2
Junior high school 1 st grade	14.3	11.9	20.0
Junior high school 2 nd grade	17.1	12.2	18.1
Junior high school 3 rd grade	8.5	5.6	9.6

(%)

	1 hour ~ 2 hours	2 hours ~ 3 hours	More than 3 hours	No answer
Elementary 5 th grade	23.0	9.0	5.9	2.3
Elementary 6 th grade	27.1	10.5	5.1	1.6
Junior high school 1 st grade	29.7	17.7	5.0	1.4
Junior high school 2 nd grade	28.9	17.9	4.6	1.4
Junior high school 3 rd grade	23.1	28.4	23.7	1.2

(2) For teachers

①Do you use team teaching method or dividing to small class method in mathematics classes? (%)

	Yes (many times)	Slightly Yes (a few times)	Slightly No (rare times)	No or almost no	No answer
Junior high school 2 nd grade	17.8	9.1	16.9	56.1	0.0

②Do you use group study method depending on student's understanding level? (%)

	Yes (many times)	Slightly Yes (a few times)	Slightly No (rare times)	No or almost no	No answer
Junior high school 2 nd grade	4.3	3.3	17.4	74.4	0.7

③Do you give children or students homework in arithmetic or mathematics class? (%)

	Yes (many times)	Slightly Yes (a few times)	Slightly No (rare times)	No or almost no	No answer
Elementary 5 th grade	37.7	46.4	13.0	2.4	0.5
Elementary 6 th grade	35.2	44.4	16.9	3.0	0.4
Junior high school 1 st grade	18.4	29.5	43.1	8.3	0.7
Junior high school 2 nd grade	15.1	26.7	46.9	10.9	0.4
Junior high school 3 rd grade	16.2	31.2	43.9	8.3	0.3

④Do you use advanced topics in arithmetic or mathematics class?

(%)

	Yes (many times)	Slightly Yes (a few times)	Slightly No (rare times)	No or almost no	No answer
Elementary 5 th grade	10.8	34.9	44.0	10.0	0.4
Elementary 6 th grade	10.6	35.8	41.0	12.1	0.5
Junior high school 1 st grade	9.6	33.4	42.7	13.8	0.5
Junior high school 2 nd grade	11.2	38.8	37.1	12.1	0.9
Junior high school 3 rd grade	14.4	39.4	36.1	9.7	0.4

⑤Do you give supplemental teaching to slow-learning children or students after lesson or in some opportunities? (%)

	Yes	Slightly Yes	Slightly No	No or	No answer

	(many times)	(a few times)	(rare times)	almost no	
Elementary 5 th grade	21.2	52.0	22.5	3.8	0.5
Elementary 6 th grade	17.3	52.9	25.3	3.5	0.9
Junior high school 1 st grade	11.7	39.1	38.1	10.7	0.4
Junior high school 2 nd grade	10.5	40.5	37.7	10.4	0.9
Junior high school 3 rd grade	13.7	41.9	35.4	8.4	0.6

12. CONCLUSION

It is fact that in Indonesia the traditional approach for teaching and learning mathematics does not adequately prepare our students' mathematical competencies. Even though a reform of mathematics curriculum has been conducting many problems concerning its implementation are needed to be studied and answered. Given this brief overview of curriculum and school climate, especially in mathematics education both in Indonesia and Japan, it is reasonable to consider the possibility of cooperative research between scholars in both countries. What should be noted here is that, many issues about reform are similar in both: improving current practices, design and testing of new materials, and the professional development of teachers.

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