Summary of Evaluation Result

1. Outline of the Project		
Country:	The Republic of Turkey	Project Title: Project on Strengthening the Program of Expanding Industrial Automation Technologies Departments (SPREAD)
Sector:	Industrial technical education and vocational training	Cooperation Scheme: Technical Cooperation Project
Division in Charge:	Technical and Higher Education Division, the Human Development Department	Total Cost: approximately JPY 222 million
		Partner Country's Implementation Organization: Ministry of National Education (MoNE)
Period of Cooperation:	(R/D): May 7, 2007	Supporting Organization in Japan: Ministry of Education, Culture, Sports, Science and T echnology (MEXT)
	August 2007-September 2010	Related Cooperation: Technical Cooperation Project "Establishment of Industrial Automation Technologies Departments in Anatolian Technical High Schools" (2001-2006)

1-1 Background to the Project

As manufacturing industries have expanded rapidly since 1990, meeting the need for large numbers of high quality manufacturing engineers, particularly core engineers, was an urgent issue in the Republic of Turkey (hereinafter called Turkey). In the 7th Five-Year Development Plan (1996-2000), the development of the human resources needed to support the rapid growth was included in the top priority issues. In line with this policy, Turkey has been implementing measures to improve the education system. However, while Turkish manufacturing is growing, the technical levels of the personnel involved in manufacturing industries, particularly those who have control engineering skills, have not fully met the needs of private companies. Therefore, it was pointed out that human resource development in the sector needed to be strengthened.

In light of this situation, the Turkish Ministry of National Education (MoNE) implemented the Technical Cooperation Project "Establishment of Industrial Automation Technologies Departments in Anatolian Technical High Schools" from 2001 to 2006 with Japanese assistance, in order to develop human resources who have control engineering skills. As part of the project, the Turkish government established Industrial Automation Technologies (IAT) Departments within the Anatolia Vocational High Schools in Izmir and Konya. After the successful establishment of the departments, the MoNE also founded IAT Departments in 20 other Anatolia Vocational High Schools in Turkey (hereinafter called expansion schools) as well as founding the Teacher Training Center (TTC) as a facility attached to the Izmir Anatolia Vocational High School in order to disseminate IAT education in Turkey.

When the above-mentioned project was coming to an end, Turkey published the Ninth Development Plan (2007-2013) which stipulated "human development" as a main objective, renewing its focus on technical education. It was in this context that the Turkish government requested Japan's cooperation in the Project on Strengthening the Program of Expanding Industrial Automation Technologies Departments (SPREAD) which aims to develop an implementation structure in the TTC to provide training courses to teachers. The project was then launched in August 2007. The planned duration was about three years (August 2007-September 2010).

1-2 Project Overview

(1) Super Goal: IAT engineers are trained and the demand for human resources in the industrial sector in Turkey will be fulfilled to a considerable extent.
(2) Overall Goal: Vocational education and training (VET) for IAT at the expansion schools will be practiced effectively.
(3) Project Purpose: The teacher training system will be established at the TTC.
(4) Output: 1) TTC's abilities to develop teacher training plans will be strengthened.
2) TTC's abilities to implement teacher training courses will be strengthened.
3) TTC's abilities concerning teacher training evaluations will be strengthened.
4) TTC's capacity to develop a long-term strategy will be strengthened.
(5) Input (at the time of the evaluation)

Japanese Side: Dispatched experts: 21 experts Provision of equipment: JPY 6,903,771
Accepted trainees: 25 trainees Local cost: JPY 22,235,000
Partner Country's Side: Allocation of Counterparts: 15 counterparts

Purchase of equipment: TL 999,900 (JPY 58,554,000)
Others: Provision of TTC facilities and an office for the Japanese experts (within the TTC)
The utility costs and the internet costs for the facilities
Local costs: Per diems and accommodation costs for the training participants from the expansion schools

2. Evaluation Team

	Team Leader	Nobuyuki Konishi	Head of the Higher Education and Social Security Group, the Human Development Department, JICA
	Teacher Training	Shigeru Ikemori	Subject Investigation Officer at the School Management Support Division, the Elementary and Secondary Education Bureau, MEXT
	Cooperation and Planning	Sae Kojima	Staff member at the Technical and Higher Education Division, the Human Development Department, JICA
	Evaluation and Analysis	Chie Tsubone	Consultant from Global Link Management, Inc.
Period	February 23, 2010 to March 14, 2010		Type of Evaluation: Terminal Evaluation

3. Summary of Evaluation

3-1 Result of Cooperation

(1) Achievement of the Output

[Output 1] TTC's abilities to develop teacher training plans will be strengthened.

Output 1 was mostly achieved.

In preparation for the development of the teacher training curriculum, the project team: 1) assessed the TTC's needs and industry's needs by conducting a baseline study; 2) clarified the training course objectives; and 3) evaluated the existing teacher training courses and closely examined the issues identified in the evaluation.

The framework for the development and revision of a curriculum is explained in the Teacher Training Manual created by the project, but it only provides a brief explanation. Therefore, it is necessary to document the tacit knowledge related to the development and revision of a curriculum and to make the manual more detailed. In addition, more detailed explanations are needed regarding the necessity for and the methods of revising a curriculum and adjusting training plans in accordance with the revisions. Further, it is also necessary to document the reasons for the revisions of a curriculum during the project period, the processes used for the revisions and the correction of training plans in accordance with the revision of a curriculum, for future reference.

The project team reconstructed the teacher training curriculum by constantly comparing it with the framework of the IAT Department curriculum stipulated by the MoNE and developed a curriculum made up of 25 subjects in six groups. The curriculum set lecture hours for each of the tranees' specialized subjects.

[Output 2] **TTC's abilities to implement teacher training courses will be strengthened.**

Output 2 was achieved to a certain extent.

The syllabus format was clarified and syllabuses for all subjects were produced by August 2009. The content of textbooks was also clarified using a specified format. At the time of the completion of the terminal evaluation, all the textbooks for grade 10 and grade 11 had been created. They have also finished creating 87% of the textbooks for grade 12 in terms of the number of pages (four textbooks out of nine) and 64% of the textbooks for the summer course in terms of the number of pages (two textbooks out of three), which are expected to be completed by the end of the project.

TTC teachers took a training course conducted by the MoNE in January 2008 and were officially recognized as TTC teachers. According to the results of the questionnaire survey for participants on the training courses conducted in the second half of 2009, over 90% considered that the TTC teachers' level of knowledge, teaching methods and techniques were appropriate. On the other hand, according to the questionnaire survey conducted in the terminal evaluation, 63% gave a positive evaluation on the TTC teachers' quality and 37% gave a negative evaluation. The interview survey also confirmed that the evaluations of the teachers were mixed. Many of the respondents observed that the TTC teachers could not spare the time to improve the quality of training because they had a heavy work load during the first half of the project. Based on the survey results above, there is still room for improvement although the TTC teachers' knowledge and skills have reached reasonable levels.

All the training courses, i.e. basic level 1 and 2 for grade 10 and grade 11, advanced level 1 and 2 for grade 12 and the summer course, had been conducted at least once by the end of 2009.

According to the questionnaire survey conducted by the terminal evaluation team, 59% gave a negative evaluation of the administrative support for the training courses (such as arranging accommodation and sending training information). The reasons stated included the first training course being too long and that the criteria and process for selecting the training participants were not made clear. However, they also recognized that the quality of the administrative support had improved when compared to the beginning of the training program. It was also confirmed that many teachers participate in the training courses without understanding the objectives of the training. Therefore, it is recommended that information is provided in advance to all the people involved.

[Output 3] **TTC's abilities concerning teacher training evaluations will be strengthened.**

Output 3 was achieved to a certain extent.

The formats for evaluation and monitoring were created. Evaluation was conducted 11 times and monitoring at the expansion schools was conducted 28 times in total. However, it was confirmed that there is a need to strengthen the monitoring and evaluation abilities of the TTC teachers and to develop a system to feed back the results of monitoring and evaluation.

In order to achieve this, the terminal evaluation team pointed out that it is necessary to improve the questionnaire formats for evaluating training courses and evaluating interns. At the same time, it is desirable for aggregated data to be carefully analyzed, shared and discussed within the TTC and effectively utilized for improving future training courses. In particular for monitoring at the expansion schools, it is hoped that a check sheet for observing classes will be created, class observation will be conducted and the findings will be fed back to each expansion school. In monitoring, it is desirable that interviews focus on important issues, that methods to resolve the issues are fully discussed with the teachers at each school and that solutions are proposed to the school. It is also important to continue observing progress after the monitoring and continue providing appropriate support and advice to each school. It is also expected that the results of the monitoring at each school will be utilized in future TTC training.

[Output 4] TTC's capacity to develop a long-term strategy will be strengthened.

Output 4 was mostly achieved.

A task force made up of personnel from the MoNE, TTC staff, the JICA project team and the JICA Turkey Office was launched in May 2009. The task force held four meetings over the period from May through August, 2009, where the future direction of the TTC and the teacher training system were discussed. Based on the discussion results and the current situation at the TTC, a draft TTC Long-Term Strategy was produced by the TTC and the JICA project team in September 2009. The Long-Term Strategy sets forth the TTC's mission, policies, objectives and activities.

The strategy content was further discussed during the training in Japan in January 2010 and it was agreed by the Turkish and Japanese parties. The Long-Term Strategy has already been finalized and approved by the MoNE.

(2) Achievement of the Project Purpose

[Project Purpose] The teacher training system will be established at the TTC.

It was determined that the project purpose was achieved to a considerable extent.

Except for one trainee who had to quit the course for personal reasons, a total of 727 trainees have so far completed the training courses and been given certificates of completion.

According to a questionnaire survey for participants on the training courses conducted in the second half of 2009, an average 78% of the participants answered that the TTC training courses were useful when they gave lessons to students after they went back to their schools. Although this is lower than the target (90%), 80% of the indicator target was achieved at the time of the terminal evaluation. According to a questionnaire survey for training participants conducted several months after the training courses were completed, over 96% of the participants answered that the training was useful for lessons at their schools. In a questionnaire survey conducted by the terminal evaluation team, 77% answered that they were using what they learned in the TTC training for lessons at their schools. All the data shown above exceeded the target value of 65%. According to a questionnaire survey conducted by the project team, 100% of the heads of IAT Departments said that the teachers who received the training increased their knowledge and skills.

The operational and management procedures for teacher training courses were clarified in the Teacher

Training Manual developed by the project team. It is hoped that the manual will become more detained and be finalized before the project comes to the end. The training courses were mostly implemented as planned, except for the implementation of the courses for grade 12 which were delayed due to a shortage of equipment as well as because of the delayed preparation of textbooks.

Although it has been determined that the project purpose has been achieved to a considerable extent, it is hoped that the project will work to further improve the quality of the training by the end of the project.

(3) Possibility of Achieving the Overall Goal

[Overall Goal] Vocational education and training (VET) for IAT at the expansion schools will be practiced effectively.

Signs of achieving the overall goal were observed.

The Izmir school collected evaluations on interns made by the companies hosting the interns. According to the evaluations, all the companies said that interns are "excellent" or "good." Interns from the expansion schools also generally received positive evaluations. According to five of the expansion schools, more than 90% of the companies said that the interns were "good" or better. In interviews with companies hosting the interns which were conducted by the evaluation team, positive comments were heard, for example, "the interns are quick learners when compared to other interns."

A large majority of teachers at the expansion schools are positive about the achievement of the overall goal. Respondents raised problems that may prevent the achievement of the overall goal, which include the following. 1) Equipment and workshops are not adequately provided. 2) It is difficult to secure excellent students. 3) It is not possible to recruit an adequate number of IAT Department teachers. 4) There are only a few industries in the area (reply from some of the expansion schools). The MoNE, the TTC and the expansion schools will need to cooperate with each other to solve these problems and continue their efforts to effectively implement vocational education and training on IAT at the expansion schools after the project ends.

(4) Possibility of Achieving the Super Goal

[Super Goal] IAT engineers will be trained and the demand for human resources in the industrial sector in Turkey will be constantly fulfilled.

It is too early to measure the achievement level for the super goal at this point. As a result of a consultation with the MoNE conducted during the present study, it was agreed that the target year for the super goal be tentatively set as 2030. Regarding the development of the industrial sector in Turkey, which is one external condition for the achievement, it has been confirmed that many Turkish manufacturing industries have been affected by the global recession and reduced the number of employees and the amount of production. However, high demand for quality personnel who have knowledge about IAT is unchanged. Therefore, it is important for the expansion schools to continue providing high quality education. Another external factor is the recruitment of IAT teachers. A little over 60% of the teachers who received training at the TTC wished to become official IAT teachers and they were officially approved by the MoNE. A sufficient number of teachers have not yet been recruited, but it is expected that the teacher shortage problem will be solved in the medium to long term, because graduates of mechatronics departments in universities are expected to become IAT Department teachers in the future. In order to monitor the progress in the achievement of the super goal, it is important for the expansion schools to establish a system to monitor who has employed the graduates and if they proceeded to university, what career choices they made after they graduated from university.

3-2 Summary of Evaluation Results

(1) Relevance

Consistency with Turkish and Japanese Policies

The Ninth Development Plan (2007-2013) of the Turkish government stipulates "human development" as one of the priority issues and "enhancing the educational system" as one strategy to achieve this goal. In this, the Turkish government emphasized the importance of the development of human resources familiar with scientific and technological usage and production and the implementation of effective training for teachers. In addition, in the "Increasing Employment" section which is another priority issue in the development plan, it mentions the need to develop human resources with knowledge and skills in science and technology to meet industry's needs. Therefore, the project is highly consistent with Turkish government policy because the project aims to improve the education given by IAT Departments at technical and vocational high schools through developing the teacher training system at the TTC, thereby contributing to the development of human resources who are knowledgeable about IAT.

The project also matches with the Japanese assistance policy for Turkey. In the economic cooperation policy meeting with the Turkish government in 2008, it was confirmed that the existing five priority fields,[11] including "human resource development" which the project comes under, will continue to be subject to the assistance. JICA's assistance policy for Turkey formulated in 2006 also follows these priority fields and stipulates "human resource development" as one of the priority issues.

The Needs of the TTC and Industry

As mentioned above, the demand for human resources with IAT knowledge is growing in industry in Turkey, but IAT is still a new educational field for the country. Therefore, there is strong demand from industry for a system to produce large numbers of graduates in the IAT field through the establishment of an effective teacher training system for the field. Therefore, the project meets the needs of the TTC and industry.

The Project Plan

The TTC is a new center which was established as a facility attached to the Izmir school just before the project started. Therefore, the project started before the problems in the TTC's operation and management were clarified and before the job criteria of the TTC teachers were clarified. The project also started before the national approval system for the IAT Department teachers was fully developed.

The project also started before difficult institutional problems were solved. These problems include the fact that the budget is not earmarked for the TTC when it is allocated[12] and the unclear personnel system for the TTC teachers.[13] These problems caused heavy work burdens for the TTC teachers and it affected the progress and quality of the activities conducted in the first half of the project.

The teacher training courses for IAT Departments at the TTC were not properly institutionalized[14] when the project started. Midway through the project, the education council announced a policy where only the graduates of mechatronics departments in universities could be approved as IAT Department teachers. This contradicted the policy to train teachers through the TTC training. Therefore, it became clear that there were different opinions about the TTC and that the roles and institutionalization of the teacher training system at the TTC had not been fully discussed or recognized within Turkey. With the efforts made by the General Directorate of Vocational and Technical Education (DGVET), the problem was eventually solved by offering teachers, who have completed the TTC training through the project, the choice of becoming IAT Department teachers. This was a confusion which occurred midway through the project and it would have been difficult to take preventive action before the launch of the project. Nonetheless, had the possibility of such a situation occurring been fully discussed within the country before the project started, the project activities could have been implemented more smoothly.

In addition, a careful examination should have been conducted into whether it was relevant to start the training courses for potential IAT Department teachers before the system to certify IAT Department teachers was established. So far, only about 60% (136 teachers) of the 218 expansion school teachers who received the IAT training at the TTC have decided to become IAT Department teachers. One reason for this could be that the teachers wanted to avoid a situation where the choice of school was limited because of the limited number of schools which have IAT Departments in the country. However, it would probably have been more efficient and effective if the project had waited for the teacher certification system to be established and had then provided training only to those who planned to work in IAT Departments.

(2) Effectiveness

As explained in "3-1. Achievement of the Project Purpose," the project purpose was achieved to a considerable extent. Therefore, it can be said that the effectiveness of the project's approach was confirmed. It is important that the project continues to work to increase the achievement levels for Outputs 2 and 3 in order to fully achieve the project purpose. For this reason, it will be useful for the project to reanalyze the existing monitoring and evaluation results in order to identify problems in the training courses together with the TTC counterparts, discuss measures to improve the training courses and then produce and implement a detailed improvement plan.

[11] The other fields are "the environment," "correction of disparity," "South-South cooperation" and "disaster prevention."

[12] Some funds are added to the budget for the Izmir school when the budget is allocated to the school.

[13] Because the TTC was established as a facility attached to the Izmir school, the TTC teachers also worked as Izmir school teachers. A simple calculation showed that the teachers' duties almost doubled at one point. In order to improve the situation, the principal of the Izmir school decided to divide the Izmir school teachers into two groups of equal size, assign duties for the Izmir school to one group and the TTC duties to another group.

[14] At that time, the MoNE had not institutionalized the system where teachers who receive the IAT training at the TTC are officially approved as IAT teachers even if they originally specialized in electrical engineering, electronics, mechanical engineering or computing (even if they did not graduate from a mechatronics department).

When looking at the contribution of each output to the achievement of the project purpose, Output 2 concerning the implementation of training contributed the most. In other words, when considering Outputs 1, 2 and 3 (that are directly related to the implementation of training) as one cycle, the cycle has not yet resulted in a significant synergy effect. For example, the terminal evaluation study showed that 66 % of the teacher training participants said that the training courses met their needs to some extent.[15] This shows that a significant percentage of participants were satisfied, but only to "some extent" rather than to "the full extent." The reasons for this relatively low level of satisfaction included the following. (1) To some extent, it is difficult to utilize what they learned in the training within their classes because the equipment used at the TTC and their schools are different. (2) The number of pieces of equipment available at the TTC and the practice hours were inadequate. (3) They wanted to deepen their knowledge by learning, for example, cutting-edge technologies in their fields of study instead of obtaining broad and general knowledge about different fields including ones that they did not specialize in. The TTC is planning and operating its training courses with the aim of teaching basic knowledge and technologies that are essential to gain practical IAT skills, so that trainees can utilize different types of equipment using the basic knowledge and theories that they learned. However, the above study results suggest that this TTC policy was not understood by all the training participants. Some differences between the expectations of the training participants and the objectives of the courses provided by the TTC were not properly identified through the monitoring and evaluation activities being conducted by the project. Even though some of the differences were recognized by the project team, they did not properly consider measures to fundamentally solve the problem and apply the measures to the following training courses. This indicates that there is room for improvement so that the cycle that the project aims to achieve ("Plan → Do → See → Action") functions fully.

The terminal evaluation team conducted a questionnaire survey for past training participants about the quality of the training (the content of the training courses, the quality of the TTC teachers, the quality of handouts and teaching materials and the handling of procedures). The percentage of respondents who evaluated each topic positively was: 63%[16] for quality of the TTC teachers; 55%[17] for the content of the training courses; 48%[18] for quality of handouts and teaching materials; and 41%[19] for the handling of procedures. It is thought that one reason for the relatively low percentages given for the content of the training courses, the quality of handouts and teaching materials as well as the administrative support is that the TTC teachers became over burdened with their duties in the first half of the project and could not spare enough time and labor to improve the training. Although the respondents gave a relatively low evaluation for some topics, many of them recognized that improvements have been made when compared to the initial stage of the project. This proves that the efforts in the "See → Action" part of the cycle mentioned above were positively evaluated in part.

It is thought that the project's approach can be more effective if its monitoring and evaluation results are utilized for planning and implementation. In particular, it is desirable that the TTC counterparts conduct full interview surveys at the expansion schools, analyze and feed back the results as well as informing all the participants about the policies and objectives of the TTC training courses in order to promote their understanding.

One external condition, "The counterparts will stay at the TTC" is currently being met, but it is not clear if they will stay at the TTC in the long term because their position as TTC teachers will not guaranteed in the future. In order to ensure that the effects of the project continue after the project ends, it is necessary to consider measures, including training future TTC teachers as replacements.

(3) Efficiency

The delay in the allocation of budget from the MoNE to the TTC and to the expansion schools for the procurement of equipment made it difficult for some training courses to be implemented in accordance with the initial schedule. This led to a sudden change in the plan and Japan provided equipment for the TTC.

As mentioned above, it was difficult to improve the quality of the training at the TTC in the first half of the project because of the heavy work burden on the TTC teachers due to them having duties at both the TTC and the Izmir school. In the second half of the project, this problem of the allocation of teachers was solved thanks to the efforts made by the Izmir school principal. The TTC teachers can now spend enough time on training

[15] N=127
[16] N=132
[17] N=130
[18] N=132
[19] N=130

and the achievement levels for Outputs 2 and 3 are improving.

Regarding the number of IAT Department teachers, the system to certify the Department teachers had not been clarified within the MoNE when the project started. This caused some teachers who took the training courses not to seek employment in IAT Departments and made it difficult to secure a sufficient number of IAT Department teachers. On March 10, 2010, the Personnel Bureau of the MoNE issued an official notice which put in place a measure to officially approve all the teachers who have taken the TTC training courses and wish to become IAT Department teachers as IAT Department teachers. 137 teachers out of 218 wished to become IAT Department teachers and they received official approvals, but this is not a sufficient number. However, it is thought that the problem of the teacher shortage will be solved gradually because the procedures to employ graduates of mechatronics departments in universities as IAT Department teachers will be launched.

One factor which contributed to the efficiency of the project was the fact that excellent counterparts were allocated to the project. They had enough morale to cope with the heavy work burdens and they played active roles in leading the project activities. Another factor which contributed to the efficiency of the project was that the project effectively utilized the outputs produced by the previous project,[20] i.e. the counterparts who received training and obtained sufficient abilities, a good relationship between the Japanese parties, the TTC and the MoNE, strong Turkish ownership and the equipment provided for the Izmir school. This enabled the smooth progress of the project activities.

(4) Impact

Signs of achieving the overall goal were observed and therefore it is thought that the goal can be achieved after the project ends.

Other positive impacts include the training contracts with industry and the establishment of the cooperation with TKNIKA which is a teacher training facility in Spain. These cooperative relationships were made possible through the abilities of the TTC personnel and the TTC's organizational capacity which were improved by the project. In addition, the TTC is conducting training for IAT Department teachers from Azerbaijan in cooperation with the Turkish International Cooperation and Development Agency (TIKA) and it is hoping to expand support to other neighboring countries. Many expansion school teachers also highly valued the fact that the TTC has become a place for teachers from different schools to share and learn different opinions and experiences, i.e. it provides opportunities for exchanges between teachers from different schools rather than merely serving as a training center. Another impact is that horizontal relationships have been developed between the expansion schools and it has become common for them to exchange information and help each other. The DGVET stated that the establishment of the model for a teacher training system by the project led the MoNE to consider introducing similar teacher training systems in fields other than IAT. Therefore, it is expected that the results of the project can produce further impacts.

(5) Sustainability

Policies

In Turkey, political support for technology training is expected to continue under the Ninth Development Plan (2007-2013) which focuses on meeting industry's demands. On the other hand, as pointed out during the Mid-Term Review study for the project, the document sent by the head of the DGVET to the Minister and approved by the Minister is the only document which institutionally guarantees the organizational position and roles of the TTC. The document only briefly explains the fact that the TTC is operated under the jurisdiction of the DGVET as a facility attached to the Izmir school and that the TTC should be used to train teachers in the IAT field. It does not fully stipulate detailed matters concerning the scope of responsibility, the content of duties, budgetary measures, the allocation of personnel and the job status of the staff members. As a result, detailed decisions remain left to the Izmir school principal and he decides on the allocation of budget and personnel to the TTC from the budget and personnel allocated to the Izmir school. The head of the DGVET at the MoNE approved the TTC Long-Term Strategy before the terminal evaluation study was conducted. It is desirable that approvals are obtained from various agencies within the MoNE regarding the TTC's Strategy, the roles of the TTC and the institutionalization of the TTC, in order to ensure the organizational sustainability of the TTC. In order to promote this process, it is important to disseminate the information about the TTC's activities and successful cases, to agencies within the MoNE as well as to various parties outside the MoNE.

[20] "Establishment of Industrial Automation Technologies Departments in Anatolian Technical High Schools," started in April 2001 and completed in April 2006.

Financial Aspect

As of February 2010, there is no plan to allocate a budget specifically to the TTC. The budget needs to be shared between the Izmir school and the TTC and this is creating inconvenience regarding the division of the budget and individual budget management. The TTC will sign a contract to conduct training in partnership with Philip Morris and the SMC Corporation. It is expected that the TTC can earn its own income from these activities for the next several years.

There is currently no earmarked budget for repairing and maintaining the equipment provided to the TTC. In order for the TTC to continue providing high quality training in the future, it is desirable that the budget for repairing and maintaining the equipment provided during the project period be secured from the above-mentioned income.

Personnel and Technical Aspects

At present, the MoNE has not clarified the personnel system for the TTC including the job status of the TTC teachers, the training of replacements and the rotation of personnel. Due to the uncertainty about the personnel system, there is a concern that it might become difficult to continue securing quality TTC teachers into the future. There is a possibility that the TTC lecturers who received intensive training and developed their capacities in the previous and present projects will be relocated to other schools after the project ends. Therefore, it is important for the MoNE and the TTC to cooperate with each other and discuss measures to continue providing quality training at the TTC, including the training of replacement personnel.

It can be determined that the capabilities and motivation of the TTC counterparts are sufficiently high. Therefore, it is likely that they will maintain or further increase their knowledge and technical levels by cooperating with industry and teacher training centers in other countries in the future.

3-3 Promoting Factors

(1) Planning and Content

- Utilization of the outputs and experiences of the previous project

(2) Implementation Process

- Strong commitment and ownership of the MoNE and the TTC counterparts

3-4 Hampering Factors

(1) Planning and Content

- Clarification of problems concerning the operation and management of the TTC and the job criteria for the TTC teachers prior to the launch of the project
- A lack of clarification about the system to approve IAT teachers prior to the launch of the project

(2) Implementation Process

- Delayed allocation of budget for the TTC by the MoNE
- Delayed procurement of equipment for expansion schools

3-5 Conclusions

The results of the current study confirmed that parts of the project activities were delayed midway through due to the delayed allocation of budget by the Turkish government, but the project purpose is expected to be achieved within the cooperation period as initially planned thanks to efforts to get the project back on track. The Turkish parties had strong ownership of the project and they worked to solve each of the various problems that were identified during the project implementation. This attitude deserves to be highly valued as one of the most important factors which facilitated the project implementation. Since it was confirmed that the project activities are expected to proceed smoothly in the rest of the cooperation period due to Turkish strong ownership, the evaluation team concluded that an extension of the project activity period is not necessary.

On the other hand, in order to achieve the overall goal and super goal within the planned period, it is recommended that new activities are implemented or started during the project period, in addition to the currently-planned activities. Details of the new activities are described in the next chapter.

3-6 Recommendation

<During the Project Period>

(1) Promoting Understanding about the Training among the Expansion Schools' Teachers Participating in the Training and Strengthening the Training Result Monitoring and Feedback System:

The present study showed that, although the training participants from the expansion schools were satisfied with the knowledge obtained in the teacher training at the TTC, some of them pointed out the differences between the training content and their needs, such as learning about cutting-edge technologies. However, the teacher training focuses on the trainees obtaining knowledge about basic technologies, teaching methods, etc. in order for the teachers to effectively teach classes at the expansion schools. The TTC teachers fully understand this objective and have been explaining this objective to parties involved in the project. However, the present study observed that the objective of the TTC training has not necessarily been fully understood by all the teachers at the expansion schools. Therefore, the TTC needs to continue to promote understanding of the training among the training participants from the expansion schools.

It is also necessary to understand the training participants' needs, select appropriate topics that they wish to learn, examine them fully and then include them in the training content, in order to secure a reasonable number of participants on the teacher training courses at the TTC. The Teacher Training Manual is currently being developed (the plan is to update the content of the manual where necessary as it is used). The manual sets forth the method to monitor participants who have completed past training courses. It is necessary to strengthen the system which ensures that the monitoring is implemented in the remaining project period and the system that feeds back comments from past training participants into the process for improving training courses that are planned for the future.

<During the Project Period and after Project Completion>

(2) Sustainability Concerning the TTC's Activities and the Budget:

Considering the TTC's operation after the completion of the project, the TTC has been preparing for cooperative activities with similar international organizations in Spain, etc. and industry. Therefore, it is expected that the TTC can obtain technical and financial support from these organizations. The evaluation team hopes that the strengthening of cooperation with these related organizations will contribute to the sustainability of the TTC, by improving the technical skills of the TTC teachers, securing the necessary budget for its activities, identifying the relevant organizations' needs for the new training courses, etc.

(3) Clarification of the Job Status of TTC Teachers:

In order to continue implementing the various activities which have been conducted at the TTC, it is important that the eight teachers who have been directly supported by the project stay at the TTC after the project ends. At present, there is no stipulation concerning the job status of TTC teachers. It is hoped that the MoNE will take measures to clarify the job status of the TTC teachers.

(4) The Planning and Implementation of New Training Courses on How to Conduct Classes:

All the training courses for IAT Department teachers which were initially planned by the project have been developed and implemented during the project period. It is expected that these courses will continue to be implemented after the project ends. In addition, as mentioned in the "Summary of Evaluation" in Chapter 3, it is desirable for the TTC to plan and implement new training courses on how to conduct classes effectively (such as teaching methods and lesson planning methods) in order to increase the academic abilities of students.

<After Project Completion>

(5) Institutionalizing the Training for Graduates of Mechatronics Departments:

Teachers at the 20 expansion schools nationwide who are receiving training at the TTC will be given priority when seeking jobs in IAT Departments. However, the future plan is that graduates of university mechatronics departments will fill the posts of IAT Department teachers. It is hoped that the MoNE will institutionalize the system where teachers who have graduated from mechatronics departments are given teacher training at the TTC.

(6) Support for Neighboring Countries:

Due to its geographical position, Turkey has strong relationships with Central Asia, the Middle East, etc. Provision of assistance to countries in these regions using its knowledge is consistent with Turkish policy. IAT (which is the focus of the project) can be used for many purposes and therefore IAT training has great potential for contributing to human resource development in various industries. It is hoped that further effects of the project will be achieved through the TTC disseminating the outputs and know-how obtained in the project to neighboring countries.

(7) Utilization of the Know-How in Other Departments in Turkey:

The TTC was the first teacher training center in Turkey. In order to produce further outputs from the project, it is hoped that a model will be developed based on the teacher training system established at the TTC and the system will be introduced in other industrial technology and vocational education fields that come

under the jurisdiction of the DGVET.

3-7 Lessons Learned

(1) Clarification of the Organizational Position of the Agency or the Department Subject to Assistance Prior to the Launch of the Project:

In order to guarantee the partner country's ownership and sustainability of the activities, it is essential that the budget and personnel are allocated in a planned manner, without delay. As a fundamental condition to achieve this, the roles and missions of the agency or the department subject to assistance need to be officially approved by its superior organization. Therefore, it is necessary to ensure that these points have been clarified, before launching a project.

(2) Clarification of the Teaching Personnel System of the Relevant Country

When conducting a project which establishes a new academic department or a project which supports a newly established academic department, the teaching personnel system of the relevant country should be fully examined and necessary measures should be taken. Otherwise, there may be cases where jobs cannot be secured for teachers trained in the project, or the project cannot collect a sufficient number of participants because they are concerned about the lack of employment opportunities after the training is completed. The teaching personnel system is different in each country. Therefore, it is necessary to keep an eye on developments in the partner country's ministries and agencies responsible for the relevant field before as well as after the project has started.

(3) Utilization of Outputs Produced in the Previous Phase:

When looking at the present project, the utilization of the outputs produced in the previous phase of the project greatly contributed to the achievement of the present project's outputs. The previous project's outputs included: the allocation of capable and enthusiastic counterparts; good relationships between the counterparts and the Japanese parties involved in the project; and the utilization of the equipment provided to the facility. If there is a past project which provided support to the same counterparts, it is desirable to employ a framework through which the previous project's outputs can be effectively utilized, in order to produce better results.