

Terminal Evaluation

Africa

1. Outline of the Project

Country:

Kenya

Project title:

Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project

Issue/Sector:

Human Resources Development(Pre-secondary Education)

Cooperation scheme:

Technical Cooperation Project

Division in charge:

Second Technical Cooperation Division, Social Development Cooperation Department

Total cost:

approximately 860 million yen

Period of Cooperation

20 May 1997 - 19 May 2002

Partner Country's Implementing Organization:

Ministry of Education, Science and Technology (MOEST), Kenya Science Teachers College (KSTC)

Supporting Organization in Japan:

Ministry of Education, Science and Technology, Hiroshima University

Related Cooperation:

Team Dispatch of Japan Overseas Cooperation Volunteers(JOCV)

Grant Aid; "Project for Supply of Equipment for Kenya Science Teachers College"

1-1 Background of the Project

Kenya made self-help efforts toward continuous development by promoting industrialization in the education sector since its independence in 1963. The Kenyan government allocated more than 30% of its current budget to the field of education. However, because of the lack of textbooks, teaching materials and science teachers caused by congestion of curriculum and the tight educational budget, the quality of education was lowered mainly in the subjects of science and mathematics. Upon those facts, the government of Kenya announced that the "Quality of Mathematics and Science education at secondary level is strengthened" as one of its key policies in the 7th and 8th National Development Plan and aimed to improve the quality in terms of both hardware and software aspects such as the development of facilities and textbooks and the expansion of fostering teachers.

Under these circumstances, the government of Japan has continued to support science and mathematics education through JOCVs. In addition, the Kenyan government requested to the Japanese government for a grant aid and a Project-type Technical Cooperation on the development of equipment to strengthen the education of mathematics and science at secondary schools through the training to incumbent teachers of science and mathematics.

1-2 Project Overview

In order to improve the quality of mathematics and science education at secondary schools, the project implemented cooperation at Kenya Science Teachers College (KSTC) to develop the training system to foster district trainers (leading teachers) in each region and In-Service Training for Teachers (INSET) of incumbent teachers at nine pilot districts across the country.

(1) Overall Goal

Capability of the young Kenyans in Mathematics and Science education is upgraded.

(2) Project Purpose

Quality of Mathematics and Science education at secondary schools is strengthened through INSET of teachers in the pilot districts.

(3) Outputs

- 1) A system of training for the District trainers (leading teachers) in the pilot districts in Mathematics and Sciences will be established at KSTC.
- 2) A system of INSET in Mathematics and Science will be established in the pilot districts.
- 3) The role of KSTC and district INSET centers as resource centers will be strengthened.

(4) Inputs

Japanese side:

Long-term Experts	12		
Equipment (vehicles, equipment for science)	122 million yen		
Short-term Experts	33	Local Cost	138 million yen
Trainees received	35 (30 for training in Japan, 3 for long-term training and 2 for third-country individual training)		

Kenyan Side

Counterparts	31	Land and Facilities
Equipment and Local Cost	58 million ksh in total (99 million yen)	
Other Personnel Allocation	9	

2. Evaluation Team

Members of Evaluation Team	Team Leader/General: Shinji ISHII, Professor/Director, Center for the Study of International Cooperation in Education, Hiroshima University	
	Science and Mathematics Education: Hideo Ikeda, Professor, Graduate School of Education, Hiroshima University	
	Evaluation Planning: Minako SUGAWARA, Staff, Second Technical Cooperation Division, Social Development Cooperation Department, JICA	
	Evaluation Analysis: Kunio NISHIMURA, CRC Overseas Cooperation Inc.	

Period of Evaluation	13 October 2002 - 26	Type of Evaluation:
	October 2002	

Terminal Evaluation

3. Results of Evaluation

3-1 Summary of Evaluation Results

(1) Relevance

The Master Plan on Education and Training (MPET, 1997 - 2010) and the Totally Integrated Quality Education and Training (TIQET) referred to the necessity of implementing INSET. INSET is included in the Poverty Reduction Strategy Paper (PRSP) and Mid-Term Expenditure Framework (MTEF, 2000-2003) as a part of human resource development. As the number of teachers against the number of students at secondary schools was big enough, the World Bank recommended Kenya to decrease the number of teachers in order to reduce the public expenditure. Therefore, the necessity to train the incumbent teachers was high compared to fostering new teachers. Judging from the fact mentioned above, the aim of the project "quality

improvement of incumbent teachers in science and mathematics through INSET" was matched with the social needs and the national policy of Kenya. The project purpose was also in line with the Japanese Official Development Assistance (ODA) policy because the enhancement of mathematics and science education at secondary schools was one of the highly promoted areas in JICA's country-focused project plan to Kenya. Judging from the above, the relevance of the project was high.

(2) Effectiveness

As for INSET, four central training courses to the trainers of regional training and three regional training courses to the trainers who joined central training and instructed other incumbent teachers were conducted, and the numbers of trainers were almost as big as the target number at each level. According to the Lesson Innovation Index the attitude of teachers was measured, along with the quality of lesson methods and change of students' attitudes, which were indicators of the level of the project purpose accomplished. The results were 3.5 and 3.2 respectively on the scale of 0 - 4 in the pilot regions. Judging from these results, the project purpose of strengthening quality of mathematics and science education at the secondary level was considered to be accomplished. The approach of implementation of INSET and its systemization aiming at the improvement of teaching methods of teachers to accomplish the quality enhancement of education was effective.

(3) Efficiency

The inputs of Japanese experts were for the most part appropriate in number, quality and timing. Many experts had experiences working as Japan Overseas Cooperation Volunteers in African regions in particular, which contributed to the efficiency of activities. Most of the delivered equipment was distributed in Kenya and actually procured in Kenya. INSET was implemented at KSTC or junior high schools utilizing existing facilities, so the expenditure for the project was held down. As a result, the project was highly cost efficient.

Regarding the project implementation method, the Cascade System (to disseminate effects of INST to local areas) has not worked well at the lowest (cluster) level as planned. Because of this, the system had been simplified, and the efficiency of the system was improved.

(4) Impact

It was difficult to measure the attainment of the overall goal "capability of the young Kenyans in Mathematics and Science education is upgraded". However, teachers and teaching methods were improved through INSET and positive effects were observed such as the change of lessons and students' attitude toward lessons at secondary schools in pilot districts. However, only nine among seventy districts were target areas, and Activities, Students, Experiments, Improvisation (ASEI) lessons, which the project introduced, were practiced only in limited areas. Therefore, the impact the project gave to the whole education of science and mathematics in Kenya was limited according to the terminal evaluation.

There were other positive impacts observed. Kenya Secondary School Heads Association (KSSHA) resolved the request the Ministry of Education, Science and Technology (MOEST) to provide INSET for all mathematics and science teachers of secondary school in Kenya. The interests of teachers to INSET in areas other than pilot regions were strong, and the project gave large impacts to the concerned personnel in education in Kenya. The impacts of the projects began in Kenya and later spread to its surrounding African countries. Moreover, a gradual network between thirteen countries was organized with interest to change lessons approach which was the aim of the project. There was no negative impact observed of the project implementation.

(5) Sustainability

The activities established through the project were in line with the Kenyan national policy, and the budget for the project was allocated as the current budget in MTEF (2002 - 2003). Therefore it will be continuously assured. The Strengthening of Mathematics and Science in Secondary Education (SMASSE) fund covered part of the school fees as the costs of INSET without financially burdening the parents. This was systemized at the district training and the financial foundation of district, INST was established.

The concerned personnel of the Kenyan side at both national and regional levels fostered the consciousness toward the proactive management of INSET during the project period, and this implementing system will be maintained. The stability rates of central and regional trainers were both high. The central trainers were authorized to occupy the official position of the Kenyan government and the regional trainers were assured to get an official certificate at the terminal evaluation, thus their conditions were stable.

National trainers were capable of managing and improving national INSET while their employments were assured by Teachers Service Commission (TSC), and therefore the national INSET unit system will be maintained from now on. Central trainers were the full-time staff of the project and regional trainers were selected among regional staff. Judging from the above, the sustainability of the project was very high.

3-2 Factors that promoted realization of effects

(1) Factors Concerning the Planning

1) As the experts and members of the supporting committee in Japan continuously committed their efforts to the survey on the process of project development, the consistency in the development from planning to implementation was maintained, and the trustworthy relationship with the Kenyan side has been established since the commencement of the project.

2) As monitoring and evaluation activities were included in the project activities at each training level, the activities were checked and monitored within the project while the feedback results could be provided and thus, the activities could be improved. This system produced the consistency of the quality of activities more feasibly.

(2) Factors concerning the Implementation Process

1) The attitude of Japanese experts supporting their counterparts of the Kenyan side was conducted with thoroughness so that the ownership of the project clearly belonged to the Kenyan side.

2) By offering opportunities to participate in the training classes or the technical visits to trainers only with outstanding performance, the willingness of the counterpart party could be improved and maintained without depending on monetary incentives such as their salaries.

3) As the three elements of "operation and management", "finance", "implementing organization" were enforced with balance, the sustainability of the project was established. The idea of utilization of local resources (attainable facilities and equipment at site) contributed to assuring the sustainability.

3-3 Factors that impeded realization of effects

(1) Factors Concerning the Planning

N/A.

(2) Factors concerning the Implementation Process

N/A.

3-4 Conclusion

The Project was the first educational project that the Japanese government implemented in Africa. The outputs of system development of INSET and quality improvement of science and mathematics education (especially improvement of teaching methods) were accomplished and thus, the project was terminated with success. The operation methods of the project can be a model to other projects in aspects of the estimation of the beneficiary country's ownership and establishment of sustainability through the introduction of "principal of beneficiary burden" which embodied the spirit of self-reliance.

3-5 Recommendations

The recommendations to the project are as follows.

(1) As the project was implemented making only nine among seventy districts as its target regions, the overall goal "capability of the young Kenyans in Mathematics and Science is upgraded" has not accomplished yet. Therefore, it is necessary to expand the INSET system developed in this project to a national level and to continue its activities.

(2) For the development of the project in the future, it is necessary to consider the self-reliance of the Kenyan side maximally, and the Kenyan government must take measures to assure necessary personnel, to increase budget allocation and to offer facilities.

3-6 Lessons Learned

(1) The project adopted a gradual training system from central to regional teachers, as its training implementation system (Cascade System) and the efficiency of management and effects differ by region with the difference of the number of teachers, capability of training management and regional conditions. In case of adopting the Cascade System for the future, it is necessary to consider the conditions of each region and to improve a model flexibly.

(2) To establish sustainability, it is necessary to sincerely contemplate and implement self-reliant support. This project could be an ideal reference for future technical cooperation projects because of the following reasons which gained respect for the ownership and partnership of the project. The project implementation was led by Kenya and the training cost was shared by the beneficiary.

(3) In case target regions are overlapped, the linkage of JOCV and project activities has a certain significance gained through exchanging information at classroom and school levels, and sharing experiences as the effects of project activities are enhanced. However, there are many issues to cope with such as the lack of explanation to volunteers in advance and of the improvement of their quality.

(4) Including monitoring and enhancement (M&E) in the project activities makes the smooth and effective project implementation possible. For that purpose, it is necessary to develop the indicators and methods of M&E and to improve the quality of evaluators.

(5) It is necessary to consider the situation of the beneficiary country in order to promote the achievement of training to science and mathematics teachers and to improve the quality of education. It is necessary to organize textbooks and introduce teaching methods easily attainable at any environment.

(6) In order to implement appropriate INSET in addition to the research on the contents of subjects and teaching methods, quality improvement of education officers, inspectors, trainers and managers is also important.

3-7 Follow-up Situation

"Strengthening of Mathematics and Science in Secondary Education Phase 2" has been implemented to the entire nation of Kenya and neighboring countries in Africa since July 2003.