**APEC-TSUKUBA** International Conference Innovative Teaching Mathematics through Lesson Study Status of Cooperation in Mathematics and Science Education by JICA

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#### **Trends in JICA's Cooperation** in Education Development

- ≻Technical Cooperation Project
  - Dispatch of Experts/Receiving Trainees in Japan/Provision of Equipment
  - Development Study, Dispatch of JOCV, etc
- >30 billion yen/year, 20% of total amount of education development cooperation by JICA (2003)
- Budget of Basic Education is USD93 Million/year, 38% of Cooperation of Education (2003)



## **Status of Cooperation in Mathematics** and Science Education Development by JICA

- Typical Type of Cooperation in Basic Education1 Rapid increase in late 1990 s ⊳
- 27 Technical Cooperation Projects in Mathematics & Science Education are implemented in Africa, Asia, Middle East, and Latin America (January, 2006) ۶
- > (1)INSET: In-service training: Training for incumbent teachers (2)PRESET: Pre-service training: Training for college
- students
- Teacher s training in in Math & Science Education, improvement of training system, support for institutionalization of training, development of education method, development of teaching material and guidebook, dissemination of lesson study, revision of syllabus and curriculum

**Projects on Cooperation in Mathematics and** Science Education Development by JICA

- SMASSE: Strengthening of Mathematics and Science in Secondary Education
- PROMETAM: The Improvement of Teaching Method in Mathematics (Proyecto de Mejoramiento de Ensenanza Tecnica en el Area de Matematica)

These 2 projects have developed to regional cooperation projects, supporting surrounding countries in Phase2

# **SMASSE Background of Project**

- Redundant curriculum
- Chalk and talk
- > Lack of teaching material (text, experimental apparatus, etc)
- Lack of qualified Math & Science teachers Attitude of teachers for Math & Science (stereotype - Math & Science are difficult) Reason of fear on Science and Math among students
- Poverty and family problems of students
- Lack of principal's administration ability

# **SMASSE Background of Project**

- > Support for Math & Science education dispatching JOCV Math & Science teachers  $(1966 \sim)$
- Grant Aid Provision of Equipment to KSTC (Kenya Science Teachers College)
- Request of Project Type Technical Cooperation on INSET in Math & Science education

# SMASSE

# Phase 1 project

- Project Purpose: Quality of Mathematics and Science education at secondary level is strengthened through INSET in the pilot district. > Outline of Project:
- Implement training in KSTC for Math & Science key trainers of pilot districts
- Exchange information on subject matters among secondary school teachers
- Duration: July, 1998 ~ June, 2003
  - Japanese Input: Training of Kenyan counterpart in Japan: 35 persons Japanese Experts: Long term experts 5 persons/year Short term experts 33 persons Others

# **SMASSE**

# **Phase 1 Project** Output

- > Established INSET system, and improved quality of Math & Science education (Especially, Improved teaching method) Successful project - model project
- > Ownership, self -help effort of Kenyan stakeholders, The expenses fall on beneficiaries

Strengthened sustainability of project

> Understood other African countries face similar problems in Math & Science education

Formulate Information Network among African countries Hold International Workshop (February, 2001) Established Regional Network "SMASSE-WECSA"

# **SMASSE**

#### Phase 2

#### **Regional Cooperation**

- Duration : July, 2003 ~ June, 2008
  Implementation of Third Country Training in Kenya
- Held 2 times in 2004, 18 countries, 127 participants Projects collaborated with SMASSE started in 6 African countries
- Malawi, Uganda, Nigeria, Zambia, Mozambique, Niger Support from Kenya SMASSE Dispatch of Japanese experts in Kenya, Kenyan experts Technical Advice
- SMASSE-WECSA Regional Conference
- Exchange information, Formulate Information Network Held Conference 5 times 133 persons participated from 27 countries in the 5th SMASSE-WECSA Regional Conference

# **PROMETAM Background of Project**

#### > Problems on Basic education in Honduras

- · Majority of grade repeats is attributed to low proficiency in Spanish and mathematics. Low quality of teachers in primary education
- Percentage of children comleting their education is 68.5% (2000)
- Percentage of those children comleting primary education is 31.9%
- Japan has conducted cooperation in Basic Education since 1988
  - Grant Aid Construction of INICE (National Institute of Training and Education) in 1988.
  - JICA has dispatched more than 60 JOCV mathematics teachers since 1989
  - JICA experts and volunteers drafted " teachers guidebook " and " children s workbook " (for 1st and 2nd grade at primary level) in 2002

# **PROMETAM**

#### Phase 1

- > Project Purpose: Improve teaching method in mathematics at primary level > Outline of Project: In the 5 targeted areas,
- - Elaborate teacher s guidebooks and children s workbooks in mathematics
  - · Conduct INSET by using these guidebooks and workbooks
  - Evaluate teaching ability of teachers and achievement of students
- Duration: April, 2003 ~ March, 2006
  - Japanese Input: Japanese experts (Long term experts 2~3 persons, short term experts 4persons)
    - JICA volunteers 39 persons, Training Honduran counterparts in Japan 20, Others

# PROMETAM Phase 1 Impact of The Project

- Nationwide distribution of the guidebooks and workbooks, defined as textbooks in line with new national curriculum
- Other countries in Central America are interested in the guidebooks and workbooks, and requested Japan to conduct same kind of cooperation as Honduras

Regional cooperation (PROMETAM Phase 2 in Honduras, El Salvador, Guatemala, Dominican R., Nicaragua (will start in April, 2006)

\* The Project in Dominican R. started in May, 2005

# PROMETAM Phase 2

## **Regional Cooperation**

- Elaborate guidebooks and workbooks in each countries based on PROMETAM guidebooks and workbooks
- Conduct INSET or PRESET on teaching method by using those guidebooks and workbooks
- Training in Japan, Third country trainings in Honduras or other Central American countries
- Dispatch Japanese or Honduran experts from Honduras PROMETAM to the projects in other countries to give technical support
- > Hold International Symposium
- Exchange information and experience among the Central countries

# Challenges of The Projects on Mathematics and Science Education

- > Recruit Japanese experts in mathematics and science education
- > Institutionalization of INSET
- Cost to be borne by recipient countries
- Cost for conducting training, allowance, travel expenses, etc.
- Possibility to draw implications from Japan's experience of educational development for other countries

# Way forward

- > JICA's Cooperation in Education Development has shifted from hard-oriented cooperation to soft-oriented cooperation since 1990.
- Level of Japan's education in mathematics and science
  Rather high.
  - Language and culture barrier not so serious as other subject Japan has advantage to conduct cooperation in Mathematics and Science Education to developing countries.

JICA will continue to conduct cooperation in mathematics and science education, gain the experience by practice, and have knowhow on cooperation in mathematics and science education to developing countries.

JICA will conduct better cooperation in mathematics and science education to developing countries.