

9. 第3次短期調査報告書

平成12年9月28日

トルコ国 自動制御技術教育改善計画プロジェクト 短期調査団報告

1. 調査期間： トルコ滞在：2000年9月3日（日）～12日（火）

2. 調査団構成：

- | | | |
|-------------------|-------|-----------------------|
| (1) 団長・総括 | 佐藤 義雄 | 文部省初等中等教育局職業教育課教科調査官 |
| (2) 技術教育 | 鈴木 靖男 | 国際協力事業団国際協力専門員 |
| (3) カリキュラム・機材計画策定 | 石田 康裕 | 埼玉県立新座総合技術高等学校情報技術科教諭 |
| (4) 協力企画 | 広瀬 恵美 | 国際協力事業団社会開発協力部第二課 |

3. 調査の背景、目的：

トルコ国は現代産業に適應できる中堅技術者の養成を図ることを目的とし、トルコ全国に約150校存在する5年制のアナトリア工業高校に自動制御コースを整備する計画を立案しており、その実現のために我が国にプロジェクト方式技術協力を要請してきた。これに基づき、調査団の派遣を重ね、本年4月に事前調査団を派遣し、協力の枠組みについてミニッツにてトルコ政府と合意したところである。

本調査においては、これまでの調査結果を踏まえつつ、プロジェクトの実施計画、相手国側実施体制につき協議を行い、その結果をミニッツにとりまとめることを目的とする。

4. 主な協議／調査先

- 9月 4日 JICA トルコ事務所
在トルコ日本国大使館
国民教育省表敬
- 5日 国民教育省との協議
- ～7日 国民教育省とのミニッツ協議
- 8日 ミニッツ署名（国民教育省技術職業教育総局局長）
JICA トルコ事務所（調査結果報告）
在トルコ日本国大使館（調査結果報告）
- 11日 アナトリア工業高校コンヤ・アディル・カラアチ校

5. 調査概要

(1) 調査方法

- ・プロジェクトの実施計画に関し国民教育省と協議を行い、その結果をとりまとめ M/M に集約した。

(2) 決定事項

実施スケジュール

- ・プロジェクト開始は2001年4月中旬とする。
- ・イズミール校（拠点校）並びにコンヤ校（協力校）での生徒受け入れに関し、トルコ側は2001年9月から両校同時の開講を希望。最終的には実施協議調査団にて決定することとする。
- ・暫定実施計画、暫定活動計画についてはM/MのANNEX II, VI, VIIに添付のとおり。

日本側投入

- ・専門家は長期6名（リーダー、情報電子／機械各2、調整員）、短期専門家は必要に応じ派遣する。トルコ側より、コンヤ校への技術移転に関し、短期専門家や長期専門家の派遣に対し強い要望があった。（長期専門家の常駐は不可能な旨説明し了解を得る）
- ・研修員受け入れは年間1～4名であることを説明。カウンターパートの配置時期、人数とのシミュレーションを行った。初年度は4名を5月頃から派遣する予定となっている。その後のスケジュールについてはプロジェクト開始後調整することとする。
- ・カリキュラム、科目の説明と並行して主要機材に関する説明を行い、トルコ側の下承を得た。（M/MのANNEX I）

トルコ側投入

- ・カリキュラム、科目に基づく教員配置必要時間数を計算し、国民教育省の規則に概ね沿う形で初年度以降の配置を決定した。（M/MのANNEX III）なお、現行では教員一人あたり週40時間授業での配置数となっているが、R/D後にプロジェクト実施校に対しては週20時間授業等の特別措置をとることができるように国民教育省内部にて調整するとの発言があった。
- ・プロジェクトの実施並びに機材設置に必要な場所の確保につき、イズミール校、コンヤ校の校長を含め協議し、最大の便宜を図る旨発言を得た。具体的なレイアウト等については、実施協議時にイズミール校、コンヤ校を訪問して協議を行うこととする。

上述の機材設置に必要な電源、ネットワーク環境整備等に関し、トルコ側が責任を持って実施する旨、発言を得た。

- ・プロジェクト運営にかかる必要経費に関しても、トルコ側でできる限りの特別予算措置をとる旨、発言を得た。

運営管理

- ・事前調査時に作成した組織図に、具体的なプロジェクトサイトを記入したものを M/M ANNEX IV として合意を得た。
- ・事前調査時に作成した PDM の修正案を提示し、了承を得た。(M/M ANNEX V)

(3) 今後の確認事項

- ・両校に対する技術移転スケジュールの最終確認を行う。
- ・イズミール校及びコンヤ校での機材設置に必要な設備につき確認し、トルコ側への準備を依頼する。
- ・プロジェクト開始前の本邦研修実施（国民教育省技術職業教育総局局長）につき、検討する。

以上

別添 1：面談記録

2：Minutes of Meeting

主要面談者リスト

1. 国民教育省

Deputy Undersecretary	Mr. Mehmet TEMEL
Deputy Under-secretary,	Mr. A. Remzi SEZGIN
国民教育省技術職業教育局	
Director General	Mr. Naim DURMAZ
Deputy Director General	Mr. Mehmet CAKIREL
Deputy Director General,	Mr. Ismet NISANCI
Head of Department	Mr. Erol BELCE
Director of International and Bilateral Projects Section	Mr. Ibrahim DEMIRER
Director of Curriculum Development Section	Mr. Osman YILDIRIM

2. 協力対象校

アナトリア工業高校イズミール・マザール・ゾルル校校長	Mr. Sati CALISKAN
アナトリア工業高校コンヤ・アディル・カラアチ校校長	Mr. Muzaffer APAN

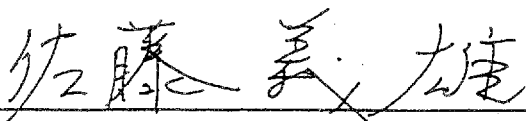
THE MINUTES OF MEETING
BETWEEN
THE JAPANESE SUPPLEMENTARY STUDY TEAM
AND
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE REPUBLIC OF TURKEY
ON
THE JAPANESE TECHNICAL COOPERATION
FOR
THE PROJECT ON THE INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT
IN ANATOLIAN TECHNICAL HIGH SCHOOL

The Japanese Supplementary Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (JICA), headed by Mr. Yoshio SATO, visited the Republic of Turkey from September 3 to September 12, 2000, for the purpose of formulating the detailed plan of the implementation of the Project on the Industrial Automation Technologies Department in Anatolian Technical High School. (hereinafter referred to as "the Project").

During its stay in the Republic of Turkey, the Team exchanged views and had a series of discussions with the Turkish authorities concerned, headed by Director General, Mr. Naim DURMAZ.

As a result of the discussions, the Team and the Turkish authorities concerned agreed to report to their respective Governments the matters referred to in the document attached hereto.

Ankara, September 8, 2000



Yoshio SATO
Leader,
Supplementary Study Team
Japan International Cooperation Agency
Japan



Naim DURMAZ
Director General,
General Directorate of Technical and
Vocational Education
Ministry of National Education
The Republic of TURKEY

THE ATTACHED DOCUMENT

The discussion between the Team and Turkish authorities concerned were held in Ankara with participants listed below;

Turkish Side	
Ministry of National Education	
Naim DURMAZ	Director General of Technical and Vocational Education
Mehmet ÇAKIREL	Deputy Director General
Erol BELCE	Head of Department
İbrahim DEMIRER	Director of International and Bilateral Projects Section
Osman YILDIRIM	Director of Curriculum Development Section
Anatolian Technical High School	
Satı ÇALIŞKAN	School Director, Izmir Mazhar Zorlu Anatolian Technical High School
Muzaffer APAN	School Director Konya Adil Karaağaç Anatolian Technical High School
Japanese Side	
JICA Office in Ankara	
Toru NAITO	Assistant Resident Representative
Timur SAYRAÇ	Head of Technical Cooperation Division
The Team	
Yosio SATO	Leader, Senior Curriculum Specialist for Industrial Education, Elementary and Secondary Education Bureau, Ministry of Education, Science, Sports and Culture
Yasuo SUZUKI	Technical Education, Senior Advisor, JICA
Yasuhiro ISHIDA	Planner for curriculum and equipment, Teacher, Computer Technology, Niiza Comprehensive Technical High School
Megumi HIROSE	Cooperation Planning, Social Development Cooperation Department, JICA

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1. Master Plan

The Project will be implemented in accordance with the Master Plan as follows.

1. Title of the Project

The Project on the Industrial Automation Technologies Department in Anatolian Technical High School

2. Ultimate goal

To fill the demand for mid-level technicians and engineers in the automation technology field in the Republic of Turkey.

3. Overall goal

To introduce a new educational system for automation technology for other Anatolian Technical High Schools (ATHSs).

4. Project purpose

To establish a new educational system as an extension model in the Izmir and Konya Anatolian Technical High Schools in order to train mid-level technicians that will meet the requirements of industries utilizing automation technology.

5. Outputs

- (1) Development of an innovated curriculum. (Outline is shown in the ANNEX I)
- (2) Development of new learning materials.
- (3) Development of suitable teaching materials.
- (4) Establishment of a training system for teachers (including teaching methods) and improvement of teachers' capabilities.
- (5) Introduction of state-of-the-art equipment to meet the requirements of industry.
- (6) Proper operation and maintenance of the equipment mentioned above through learning of technology.
- (7) Output (1)- (6) above are converted in the form of electronic media and deployed to the public, other schools and industries.
- (8) Establishment of a new system on industrial automation technologies department in Anatolian technical high schools that meets the needs of industry, and creation of an extension system.
- (9) Assessment (monitoring, evaluation) of the entire project process in terms of technical transfer from Japan to Turkey.

6. Activities

- (1-1) Formulation of curriculum
- (1-2) Drawing up of a syllabus based on the curriculum
- (2-1) Production of learning materials (for practice)
- (2-2) Production of textbooks

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- (3-1) Production of teachers' manuals for practice
- (3-2) Drawing up of a teaching guidance for training
- (3-3) Drawing up of a demonstration model
- (3-4) Implementation of model lesson by experts
- (4-1) Formulation of a plan for technology transfer
- (4-2) Development of equipment for training of teachers
- (4-3) Technology transfer related to training methods
- (4-4) Implementation of teachers' training using learning and teaching materials produced under 2 and 3 above
- (5-1) Drawing up of a list of training materials and equipment
- (5-2) Procurement of materials and equipment
- (6-1) Technology transfer related to use of materials and equipment
- (6-2) Implementation of training on the maintenance of materials and equipment
- (6-3) Formulation of a plan for acquiring necessary spare parts (e.g. confirming the route for obtaining spare parts and expendables or substitutes)
- (7-1) Conversion of information resulting from items 1 to 6 in the form of electronic media
- (7-2) Deployment of converted information to the public via the Internet and establishment of a management system
- (8-1) Understanding of the automation technology needs of industry
- (8-2) Work to gain certification from the Turkish Ministry of National Education for the new educational system
- (8-3) Implementation of seminars for other schools aimed at extending the new educational system
- (8-4) Implementation of seminars for enterprises aimed at introducing the new educational system
- (8-5) Implementation of teachers' training courses for instruction of specific subjects
- (8-6) Support in selection of schools to implement the new educational system
- (8-7) Support for career guidance/job placement system
- (8-8) Strengthening of networks with industry
- (9-1) Establishment of a monitoring and evaluation system
- (9-2) Regular implementation of monitoring and evaluation

II. Duration of the Project

The duration of the Japanese technical cooperation for the Project will be five (5) years. The Team and Turkish sides understand that the starting date of the Project will be middle of April 2001.

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III. Project site

Project Center will be located at Izmir Mazhar Zorlu Anatolian Technical High School.
Cooperation site will be located at Konya Adil Karaagac Anatolian Technical High School.

IV. Measures to be taken by the Government of Japan

(1) Dispatch of a long-term expert as follows;

Chief advisor,

Coordinator,

Experts of

Information Electronics 2,

Information Machinery 2.

(2) Dispatch of a short-term expert

A short-term expert will be dispatched in accordance with the needs for the effective implementation of the Project.

(3) Training of a counterpart personnel in Japan

Some Turkish counterpart personnel involved in the Project will be trained in Japan. The number of trainees and training periods will be determined annually according to the discussions by the both sides. Tentative schedule of training in Japan is shown in the ANNEX II.

(4) Provision of equipment

The list of main equipment that is necessary to implement the Project is shown in the ANNEX I.

Japanese side will provide the necessary equipment for the technology transfer activities. The details of provision of equipment will be defined by both sides' agreement later on.

V. Measures to be taken by the Government of Turkey

(1) Assignment of Personnel

(1-1) Counterpart personnel

Turkish side will assign a sufficient number of counterpart personnel being capable in English for technology transfer to ensure effective operation of the Project. Turkish side agreed that 9 (nine) counterparts will be assigned when the project starts, and other counterparts will be assigned according to the assignment plan, which is shown in ANNEX III.

(1-2) Administrative Personnel

Turkish side will assign a sufficient number of administrative personnel and if necessary additional technical teachers to ensure effective operation of the Project. Plan of the assignment is shown in ANNEX III.

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(2) Buildings and facilities

Turkish side will prepare necessary buildings and facilities for the implementation of the Project. Japanese side requests that Turkish side prepare necessary arrangements such as electricity, computer network for installation of equipment.

Turkish side will also provide offices and other necessary facilities for the Japanese experts in both the project center and cooperation site.

(3) Furniture and consumable materials

Turkish side will provide furniture and consumable materials necessary for the implementation of the Project. Japanese side requests that Turkish side provide basic tools.

(4) Budget allocation

Turkish side will ensure operational expenses for the project schools for the implementation of the Project.

VI. Administration of the Project

(1) The tentative organization chart of the Project is given in ANNEX IV.

(2) Joint Coordinating Committee

(2-1) Functions

The Joint Coordinating Committee (hereinafter referred to as "JCC") will be established for the effective and successful implementation of technical cooperation for the Project. JCC will meet at least once a year or whenever the necessity arises, in order to fulfill the following functions:

- (A) To formulate annual work plan of the Project;
- (B) To review the progress of the annual work plan;
- (C) To review and exchange opinions on major issues that may arise during the implementation of the Project;
- (D) To discuss any other issue(s) pertinent to smooth implementation of the Project.

(2-2) Composition

(A) Chairperson: Director General of Technical and Vocational Education Directorate, Ministry of National Education

(B) Members of Turkish side

- a. State Planning Organization (SPO) Representative of Social Sector and Coordination General Directorate,
- b. Deputy Director General, Technical and Vocational Education Directorate,
- c. Head of Department, Technical and Vocational Education Directorate,
- d. Director of International and Bilateral Projects Section, Technical and Vocational Education Directorate,
- e. Director of Curriculum Development Section, Technical and Vocational Education Directorate,

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- f. School Principal of the Project center (Izmir), as the Project Manager, with responsibility of the technical and administrative issues for the implementation of the Project
- g. School principal of the cooperation site (Konya)
- h. Representative of local related industry.

(C) Members of Japanese side

- a. Chief advisor to provide necessary recommendations and advice to the Project Director and the Project Manager on any matters pertaining to the implementation of the Project
- b. Coordinator,
- c. Long-term experts,
- d. Resident Representative of JICA in Turkey or a personnel of the JICA office,
- e. Other personnel concerned, to be assigned by JICA, if necessary

Note: Official(s) of the Embassy of Japan in the Republic of Turkey may attend as observer(s).

VII. Project Design Matrix (PDM)

The Team and Turkish side discussed to elaborate the tentative Project Design Matrix (PDM) which was made in the preliminary study. The revised PDM is shown in ANNEX V.

VIII. Plan of Operation (PO)

The tentative PO is shown in ANNEX VI and VII.

IX. Tentative Schedule

(1) Implementation of the Project

The tentative schedule of implementation is shown in ANNEX II.

According to this schedule, Japanese side will execute the plan such as dispatching experts, provision of equipment and counterparts training. On the other hand, Turkish side will execute the plan such as assignments of counterpart personnel, preparation of buildings and facilities, furniture and consumable materials and allocation of budget.

(2) Implementation Study

When the Project is found viable, the Japanese Implementation Study Team will be dispatched to finalize the content of the technical cooperation and record it in the form of the R/D, hopefully around October 2000.



ANNEX I	Curriculum of industrial automation technologies department and its list of main machinery and equipment
ANNEX II	Tentative Schedule of Implementation
ANNEX III	Assignment plan of C/P and administrative personnel
ANNEX IV	Tentative organization chart of the Project
ANNEX V	Tentative Project Design Matrix
ANNEX VI	Tentative Plan of Operation (Whole period)
ANNEX VII	Tentative Annual Plan of Operation

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CURRICULUM OF INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT
AND ITS LIST OF MAIN MACHINERY & EQUIPMENT

	SUBJECTS	MAIN MACHINERY & EQUIPMENT
	Subject of "Basic Practice for Industrial works" Purpose: To study widely basic knowledge of electricity, electronics, and digital circuit. Chapter: 1 Electric circuits / components 2 Electronics / semi-conductors 3 Digital circuits	volts meter, ampere meter, oscilloscope, sharing machine, bending machine, etching gadget
C O M	Subject of "Mathematics for engineering I" Purpose: To study mathematics knowledge for basic industrial process. Chapter: 1 Outline of the Automatic Control Technology 2 Industrial phenomena and its mathematical expression 3 Mathematical disposal 4 Application of the disposal 5 Practice	—
M O N	Subject of "Basic Practice for Information Technology" Purpose: To study basic concept of the information technology, then to organize practice how to use a basic software application. Chapter : 1 Operating system 2 Application software 3 Internet /Web. System / UNIX 4 E-mail 5 Home page building practice 6 Picture editing / Movies, Sound 7 Three dimension graphics practice 8 Practice of the CD-ROM contents	personal computer with network facility, application software (word processor etc.), digital camera

	SUBJECTS	MAIN MACHINERY & EQUIPMENT
	Subject of "Mechanical Works and Engineering I" Purpose: To study and practice the basic mechanical engineering subject Chapter : 1 Industrial material for manufacturing 2 Mechanical work, using the material 3 Introductory of basic mechanical design	lathe, drilling machine, milling machine
C	Subject of "Technical Drawing" Purpose: To study and develop the analysis skill of the drawing data / file, as well as basic knowledge and technique of drawings, through drawing practice then to study fundamental knowledge of the CAD/CAM.	drawing instrument
O	Subject of "Mathematics for engineering II" Purpose: To study how to dispose engineering mathematical expression to computer process.	—
M	Chapter : 1 Mathematical computer-process	
M	Subject of "Mechanical Works and Engineering II" Purpose: To study mechanical design technology through practice.	lathe, drilling machine, milling machine
O	Subject of "Microcomputer Technology" Purpose: To study and practice the computer hardware configuration and its assembling, as well as basic of the software and interface technology.	PIC training set, pocket computer, personal computer
N	Chapter : 1 Configuration of a micro-processor 2 Hardware 3 Software 4 Input / Output interface 5 Programming	PIC: one kind of micro-processors

	SUBJECTS	MAIN MACHINERY & EQUIPMENT
	<p>Subject of "Electricity and Electronic Engineering "</p> <p>Purpose: To study engineering phenomena and circuit of the electricity / electronics, as well as studying mathematical disposal of the engineering phenomena.</p> <p>Chapter : 1 Alternating current circuit 2 Magnetisms 3 Electric motor 4 Transistor</p>	—
C	<p>Subject of "CAD / CAM"</p> <p>Purpose: To practice of CAD / CAM facility.</p> <p>Chapter : 1 Basic mechanisms of the CAD 2 Operation of the CAD / CAM</p>	personal computer, CAD/CAM software
O		
M	<p>Subject of "Fundamentals of Computer Network"</p> <p>Purpose: To study technology of the local area network, then to study the network for manufacturing.</p> <p>Chapter : 1 Basics of the local area network 2 OSI model (OSI: Open System Interconnection) 3 Practice of the network 4 Outline of the UNIX 5 Internet Technology 6 Configuration of a network server</p>	personal computer, network equipment
M		
O		
N		
	<p>Subject of "Industrial Management"</p> <p>Purpose: To study basic managerial knowledge concerning the industrial farm operation.</p> <p>Chapter : 1 Planning and control of manufacturing products. 2 Manufacturing process management and quality control 3 Security management for manufacturing accidents 4 Smooth operation of an industrial farm</p>	—

	SUBJECTS	MAIN MACHINERY & EQUIPMENT
C O M M O N	<p>Subject of "Technical English"</p> <p>Purpose: To cultivate ability of presentation concerning industrial technical issues.</p> <p>Chapter : 1 Conversation on industrial topics</p> <p>2 Presentation</p> <p>3 Reading and writing an engineering report</p>	—
I N F O R M A T I O N	<p>Subject of "Sequence Control Technology"</p> <p>Purpose: To study application technology of programmable controls on the manufacturing line, as well as basic technology.</p> <p>Chapter : 1 Basics of the sequence technology</p> <p>2 Programmable controller</p> <p>3 Application of programmable controller</p> <p>4 Technology of the sensor and actuator</p> <p>5 Mechatronics knowledge</p> <p>6 Pneumatic control</p>	programmable logic controller (PLC), pneumatic control, training set, hydraulic set
S P E C I A L I T Y	<p>Subject of "Basics Technology for Factory Automation"</p> <p>Purpose: To study the robotics and numerical controlled machine technology, as well as the PLC application.</p> <p>Chapter : 1 Fundamentals of Industrial robot</p> <p>2 Numerical control technology</p> <p>3 Application to manufacturing line</p>	NC machine, industrial robot NC: Numerical Control

		SUBJECTS	MAIN MACHINERY & EQUIPMENT
I N F O R		Subject of "Computer Control Technology" Purpose: To study actual computer control technology on a manufacturing line and its interface technology, as well as those programming	personal computer, I/O interface
		Chapter : 1 Advanced concept of the interface 2 C-language programming 3 Control technology of a peripheral machine 4 Design technology of the computer control.	I/O: Input and Output
	S M	Subject of "Computer Network for the Factory Automation System" Purpose: To study computer network system for / connecting manufacturing facility in a farm and for / connecting some farms.	personal computer
	P A E T C I O	Chapter : 1 Application of the internet server 2 Factory automation technology through the computer network	
A N L I M T A Y C H I	Subject of "Automatic Production Technology" Purpose: To study practical automation production technology on various manufacturing processes, then to study operation of a NC machine, a robot, and application of the PLC. Chapter : 1 NC programming 2 Industrial robot 3 Automation technology of manufacturing facility	NC machine, industrial robot	
N E R Y	Subject of "Factory Automation System Technology" Purpose: To study connection technology of various kind of manufacturing process lines, using the PLC and the PC system. Chapter : 1 Design of the FA system 2 Operation of the system 3 Its maintenance	Factory Automation system	




		SUBJECTS	MAIN MACHINERY & EQUIPMENT
I N F O R M		Subject of "Mechatronics"	sensor, actuator
		Purpose: To study technology of a sensor and actuator and system configuration using the sensor and actuator. The subject is situated next to the computer control technology.	
		Chapter : 1 Knowledge of various sensors and actuators 2 Programming and control technology 3 The built-in system	
S A P T E I C O I N		Subject of "Feedback Control Technology"	personal computer
		Purpose: To study control technology of analogue data / information.	
		Chapter : 1 Basics of the feed back control 2 Analogue proportional integrals / differentials 3 Digital proportional integrals / differentials	
A L E I L T E Y C T R		Subject of "Computer Programming"	personal computer
		Purpose: To study the C-language programming, as a basic control language.	
		Chapter : 1 Basics of the grammar 2 The sub-routines and the pointer 3 Disposals of character data 4 Structure body 5 Built-in program of the C-language	
O N I C S		Subject of "Industrial Products Design"	personal computer, CNC milling machine for electronic circuit board
		Purpose: To design and make control system, using all of studied subjects	
(IE)			CNC: Computerized Numerical Control

		SUBJECTS	MAIN MACHINERY & EQUIPMENT
S P E C I A L I T Y		Subject of "Network design for computer system on the automatic control" Purpose: To design and construct the automatic control network design, using the control technology and program language.	personal computer, network equipment
	IE	Chapter : 1 Control technology through the network 2 Language of "JAVA" 3 Practice of the network design	

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TENTATIVE SCHEDULE OF IMPLEMENTATION

PROJECT TITLE : THE PROJECT ON THE INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT IN ANATOLIAN TECHNICAL HIGH SCHOOL

PHASE	IMPLEMENTATION					
	2001	2002	2003	2004	2005	2006
I. PROJECT DURATION	[Solid bar spanning 2001-2006]					
II. INPUTS BY TURKISH SIDE						
1. ASSIGNMENT OF COUNTERPART PERSONNEL (total)	[Solid bar spanning 2001-2006]					
2. ASSIGNMENT OF ADMINISTRATIVE PERSONNEL	[Solid bar spanning 2001-2006]					
3. BUILDINGS & FACILITIES	[Solid bar spanning 2001-2004]					
4. FURNITURE & CONSUMABLE MATERIALS	[Solid bar spanning 2001-2006]					
5. ALLOCATION OF BUDGET	[Solid bar spanning 2001-2006]					
III. INPUTS BY JAPANESE SIDE						
1. LONG-TERM EXPERTS	[Solid bar spanning 2001-2006]					
2. SHORT-TERM EXPERTS	[Solid bar 2001]	[Solid bar 2002]	[Solid bar 2003]	[Solid bar 2004]	[Solid bar 2005]	
3. PROVISION OF EQUIPMENT	[Solid bar spanning 2001-2004]					
4. TRAINING OF TURKISH COUNTERPART PERSONNEL IN JAPAN	[Solid bar 2001]	[Solid bar 2002]	[Solid bar 2003]	[Solid bar 2004]		
5. STUDY TEAMS			[Solid bar 2003]		[Solid bar 2005]	
IV. JOINT COORDINATING COMMITTEE	[Solid bar 2001]	[Solid bar 2002]	[Solid bar 2003]	[Solid bar 2004]	[Solid bar 2005]	
V. TECHNOLOGY TRANSFER						

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ANNEX III Assignment plan of C/P and supporting staff

1. Counterpart personnel

- (1) Principal of Project center (Izmir)
- (2) Principal of Cooperation site (Konya)
- (3) Teachers as follows:

		Total	2001	2002	2003	2004
IZMIR	Information Electronics	5	3	1	1	0
	Information Machinery	4	3	1	0	0
KONYA	Information Electronics	5	3	1	1	0

2. Administrative personnel

- Accountant
- Secretaries
- Drivers
- Other staff

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TENTATIVE ORGANIZATION CHART OF THE PROJECT

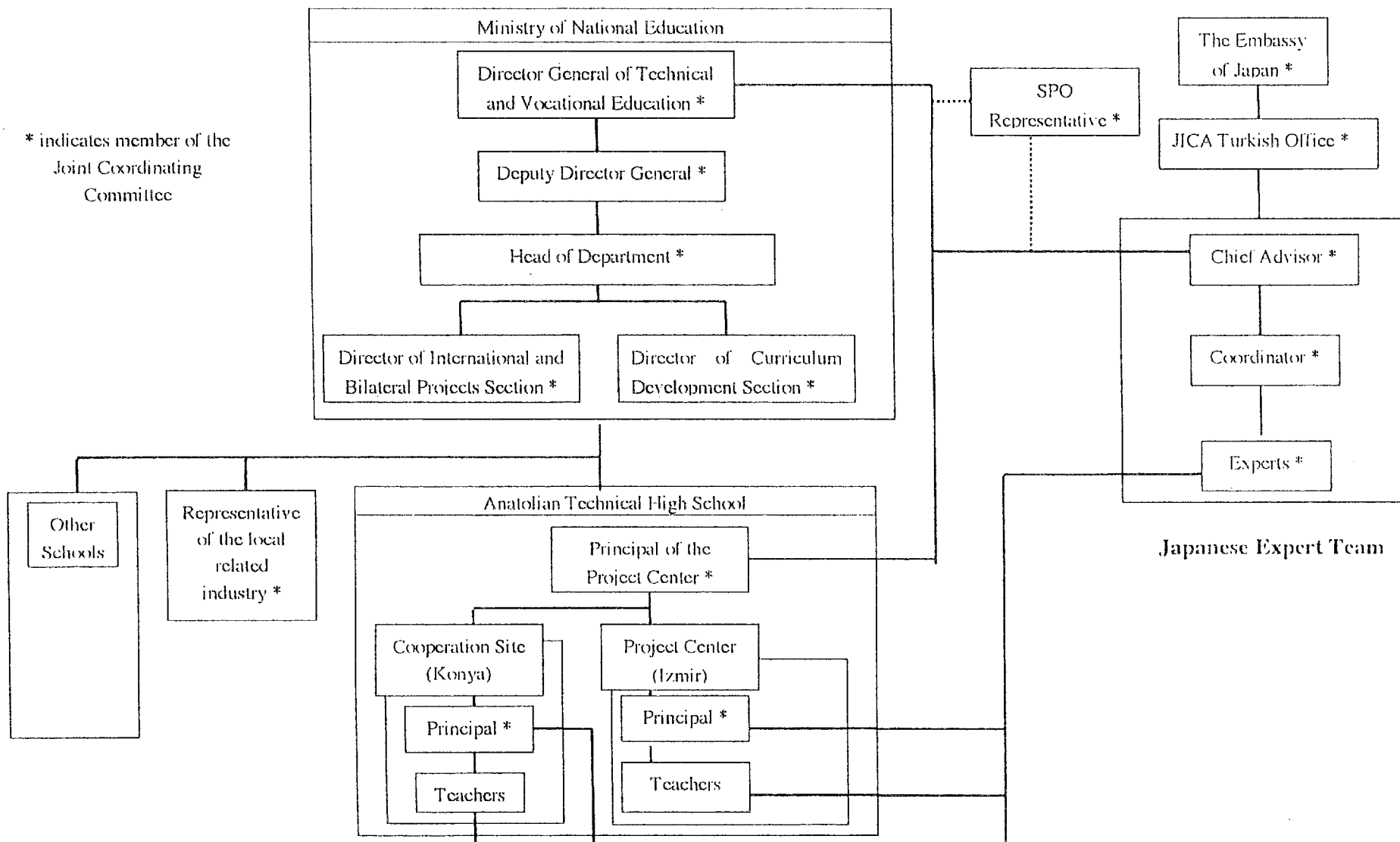
Turkish side

Japanese side

* indicates member of the
Joint Coordinating
Committee

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Amir



TENTATIVE PROJECT DESIGN MATRIX

Project name: The Project on Industrial Automation Technologies Department in Anatolian Technical High School

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Ultimate Goal</p> <p>To fill the demand for mid-level technicians and engineers in the automation technology field in the Republic of Turkey.</p>	<p>1. Increase in the number of persons finding employment in the automation technology field</p>	<p>1. Statistical records</p>	
<p>Overall Goal</p> <p>To introduce a new educational system for automation technology for other Anatolian Technical High Schools (ATHSs).</p>	<p>1. Number of industrial automation technologies departments established at Anatolian technical high schools</p> <p>2. Number of project subjects taught at Anatolian technical high schools</p>	<p>1. Data from the Ministry of National Education</p> <p>2. Data from the Ministry of National Education</p>	<p>1. Enterprises continue to require technicians trained in automation technology.</p>
<p>Project Objective</p> <p>To establish a new educational system as an extension model in the Izmir and Konya Anatolian Technical High Schools in order to train mid-level technicians that will meet the requirements of industries utilizing automation technology.</p>	<p>1. Ratio of students finding employment in industries using automation technology against the overall number of students finding employment</p> <p>2. Degree of satisfaction enterprises have for the capabilities of graduates</p> <p>3. Number of applicants to Izmir Mazhar Zorlu and Konya Adil Karaagac ATHSs</p> <p>4. Proportion of Anatolian technical high school teachers that understand the new educational system</p> <p>5. Entrance examination scores of successful applicants to both schools</p>	<p>1. Records of where students are employed after graduation</p> <p>2. Questionnaires distributed to enterprises</p> <p>3. Data from the Ministry of National Education</p> <p>4. Records of project activities, data from the Ministry of National Education</p> <p>5. Data from the Ministry of National Education</p>	<p>1. The needs of enterprises for technicians trained in automation technology do not change significantly.</p> <p>2. The project continues to receive the support of the Ministry of National Education</p> <p>3. Teachers that have received training do not enter private employment.</p> <p>4. Continuous funding of the project is secured</p>

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TENTATIVE PROJECT DESIGN MATRIX

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Outputs</p> <p>1. Development of an innovated curriculum.</p> <p>2. Development of new learning materials</p> <p>3. Development of suitable teaching materials.</p> <p>4. Establishment of a training system for teachers (including teaching methods) and improvement of teachers' capabilities.</p> <p>5. Introduction of state-of-the-art equipment to meet the requirements of industry.</p> <p>6. Proper operation and maintenance of the equipment mentioned above through learning of technology.</p> <p>7. Output 1.- 6. above are converted in the form of electronic media and deployed to the public, other schools and industries.</p> <p>8. Establishment of a new system on industrial automation technologies department in Anatolian technical high schools that meets the needs of industry, and creation of an extension system.</p> <p>9. Assessment (monitoring, evaluation) of the entire project process in terms of technical transfer from Japan to Turkey.</p>	<p>1-1. Curriculum and syllabus are developed by (month) 2001</p> <p>1-2. The Board of Education approves the curriculum by (month) 2001</p> <p>1-3. Degree of satisfaction related industries have for the curriculum</p> <p>2. (Learning materials/textbooks) are prepared (number) months before the start of lessons each school year</p> <p>3. (Instruction manuals for practice manual/instruction outline/demonstration model) are prepared (number) months before the start of lessons each school year</p> <p>4. Level to which teachers have mastered (lesson content/instruction methods/course management methods)</p> <p>5-1. Degree of satisfaction of enterprises for level of equipment supplied</p> <p>5-2. Equipment is installed (number) months before technical transfer</p> <p>6-1. Level to which C/Ps have mastered operation of equipment</p> <p>6-2. Rate of operation of equipment</p> <p>6-3. Rate of inefficiency due to lack of spare parts and expendables</p> <p>7-1. Degree to which conversion has been completed (curriculum, syllabus, learning materials, teaching materials, training system)</p> <p>7-2. Percentage of electronic media deployed to the public, other schools and industries</p> <p>8-1. Ministry of National Education announces the introduction of the new educational system</p> <p>8-2. Surveys of the needs of enterprises are conducted more than once per year</p> <p>8-3. Degree to which extension seminars for the new educational system (directed at other schools) are held</p> <p>8-4. Degree to which introductory seminars for the new educational system (directed at enterprises) are held</p> <p>8-5. Number of teachers who work for other ATISs receiving instruction in courses related to industrial automation technologies</p> <p>8-6. Degree to which schools to implement the new educational system have been selected</p> <p>9-1. Assessment system has been formulated by (month) 2001</p> <p>9-2. Degree to which assessment is being conducted using the system</p>	<p>1-1. Records of project activities</p> <p>1-2. Data from the Ministry of National Education</p> <p>1-3. Questionnaires distributed to related enterprises</p> <p>2. Records of project activities</p> <p>3. Records of project activities</p> <p>4-1. Implementation of evaluation committee</p> <p>4-2. Implementation of simultaneous testing of teachers</p> <p>5-1. Interviews of related enterprises</p> <p>5-2. Equipment maintenance records</p> <p>6-1. Records of project activities</p> <p>6-2. Records of equipment rate of operation survey</p> <p>6-3. Records of spare parts and expendables stock survey</p> <p>6-4. Interviews concerning route for obtaining spare parts and expendables or substitutes</p> <p>7-1. Records of project activities</p> <p>7-2. Records of survey of amount of information made available on the Internet</p> <p>8-1. Data from the Ministry of National Education</p> <p>8-2 to 8-5. Records of project activities</p> <p>8-6. Data from the Ministry of National Education, records of project activities</p> <p>9-1. Records of project activities</p> <p>9-2. Records of project activities</p>	<p>1. The needs of enterprises for technicians trained in automation technology do not change significantly from those assessed by the needs survey.</p>

TENTATIVE PROJECT DESIGN MATRIX

Activities	Inputs	Important Assumptions
<p>1-1. Formulation of curriculum 1-2. Drawing up of a syllabus based on the curriculum 2-1. Production of learning materials (for practice) 2-2. Production of textbooks 3-1. Production of teachers' manuals for practice 3-2. Drawing up of a teaching guidance for training 3-3. Drawing up of a demonstration model 3-4. Implementation of model lesson by experts 4-1. Formulation of a plan for technology transfer 4-2. Development of equipment for training of teachers 4-3. Technology transfer related to training methods 4-4. Implementation of teachers' training using the study and teaching materials produced under 2 and 3 above. 5-1. Drawing up of a list of training materials and equipment 5-2. Procurement of materials and equipment 6-1. Technology transfer related to use of materials and equipment 6-2. Implementation of training on the maintenance of materials and equipment 6-3. Formulation of a plan for acquiring necessary spare parts (e.g. confirming the route for obtaining spare parts and expendables or substitutes) 7-1. Conversion of information resulting from items 1 to 6 in the form of electronic media 7-2. Deployment of converted information to the public via the Internet and establishment of a management system 8-1. Understanding of the automation technology needs of industry 8-2. Work to gain certification from the Turkish Ministry of National Education for the new educational system 8-3. Implementation of seminars for other schools aimed at extending the new educational system 8-4. Implementation of seminars for enterprises aimed at introducing the new educational system 8-5. Implementation of an teachers' training course for instruction of specific subjects 8-6. Support in selection of schools to implement the new educational system 8-7. Support for career guidance/job placement system 8-8. Strengthening of networks with industry 9-1. Establishment of a monitoring and evaluation system 9-2. Regular implementation of monitoring and evaluation</p>	<p><u>Turkish Side</u></p> <p>1. Assignment of personnel -Counterparts (C/Ps) IZMIR Information Electronics 5 Information Machinery 4 KONYA Information Electronics 5 -Administrative personnel 2. Buildings and facilities 3. Furniture and consumable materials 4. Allocation of budget</p> <p><u>Japanese side</u></p> <p>1. Dispatch of experts -Long-term experts Chief advisor, Information Electronics 2, Information Machinery 2, Coordinator -Short-term experts 2. Provision of equipment 3. Training of Turkish C/Ps in Japan</p>	<p>1. The occupational training system in Turkey does not change significantly. 2. Accessibility to the Internet improves. (Establishment of infrastructure for electronic communication progresses.)</p> <hr/> <p>Preconditions</p> <p>1. Counterparts are appropriately assigned 2. Financial resources are appropriately secured</p>




PROJECT TITLE: THE PROJECT ON THE INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT IN ANATOLIAN TECHNICAL HIGH SCHOOL

SUBJECT OF ACTIVITIES	1st Year				2nd Year				3rd Year				4th Year				5th Year				
	2001				2002				2003				2004				2005				2006
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I
TERM OF COOPERATION	_____																				
1. Development of an innovated curriculum																					
1-1. Formulation of curriculum	_____																				
1-2. Drawing up of a syllabus based on the curriculum	_____																				
2. Development of new learning materials																					
2-1. Development of suitable teaching materials					_____				_____				_____				_____				
2-2. Production of textbooks					_____				_____				_____				_____				
3. Development of suitable teaching materials.																					
3-1. Production of teachers' manuals for practice					_____				_____				_____				_____				
3-2. Drawing up of a teaching guidance for training					_____				_____				_____				_____				
3-3. Drawing up of a demonstration model					_____				_____				_____				_____				
3-4. Implementation of model lesson by experts					_____				_____				_____				_____				
4. Establishment of a training system for teachers (including teaching methods) and improvement of teachers' capabilities.																					
4-1. Formulation of a plan for technology transfer	_____																				
4-2. Development of equipment for training of teachers					_____				_____				_____				_____				
4-3. Technology transfer related to training methods					_____				_____				_____				_____				
4-4. Implementation of teachers' training using the study and teaching materials produced under 2 and 3 above.					_____				_____				_____				_____				
5. Introduction of state-of-the-art equipment to meet the requirements of industry.																					
5-1. Drawing up of a list of training materials and equipment	_____																				
5-2. Procurement of materials and equipment					_____				_____				_____				_____				

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SUBJECT OF ACTIVITIES	1st Year				2nd Year				3rd Year				4th Year				5th Year				
	2001				2002				2003				2004				2005				2006
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I
6. Proper operation and maintenance of the equipment mentioned above through learning of technology.																					
6-1. Technology transfer related to use of materials and equipment																					
6-2. Implementation of training on the maintenance of materials and equipment																					
6-3. Formulation of a plan for acquiring necessary spare parts (e.g. confirming the route for obtaining spare parts and expendables or substitutes)																					
7. Output 1.- 6. above are converted in the form of electronic media and deployed to the public, other schools and industries.																					
7-1. Conversion of information resulting from items 1 to 6 in the form of electronic media																					
7-2. Deployment of converted information to the public via the Internet and establishment of a management system																					

SUBJECT OF ACTIVITIES	1st Year				2nd Year				3rd Year				4th Year				5th Year				
	2001				2002				2003				2004				2005				2006
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I
8. Establishment of a new system on industrial automation technologies department in Anatolian technical high schools that meets the needs of industry, and creation of an extension system.																					
8-1. Understanding of the automation technology needs of industry																					
8-2. Work to gain certification from the Turkish Ministry of National Education for the new educational system																					
8-3. Implementation of seminars for other schools aimed at extending the new educational system																					
8-4. Implementation of seminars for enterprises aimed at introducing the new educational system																					
8-5. Implementation of an teachers1 training course for instruction of specific subjects																					
8-6. Support in selection of schools to implement the new educational system																					
8-7. Support for career guidance/job placement system																					
8-8. Strengthening of networks with industry																					
9. Assessment (monitoring, evaluation) of the entire project process in terms of technical transfer from Japan to Turkey.																					
9-1. Establishment of a monitoring and evaluation system																					
9-2. Regular implementation of monitoring and evaluation																					

I: April-June
 II: July-September
 III: October-December
 IV: January-March

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PROJECT TITLE: THE PROJECT ON THE INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT IN ANATOLIAN TECHNICAL HIGH SCHOOL

SUBJECT OF ACTIVITIES	2001												2002			
	4	5	6	7	8	9	10	11	12	1	2	3	4			
TERM OF COOPERATION	_____															
1. Development of an innovated curriculum																
1-1. Formulation of curriculum	_____															
1-2. Drawing up of a syllabus based on the curriculum				_____												
2. Development of new learning materials																
2-1. Development of suitable teaching materials																
2-2. Production of textbooks																
3. Development of suitable teaching materials.																
3-1. Production of teachers' manuals for practice																
3-2. Drawing up of a teaching guidance for training																
3-3. Drawing up of a demonstration model																
3-4. Implementation of model lesson by experts																
4. Establishment of a training system for teachers (including teaching methods) and improvement of teachers' capabilities.																
4-1. Formulation of a plan for technology transfer																
4-2. Development of equipment for training of teachers																
4-3. Technology transfer related to training methods																
4-4. Implementation of teachers' training using the study and teaching materials produced under 2 and 3 above.																

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SUBJECT OF ACTIVITIES	2001									2002			
	4	5	6	7	8	9	10	11	12	1	2	3	4
5. Introduction of state-of-the-art equipment to meet the requirements of industry. 5-1. Drawing up of a list of training materials and equipment 5-2. Procurement of materials and equipment													
6. Proper operation and maintenance of the equipment mentioned above through learning of technology. 6-1. Technology transfer related to use of materials and equipment 6-2. Implementation of training on the maintenance of materials and equipment 6-3. Formulation of a plan for acquiring necessary spare parts (e.g. confirming the route for obtaining spare parts and expendables or substitutes)													
7. Output 1.- 6. above are converted in the form of electronic media and deployed to the public, other schools and industries. 7-1. Conversion of information resulting from items 1 to 6 in the form of electronic media 7-2. Deployment of converted information to the public via the Internet and establishment of a management system													

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SUBJECT OF ACTIVITIES	2001										2002			
	4	5	6	7	8	9	10	11	12	1	2	3	4	
8. Establishment of a new system on industrial automation technologies department in Anatolian technical high schools that meets the needs of industry, and creation of an extension system.														
8-1. Understanding of the automation technology needs of industry														
8-2. Work to gain certification from the Turkish Ministry of National Education for the new educational system														
8-3. Implementation of seminars for other schools aimed at extending the new educational system														
8-4. Implementation of seminars for enterprises aimed at introducing the new educational system														
8-5. Implementation of an teachers' training course for instruction of specific subjects														
8-6. Support in selection of schools to implement the new educational system														
8-7. Support for career guidance/job placement system														
8-8. Strengthening of networks with industry														
9. Assessment (monitoring, evaluation) of the entire project process in terms of technical transfer from Japan to Turkey.														
9-1. Establishment of a monitoring and evaluation system														
9-2. Regular implementation of monitoring and evaluation														

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