Saudi Arabia

Ex-Post Evaluation of Japanese Technical Cooperation Project

"The Development and Training Center Project"

External Evaluator : Koichiro Ishimori, Value Frontier Co., Ltd

0. Summary

This project intended to strengthen capabilities to implement training courses for teachers at technical colleges at Development and Training Center (DTC) of Technical and Vocational Training Corporation (TVTC) by developing training courses for teachers at technical colleges, and thereby contribute to improving their knowledge and skills. The objective of the project was relevant to the development policies and needs of Saudi Arabia, as well as to the development policies of Japan. Therefore, relevance of the project is high. Although training courses were developed almost as planned, technology transfer to DTC instructors ended up insufficiently, and consequently capabilities to implement training courses for teachers at technical colleges were not well strengthened. Besides, improvement of their knowledge and skills is limited due to reorganization[1] of DTC after completion of the project. Therefore, effectiveness and impacts of the project is low. The project period of cooperation and project cost both exceeded the plan and there were problems with inputs of experts and counterparts. Therefore, efficiency of the project is low. Although training for teachers at technical colleges is still prioritized in policy, sustainability of the project effects is low due to reorganization of DTC.

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

1. Project Description

Project location

Laser cutting machine

1.1 Background

Saudi Arabia has the world's largest stock and production of crude oil. Since Saudi Arabia's

[1] DTC has become Technical Trainer's College (TTC) where the equipment procured and the teaching materials developed by the project are still in use, but DTC's key function that the trained counterparts (DTC instructors) provide training for college teachers is not as much fulfilled as the project expected. Please see page 18 for details.

contribution to the nominal GDP was 46.8% in 2004, the national economy was heavily dependent upon oil. At the same time, unemployment among young Saudi Arabians was becoming a growing concern, since foreigners occupied more than half of the jobs while the population of young Saudi Arabians was rapidly increasing. Therefore, the Saudi Arabian government tried to break away from the monoculture economy that was established in the middle of the 1990s and attain multilayered industrial structures by promoting *Saudization.* This involved reversing the trend of jobs being primarily held by foreigners and giving these jobs back to Saudi nationals, thereby mitigating the unemployment issues of young Saudi nationals. In short, it was important for the country to promote industrial development and create employment for Saudi nationals outside the oil industry. Under such circumstances, General Organization of Technical Education and Vocational Training (GOTEVOT, now TVTC) was expected to produce many young Saudi engineers who could contribute to industrial development and employment creation. However, since many teachers of young engineers at technical colleges lacked technical knowledge and skills that could sufficiently meet the needs in each industry, GOTEVOT considered it necessary to produce instructors with such knowledge and skills to teach at such schools. For this reason, in 2002, GOTEVOT established DTC, where instructors provide training for teachers at technical colleges. However, since training programs and equipment were not also sufficiently developed at DTC, the country requested assistance from Japan, which had abundant experience in technical education in order to implement the project.

1.2 Project Outline

Overall Goal		Knowledge and skills of teachers in the target fields at technical colleges are improved.
Project Objective		Capabilities of DTC instructors in the target fields to implement training courses for teachers at technical colleges are improved.
Outputs	Output 1	Skill levels of teachers in technical colleges in the target fields and the needs of human resources in industries are identified.
	Output 2	Training courses for teachers at technical colleges in the target fields are developed.
	Output 3	Training system for teachers at technical colleges in the target fields is developed.
	Output 4	Training courses for teachers at technical colleges in the target fields are managed.
Inputs		Japanese Side: 1. Experts: 17 experts 6 experts for Long-Term, 11 experts for Short-Term 2. 12 Trainees received（12 for Japan） 3. 23 trainees for Third Country Training Programs (total) 4. Equipment 129 million yen 5. Local Cost 25 million yen

	6. Others (incl. dispatch of related missions) 18 million yen Saudi Arabian Side: 1. 14 Counterparts 2. Equipment 1.4 million SAR (approx. 46 million yen) 3. Land and Facilities, Project Office, Utilities 4. Local Cost, Counterpart Salary, Seminars
Total Cost	472.37 million yen
Period of Cooperation	Original period: September, 2004- August, 2007 Extended period: September, 2007- March, 2009
Implementing Agency	Development and Training Center (DTC) of Technical and Vocational Training Corporation (TVTC), which was changed in November, 2007 from General Organization of Technical Education and Vocational Training (GOTEVOT)
Cooperation Agency in Japan	Ministry of Education, Culture, Sports, Science & Technology
Related Projects	NA

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

According to the terminal evaluation for the original project period in 2007, it was too early to judge the likelihood of achieving overall goal, but it was judged that the likelihood of the achievement of this goal would be increased if college teachers were more skilled and knowledgeable. According to the terminal evaluation for the extended project period in 2009, problems with practical use of the acquired knowledge and skills were mentioned, but it was judged that overall goal would be partially achieved through provisions of technical knowledge and skills for teachers at technical colleges and their overall improvement.

1.3.2 Achievement of Project Objective

According to the terminal evaluation for the original project period in 2007, it was judged that achieving the objective by the end of the original project period would be difficult, though the project did produce outcomes such as the improvement of the DTC instructor's skill levels and the development of training courses and equipment. According to the terminal evaluation for the extended project period in 2009, it was judged that the project objective would be partially achieved by the end of the extended project period. Alternatively, the evaluation also pointed out that delays in producing output 3 could negatively affect achieving the project objective.

1.3.3 Recommendations

Recommendations resulting from the terminal evaluation for the original project period in 2007 were as follows: (1) It is necessary to extend the project period to the end of December 2008 for

the electric field, and to the end of March 2009 for the mechanical and construction fields in order to firmly achieve the project objective. (2) It is necessary to deepen mutual understandings between the Japanese and Saudi Arabian sides. (3) It is necessary for the Saudi Arabian side to deploy enough counterparts in the construction field, since numbers in this area fall short, and also to provide support, such as the introduction of appropriate local resources for technical improvement. (4) It is necessary for the Saudi Arabian side to develop facilities and equipment before starting the training courses. (5) It is necessary to start training courses for these teachers as soon as possible. (6) It is necessary to hold regular meetings of the steering committee, and to establish the maintenance and safety committees.

Recommendations resulting from terminal evaluation for the extended project period in 2009 were as follows: (1) It is necessary to start training courses that are planned but not yet implemented. (2) It is necessary to observe safety precautions. (3) It is necessary to consider improving procedures for sending application forms for training programs at these colleges. (4) It is necessary to hand over equipment to the Saudi Arabian side. (5) It is necessary for JICA to issue certificates qualifying counterparts as instructors.

2. Outline of the Evaluation Study

2.1 External Evaluator

Mr. Koichiro Ishimori, Value Frontier Co., Ltd

2.2 Duration of Evaluation Study

The Ex-Post Evaluation Study was implemented according to the following schedule:

Duration of the Study: August, 2011 - June, 2012

Duration of the Field Study: November 11 - December 4, 2011 and February 25, - March 10, 2012

2.3 Constraints during the Evaluation Study

There were limitations in terms of gathering data on the project, since some counterparts were studying abroad at the time.

3. Results of the Evaluation (Overall Rating: D[2])

3.1 Relevance (Rating:③[3])

3.1.1 Relevance with the Development Plan of Saudi Arabia

The 7th Development Plan (2000-2004) at the time the project was planned prioritized the improvement of teaching skills of college teachers and making university education meet the needs of industries under one of six priorities, which was “education.” Meanwhile, GOTEVOT tried to

2 A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

3 ③: High, ②: Fair, ①: Low

train teachers of technical colleges in order to respond to industry needs by producing engineers who were able to start working right away.

The 8th Development Plan (2005-2009) at the time of the project's completion prioritized the supply of national working forces aimed at meeting the needs of industries under one of fourteen priorities, known as "human resources development." The Strategic Plan for Technical and Vocational Training (2008-2030) by TVTC (former GOTEVOT) prioritized the expansion of human resource programs teaching technical and vocational trainees under one of ten priorities, which was "maximizing capabilities of technical and vocational trainees."

Therefore, both the development plan and the sector plan in Saudi Arabia, at the time of the project's planning and completion, prioritized the development of human resources focused on teaching technical and vocational trainees. This project is judged relevant to the national plans of Saudi Arabia.

3.1.2 Relevance with the Development Needs of Saudi Arabia

While GOTEVOT focused on rapidly increasing the number of technical colleges capable of producing Saudi engineers as part of the Saudization policy, training for teachers at these colleges lagged behind. Therefore, the project that was intended to strengthen capabilities of DTC instructors to implement training courses for teachers at these colleges met the Saudi development needs at that time, and the need for the project was judged to be high.

Even after completion of the project, the country continued to promote the Saudization policy, and in fact, Saudization was taking place in occupations of workers such as "technicians," albeit slowly[4]. Besides, the number of these colleges was also still rapidly increasing as a result of this policy[5]. Consequently, training for their teachers was also still behind. Therefore, the project intended to strengthen capabilities of DTC instructors to implement training courses for teachers at technical colleges still met Saudi development needs the time of the project's completion, and the need for the project was judged to be high.

3.1.3 Relevance with Japan's ODA Policy

The Charter on Official Development Assistance (ODA) (2003) before the implementation of the project highlighted the importance of "cooperation for human resources development" to promote sustainable growth as one of its four priorities. The Mid-term Policy on ODA (1999) before the implementation of the project highlighted the importance of "human resources development for building countries" since human resources development and their intellectual support was one of its seven priorities. In addition, the basic policy on ODA to Saudi Arabia emphasized technical

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4 In 2006, Saudi employees in occupation classified as "technicians" were approximately 266,000, which was about 16% of the total employees, while in 2009 there were approximately 282,000 employees in such professions, which was about 16.3% of the total.

5 The number of technical colleges increased from 24 to 36 between 2004 and 2009.

cooperation related to vocational training as one of its 3 priorities, based on "Japan-Saudi Arabia Cooperation Agenda" made in 1998. Therefore, the project that was intended to strengthen capabilities of DTC instructors to implement training courses for teachers at technical colleges met the Japan's ODA policy at that time.

In sum, the project has been highly relevant with the Saudi Arabian development plans, development needs, as well as Japan's ODA policy. Therefore, it relevance is high.

3.2 Effectiveness and Impact (Rating:①[6])

3.2.1 Project Outputs

3.2.1.1 Project Output

1) Output 1: Skill levels of teachers in technical colleges in the target fields and the needs of human resources in industries are identified.

According to the terminal evaluation for the original project period in 2007, it was judged that output 1 was achieved by the end of the period, since indicators 1-1 to 1-3 below were achieved during that time. The ex-post evaluation similarly confirmed, through hearings to the ex-project director, the ex-project manager, experts, and others, that skill levels of teachers in technical colleges in the target fields and subjects necessary for training were identified during the original project period. It also confirmed that output 1-1 and 1-2 were achieved by the end of the original project period. Regarding 1-3, it then confirmed though hearings to Curriculum Design Development that the subjects and their levels, as demanded by related industries, were identified during the original project period. Therefore, indicator 1-3 was achieved, and it is judged that output 1 was achieved.

Indicator 1-1: Skills of technical colleges and their levels are identified through analyses of new curriculum for colleges of technology.

Through experts' analyses of new curriculum for technical colleges during the original project period, contents of lectures and practices, equipment, and their levels at colleges of technology in target fields were identified.

Indicator 1-2: Subjects necessary for training and their levels are identified.

Mechanical: Through expert analyses during the original project period, it was found that two subjects (Welding, and Material Testing) out of the five (CAD[7], CNC[8], Forming Technology, Welding, and Material Testing) that had been planned at the time of

6 ③: High, ②: Fair, ①: Low

7 Computer Aided Design

8 Computer Numerical Control

signing R/D were withdrawn from the course development since it was determined that their levels were high enough.

Electric: Through expert analyses during the original project period, it was found that the levels of the five subjects (PLC[9], Mechatronics, Power Electronics, Drive Technology, and Automatic Control) that had been planned at the time of signing R/D were not high enough, and as a result, they were selected as subjects for course development.

Construction: Through expert analyses during the original project period, it was found that three subjects (Modeling, Surveying, and Drawing) out of the five (Modeling, Surveying, Drawing, Construction Technology, and 3D CAD[10]) that had been planned at the time of signing R/D were withdrawn from course development since their levels were determined to be high enough. Meanwhile, Project Management was newly added since it was considered important.

Indicator 1-3: Subjects and their levels as demanded by related industries are identified

During the original project period, TVTC held special committees in fifteen fields[11], each consisting of approximately ten people, including senior staff at TVTC, related industries, and teachers at technical colleges, and analyzed the needs of related industries. In order to develop the curriculum based on the needs of the industries, TVTC held curriculum development committees consisting of approximately ten people, including the vice-governor of TVTC, heads of special committees, and other related staff, and formulated the National Occupational Skills Standards (NOSS), which has to be followed by about 200 training courses. Special committees and curriculum committees were held on a necessary basis afterwards, reflecting the curriculum development needs of industries.

In sum, it is judged that output 1 was achieved.

2) Output 2: Training courses for teachers at technical colleges in the target fields are developed.

According to the terminal evaluation for the original project period in 2007, it was judged that output 2 was partially achieved since teaching materials were still under preparation while training courses in the target fields were being developed. According to the terminal evaluation for the extended project period in 2009, it was judged that output 2 was mostly achieved since the teaching materials that had been prepared were complete by the end of the period. The

9 Programmable Logic Controller

10 3 Dimensional Computer Aided Design

11 In addition to the mechanical, electric and construction fields under the project, there were 12 other fields, that is, chemical, electrical, printing, automobile, computer, communications, plating, woodworking, barber, welding, sanitation, and sawing.

ex-post evaluation similarly confirmed, through hearings to the ex-project director, the ex-project manager, experts, and others, the contents of the training courses and results of the development of teaching materials. It then confirmed that indicators 2-1 and 2-2 were achieved by the end of the extended project period, though some parts were not achieved during the original project period, and therefore it is judged that output 2 was mostly achieved.

Indicator 2-1: Training courses developed.

Mechanical: Three courses in three subjects (CAD, CNC, and Forming Technology) were developed during the original project period and matched the capabilities of counterparts.

Subject	Course	Period of Development
CAD	3D CAD	During the original project period
CNC	CAM & CNC Milling	Ditto
Forming Technology	Laser Cutting	Ditto

Electric: Although there was a delay in development, due to problems with technical knowledge and communications by both experts and counterparts[12], ten courses in five subjects (PLC, Mechatronics, Power Electronics, Drive Technology, and Automatic Control) and one course in multiple subjects were developed during the original project period. In addition, two courses (Pneumatic, and PLC & Pneumatic) in PLC were additionally developed during the extended project period. However, since Power Electronics, Drive Technology, and Automatic Control were slightly beyond the capabilities of counterparts, counterparts did not have the ability to implement courses themselves by the end of the extended project period, as indicator 2 of the project objective later explicates.

Subject	Course	Period of Development
PLC	PLC Basic	During the original project period
	PLC STEP7	Ditto
	Pneumatic	*During the extended project period*
	PLC & Pneumatic	*During the extended project period*

12 In all but one field, experts were expected to have technical knowledge in multiple subjects, and therefore, it was difficult for them to transfer sufficient technology to counterparts in all subjects. Meanwhile, some counterparts had only an associate bachelor's degree and did not seem to have sufficient knowledge regarding receiving technology transfer. In addition, the chief advisor, or the long-term expert in charge of managing operations of the project who was sent to TVTC, pointed out that there were communication problems in daily operations between experts and counterparts and that JICA and TVTC continuously tried to discuss the problems. However, it was not easy to solve them in the end.

Mechatronics	Mechatronics (1)	During the original project period
	Mechatronics (2)	Ditto
Power Electronics	Power Electronics (1)	Ditto
	Power Electronics (2)	Ditto
Drive Technology	Drive Technology	Ditto
Automatic Control	Automatic Control (1)	Ditto
	Automatic Control (2)	Ditto
	Automatic Control (3)	Ditto
Multi Subjects	Industrial Automation System	Ditto

Construction: Regarding Construction Technology's division of three subjects (Construction Technology, 3D CAD, Project Management), it was difficult to develop a course since numerous construction technologies exist depending on such fields as buildings, houses, roads, bridges, and ports. Therefore, only documents related to numerous construction technologies were collected, and a course was not developed on Construction Technology. Regarding 3D CAD and Project Management, three courses were developed during the original project period, though there was a delay in development due to problems with technical knowledge and communications by both experts and counterparts, as well as a delay in deployment of experts. However, counterparts did not have the ability to implement courses themselves by the end of the extended project period, as indicator 2 of project objective later explicates.

Subject	Course	Period of Development
3D CAD	3D CAD Revit	During the original project period
	3D CAD AutoCAD Architecture	Ditto
Project Management	Project Management	Ditto

Indicator 2-2: Teaching materials developed

Mechanical: Teaching materials for two courses (CAM & CNC Milling, and Laser Cutting) out of the three developed, were formed during the original project period and those in one course (3D CAD) were developed during the extended project period.

Subject	Course	Period of Development
CAD	*3D CAD*	*During the extended project period*
CNC	CAM & CNC Milling	During the original project period

Forming Technology	Laser Cutting	Ditto

Electric: Teaching materials for eight courses (PLC Basic, PLC STEP 7, Mechatronics (1), Mechatronics (2), Power Electronics (1), Drive Technology, Automatic Control (1), and Industrial Automation System) out of the thirteen developed were formed during the original project period. Teaching materials for the rest of the five courses (Pneumatic, PLC & Pneumatic, Power Electronics (2), Automatic Control (2), and Automatic Control (3)) were developed during the extended project period as a result of problems with technical knowledge and communications by both experts and counterparts, as well as six to eighteen months of delay resulting from additional preparation for rebidding procedures by Japanese side in the procurement of equipment, including twenty-one PCs and equipment for factory automation.

Subject	Course	Period of Development
PLC	PLC Basic	During the original project period
	PLC STEP7	Ditto
	Pneumatic	*During the extended project period*
	PLC & Pneumatic	*Ditto*
Mechatronics	Mechatronics (1)	During the original project period
	Mechatronics (2)	Ditto
Power Electronics	Power Electronics (1)	Ditto
	Power Electronics (2)	*During the extended project period*
Drive Technology	Drive Technology	During the original project period
Automatic Control	Automatic Control (1)	Ditto
	Automatic Control (2)	*During the extended project period*
	Automatic Control (3)	*Ditto*
Multi Subjects	Industrial Automation System	During the original project period

Construction: Teaching materials for one course (3D CAD Auto CAD Architecture) were developed during the original project period. Those from two courses (3D CAD Revit and Project Management) were developed during the extended project period due to problems with technical knowledge and communications by both experts and counterparts, personnel changes, a delay in deployment of experts, as well as six months of delay resulting from the diminished capabilities of local agents to procure equipment, including kinds

of software in 3D CAD Revit.

Subject	Course	Period of Development
3D CAD	*3D CAD Revit*	*During the extended project period*
	3D CAD AutoCAD Architecture	During the original project period
Project Management	*Project Management*	*During the extended project period*

In sum, it is judged that output 2 was mostly achieved.

3）Output 3: Training system for teachers at colleges of technology in the target fields is developed.

According to the terminal evaluation for the original project period in 2007, it was judged that output 3 was partially achieved since technology was transferred to counterparts and implementation of training courses was corresponding to the anticipated schedule. According to the terminal evaluation for the extended project period in 2009, it was judged that output 3 was mostly achieved since the degree of technology transfer varied depending on subjects (indicator 3-2), though training courses were implemented by the end of the extended project period. The ex-post evaluation also confirmed, through readings of documents related to the project and hearings to counterparts, that indicator 3-1 was achieved, indicator 3-2 was partially achieved, indicator 3-3 was mostly achieved, and indicator 3-4 was achieved by the end of the extended project period. However, achievement of indicator 3-2, that is, the technology transfer to DTC instructors, which was significantly important for ascertaining realizations of the impact still varied depending on various fields, and was limited. Therefore, it is judged that output 3 was partially achieved.

Indicator 3-1: Assessment reports by DTC instructors

When experts finished technology transfers, they submitted reports to JICA regarding technologies that DTC instructors already had, new technologies that experts transferred to DTC instructors, and the levels of acquisition of new technologies by DTC instructors

Indicator 3-2: Technology transfer to DTC instructors

Mechanical: Technology transfer completed in two out of the three courses, through workshops and a Third Country Training Program in Malaysia, during the original project period and in the remainder of one course during the extended project period. As a result, DTC

instructors had the ability to implement three courses in three subjects, as planned. Therefore, it is judged that this target was achieved.

Subject	Course	Period of Technology Transfer
CAD	*3D CAD*	*During the extended project period*
CNC	CAM & CNC Milling	During the original project period
Forming Technology	Laser Cutting	Ditto

Electric: Technology transfer was completed in seven out thirteen courses during the original project period and in two courses during the extended project period. However, this was not successfully completed in the remaining four courses (Power Electronics (2), Drive Technology, Automatic Control (2) and Automatic Control (3)) due to the above-mentioned problems with experts and counterparts, as well as a delay in procurement. As a result, DTC instructors did not have the ability to teach a course in the subject of Drive Technology, though they did attain the ability to teach courses of Power Electronics (1) and Automatic Control (1) in the two subjects of Power Electronics and Automatic Control. Consequently, DTC instructors were able to teach courses in only four subjects out of the planned five, as well as one in multiple subjects, and were able to teach only nine out of the planned thirteen courses. Therefore, it is judged that this target was partially achieved.

Subject	Course	Period of Technology Transfer
PLC	PLC Basic	During the original project period
	PLC STEP7	Ditto
	Pneumatic	*During the extended project period*
	PLC & Pneumatic	*Ditto*
Mechatronics	Mechatronics (1)	During the original project period
	Mechatronics (2)	Ditto
Power Electronics	Power Electronics (1)	Ditto
	Power Electronics (2)	*Incomplete*
Drive Technology	Drive Technology	During the original project period
Automatic Control	Automatic Control (1)	Ditto
	Automatic Control (2)	*Incomplete*
	Automatic Control (3)	During the original project period
Multiple Subjects	Industrial Automation System	Ditto

Construction: Technology transfer was completed in one course out of three during the original project period. However, it was not successfully completed in two courses (3D CAD Revit and Project Management) due to the above-mentioned problems with experts and counterparts, as well as personnel changes and a delay in procurement and deployment of experts by the end of the extended project period. As a result, DTC instructors were not able to teach a course of 3D CAD Revit, though they became able to teach 3D CAD Auto CAD Architecture. Additionally, they were unable to teach the course Project Management. Regarding Construction Technology, only documents related to numerous construction technologies were collected, as mentioned earlier at indicator 2-1. Since there was no technology transfer to DTC instructors, it is judged that technology transfer was incomplete. Consequently, it ended up that DTC instructors were able to teach only one course in one subject out of the three planned. Therefore, it is judged that this target was hardly achieved.

Subject	Course	Period of Technology Transfer
3D CAD	*3D CAD Revit*	*Incomplete*
	3D CAD AutoCAD Architecture	During the original project period
Project Management	*Project Management*	*Incomplete*

Indicator 3-3: Training programs and seminars for teachers at technical colleges

Chart 1: Training programs and seminars

(Unit: the number)

	2004	2005	2006	2007	2008	2009
Mechanical	0	0	0	2	6	6
Electric	0	0	1	4	8	7
Construction	0	0	0	1	4	2

Source: TVTC, JICA

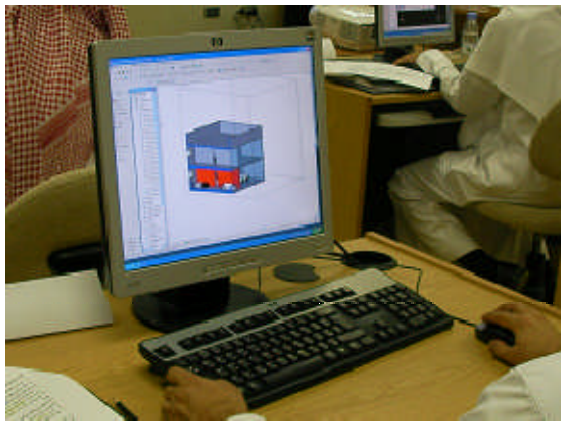
The number of training programs and seminars in 2009 was fewer than that in 2008 since there were only three months from January 2009 to March 2009 when the project was completed. However, it is judged that the number increased in 2007 and became stable afterwards[13].

Indicator 3-4: The quality of training courses

The questionnaire to teachers at technical colleges at the end of the training courses was developed during the extended project period and was able to obtain feedback on contents and methods of training courses. According to TVTC, comments were mostly positive.

13 Training programs and seminars were not held after 2010 due to the reorganization of DTC.

In sum, it is judged that output 3 was partially achieved.

	
Training using PLC	Training using 3D CAD

4） Output 4: Training courses for teachers at technical colleges in the target fields are managed.

According to the terminal evaluation for the original project period in 2007, it was judged that output 4 was partially achieved since training courses were not yet well managed. According to the terminal evaluation for the extended project period in 2009, it was judged that output 4 was partially achieved since it was still necessary to accelerate the management system for training courses, which were not well managed by the end of the period. As a result of the ex-post evaluation, it was found that TVTC had managed training courses under the regular existing meetings at TVTC, rather than the regular steering committee, the establishment of which was planned during the project. However, since the existing meetings were for the overall management of TVTC activities, the project was completed without having firmly established the regular steering committee. Therefore, it is judged that output 4 was not achieved.

Indicator 4-1: Steering Committee

TVTC managed training courses under the existing regular meetings at TVTC, and therefore, irregularly held meetings of the steering committee before or after the Joint Coordination Committee, for only four times throughout the project. These meetings were held in September 2006, February 2007, and February and May 2008. However, since information on the project was shared at weekly and irregular meetings, as well as at the regular meetings at TVTC, the implementation of the project was a success.

Indicator 4-2: Maintenance Committee

Based on the idea that all equipment, including equipment procured by the project, needs to be maintained under TVTC rules, the maintenance committee for equipment procured by the project was not established. However, since information on the project was shared at weekly and

irregular meetings among project implementers, implementation of the project was successful.

Indicator 4-3: Conditions of equipment

Daily maintenance of equipment and changes of spare parts were supposed to be done by TVTC, based on TVTC rules. However, these were carried out mainly by experts.

Indicator 4-4: Safety Committee[14]

The Joint Coordination Committee discussed the establishment and holding of safety committee meetings for the project, but did not reach a consensus in the end. However, since information on the project was shared at weekly and irregular meetings among project implementers, there was no problem with the implementation of the project.

In sum, information on the project was shared at weekly and irregular meetings among project implementers, as well as at existing regular meetings at TVTC. Therefore, TVTC was able to implement the project, including the related maintenance and safety issues. However, the steering committee, though established, was not regularly held. In addition, the maintenance safety committees were not established. Consequently, the rigid management system for training courses was not established as planned in the end, and therefore it is judged that output 4 was not achieved.

3.2.1.2 Achievement of Project Objective

Project Objective: Capabilities of DTC instructors in the target fields to implement training courses for teachers at technical colleges are improved.

1）Indicator 1: Experts, the project director, and the project manager consider that capabilities of DTC instructors have improved.

Mechanical: They considered that capabilities of DTC instructors were adequately improved.

Electrical: They did not consider that capabilities of DTC instructors had improved enough due to insufficient technology transfer (indicator 3-2) resulting from problems with technical knowledge and communications by experts and counterparts and a delay in procurement.

Construction: They did not consider that capabilities of DTC instructors had improved enough due to insufficient technology transfer (indicator 3-2) resulting from problems with technical knowledge and communications by experts and counterparts, personnel changes, and delays in deployment of experts and in procurement.

14 In the original PDM, there was indicator 4-5, which was the preventive measure against accidents. However, this was deleted since it was close and duplicated indicator 4-4 when the PDM was revised in April 2007.

2）Indicator 2: DTC instructors become able to plan and implement training courses for teachers at technical colleges themselves.

Mechanical: They became able to play a major role in all three courses.

Electric: They became able to play a major role in nine out of thirteen courses. However, experts played a major role while they played a minor role in the remaining four courses due to insufficient technology transfer (indicator 3-2).

Construction: They became able to play a major role in one out of three courses. However, experts played a major role while they played a minor role in the remaining two courses due to insufficient technology transfer (indicator 3-2). In addition, a course for Construction Technology was not developed due to the above-mentioned reason.

3）Indicator 3: Teachers at technical colleges consider that training courses are satisfactory[15].

Mechanical: They earned 94 points out of 100 on average.

Electric: They earned 81 points out of 100 on average.

Construction: They earned 89 points out of 100 on average.

Concerning the rating from teachers at technical colleges, these reflected that training courses were mostly satisfactory. However, while DTC instructors played a role at all six training courses held in mechanical fields, they played a role at only four training courses out of eleven held in electric fields due to insufficient technology transfer (indicator 3-2). Experts played a role at the remaining seven training courses. Regarding the construction field, experts played a role at all five training courses held due to insufficient technology transfer (indicator 3-2). Taking into consideration that experts in electric and construction fields still played a major role as instructors, it is not appropriate to consider that the points teachers at technical colleges assigned are attributable to improved capabilities of DTC instructors solely as a part of the project objective. Therefore, indicator 3 was partially achieved.

4）Indicator 4: Trained teachers at technical colleges.

There were 319 teachers who took training courses under the project, which was a combination of 98 teachers in mechanical fields, 172 teachers in electric fields, and 49 teachers in construction. Since the total number of teachers in three fields in the country's technical colleges at the time of project's completion was 554, 319 teachers amounted to approximately 58%, and therefore, it is judged that many teachers took these courses. However, as mentioned in indicators 2 and 3 of the project objective above, there were courses where DTC instructors played a minor role in implementing training while experts played a major one. Given this, it is

15 Highly satisfactory: 100 points; Satisfactory: 80 points; Fair: 60 points; Unsatisfactory: 40 points; Highly unsatisfactory: 20 points.

not appropriate to consider that training 319 teachers is attributable to improved capabilities of DTC instructors solely as a result of the project objective. Therefore, indicator 4 was partially achieved.

In short, output 1 was achieved during the original project period. Output 2 was mostly achieved though it was during the extended project period. Output 3 was partially achieved due to insufficient technology transfer (indicator 3-2), which was significantly important to realize the impact of the project. Output 4 was not achieved. Therefore, project outputs are limited and their overall achievement is partial. In addition, achievement of indicators 1 to 4 of the project objective is limited, and therefore overall achievement of the project objective is partial.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

Overall Goal: Knowledge and skills of teachers in the target fields at technical colleges are improved.

1) Indicator 1: Knowledge and skills of teachers in the target fields at technical colleges have improved.

At the time of the project's completion, TVTC judged that DTC instructors in mechanical fields were able to implement training courses, but those in electrical and construction fields and instructors in twelve other fields were not pertinent to the project[16]. Soon after the project's completion, TVTC made a decision based on the above judgment that it would be difficult for DTC to develop a training system for teachers at these colleges in the future. Consequently, TVTC made a decision to reorganize DTC after the project's completion. This led to the dispelling of the assumption that DTC instructors would implement training courses for these teachers, and by doing so, they would contribute to improving teachers' knowledge and skill. As of today, however, an ex-DTC instructor in the construction field still implements training courses for these teachers at Riyadh Institute of Technology[17] by using equipment and teaching materials developed by the project. Therefore, it is considered that this contributes to improving the knowledge and skills of teachers as an overall goal. Meanwhile, there is no ex-DTC instructor in the mechanical and electrical fields implementing training courses for teachers at technical colleges. In addition, the equipment procured and teaching

16 The reasons why DTC instructors in electrical and construction fields were not eventually able to implement training courses themselves are explained under the 3.2.1 Project Outputs. Meanwhile, the reason why instructors in twelve other fields was not deemed pertinent to the project is assumed to be that both systems of study abroad and training programs led to the acquisition of a degree and partial improvement of technical capabilities on an individual basis, but not to overall development of training programs in each subject of each field, since they were not focused on overall development of training programs.

17 In principle, Riyadh Institute of Technology provides technical and vocational training for high school students, but irregularly implements training courses for teachers at technical colleges.

materials developed by the project are used for college students at Technical Trainers' College[18]. Therefore, it is judged that the project's impact on improving knowledge and skills of teachers at these colleges is limited. While the total number of teachers in three fields at the country's technical colleges at the time of the ex-post evaluation in 2011 increased to 647, the number of teachers trained at DTC remained unchanged at 319. Therefore, the percentage of teachers who took training courses at DTC decreased from 58% in 2009 to 49%.

2）Indicator 2: Knowledge and skills of teachers who took training courses in the target fields at DTC have improved.

According to the beneficiary survey that was implemented during the ex-post evaluation of 100 teachers[19] at technical colleges who have taken training courses at DTC, 94 mentioned that their knowledge and skills had improved due to the training courses from DTC, and further, 55 of these mentioned that they taught classes with their newly acquired knowledge and skills. However, since few training courses have been implemented after the reorganization of DTC, it is judged that their positive consideration is attributable to effects that had been realized during the project period.

3）Indicator 3: Department heads who sent teachers at technical colleges to DTC consider that knowledge and skills of teachers have improved.

According to the hearings[20] that were implemented during the ex-post evaluation that sought the opinions of nine department heads (three heads each from mechanical, electrical, and construction fields), eight department heads considered that the knowledge and skills of teachers had improved. However, since few training courses have been implemented after the reorganization of DTC, it is judged that their positive consideration is attributable to effects that had been realized during the project period.

In short, training courses are implemented only in the construction field and most of the above-mentioned realized impact is attributable to the events that occurred during the project period due to the reorganization of DTC. Therefore, it is judged that the impact of the project is limited and overall goal is partially achieved.

3.2.2.2 Other Impacts

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18 TVTC established the Technical Trainers' College in order to receive technical cooperation by the German donor agency, GTZ (now GIZ). As of today, it teaches college students three subjects—mechanical, electrical, and information and communications technology—and therefore, is different in nature from DTC, having targeted teachers at technical colleges only.

19 A hundred teachers were randomly selected from 319 teachers who have taken training courses in the target fields; telephones were used for interviews.

20 Nine colleges of technology (Three colleges of technology each from mechanical, electrical, and construction fields) were randomly selected from twenty-nine colleges of technology that sent their teachers to DTC to receive training in the target fields. Interviews were conducted via telephone.

1) Impacts on the natural environment

There are no particular air or liquid wastes resulting from usage of the procured equipment, and therefore, there is no negative impact on the natural environment.

2) Relocation and land acquisition

Equipment was installed at the existing facility without relocation and land acquisition.

In sum, effectiveness and impacts of the project are low, due to insufficient technology transfer to the DTC instructors and the reorganization of DTC.

3.3 Efficiency (Rating:①[21])

3.3.1 Inputs

Table 2: Planned and actual performance of inputs

	Plan	Actual Performance
Japanese side		
Total Cost	450 million yen	472.37 million yen
Period of Cooperation	July, 2004- August, 2007	July, 2004- August, 2007 (original) September, 2007- March, 2009 (extended)
Experts	4 for Long-Term 15 – 27 for Short-Term	6 for Long-Term 11 for Short-Term
Trainees received	9	12
Third Country Training Programs	NA	23 (3 in mechanical, 15 in electric, and 5 in construction)
Equipment	100 million yen	129.54 million yen
Operational Cost	6 million yen	25.99 million yen
Saudi Arabian side		
Counterpart	15	14
Land, Facilities, Equipment	Offices, rooms, PCs, etc	Offices, rooms, PCs, etc
Total Local Cost	NA	148.82 million yen

Source: TVTC, JICA

3.3.1.1 Elements of Inputs

＜Japanese side＞

The total project cost was almost as planned. However, the period of cooperation was extended due to delayed achievement of outputs, in particular, output 3-2, resulting from problems with technical knowledge and communications by experts in electrical and construction fields and delays in procurement in these same fields. The number of experts increased over the long-term, while they decreased in the short-term, as compared to the plan. The number of trainees received was almost as planned. Although there was no plan to implement Third Country Training Programs, they were implemented on a necessary basis in

[21] ③: High, ②: Fair, ①: Low

Indonesia, Malaysia, and the UAE. Procurement of some equipment was delayed. Operational cost slightly increased owing to an extension of the period of cooperation.

＜Saudi Arabian side＞

The period of cooperation was extended due to delayed achievement of outputs, in particular, output 3-2, resulting from problems with technical knowledge and communications by counterparts in the electric and construction fields, personnel changes in the construction field, and delays in deployment of counterparts in the construction field. Provisions for land and facilities were almost as planned. It was impossible to make a comparison between the planned local cost and the actual one due to lack of information on the former.

3.3.1.2 Project Cost

The actual total project cost of 472.37 million yen was slightly higher than planned cost of 450 million yen (increase of 105%).

3.3.1.3 Period of Cooperation

The planned period of cooperation was 36 months in total. However, this was extended to 55 months (increase of 153%) due to delayed achievement of outputs, in particular output 3-2, resulting from problems with technical knowledge and communications by both experts and counterparts in the electric and construction fields, personnel changes in the construction field, delays in the deployment of counterparts in the construction field, and in procurement in the electric and construction fields.

In sum, both project cost and period of cooperation exceeded the plan while the elements were not appropriate, therefore efficiency of the project is low.

3.4 Sustainability (Rating:①[22])

3.4.1 Related Policy towards the Project

The 9th Development Plan (2010-2014) at the time of the ex-post evaluation prioritizes further development and expansion of technical and vocational training programs by TVTC under one of the thirteen priorities, known as “Human Resources Development.” In addition, there is no change in the Strategic Plan for Technical and Vocational Training (2008-2030) by TVTC. However, soon after the project’s completion, TVTC made a judgment that it would be difficult for DTC to develop a training system for teachers at technical colleges in the future. Consequently, TVTC made a decision to reorganize DTC after the project’s completion. Without an alternative plan to establish a new facility to implement training courses for teachers of these colleges, TVTC decided

22 ③: High, ②: Fair, ①: Low

to entrust training for teachers to external sources and established the Directorate General of Faculty Services, in charge of managing administration within TVTC. Therefore, now that DTC is reorganized and training for teachers at technical colleges is entrusted, sustainability of the project is low.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

As mentioned above, DTC was reorganized in September 2009 after the project's completion. The Directorate General of Faculty Services, which was newly established on behalf of DTC, has 40 staff members, and these include the ex-project director, ex-project manager, and three ex-DTC instructors. However, all five members work mainly as office clerks and do not instruct teachers at technical colleges. Meanwhile, the remaining nine ex-DTC instructors are now all either deployed to technical colleges and institutes of technology under TVTC, or are abroad for study. Only one ex-DTC instructor at Riyadh Institute of Technology still trains teachers at technical colleges. Since DTC is reorganized and no counterpart except the ex-DTC instructor at Riyadh Institute of Technology trains teachers of technical colleges, sustainability from institutional and operational aspects of the project is low.

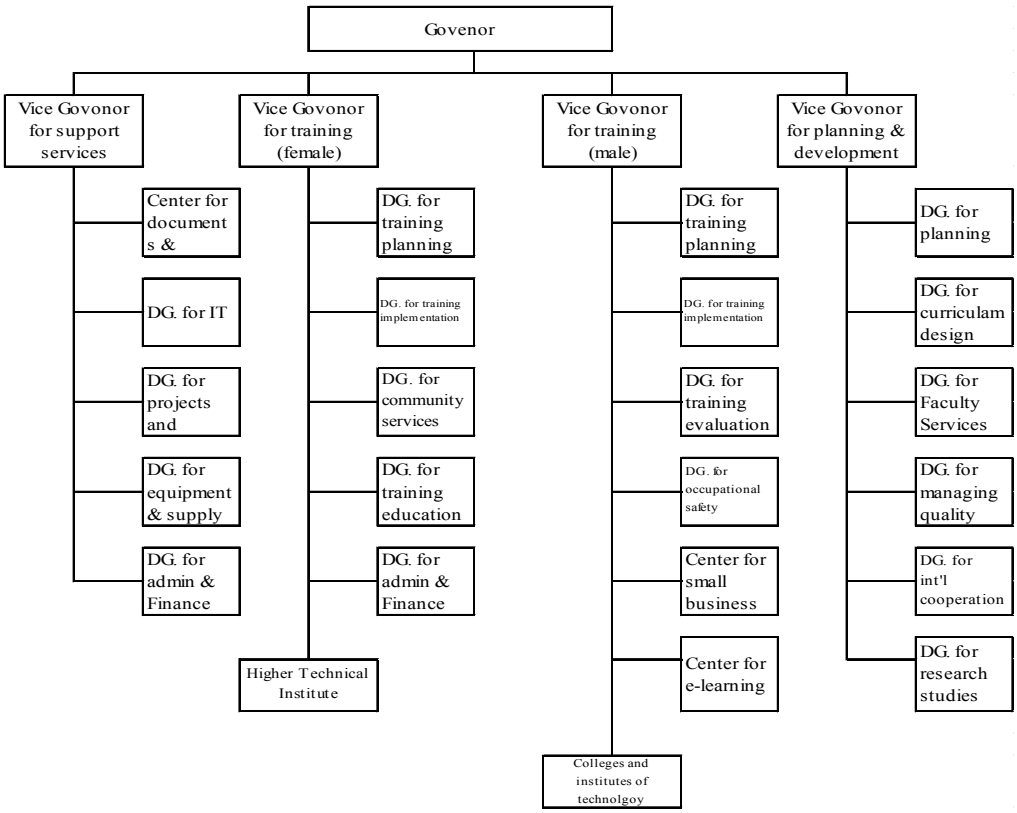

Chart 1: Organigram of TVTC

3.4.3 Technical Aspects of the Implementing Agency

Now that DTC is reorganized, it is impossible to examine technical aspects of DTC.

3.4.4 Financial Aspects of the Implementing Agency

Now that DTC is reorganized, it is impossible to examine financial aspects of DTC.

3.4.5 Likelihood of Continuation of Project Effects

DTC was reorganized in September 2009, and the Directorate General of Faculty Services in charge of managing training for teachers at technical colleges was established instead. Consequently, the premise of the project that DTC instructors implement training courses for teachers at these colleges, and by doing so they contribute to improving knowledge and skills of teachers was dispelled. In addition, only one ex-DTC instructor out of a total 14 ex-counterparts still trains teachers of technical colleges, and there is no plan to utilize other ex-counterparts again for training teachers of technical colleges. Therefore, it is judged that likelihood of continuation of projects effects is low.

In sum, major problems have been observed in the policy background, structural, technical, and financial aspects, and therefore, sustainability of the project effects is low.

4. Conclusion, Lessons Learned, and Recommendations

4.1 Conclusion

This project intended to strengthen capabilities to implement training courses for teachers at technical colleges at DTC by developing training courses for teachers at technical colleges, and thereby contribute to improving their knowledge and skills. The objective of the project was relevant to the development policies and needs of Saudi Arabia, as well as to the development policies of Japan. Therefore, relevance of the project is high. Although training courses were developed almost as planned, technology transfer to DTC instructors ended up insufficiently, and consequently capabilities to implement training courses for teachers at technical colleges were not well strengthened. Besides, improvement of their knowledge and skills is limited due to reorganization of DTC after completion of the project. Therefore, effectiveness and impacts of the project is low. The project period of cooperation and project cost both exceeded the plan and there were problems with inputs of experts and counterparts. Therefore, efficiency of the project is low. Although training for teachers at technical colleges is still prioritized in policy, sustainability of the project effects is low due to reorganization of DTC.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

Since the DTC instructors in mechanical field were eventually able to implement training courses for teachers at technical colleges by the time of the project's completion, it is recommended that

TVTC consider letting them train teachers at technical colleges.

4.2.2 Recommendations to JICA

The equipment procured and the teaching materials developed by the project are still in use for different people in different locations. It is recommended that JICA ask TVTC to use them properly in the future.

4.3 Lessons Learned

GOTEVOT (now TVTC) and JICA reached an agreement that they would develop training programs in mechanical, electrical, and construction fields at DTC. However, development in twelve other fields not pertinent to the project was basically dependent on activities by GOTEVOT. In other words, whether DTC, as the counterpart agency of the project, would properly function depended on activities in three fields, as well as those in twelve other fields not pertinent to the project. Consequently, DTC was reorganized due to insufficient performance of activities in and outside the project. Therefore, as a lesson to be learned, when it comes to implementing a project of technical cooperation that aims to transfer technology in small parts, it is important not only to examine planned activities under the project but also discuss activities outside the project with the counterpart agency. Besides, it is important to monitor progress made in the overall scheme and request the counterpart agency to take measures to make progress, if necessary.