

Republic of Indonesia
Ministry of Education and Culture

Preparatory Survey
on BOP Business on Strengthening
of Children's Mathematical Ability
through After-School Tutoring
in Republic of Indonesia

Final Report
(Summary Report)

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JAPAN INTERNATIONAL COOPERATION AGENCY

OSAKA KYOIKU KENKYUSHO CO., LTD
APPLIED MANAGEMENT INC.
KOKUSAI KOGYO CO., LTD

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**PREPARATORY SURVEY ON BOP BUSINESS ON STRENGTHENING OF
CHILDREN'S MATHEMATICAL ABILITY THROUGH AFTER-SCHOOL
TUTORING IN REPUBLIC OF INDONESIA**

FINAL REPORT: SUMMARY REPORT

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ABBREVIATIONS

AAT	Academic Achievement Test
BOP	Base of the Pyramid
ITS	Institute Technology Sepuluh Nopember
JICA	Japan International Cooperation Agency
MOEC	Ministry of Education and Culture
PROTECO	Proposal-Type Technical Cooperation

1. Project Brief and Conclusions

Background

To promote collaboration with companies on base of the pyramid (BOP) business, JICA started the BOP Project Scheme last fiscal year. BOP business has drawn a great deal of attention as a new approach that uses business principles to solve problems in developing countries that cannot be accomplished by aid agencies alone, and various bilateral and international aid agencies have been actively promoting cooperation with BOP business scheme in recent years. Within JICA as well, this study scheme is positioned as a measure aligned with JICA's vision of "inclusive and dynamic development".

In this connection, the Project called "Preparatory Survey on BOP Business on Strengthening of Children's Mathematical Ability through After-School Tutoring" was selected and implemented from July 2012 to July 2013 in Surabaya, Indonesia.

Executing Companies

Three executing companies are Osaka Kyoiku Kenkyusho Co., Ltd, Applied Management, Inc., and Kokusai Kogyo Co., Ltd

Project Objectives

To establish after-school tutoring business model to strengthen children's mathematical ability in BOP society

Project Strategies

1. Use of the OGO Method developed by Mr. Masaru OGO, a Japanese master teacher to strengthen mathematical ability
2. Proof for effectiveness of the OGO Method through pilot after-school tutoring for nine months
3. Development of the BOP business model

Pilot After-School Tutoring

1. Venue: 2 primary schools in Surabaya
2. Target subject and grades: Mathematics for Grade 1 to 3 at the primary level

3. Time: 3 times a week, 30 minutes per time
4. Evaluation of academic achievement: Comparative analysis between pilot and control schools by baseline and end-line test

Conclusions

The Baseline Survey discovered that many primary students are facing great difficulties in studying mathematics even from Grade 1, 2 and 3, which causes significant constraints for them to study advanced mathematics later.

In this understanding, the Project selected two pilot schools in Surabaya and provided approximately 600 students from Grade 1 to 3 with after-school tutoring for nine months. The Endline Survey which was implemented after pilot activities showed a significant improvement of academic achievement in mathematics of those students in comparison to three control schools.

The market survey discovered that 20% to 40% of students in Surabaya go to private after-school tutoring (hereinafter called Juku) by paying US\$ 20 to 50 a month. The Project estimated that one Juku with two classrooms can accommodate approximately 1000 students and Juku can make profit with monthly tuition fee of US\$ 15 per student.

The Project planed the business strategies in which the company focuses on stand-alone Juku operation for the first five years and starts school-based Juku operation after that in which Juku is operated by school teachers at school after school. The school-based Juku can operate with monthly tuition fee of US\$5 which is affordable for most of BOP people.

Based on these findings, Osaka Kyoiku Kenkyusho Co., Ltd made a decision to establish a company in Indonesia to start its education business and started the company registration in May 2013. The company is planning to open two Jukus in Surabaya in September 2013.

2. PROJECT ACTIVITIES

The Project activities were summarized in this Chapter in the following way:

2.1 Selection of Pilot Schools and Control Schools

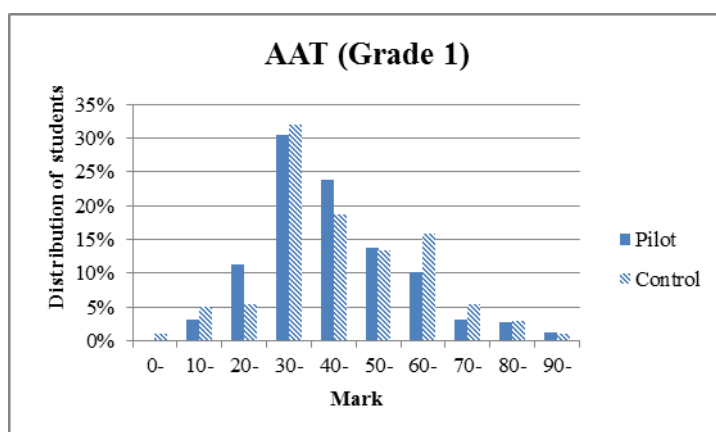
In cooperation with Ministry of Education and Culture (MOEC), two pilot schools and three control schools were selected. These schools are located in residential area for middle and lower income groups and have similar school environment. The numbers of students at these schools are shown in Table 2.1.

Table 2.1 Number of students of Pilot and Control Schools

	School Name	Grade 1		Grade 2		Grade 3	
		Class	Student	Class	Student	Class	Student
Pilot School 1	SD Kaliasin	3	103	2	72	2	73
Pilot School 2	SD Al Islah	4	152	3	113	3	103
Control School 1	SD Bubutan	2	82	2	77	2	76
Control School 2	SD Menanggal 601	3	107	2	79	2	76
Control School 3	SD Wonokusumo 5	2	76	2	75	2	76

2.2 Baseline Survey

The Baseline Survey was conducted in September 2012. As shown in Figure 2.1, many students in Grade 2 and 3 have great difficulties in understanding mathematics.



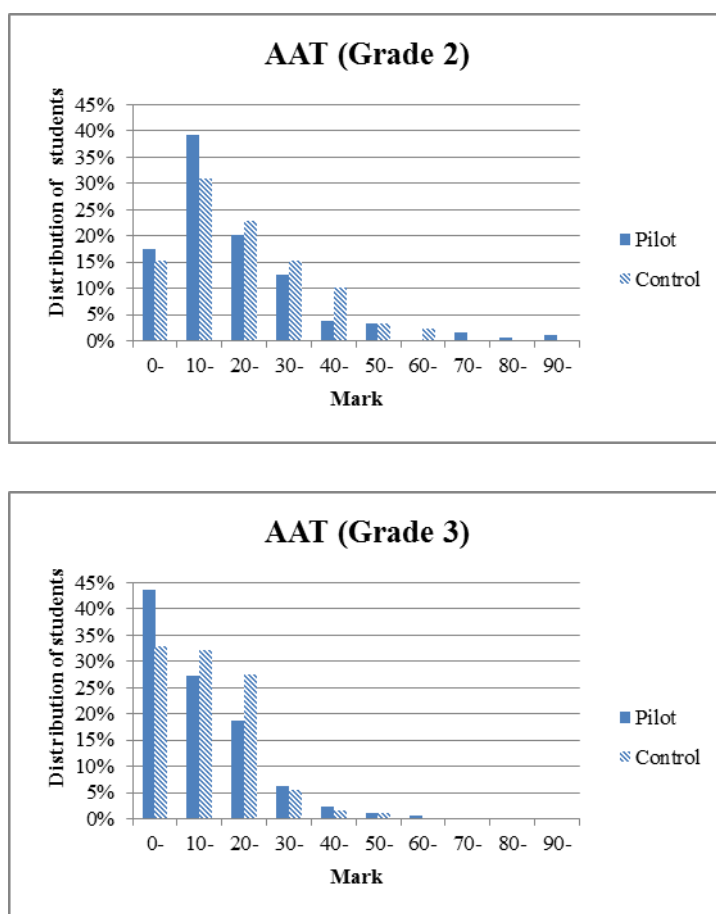


Figure 2.1 Results of Academic Achievement Test (AAT) of Baseline Survey

2.3 Implementation of Pilot Classes

The pilot classes commenced in September 2012 for Students in Grade 1 to 3 at two pilot schools. For project tutors, the students or graduates of Institute Technology Sepuluh Nopember (ITS) in Surabaya were hired and trained by the Project. Although the pilot classes were conducted by the project tutors, the school teachers supported the pilot activities.

2.4 Endline Survey

The Endline Survey was conducted in May to June 2013 after implementing the pilot classes for nine months in order to examine achievement level of mathematics abilities of students at pilot schools in comparison to control schools.

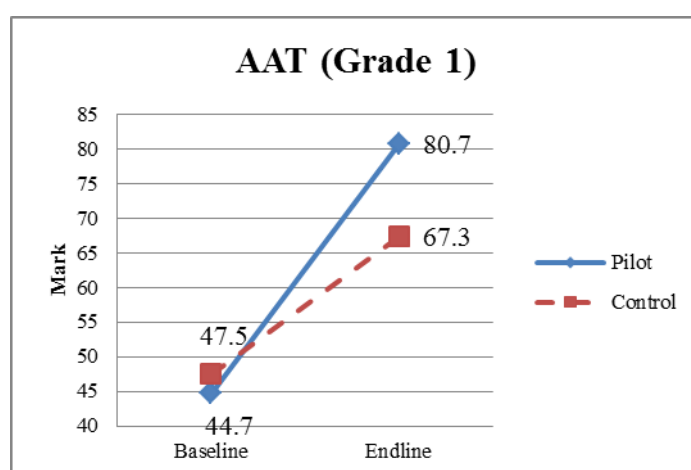
2.4.1 AAT

The results are shown in Table 2.2 and Figure 2.2. The average marks of the pilot schools were lower than the control schools at the Baseline Survey. The average marks of the pilot schools, however, became much higher than the control schools at the Endline Survey, which proved that the OGO Method could work efficiently for students in Indonesia.

Table 2.2 Comparative Analysis of AAT

(Average mark in %)

Grade	School	# of students	Base-line	End-line	Improvement		Ratio of Improvement in Comparison with Control schools
1	Pilot 1	98	43.2	84.0	40.8	194.3%	1.27
	Pilot 2	148	45.6	78.5	32.9	172.0%	
	Pilot Overall		44.7	80.7	36.0	180.6%	
	Control 1	78	45.4	65.1	19.7	143.5%	
	Control 2	100	45.8	63.6	17.8	138.8%	
	Control 3	71	52.0	74.9	22.9	144.1%	
	Control Overall		47.5	67.3	19.9	141.9%	
2	Pilot 1	68	29.5	64.3	34.8	217.8%	1.50
	Pilot 2	106	16.2	53.5	37.2	329.5%	
	Pilot Overall		21.4	57.7	36.3	269.3%	
	Control 1	71	19.9	36.4	16.5	182.9%	
	Control 2	72	25.6	52.1	26.5	203.8%	
	Control 3	75	29.5	46.1	16.5	156.1%	
	Control Overall		25.1	44.9	19.8	179.1%	
3	Pilot 1	66	19.1	43.8	24.7	229.8%	1.83
	Pilot 2	90	11.0	32.1	21.1	291.4%	
	Pilot Overall		14.4	37.0	22.6	257.0%	
	Control 1	68	14.2	19.8	5.6	139.6%	
	Control 2	69	18.6	27.9	9.3	150.3%	
	Control 3	72	19.0	25.2	6.1	132.3%	
	Control Overall		17.3	24.3	7.0	140.6%	



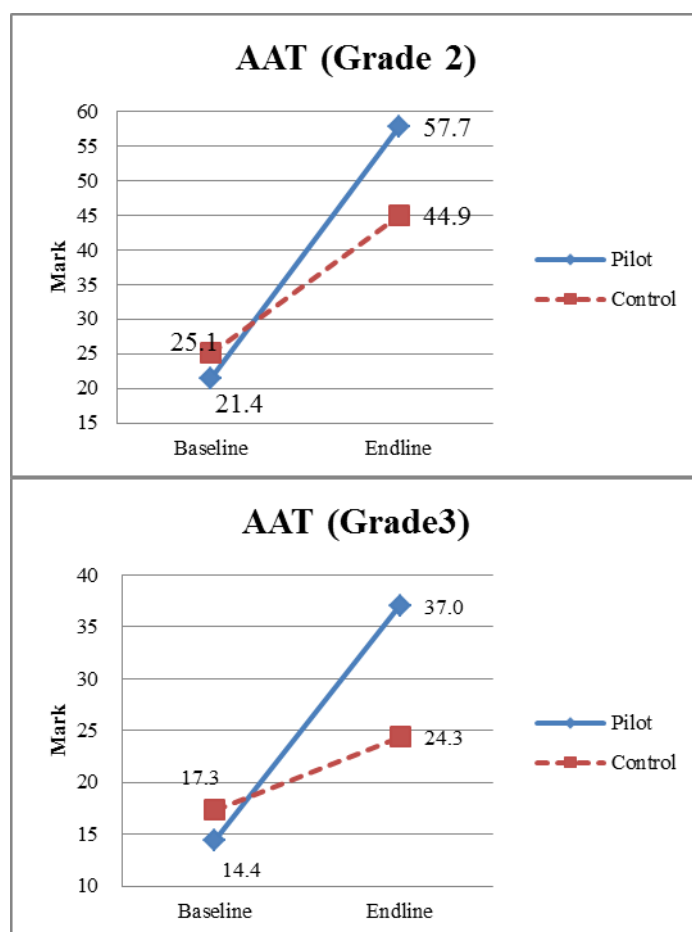


Figure 2.2 Comparative Analysis of AAT

2.4.2 100-Box Calculation

The results are shown in Tables and Figures below. All comparative analysis of addition, subtraction and multiplication of 100-Box Calculation shows significant improvement of students' mathematics capabilities of pilot schools in comparison to control school. This proved that the OGO Method could work efficiently for Indonesian students to strengthen their mathematics abilities.

Table 2.3 Comparative Analysis for Addition

(Average mark in %)

Grade	School	# of students	Base-line	End-line	Improvement		Ratio of Improvement in Comparison with Control schools
					Average	Ratio	
2	Pilot 1	68	23.2	88.2	65.0	380.7%	2.10
	Pilot 2	106	19.8	80.8	60.9	407.0%	
	Pilot Overall		21.1	83.7	62.5	395.7%	
	Control 1	71	26.8	42.2	15.3	157.1%	
	Control 2	72	22.9	51.3	28.5	224.3%	
	Control 3	75	24.8	46.4	21.6	186.9%	

	Control Overall		24.8	46.7	21.8	187.8%	
3	Pilot 1	66	43.3	95.6	52.3	220.8%	1.68
	Pilot 2	90	32.8	91.5	58.7	279.3%	
	Pilot Overall		37.2	93.2	56.0	250.5%	
	Control 1	68	39.3	54.0	14.8	137.7%	
	Control 2	69	45.8	63.5	17.7	138.6%	
	Control 3	72	39.7	68.2	28.5	171.8%	
	Control Overall		41.6	62.0	20.5	149.2%	

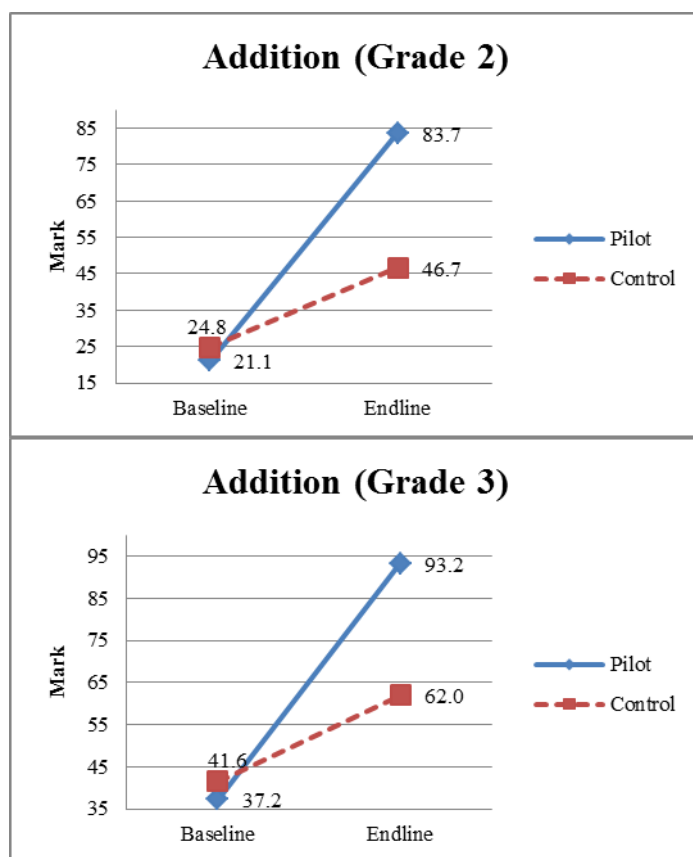


Figure 2.3 Comparative Analysis for Addition

Table 2.4 Comparative Analysis for Subtraction

(Average mark in %)

Grade	School	# of students	Base-line	End-line	Improvement	Ratio of Improvement in Comparison with Control schools
2	Pilot 1	68	14.1	64.9	50.8	460.8%

	Pilot 2	107	7.4	56.1	48.7	756.1%	
	Pilot Overall		10.0	59.5	49.5	594.7%	
	Control 1	71	12.2	23.3	11.1	191.2%	
	Control 2	72	11.7	26.9	15.2	229.4%	
	Control 3	75	10.3	18.9	8.6	184.0%	
	Control Overall		11.4	22.9	11.6	202.0%	
3	Pilot 1	66	28.0	81.6	53.6	291.8%	2.67
	Pilot 2	90	13.8	70.5	56.7	509.8%	
	Pilot Overall		19.8	75.2	55.4	379.5%	
	Control 1	68	17.2	26.3	9.1	152.8%	
	Control 2	69	27.9	38.3	10.4	137.4%	
	Control 3	72	24.7	34.6	9.9	140.0%	
	Control Overall		23.3	33.1	9.8	142.0%	

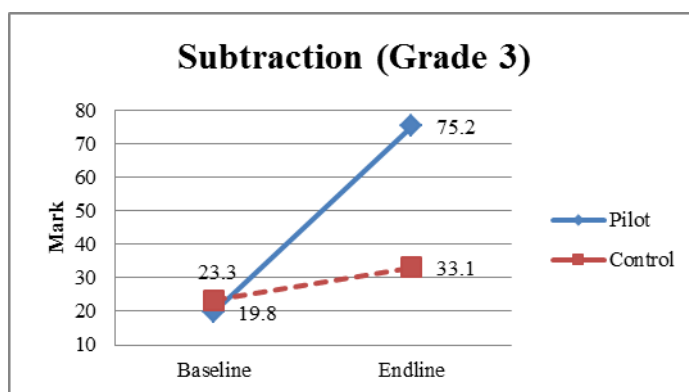
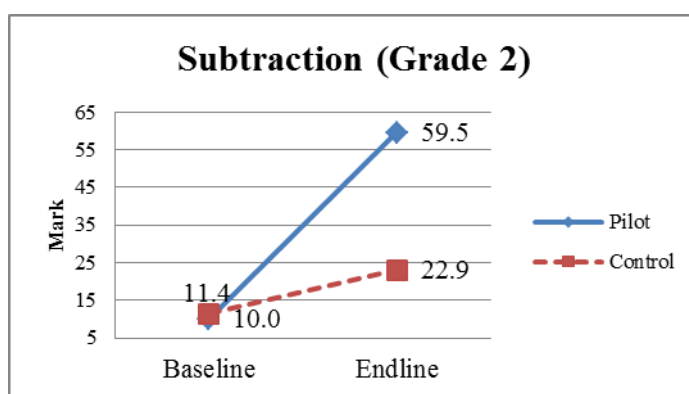


Figure 2.4 Comparative Analysis for Subtraction

Table 2.5 Comparative Analysis for Multiplication

(Average mark in %)

Grade	School	# of students	Base-line	End-line	Improvement		Ratio of Improvement in Comparison with Control schools
3	Pilot 1	66	34.4	91.9	57.5	267.1%	2.18
	Pilot 2	90	13.9	69.7	55.8	503.0%	
	Pilot Overall		22.6	79.1	56.5	350.7%	
	Control 1	68	19.0	38.1	19.2	201.2%	
	Control 2	69	28.8	50.6	21.8	176.0%	
	Control 3	72	38.7	51.2	12.5	132.2%	
	Control Overall		29.0	46.7	17.7	161.2%	

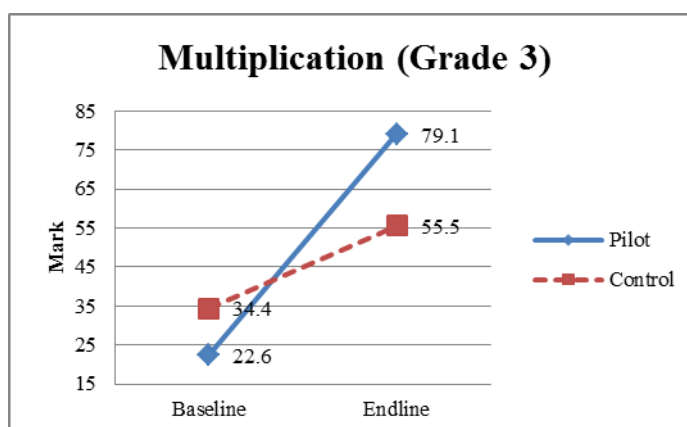


Figure 2.5 Comparative Analysis for Multiplication

2.4.3 Case Studies

There are many students who achieved extremely significant improvement in their mathematics calculation skills, as listed in Table 2.6. Those students were considered as slow learners before and people around including teachers, parents and possibly students themselves probably gave up their academic achievement and even their future lives. After nine-month practice, however, those people noticed those students were also capable of improving their academic skill when studying with right method. The OGO Method could change their future prospects.

Table 2.6 Students who Performed Significant Academic Achievement

(Marks in %)

School	Grade	Test	Base-line	End-line	Improvement	
					Mark	Ratio of improvement
Pilot 1	1	AAT	30.6	100	69.4	3.27
Pilot 2	1	AAT	15.3	100	84.7	6.54
Pilot 1	2	Addition	8	100	92	12.50
		Subtraction	9	98	89	10.89
		AAT	27.5	95	67.5	3.45
Pilot 2	2	Addition	2	100	98	50.00
		Subtraction	4	100	96	25.00
		AAT	15	87.5	72.5	5.83
Pilot 1	3	Addition	10	99	89	9.90
		Subtraction	9	99	90	11.00
		Multiplication	9	100	91	11.11
		AAT	15	85	70	5.67
Pilot 2	3	Addition	21	99	78	4.71
		Subtraction	1	89	88	89.00
		Multiplication	8	92	84	11.50
		AAT	1	35	34	35.00

3. BUSINESS RELATED SURVEY

Based on findings discovered through the Project, Osaka Kyoiku Kenkyusho Co., Ltd made a decision to establish a company in Indonesia to start its education business in the following ways:

3.1 Business Outline

The company will focus on stand-alone Juke operation in the short and midterms. After having solid financial foundation, the company will expand its business into school-based Juku operation in which Juku is operated by school teachers at school after school.

The company will start its business as shown in Table 3.1:

Table 3.1 Business Outline at Start-up

1	Business type	Stand-alone Juke
2	Start date	September 2013
3	Places	Two places in Surabaya
4	Target grades	Kindergarten to junior high
5	Target subject	Mathematics
6	Monthly tuition fee	IDR 150,000
7	Classes a week	Twice a week, 45 min. per time
8	Target number of students	1,000 students per Juku

3.2 Competitors' Analysis

There exist many Jukus in Surabaya. The hourly tuition fee is ranged from US\$ 1 to 5. The monthly tuition fee, therefore, is around US\$ 8 to 40, assuming one hour per time twice a week. The price setting of the company is enough competitive.

3.3 Business Target

The business target set for the company is 1) to start making profit in the second year, 2) to achieve turnover of US\$ 2 mil. with profit of US\$ 0.6 mil in the fifth year, and then 3) to start school-based Juku operation nationwide in cooperation with MOEC from the sixth year.

3.4 Business Scenario

The business scenario for the short term (1 to 2 years), the mid. term (3 to 5 years) and the long term (6 to 10 years) is shown in Table 3.2.

Table 3.2 Business Scenario

Term	Juku Type	Location	Target No. of Juku	Target No. of Students
Short	Stand-alone	Surabaya	5	5,000
Mid.	Stand-alone	Surabaya, Jakarta	11	11,500
Long	Stand-alone	Surabaya, Jakarta	11	11,500
	School-based	Nationwide	90	75,000

4. Cooperative Scheme with JICA

The Project discovered that the many students have been facing great difficulties in studying mathematics from their very early stage of studying. This is most probably a common issue in developing countries in the world.

Through nine-month practice of pilot activities, the Project proved that the OGO Method can provide a practical and less costly solution for this longstanding and challenging issue.

Although the final goal of this business is to provide all students with the OGO Method in developing countries, it is obviously not easy due to the limited resources of the company. In this regard, the Project tried to seek possibilities to formulate the cooperative schemes by utilizing various JICA projects and schemes. This can provide a positive impact to the company by building the brand of the OGO Method.

The four projects are proposed as follows:

4.1 Diffusing the OGO Method through ICT

1	Project title	Diffusing the OGO Method through ICT
2	Relevant JICA project/scheme	ICT Utilization Project for Education Quality Enhancement in Yogyakarta Province
3	Target country/area	Yogyakarta Province
4	Counterpart organization	Directorate General of ICT Applications, Ministry of Communication and Information Technology, 300 target primary schools
5	Goal	To improve mathematics academic achievement by the OGO Method through ICT utilization at all schools in Indonesia
6	Project objectives	To improve mathematics academic achievement at target schools by using ICT teaching materials based on the OGO Method, which are developed by teachers
7	Activities	<ol style="list-style-type: none"> 1 . Teachers at target schools understand the OGO Method and improve mathematics academic achievement by conventional teaching way. 2 . Teachers at target schools develop ICT teaching materials based on the OGO Method utilizing their ICT skills acquired through the Project 3 . Teachers at target schools confirm that ICT teaching materials are

		<p>effective to improve mathematics academic achievement.</p> <p>4. ICT teaching materials based on the OGO Method is transferred to schools in other regions.</p>
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4.2 Strengthening capabilities of mathematics education through school-based Jukus

1	Project title	Strengthening capabilities of mathematics education through school-based Jukus
2	Relevant JICA project/scheme	Technical Cooperation Project and PROTECO in the fields of community development and poverty reduction
3	Target country/area	Areas of poverty in Indonesia
4	Counterpart organization	Education departments in local governments and their primary schools
5	Goal	To improve mathematics academic achievement of students at all primary schools located in areas of poverty in Indonesia
6	Project objectives	To establish sustainable mechanism to operate school-based Jukus which provide after-school tutoring of the OGO Method by module basis
7	Activities	<p>1. To establish sustainable mechanism to collect budget from local government and/or parents to operate school-based Jukus</p> <p>2. Teachers acquire skills and know-how to manage school-based Juku by using the OGO Method.</p> <p>3. Quality of education provided at school-based Jukus is maintained through mutual monitoring system by teachers.</p> <p>4. Teachers regularly analyze academic achievement of students and discuss issues and constraints among themselves.</p> <p>5. Human resources are developed to manage the school-based Juku system.</p>

4.3 Strengthening capabilities of mathematics education at teacher's colleges

1	Project title	Strengthening capabilities of mathematics education at teacher's colleges
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2	Relevant JICA project/scheme	Training program in Japan for instructors of teacher's colleges for lesson study
3	Target country/area	Nationwide in Indonesia
4	Counterpart organization	Teacher's colleges
5	Goal	To strengthen capabilities of mathematics education at all primary schools by introducing the OGO Method
6	Project objectives	To develop the OGO Method in the context of Indonesian education environment through lesson study at teacher's colleges, which is transferred to college students
7	Activities	<ol style="list-style-type: none"> 1 . Instructors at teacher's colleges develop the OGO Method in the context of Indonesian education environment through lesson study. 2 . Teacher's college students acquire skills and know-how of the OGO Method. 3 . It is proved that The OGO Method is effective after it is introduced at their attached schools. 4 . Graduates from teacher's colleges use the OGO Method at their schools assigned and transfer skills and know-how of the OGO Method to other teachers. 5 . Quality of education is maintained by regular mutual monitoring among teachers.

4.4 Diffusion of the OGO Method to all developing countries by utilizing ICT

1	Project title	Diffusion of the OGO Method to all developing countries by utilizing ICT
2	Relevant JICA project/scheme	Technical Cooperation Project and Training Program in Japan
3	Target country/area	Selected developing countries in the world
4	Counterpart organization	Ministries of Education and relevant education institutes in selected developing countries
5	Goal	Mathematics becomes a favorite subject for all students in developing countries.

6	Project objectives	To establish an efficient mechanism by utilizing ICT to transfer skills and know-how to teach, introduce and monitor the OGO Method for personnel of mathematics education related officials and teachers in developing countries
7	Activities	<ol style="list-style-type: none"> 1 . To agree with Ministries of Education, research institutes and pilot schools to introduce the OGO Method 2 . To provide these officials, researchers and teachers with regular training program for the OGO Method in japan 3 . To make regular monitoring of their activities at their home countries by video conference system 4 . To make regular analysis to check improvement of mathematics academic achievement 5 . To organize regular video conference to exchange their ideas and opinions among participants 6 . To establish mechanism and human resources to diffuse the OGO Method in participating countries.