

Overview of Terminal Evaluation Survey Results

Date: March 7, 2008

Dept. in charge: Basic Education Team 2, Human Development Dept.

| 1. Outline of the Project | |
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| Country: Republic of Uganda | Project title : Secondary Science and Mathematics Teachers' Project (SESEMAT) |
| Issue/Sector: Basic Education | Cooperation scheme : Technical cooperation project |
| Division in charge: Basic Education Team 2, Group 1, Human Development Dept. | Total cost: 198 million yen |
| | Partner Country's Implementing Organization: Ministry of Education and Sports (MOES) |
| Period of Cooperation (R/D): August 3, 2005 3 years from August 3, 2005 to August 2, 2008 | Supporting Organization in Japan: N/A |
| | Related Cooperation: N/A |
| <p><u>1-1 Background of the Project</u></p> <p>Since the introduction of the Universal Primary Education (UPE) policy in 1997, the net enrollment ratio of primary schools in Uganda has risen to around 90%, and the number of pupils attending primary schools has jumped from 2.9 million before UPE to 6.9 million in 2004. As a result of the subsequent implementation of the Universal Post Primary Education and Training (UPPET) policy in 2007, secondary schools are now forced to accept considerably larger numbers of students who have completed primary education and thus urgently need to expand both quantitatively and qualitatively.</p> <p>Secondary school students' performance in mathematics and science is at a very low level in Uganda. While only 10 to up to 20% of students fail first-semester final exams in subjects other than math and science each year, 40 to nearly 60% of students fail math and science tests. The Ugandan Government, which aims for economic growth through the promotion of science and technology, took this situation seriously and began implementing measures to strengthen mathematic and science in secondary education.</p> <p>Many of the problems in secondary-level math and science education arise from the poor quality of teachers, many of whom are taking teacher-centered and theory-centered approaches without sufficient knowledge of the subjects they are assigned to teach. Also, secondary level teachers are given no opportunities to enhance their teaching skills and knowledge on a continuouscontinuous basis due to the absence of in-service training designed for them.</p> <p>In the face of these challenges, this project aims to improve the quality of teachers through the implementation of in-service education and training (INSET) for in-serviceservice math and science teachers in secondary education. In addition, this project intends to strengthen a support system for</p> | |

teachers who have attended INSET by educating school principals and education administrators in math and science education and improve the overall environment surrounding secondary-level math and science education by institutionalizing the in-service training of teachers.

1-2 Contents of Cooperation

(1) Project Purpose

(i) By the end of the project:

Teaching ability of math and science teachers at secondary level of pilot districts will improve.

(ii) After the cooperation:

Secondary school students' achievement in math and science will improve in pilot districts.

(2) Outputs

(i) Secondary-level math and science teachers and the trainers of teachers training institutes of pilot districts complete INSET programs as prescribed.

- 1) National Trainers (NTs) will be employed.
- 2) Training for NTs will be held in Japan and/or a third country.
- 3) Baseline study on math and science education and teachers' education will be conducted.
- 4) Training materials, manuals, etc. will be developed.
- 5) Trainers will be selected from in-service teachers in pilot districts.
- 6) District Trainer (DT) training will be held in the capital city.
- 7) District training will be conducted.
- 8) Monitoring and evaluation will be conducted.

(ii) School and parental support for teaching and learning math and science is enhanced.

- 1) Training will be conducted for secondary school principals, Chairmen of School Management Boards, and heads of PTAs.
- 2) Sensitization workshops on math and science education will be conducted for District Education Administrators of pilot districts.
- 3) Newsletters will be issued to publicize the project's activities.
- 4) Lesson practice contest will be organized.

(iii) INSET will be institutionalized

- 1) National INSET Center will be established in Uganda's capital city Kampala, and District INSET Centers in seven locations within pilot districts.
- 2) National and District INSET Centers will be provided with equipment necessary for conducting INSET.
- 3) Teaching guidelines for secondary school math and science teachers will be developed.
- 4) Concept paper on teachers training will be prepared.

1-3. Inputs

Japanese side:

- Dispatch of experts
 - Long-term (INSET management: 1 person x 3 years)
 - Short-term (third-country experts, etc. from Kenya: 8 persons in 2008, 13 persons in 2006, 8 persons in 2007)
- Receiving of trainees
 - Training in Japan (1 person from NC in 2005, 2 persons from MOES and 1 principal in 2006, 1 person from MOES, 1 principal, and 1 Director from Masaka District Education Board in 2008)
 - Overseas training: third-country training in Kenya (math/science teachers, DTs, etc. - 15 persons in 2005, 8 in 2008, 10 in 2007), On the Job Training (4 NTs in 2005, 8 NTs in 2006).
 - Overseas training: 24 stakeholders of the project (7 NC staff and 17 prizewinners of Lesson Practice Contest) participated in individual training at SEAMEO-RECSAM (Southeast Asian Ministers of Education Organization-Regional Center for Education in Science & Mathematics).
- Project Cost

Unit: 1,000 yen

| | 2005 | 2006 | 2007 | Subtotal |
|---|--------|--------|--------|----------|
| Overseas project activity/activity cost | 55,115 | 40,424 | 33,501 | 129,040 |
| Provision of equipment | 11,472 | 0 | 1,450 | 12,922 |
| Carry-on equipment | 1,642 | 245 | 0 | 1,887 |
| Country-specific training | 1,122 | 3,144 | 3,563 | 7,829 |
| Other | 510 | 2,032 | 0 | 2,542 |
| Total | 69,861 | 45,845 | 38,514 | 154,220 |

*FY2007 figures are estimate values as of the end of March 2008.

*Expenses associated with the dispatch of experts are not included.

Ugandan side:

- Salaries and allowances for NTs.
 - Lodging and transportation costs of INSET participants.
 - Allowances for DTs.
 - Facilities for National and District INSET Centers.
 - Utility costs
 - Project expenses
- Budget for expanded programs: a total of 928.8 million shillings (about 62 million yen) for three years, of which 538.8 million shillings (about 36 million yen) will be appropriated from counterpart fund and 390 million shillings (about 26 million yen) from the balance of debt relief.

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| 2 . Outline of Evaluation Study Team | | | |
| Members of Evaluation Team | Leader | Takahiko SUGIYAMA | Kenya SMASSE Project Phase-II expert |
| | Education evaluation | Tatsuhiro MITAMURA | Basic Education Team 2, Group 1, Human Development Dept, JICA |
| | Evaluation analysis | Takeshi SEKIYA | Crystal Intelligence Inc. |
| Period of Evaluation | Feb. 2, 2008 to Feb. 17, 2008 | | Type of evaluation: terminal evaluation |
| 3 . Outline of Evaluation Result | | | |
| <u>3-1 Verification of Outputs (results, degree of achievement of overall goal and project purpose)</u> | | | |
| (1) Outputs of the Project | | | |
| <p>Output 1: Secondary-level math and science teachers and the trainers of teachers training institutes of pilot districts complete INSET programs as prescribed.</p> <p>Almost all activities have been carried out as scheduled.</p> <p>NTs and DTs, the core participants of INSET, are deemed to have acquired certain capacities, and there was a positive transformation of attitude in teachers who attended INSET. Although the actual number of INSET participants fell short of the target of 400, it is significant that high-quality training programs were carried out as scheduled and motivated teachers attended INSET on a continuous basis without being paid travel expenses and other monetary incentives.</p> <p>Output 2: School and parental support for teaching and learning math and science is enhanced.</p> <p>Activities were carried out to sensitize District Education Board, principals, DMC members, and other personnel on math and science education and give them guidance on sustainable training management. The pilot districts were able to operate the 3rd training cycle without financial assistance from the central government. Lesson Practice Contest contributed to the dissemination of ALEI (Activity, Learner-centered, Encouragement and Improvisation) approach and the informing of project activities. It also led to the discovery of excellent math and physics teachers.</p> <p>Output 3: INSET will be institutionalized.</p> <p>National INSET Center was established in the capital city. Tororo/Butaleja Districts now have one District INSET Center, and Masaka District has two. Equipment and supplies were being utilized and managed properly. The Teaching Guideline, which was developed as part of the</p> | | | |

project, was distributed nationwide by the MOES, which contributed to the understanding of the ALEI approach.

(2) Project Purpose

The lesson observation index, one of the indicators to measure the accomplishment of the project purpose, registered 2.46, surpassing the target of 2.3. Also, the student's participation index exactly met the target of 1.8. It was observed that teachers were asking questions to students and actively incorporating experiments and other activities. Students seemed to enthusiastically respond to these new approaches. Although there remain room for continuous qualitative improvement, judging from how lessons are being transformed by teachers who attended INSET, it is highly likely that the project purpose will be accomplished by the end of the project.

(3) Overall Goal

Based on the record of activities, it was verified that INSET sessions had been carried out as originally planned. Transformation in teachers' attitude was confirmed through various indicators. Also, it was observed that trained teachers were endeavoring to improve classroom practices and adopt more student-centered lessons in line with the ALEI approach. During interviews, students responded that they enjoyed experiments and other activities and said that the class contents were easy to understand, verifying the accomplishment of the objective "students' interest level increases."

In view of the above, the hypothetical process flow of "implementation of INSET transformation of teachers' attitude improvement of classroom practices by teachers increase in students' interest enhancement of academic achievement" is becoming reality. Thus, it is likely that continuous effort will lead to the accomplishment of the ultimate goal of "enhanced academic achievement."

3-2 Summary of Evaluation Result

(1) Relevance: very high

The Ugandan president, in his 2007 policy speech, gave priority to the strengthening of math and science education in secondary education. With the implementation of the Universal Post Primary Education and Training policy while math and science are becoming mandatory subjects in national achievement test, the importance of the SESEMAT project is becoming increasingly recognized. Also, considering the fact that Japan's accumulated experiences and know-how are effectively utilized in the cooperation, the relevance of this project is assessed as very high.

(2) Effectiveness: high

Core personnel of the training programs have been steadily fostered, and a training management system at district level has been established. Teachers, who attended INSET, have changed their attitude and begun teaching classes according to the ALEI approach. Although continuous

improvement is still needed, the effectiveness of the project is deemed high, as the project purpose is likely to be accomplished in the near future.

(3) Efficiency: moderate

Although challenges remain in the number of INSET participants and the degree to which the knowledge and techniques taught during INSET stay with the trainees, the project is fully utilizing the intellectual, human, and physical resources of the Kenyan wide-area SMASSE project, as well as local resources. Because this is a pilot project and will require initial investment, its efficiency is assessed as moderate.

(4) Impact: high

As one of the positive impacts of this project, students' interest in math and science classes is beginning to increase. Also, expanded programs covering 12 districts have been carried out smoothly since May 2007. Thus, the overall impact of this project is assessed as high.

(5) Sustainability: high

Since Uganda's science and math promotion policy is a part of the government's long-term development plan, governmental support for this project will most likely continue in the future. DMCs were able to carry out independently the 3rd cycle INSET without financial assistance from the central government, and expanded programs are also conducted independently in all localities. Eight fulltime NTs have been assigned to work as core trainers of INSET, and the overall implementation system and capacity are strengthening. In view of the foregoing, the sustainability of this project is deemed high.

3-3 Factors that promoted the realization of effects

- A series of math and science promotion programs implemented in Uganda.
- Clear attitude of top officials of MOES and project owner.

3-4 Factors that impeded the realization of effects

- Local customs, in which people take it for granted to receive lodging allowances and other monetary compensation for participating in training and workshops organized by government agencies and donor organizations.
- Lack of awareness among teachers of their role as clerks.
- Additional burden for teachers, such as lesson preparations, without extra incentives.
- Price hike in oil and commodities due to riots in Kenya.
- Overlapping timing of INSET and scoring of national academic achievement test.

3-5 Conclusion

Based on the above evaluation results, the Study Team has made the following assessments:

- 1) Training of NTs as the core personnel of INSET is progressing steadily. Also, training systems to foster DTs and improve the capacities of math and science teachers through the cascade

system of INSET have been established for the most part.

- 2) Independent administration of district-level training programs is being realized, and expanded programs are also in progress. The sustainability of this project is deemed high because of Ugandan government's policy to keep strengthening science and math education.
- 3) Further improvements are desired including the upgrading of NTs' monitoring/evaluation capacities, establishment of a grassroots monitoring system at district level, and continuation/expansion of events (such as Super Science Teacher Contest) to motivate teachers.
- 4) Understanding the concept of the ALEI approach and trying it on a temporary basis would not be sufficient. On-going practice of ALEI methods in classrooms is the key to improving the quality of classes and students' learning abilities in order to enhance student's academic achievement.

3-6 Recommendations

(1) Institutionalizing the INSET system at national and district levels

Continuous capacity building of teachers through systematic training is essential for the improvement of the quality of education. Thus, INSET needs to be institutionalized as a national program by first appropriating funds on a permanent basis as part of the ordinary expenses of MOES. Although the current INSET programs are sufficiently financed by the project's counterpart fund, a stable financial foundation needs to be established as a specific budget item in order to institutionalize the INSET system on a sustainable basis.

In addition, to ensure that the Ugandan side can independently continue and further develop INSET, district-level INSET implementation systems, as well as the function of DMC, need to be strengthened. Also, school management capacities of principals, who are in the position to support teachers at cluster level, need to be improved.

While collection of funds necessary for conducting district INSET is improving, the collection rate from private schools is still extremely low. Considering the possible expansion of the project area in the future, MOES is advised to take measures to increase the collection of INSET funds from private schools in order not to generate a sense of inequity in public schools.

(2) Further internalization of ALEI-PIEI approach for qualitative improvement of education

In this project, educators at national and district levels were able to deepen their understanding of the ALEI-PIEI (Activity, Learner-centered, Encouragement and Improvisation - Planning, Implementation, Evaluation and Improvement) approach through three cycles of INSET. As a result, we observed a transformation in teachers' attitude and their efforts to practice lesson innovation by formulating lesson plans, introducing experiments, and adopting other methods. In order for this kind of innovative practices to take root among teachers thereby upgrading the quality of education, the impact of the project must spread and evolve from hands-on activity to minds-on activity, as well as from lesson innovation by teachers to the improvement of learning processes by students.

(3) INSET strategies after 3rd cycle

Although there is a general consensus among stakeholders that INSET needs to continue after the 3rd cycle, no concrete strategies have been established so far. Some DTs and NTs point out that future INSET should be centered around teachers' needs and focus more on the contents of each subject. At the same time, teachers are feeling difficulties in practicing the ALEI-PIEIE approach while having to cover the prescribed syllabus to prepare students for national exams, which is one of the impeding factors to the practice of ALEI-PIEIE.

To solve these structural problems of the ALEI-PIEIE approach, the MOES should, from a long-term perspective, consider redesigning the contents of national examinations to be more consistent with the approach that emphasizes the importance of students' logical thinking, and extracting important topics based on the systematic analysis of secondary-level math and science curriculums to develop corresponding INSET curriculums.

(4) Strengthening of M & E: maintaining the quality of INSET and FU on teachers' practice

Implementation of even more appropriate M & E is necessary for the evolution of the ALEI-PIEIE approach. In lesson observation, in particular, adoption of ALEI-PIEIE tends to be evaluated highly even if it is practiced on a superficial/formal level. However, NTs and DTs need to deepen their understanding about good classroom practices and be observed and evaluated based on a more appropriate evaluation system and standards. To realize this, NTs and other personnel, who have had first-hand experience in "good lessons" while participating in training at Malaysian RESCAM and/or in Japan, should take initiative in discussing and examining the effective evaluation system and standards for lesson observation.

While NTs are responsible for effective M & E for the maintenance of INSET quality, DTs and subject head teachers need to conduct daily monitoring to follow up on teachers' practice of ALEI-PIEIE for its deepening as mentioned above and to observe classes for giving feedback to teachers.

3-7 Lessons Learned

(1) Commitment-based participation to pilot project

Usually, it is difficult for the beneficiary side to grasp the entire picture of a pilot project at the beginning. Mutual understanding between the donor and the beneficiary deepens while facing and solving together various problems and conflicts arising from the implementation of the project. In expanding the pilot project, the beneficiary side should make their own decision to take part in the expansion based on their experiences during the pilot phase, as well as their thorough understanding of the cost, responsibility, and benefits associated with their participation in the expanded project.

(2) Establishing high-quality INSET and meeting the needs of teachers

Maintaining the quality of INSET is the lifeline of this project. Therefore, it would not be necessary

to increase the number of INSET participants immediately at the expense of the quality or sustainability of INSET. During the pilot phase, it is more important to establish a system for implementing high quality training than to have the target number of teachers as trainees. After taking care of the quality aspect as the top priority, the Ugandan side should examine the concerns and needs of teachers so that more of them would participate in INSET.

(3) Comprehensive approach

In order to improve the quality of education, it is important to raise the interest of people involved with schools, such as principals, teachers, students, and parents. This project not only trained teachers but also carried out various activities, including organizing of Excellent Classroom Practice Contest, demonstration of exemplary science classes, and development of Science Jobs Guide, to illuminate these people. This kind of comprehensive approach is important in order to produce the desired quality of education as an actual outcome.

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