

# Terminal Evaluation

## Asia

### 1. Outline of the Project

**Country:**

Republic of Indonesia

**Project title:**

Project for Science and Mathematics Teaching for Primary and Secondary Education (IMSTEP)

**Issue/Sector:**

Education

**Cooperation scheme:**

Project-type Technical Cooperation

**Division in charge:**

First Technical Cooperation Division,  
Social Development Cooperation Department

**Total cost:****Period of Cooperation**

1 October 1998 - 30  
September 2003

**Partner Country's Implementing Organization:**

Directorate General of Higher Education (DGHE)

**Supporting Organization in Japan:**

Ministry of Education, Culture, Sports, Science and Technology (MEXT),  
Tokyo Gakugei University, Sizuoka University, Gunma University,  
Utsunomiya University

**Related Cooperation:**

Grant Aid

### 1-1 Background of the Project

In the "National Development Plan (PROPENAS)" of the Republic of Indonesia, improvement of the quality of human resources has been put high on its agenda. Especially, the reinforcement of science and mathematics education has been regarded as indispensable for its human resource development, in line with the progress of scientific technology.

Under these circumstances, the Indonesian government requested the Japanese government for a project-type technical cooperation in order to improve the quality of science and mathematics teaching in its primary and secondary education, through quality improvement of education and reinforcement of management system at the respective departments of education at Indonesia University of Education (UPI), State University of Yogyakarta (UNY) and State University of Malang (UM). Upon the request, "Project for Science and Mathematics Teaching for Primary and Secondary Education (IMSTEP)" was commenced on 1 October 1998.

### 1-2 Project Overview

The project implemented activities such as enhancing the operation and management systems at the departments concerning science and mathematics education at UPI, UNY and UMA, to improve the capabilities of teachers, to monitor target elementary and junior high schools, and to implement appropriate training courses, with the aims to produce more competitive graduates. Such graduates are expected to contribute to the improvement of primary and pre-secondary education in Indonesia.

#### (1) Overall Goal

Output of the project are extended to other teacher training institutions in Indonesia.

#### (2) Project Purpose

Graduates from three universities improve lectures at school.

### (3) Outputs

- 1) Quality of undergraduate education at the three universities is improved.
- 2) Degree and/or non-degree programs for in-service teachers are improved.
- 3) Administrative and management systems of the three universities are strengthened.

### (4) Inputs

Japanese side:

Long-term Experts	9	Equipment	124 million yen
Short-term Experts	36 (59 in total)	Local Cost	714 million yen
Trainees received	37		

Indonesian Side:

Counterparts 77

Land and Facilities

Local Cost 4,721 million Indonesian rupiah (approx. 64 million yen)

## 2. Evaluation Team

**Members of Evaluation Team** Team Leader: Eiji INUI, Director, First Technical Cooperation Division, Social Development Cooperation Department, JICA  
Science and Mathematics Education: Takashi SHIMOJO, Professor, Tokyo Gakugei University  
Educational Administration: Koji TOYAMA, Professor, Research Center for Higher Education, Kanagawa Institute of Technology  
Evaluation Planning: Miyako KOBAYASHI, First Technical Cooperation Division, Social Development Cooperation Department, JICA  
Evaluation Analysis: Shinichiro TANAKA, PADECO Co., Ltd.

**Period of Evaluation** 23 March 2003 - 9 April 2003  
(Evaluation Analysis: 19 - 24 January, 2 - 7 March)

**Type of Evaluation:** Terminal Evaluation

## 3. Results of Evaluation

### 3-1 Summary of Evaluation Results

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#### (1) Relevance

Considering the current status of education in Indonesia and the aid policies of Japan, it was appropriate to have tackled teacher training in this project. Also, in the Indonesian policies, quality improvement of primary and secondary education through improvement of teachers' capabilities has been prioritized, as described in the General Framework of National Policies (GBHN) (1999 -2004) and the National Development Plan "PROPENAS (2000 - 2004)." "The Forth Country-Focused Aid Studies Report for Indonesia (JICA 2000)" also prioritized the upgrading of the quality of teachers.

The educational methodology which the project promoted (student-centered, experiment-introduced, and process-oriented), were very much consistent with the competency-based curriculum, which is scheduled to be implemented in 2004 by the Indonesian government.

## (2) Effectiveness

The outputs of the project have contributed to the achievement of project purpose. It can be expected that the concerned departments of the three universities will produce more competent graduates. It was confirmed that the student-centered, experiment-introduced, and process-oriented teaching and learning methods, under which the students were taught in the pilot programs, were effective. While there remained room for quality improvement, the project can be considered to have contributed to the establishment of foundation to improve education.

## (3) Efficiency

Inputs of the project were implemented smoothly for the most part. Judging from the number of outputs and the improved performance of students, the project was very effective. The project produced many publications (over 200 titles in total, which includes abstract of lectures, common textbooks, textbooks for each university, instructions for experiments, operating manuals for equipment, etc.) in a limited period, and they have actually been utilized. The implementing system of the project consisted of the vertical "working group" in each department, and the horizontal "task team" across departments, and they contributed to the effective implementation of activities. On the other hand, some counterparts had complaints that some Japanese experts were not specialized in science or mathematics education; that the dispatched period of the experts tended to concentrate on the holidays of Japanese universities, which was too short; and that the number of the dispatched experts in certain departments were too few or too many. Also, there has been a delay in development of common textbooks for the fiscal year of 2002 and onward.

## (4) Impact

In addition to the expected positive impacts of outputs being shared with nine educational universities (including the former teacher-training college, IKIP), by sending each university 20 copies of textbooks, academic journals and newsletters, some unexpected positive impacts were observed: (a) project outputs shared by universities other than the ones mentioned above (15 universities were confirmed during the final evaluation of the project), (b) reinforced linkage between universities and local schools (junior and senior high schools) through the pilot programs, and (c) linkage formed with the educational bureaus of local governments (training for teachers at regency level, implementing framework, etc.).

## (5) Sustainability

From the perspective of activities of tertiary educational institutes, the project will continuously upgrade lessons and pilot programs. As mentioned above, the student-centered, experiment-introduced, and process-oriented teaching and learning methodology, which the project promoted, was consistent with the competency-based education which was to be introduced by the Indonesian government in 2004. Counterparts have accumulated knowledge and hands-on experiences on the methodology, and leaders are also to be fostered. DGHE and the head of each department expressed the willingness to allocate funds to continue the project activities. However, it has to be noted that the "Competency Based Curriculum (CBC)" will be introduced in 2004. (After the full introduction of it, the project is expected to respond to the request from local schools, by such means as providing advice.) However, a systematic framework for the in-service teacher training under the decentralization have not been developed or offered. As such, from the perspective of extension of training for teachers, especially in local areas, there are a few unpredictable points.

### **3-2 Factors that Promoted the Realization of Effects**

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#### (1) Factors Concerning the Planning

As the project put importance on the collaboration between universities and local schools through pilot programs, it is to be confirmed that the teaching methods of student-centered, experiment-introduced, and process-oriented are effective both in the lessons and practices at universities and target schools of the pilot programs for upgrading teaching methods and learning quality.

#### (2) Factors concerning the Implementation Process

Both "working group" and "task team" functioned as the implementing organizations of the project, which contributed to the smooth implementation of the project activities.

### **3-3 Factors that impeded realization of effects**

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#### (1) Factors Concerning the Planning

The project purpose was: "Graduates from three universities improve lectures at school." It is difficult, however, to improve the contents of education at a four-year college and produce many graduates within the limited implementation period (5 years). The initial project purpose set at the planning stage was somewhat problematic in feasibility and its measurement. Thus, in this

evaluation, both the Japanese and the Indonesian sides interpreted the project purpose to be: "Improve the capabilities of the three universities to produce graduates with high quality." This had been the mutual understanding among those concerned in the project. From this perspective, the project could be evaluated as having accomplished its realistic project purpose.

## (2) Factors concerning the Implementation Process

- 1) Some problems on efficiency were pointed out, such as the fact that the dispatched period of the experts tended to be concentrated on the holidays of Japanese universities since many of the experts were employees of Japanese universities, and that their specialties were not necessarily education of science or mathematics.
- 2) Due to insufficient communication between the Indonesian side and the Japanese side, the process of developing textbooks was changed in the year of 2002, which resulted in the delay in development of common textbooks.

## 3-4 Conclusion

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The project has contributed efficiently and effectively to the upgrading of science and mathematics education in Indonesia. Both Indonesian and Japanese sides agreed that the project purpose would be accomplished by the end of the project.

## 3-5 Recommendations

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- (1) The project is requested to prepare a basic plan for the follow-up activities of the project, which includes the duration, process, scale of input, the implementation date, piloting activities, and support for formation of networks for teacher training at a local level. The plan shall be submitted to JICA Indonesia Office by the end of July.
- (2) As for the delay in developing common textbooks, both the Indonesian and the Japanese sides need to reconfirm the current status of the progress, and agree on the procedures for quick recovery from the delay.
- (3) Though all the equipment and materials procured under the project have been registered in the inventory, contact information seems to be insufficient. Inventory needs contact information to cope with malfunctioning of equipment that cannot be fixed by the faculty.
- (4) DGPSE (Director General of Primary and Secondary Education) of MONE (Ministry of National Education) has not been informed of the project progress since the mid-term evaluation. Though DGPSE is not a primary counterpart institution at the central government, the project's links to the directorate should be reestablished for the remaining period.
- (5) It is recommended that concrete plans be developed to disseminate the outputs of the project to all the departments of the universities.
- (6) In order to set clear indicators to measure the effects of the pilot project, it is recommended that control groups/classes be set up and baseline and post-piloting survey on both pilot classes and control classes be conducted.
- (7) Each faculty has distributed a questionnaire to former IKIP universities to ask for their perception regarding the outcomes of the project. Response from the universities, however, had not been made available at the time of the final evaluation. The response needs to be analyzed to further optimize the activities and outputs of the projects.
- (8) It was confirmed that DGHE would allocate funds for three years after the termination of the current JICA. In addition, the Indonesian government should allocate an appropriate budget to the pilot programs and the maintenance of equipment.
- (9) After the decentralization, teacher training will be conducted primarily by the prefectural education bureaus, but the institutional framework has not yet been developed or offered. It is recommended that a collaboration system of concerned educational organizations be established for the implementing of training, and a model guideline for systematization be prepared.
- (10) In order to foster teachers who can implement the new "competency-based curriculum," it is recommended that universities develop teaching methods in line with this curriculum.
- (11) It is effective to implement national seminars on science and mathematics education because they can be a venue for exchanging knowledge and experiences in this field. It is recommended that the Ministry of National Education hosts and finances an annual seminar.
- (12) It is recommended that universities and local schools implement well-balanced educational cooperation through "upgrading educational quality" and "expanding the number of teachers," as the school enrollment ratio still remains low even at the junior high school level, whose education is compulsory.

### **3-6 Lessons Learned**

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(1) The collaborations "among universities" and "between universities and local schools" are very effective for both groups. It is recommended that universities develop outcomes that are directly connected to the local schools, and make considerations to enhance the consciousness of their involvement in upgrading primary and pre-secondary education.

(2) The project made both "working group" and "task team" the implementing organizations, and implemented activities with both horizontal and vertical structures. This made the effective management possible. This approach could also be applied in other similar projects.

(3) It is recommended that a project develop outputs based on what has already been utilized in actual classes in order to enhance the practicality of its activities.

(4) Some problems, such as the timing for dispatching experts, were pointed out in the project. In order to prevent such problems, it is recommended a domestic supporting system be developed, which involves not only universities but also other concerned parties (former Japan Overseas Cooperation Volunteers, educational committees, classroom teachers, consultants, etc.) at the preparation period of a project.

### **3-7 Follow-up Situation**

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Based on the above recommendations, a two-year follow-up cooperation has been implemented since 1 October 2003, and is to last until 30 September 2005. In the follow-up cooperation, discussions were held with DGPSE of MONE, and as a result, a joint training program among universities will be commenced in January 2004. The purpose of this is to upgrade the quality of education, which was about to be realized during the original project cooperation period, as well as to further diffuse and systemize the collaboration (pilot programs) between universities and schools on site. The efforts are made to catch up with the schedule for developing common textbooks by reviewing the operation management system.