Country Name	Capacity Development of Learning Resources Centers (LRCs) for Science Education utilizing ICT
Jordan	

Ⅰ Project Outline

Project Cost	218 million yen
Project Period	March 2006 – February 2009
Implementing Agency	Directorate of Training, Qualification and Supervision(DTQS) Directorate of Curricula and Textbooks(DCT)
Cooperation Agency in Japan	NA
Related Projects	**Assistance by other foreign donors :** USAID : Support to the implementation of 5 year plan on ErfKE by the Government of Jordan. (Support on the curriculum development of newly introduced secondary education course and capacity development of teachers through training of teachers, Support to schools though LRC as a resource centre as well as information exchange centre, Support to the information services with portal website and environmental settings for information sharing.) Microsoft : Provision of training for teachers on curriculum development for multimedia teaching materials through helpdesks at QRC, Provision of trainings program for college students Intel Program : Implementation of essential training courses for teachers on new educational theory, and teaching methods using new technologies Note : ErfKE: Education Reform for Knowledge Economy QRC: Queen Rania Al Abudullar Educational Technology Center LRC: Learning Resource Center
Background	In Jordan, the government had vigorously pushed forward on the human resources development to achieve "knowledge economy", and implemented educational reform focusing on the quality improvement in education through organizational reform, infrastructure development of educational institutions, the development of learning contents in accordance with the societal change and the encouragement of child education. However, there were several concerns. Since the proportion of young adults in an entire population was very high, the number of teachers was very much in short supply. And in many cases, teachers had taught by traditional didactic manner in the classroom. Since 1980's, the government of Jordan had introduced the teaching methods using Information and Communication Technology (ICT) to conduct effective education. However, it tended to focusing on the teaching of software of Information Technologies (IT), not on the effective teaching methods using the ICT. At the LRCs, established in each district as a field level center of training for teachers with technical supports, as well as at the QRC, its national level center, effective training of teachers using ICT had not been carried out. In order to further improve the capacity of QRC and LRCs, the government of Jordan requested the government of Japan to provide the technical cooperation project.

Inputs	Japanese Side	Jordan Side
	1. Experts:10 Short-term experts (47.3MM) 2. Trainees received: 12 persons 3. Equipment: NA 4. Local Cost: NA	1. Staff allocated: 23 persons 2. Land, facility and project office Provision of office space for Japanese experts at the QRC

Project Objective	Overall goal: Teachers for basic education in the target areas implement effective science education utilizing Information and Communication Technology (ICT).
	Project Purpose: QRC and Pilot LRCs/Field Directorates (FDs) (Amman, Karak, Irbid, Salt) are capable of functioning as the centers to develop the capacities of teachers that implement effective science education utilizing ICT. (Grade 7-10)
	Outputs: 1. Institutional framework of QRC to develop the capacity of trainers and teachers who can conduct effective science education is established. 2. Teachers' training courses to implement effective science education are developed and maintained at QRC. 3. Capacities of core trainers* who conduct teachers' training courses for effective science education are developed at QRC. *"Core trainers" are 14 trainers (4 QRC staff and 10 teachers) that receive technical transfer directly from Japanese experts at QRC. 4. Teachers and staff of pilot LRCs/FDs develop the capacity to conduct teachers' training courses for an effective science education for teachers and staff of trial schools.

Ⅱ Result of the Evaluation

Summary of the Evaluation

In 1980's, the government of Jordan introduced the basic education methods using ICT in accordance with the needs of school teachers. However, teachers tended to focusing on the teaching of IT software itself, not on the effective teaching methods itself. Therefore, the government of Jordan developed the effective teaching methods of science education utilizing the ICT through this project. It was expected that 14 core trainers trained by this project train other teachers using this effective teaching method in the cascade manner.

The LRCs, had been established under the FDs of each district since 1980's, and QRC, established under the Ministry of Education in 2001 as the national center of LRCs were expected to serve as the training and supporting institutions for capacity development of school teachers. However, sufficient number of staff has not been allocated, and they have not been properly managed. Especially, the QRC which is responsible to supervise all LRCs as well as to promote the educational technology using ICT has not had enough management capability, nor had been given the discretion of training programs including budget allocation. As a result, the effective teaching methods of science education utilizing the ICT have not been systematically progressed.

This project has somewhat achieved the project purpose. By developing and consolidating the training materials, as well as conducting the trainings for teachers, the capacity of teachers who can teach science education using ICT were strengthened. However, since the institutional framework and organizational settings of QRC and LRCs are not established, it is hard to say that QRC and LRCs/FDs have been capable of functioning as the centers to develop the capacities of teachers that implement effective science education utilizing ICT as it is stipulated in the project purpose.

As for the overall goal, it was identified that principals whose teachers were trained by the project and those DTQS had shown the high satisfaction of the performance of those trained teachers. It was also presumed that students in the trial schools in the pilot areas of this project had got more interested in the science as their academic score had been improved.

As for the sustainability, the ICT division of the Ministry of Education has become under the control of the QRC and it can be said that the QRC has been recognized as an educational institution specializing the ICT application. Facilities of LRCs have been well utilized for the training programs in FDs to promote the teaching methods using ICT to other non-targeted areas. While, there are several issues to be resolved in terms of institutional framework and organizational settings for QRC and LRCs. As for the technical aspect, teachers trained by the project have continued working to independently carry out the training program for trainers. There are some problems in information infrastructure such as internet accessibility has not been well equipped in the targeted schools. Since the science teaching method utilizing ICT has obtained a good reputation, a budget for diffusion of the method is expected to be secured. However, considering the deteriorating financial condition of the government, the drastic cut down of the educational budget is assumed. Overall, the project has some problems in structural, technical and financial aspects of the implementing agency.

This project has been highly relevant with Jordan's educational development policy, development needs on the science education using ICT as well as Japan's ODA Policy both at the onset of project and project completion. For efficiency, the project cost slightly exceeded the plan.

In the light of above, this project is evaluated to be partially satisfactory.

1 Relevance

This project has been highly relevant with Jordan's educational development policy (e.g. "to foster qualified human resources who can contribute to the knowledge economy which focused on the technical capacities") as set in the Education Reform for Knowledge Economy (ErfKE-1), development needs (e.g. "science education using ICT", as well as Japan's ODA Policy to provide the qualified education and narrowing regional disparities" both at the onset of the project and project completion.

Therefore, relevance of this project is high.

2 Effectiveness / Impact

This project has somewhat achieved the project purpose. By developing and consolidating the training materials, as well as conducting the trainings for teachers, the capacity of teachers who can teach science education using ICT were strengthened. Self-evaluation by teachers of trainer level themselves has also reaffirmed the positive change. However, in terms of management capacity of QRC and LRCs, only limited progresses have been identified. Originally, it was expected that both the QRC at the central level and LRCs/FDs in the field level have harmoniously worked together to promote the teaching method using ICT in cascade manner. However, training programs have not been conducted in collaboration among both institutions. LRCs have only provided the physical settings, such as the training facilities and equipment. Therefore, it is hard to say that QRC and LRCs/FDs in the pilot area have been capable of functioning as the centers to develop the capacities of teachers that implement effective science education utilizing ICT as it is stipulated in the project purpose.

As for the overall goal, it was identified that principals whose teachers were trained by the project and those DTQS had shown the high satisfaction of the performance of those trained teachers. It was also presumed that students in the trial schools in the pilot areas of this project had got more interested in the science as their academic score had been improved. Furthermore, according to the interviews with DTQS and DCT, it was identified that teaching methods using ICT by this project had been used in non-targeted schools, and in other subjects than science education. And such teaching methods have also been spreading into the neighboring countries through the JICA third-country training program conducted by Jordan "Capacity Development for Science Education Utilizing ICT in Palestine" in 2012.
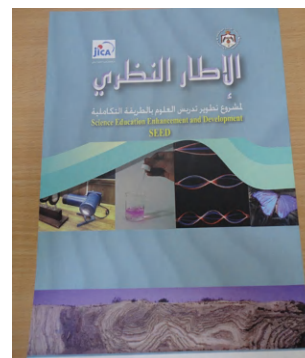
Therefore, its effectiveness/impact of this project is fair.

Class scene of science education
of non-targeted schools

Class scene using the teaching methods
of science education utilizing ICT

Training materials, developed by the project, on teaching methods of science education using ICT

3 Efficiency

While inputs were appropriate for producing outputs of the project and project period was within the plan (ratio against the plan: 100%), project cost slightly exceeded the plan (ratio against the plan: 110%) as personal computers were additionally provided in order to make the trainings of the teaching methods more effective.

Therefore, efficiency of the project is fair.

4 Sustainability

As for the policy aspect, the project has conformed to the government policy of ErfKE-2 (Education Reform for Knowledge Economy) and has played an important role in the educational sector.

As for the structural aspect, the ICT division of the Ministry of Education has become under the control of the QRC and it can be said that the QRC has been recognized as an educational institution specializing the ICT application. Not full-time, but three personnel are assigned to work on the implementation of training programs and promotion of science education using ICT. They have also played an important role to carry out the third-party training program under JICA training scheme. It is very likely that these personnel continue to work on the promotion of method of science education using ICT. FDs of targeted area have also actively promoted the method to other non-targeted areas based in the LRCs of each FD to carry out the training program. While, there are several issues to be resolved in terms of institutional framework and organizational settings for QRC and LRCs. For example, it is not clear what the role of LRC is in the promotion of science education using ICT in relation to the QRC, and training program has not served as the criteria of promotion.

As for the technical aspect, many of teachers and staff trained by the project have continued working to independently carry out the training program for trainers even after the project completion. Although the portal website was constructed by the project, there have been some problems at the non-targeted schools where information infrastructure such as the PCs settings and internet accessibility has not been well equipped. Such problems have also been identified in some of targeted schools where trainer level teachers are working.

Although the effective teaching method has obtained a good reputation and trainers trainings have been continuously conducted, there are some concerns in the financial aspects. Considering the deteriorating financial condition of the government, the drastic cut down of the educational budget is assumed since approval by the Ministry of Education is necessary to acquire a budget.

Overall, the project has some problems in structural, technical and financial aspects of the implementing agency.

Therefore, sustainability of this project effect is fair.

Ⅲ Recommendations & Lessons Learned

Recommendations for the Implementing Agency :

1) In order to promote the teaching method of science education using ICT, it is essential that the QRC should collaborate with LRCs/FDs and continue the training program in cascade manner. However, the QRC has limited management capacity to conduct the training program in collaboration with LRCs/FDs. It is recommended, therefore, that the QRC should practically work together with each LRC/FD in the process of planning, budgeting and managing of training programs and spread the teaching method.

2) Currently, the FD is responsible for the selection of training participants for the training program conducted by QRC. While, the LRC provides the facility for the training program, but its role has not been clearly identified.
   In targeted FDs, there are trainers who can independently carry out training to promote the teaching method to other non-targeted areas in cascade manner and it is considered that human resources are secured. It is recommended, therefore, the QRC should consider the effective utilization of LRCs, such as useful resource centers with sufficient teaching materials and equipment.

Lessons learned for JICA :

1) It has proven to be effective to implement the teaching method using ICT, especially those schools in the remote areas and in deprived areas. It should be noted, however, the implementation of such teaching method should come along with the sufficient infrastructure of information technology. Therefore, it should be obligatory for any schools to have IT infrastructure well equipped before introducing this method.

2) Management capability of the core organizations is indispensable to establish the institutional settings for human resources development as well as to implement the relevant training programs in collaboration of affiliated institutions.
   In this case, the project was not successful to establish the institutional framework as the centers to develop the capacities of teachers that implement effective science education utilizing ICT. This is partly due to the insufficient management capacity of QRC as the core organization. The project should have had the relevant inputs not only to strengthen the technical capacity of those concerned human resources but also the management capacity of core organization.