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FINAL REPORT
ON
A JOINT EVALUATION STUDY
OF
JAPANESE TECHNICAL COOPERATION PROJECT
IN
THE FEDERATIVE REPUBLIC OF BRAZIL

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prepared by

Brazilian Cooperation Agency - ABC, Ministry of Foreign Relations
Ministry of Health
National Health Foundation
Oswaldo Cruz Foundation (FIOCRUZ)
SENAI/NATIONAL
SENAI/MG

and

Japan International Cooperation Agency

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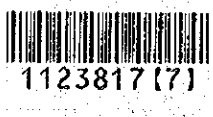


1 INTRODUCTION

1.1 OBJECTIVES

The Ministry of Foreign Relations in Brazil (MOFR) and the Japan International Cooperation Agency (JICA) agreed to conduct a joint evaluation study of the following two technical cooperation project carried out in Brazil in cooperation with Japan.

The two projects to be evaluated are as follows:

1) SENAI Electrical and Electronic Vocational Training Center Project
2) Biologicals Production Project

The objectives of the joint evaluation study are:

1) To identify the achievements and problems of the target project,
2) To share common findings and understanding of the results, and
3) To feedback the results to the improvement of planning and implementing future projects in Brazil.

The joint evaluation study covers all stages of the two projects, i.e. project formation, implementation, and ex-post situation of the project.

1.2 PROJECT SUMMARY

1.2.1 SENAI ELECTRICAL AND ELECTRONIC VOCATIONAL TRAINING CENTER PROJECT

Complied to the strong industrialization policy of the Brazilian Government in the 1970's, many investments by overseas enterprises and international assistance were undertaken in Brazil, which resulted in a shortage of high-skilled technicians (technicos) to satisfy the technical

standard required by investors and progressive Brazilian industries. And it was pointed out to be an obstacle for the promotion of industrialization. But, at that time, adequate training facilities did not exist in Brazil.

Under such background, the Brazilian Government requested assistance from the Japanese Government to establish a vocational training center in Belo Horizonte in order to train high-skilled technicos in the field of electric and electronic techniques.

In response to the request, the Japanese Government started technical cooperation to the training center. The cooperation project was, as scheduled, implemented from 1979 and completed in 1984.
After the completion, the vocational training center (CETEL) has been making the efforts for the adaptation to rapid technical progress in the local industries. In June of 1993, CETEL was selected as one of 13 "National Technology Information Centers" by SENAI.

1.2.2 BIOLOGICALS PRODUCTION PROJECT

Since 1980, the Ministry of Health had been strengthening a National Vaccination program of Immunization, whereby the Ministry was responsible for supplying the whole country with a certain number of biologicals that were considered essential to the health service network in Brazil.

In order to develop the technical capability for domestic production and quality control of measles and poliomyelitis vaccines, the Brazilian Government requested the technical cooperation on a bilateral basis.

In response to the request of the Brazilian Government, JICA visited the Federative Republic of Brazil in August, 1980, for the purpose of discussing the technical cooperation program concerning the Biologicals Production Project. The project aimed to establish measles vaccine production and to strengthen quality control of measles and poliomyelitis vaccines in Brazil through technology transfer to the Oswaldo Cruz Foundation (FIOCRUZ), the Ministry of Health.

During the project implementation of three years, nineteen Japanese experts were dispatched, and nine Brazilian counterparts were sent to Japan for technical training. Equipment necessary for the project was donated by the Japanese Government.

After the completion of the technical cooperation in 1983, a Japanese evaluation study team was dispatched and agreed to take the necessary measures for extending the duration of the Japanese technical cooperation project for one year, up to August 1984 and dispatched five Japanese experts and accepted additional six Brazilian counterparts for technical training in Japan.

Recently, FIOCRUZ (Ministry of Health) became virtually the largest integrated biomedical research center in Latin America and its technical development activities were recognized by WHO (World Health Organization). In 1991, the regional branch of WHO for the Americas designated Brazil as one of the two regional centers for vaccines development.

2 STUDY METHOD

2.1 METHODOLOGY

This study evaluates the projects employing the logical framework concept usually applied in a project design. The details of the logical framework approach are reported in Preliminary Guidelines on Evaluation Methods and Procedures, JICA (1990). The essence of the logical framework is to evaluate a project through 4 stages: project inputs (activities), outputs, purpose, and goal. At each stage, important assumptions of the project are made.

The key evaluation items for the project are as follows:

A. Efficiency

Efficiency of the project is concerned with the transformation of project inputs into outputs in terms of time, cost and use of other project resources.

B. Effectiveness

Effectiveness is to examine the degree to which the project is being realized, i.e. by comparing the original targets with the results actually achieved, and to analyze factors and conditions leading to the difference.

C. Impact

Impact of the project examines the developmental effects brought about by the project. Impacts -- positive, negative, expected or unexpected -- should be evaluated against the overall development within the country as a whole.

D. Sustainability

Sustainability is concerned with the likelihood to which the objectives of the project are continued after the project assistance is over.

E. Relevance

Relevance is also known as project rationale and examines the relevance of the project at the time of project preparation up till implementation, in accordance with the change in project circumstances.

In this particular joint evaluation study, the means for the study is to conduct interview and questionnaire survey of various categories of people who were involved or have benefited from the two projects.

Six categories of respondents have been defined. They are:

a. Brazilian counterparts and staff (hereinafter referred to as "the Counterparts"), who worked or who are presently working for the project;

b. Brazilian managers (hereinafter referred to as "the Managers") who have been in the supervising position with the project, belonging to the project implementing agencies;

c. Brazilian officials (hereinafter referred to as "the Officials") who have been in the supervising position with the project, belonging to MOFR, SENAI/NATIONAL and Ministry of Health;

d. Professional persons (hereinafter referred to as "the Professionals") who are specialists in the field of the project;

e. Beneficiaries from the project (hereinafter referred to as "the Beneficiaries"); and

f. Japanese experts (hereinafter referred to as "the Experts"), who worked for the project during the Japanese cooperation period.

For this project, interviews were carried out with all categories of respondents. Additionally, questionnaires were sent out to other Beneficiaries and Professionals.

The JICA has also commissioned a related study in Japan on the experts who were attached to the project and also found out their opinions and their experiences.

2.2 STUDY TEAM

Each agency, MOFR and JICA, hired a group of consultants and formed a study team in order to execute the joint evaluation study.

The members of the study teams are as follows:

Brazilian Study Team:

a. Nelson de Oliveira	Brazilian Cooperation Agency -ABC Ministry of Foreign Relations
b. João Baptista Risi Júnior	Ministry of Health
c. José Lazaro de Brito Ladislau	National Health Foundation
d. Otávio Pinheiro Oliva	Oswaldo Cruz Foundation (FIOCRUZ)
e. Geraldo Eustáquio de Oliveira	SENAI/NATIONAL
f. Erich Robert Gans	SENAI/MG
g. Carmen Rocha Dias	SENAI/MG
h. Valerie Rumjanek Chaves	Ministry of Health

Japanese Study Team:

a. Yasuo Mukai	Institute for International Cooperation, Japan International Cooperation Agency
b. Yoshitaka Fujita	Japan International Cooperation Agency

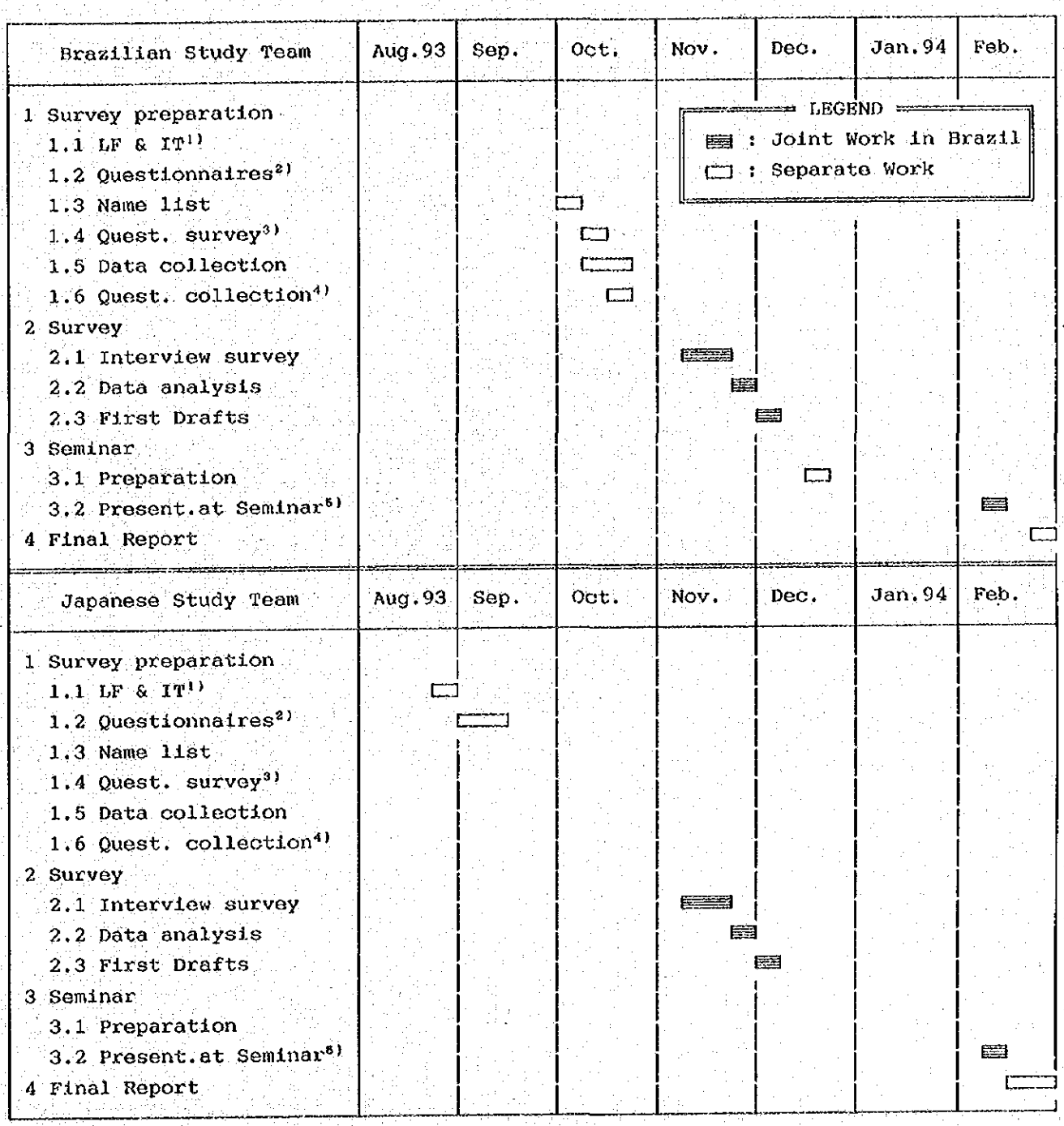
c. Kanji Hoshino PADECO Co., Ltd.

d. Akio Nakamura PADECO Co., Ltd.

2.3 WORK PROCEDURE

The joint evaluation study has been carried out, as shown on the next page.

Work Schedule



REMARKS:

1) Logical Framework and Indicator Table
2) Question sheets for the interview survey and questionnaires
3) Questionnaire Survey; Questionnaires shall be distributed.
4) Questionnaire collection; Those questionnaires distributed shall be collected.
5) Presentation at Seminar; Both Study Teams shall present their own findings and understandings from the joint evaluation study.

[Extracted from the Brazilian side's report "SENAI ELECTRICAL AND ELECTRONIC VOCATIONAL TRAINING CENTER PROJECT - EVALUATION REPORT" which appears as ANNEX-A of this volume.]

3 SENAI ELECTRIC AND ELECTRONIC VOCATIONAL TRAINING CENTRE PROJECT

SUMMARY

Complied to strong industrialization policy in 1970's by the Government of the Republic of Brazil, many investments by overseas enterprises and international assistance were undertaken in Brazil, which resulted in a shortage of skilled technicians (technicos) to satisfy the technical standard required by investors and a progressive Brazilian industry. And it was pointed out to be an obstacle for the promotion of industry. But in that period, an adequate training facility did not exist in Brazil.

Under such background, the Brazilian Government requested assistance from the Japanese Government to establish a training centre in the existing SENAI's vocational centre, Cesar Rodriques School, in Belo Horizonte (CETEL) in order to train higher skilled technicos in the field of electric and electronics techniques for employment in Brazilian industries.

In response to the request, the Japanese Government dispatched missions such as Pre-Study Mission (March 1978), Expert Team (August 1978) and Implementation Survey Team (March 1979), to study the feasibility of implementation of the project. According to the results of study and suggestions the Record of Discussion (R/D) on cooperation in the field of electric and electronic technical training was signed in March 1979 by both Governments.

The cooperation Project (the Project) of components which were a dispatch of experts, provision of equipment and training in Japan, was implemented effectively from 1979 as soon as R/D was signed and successfully completed in March 1984 as scheduled in spite of a delay in construction of building and import of some training equipments. In addition to the training in Brazil, training in Japan was an important and effective program in the Project. In total, 17 counterparts visited Japan to participate in electric and electronic training courses prepared by JICA.

After the cooperation project was completed in 1984, the Training Centre (CETEL) was and continues to be successfully operated by enthusiasm of SENAI and support from the Japanese Government such as the dispatch of short term experts, provision of equipment and training in Japan. The number of graduates reached 476 in December 1993 and most of the graduates are appreciated as superior technicos and treated with better salaries in the companies where the interview survey was carried out.

The effort of adaptation to rapid technical progress is being conducted by the staff of CETEL such as to attend international conferences and internal technical seminars for training of instructors prepared by SENAI and new curriculum and materials are gradually introduced to the training. According to those movement, Industrial Information Technique Course was newly started by the request of Brazilian industrial circle instead of the previous Electric Technical Training Course.

According to interviews of the supervisors in the companies, the impacts of the training effects given to Brazilian industries is still weak in spite of the good reputation among the officials and related people. The most of interviewed companies have only 1 to 5 graduates. They were evaluated as one of the capable members of the section.

But the limited number of graduates from CETEL, only 20 to 30 graduates every year, make it difficult to have significant impacts, especially to big companies. Lack of public relations activities of CETEL may be also one of the reasons that the graduates' skill is not widely known in Brazil.

One of the positive major impact to vocational education in Brazil is that training centres woke up to follow the quick progress of technical innovation and adopt them for upgrading of technical level. Recently, in June 1993, SENAI selected 13 training centres to establish the "National Technology Information Centre" in cooperation with UNESCO, financed by UNESCO and SENAI. SETEL was selected as one of the 13 centres and expected to be one of the leaders of technical innovation in Brazil.

This program is scheduled to continue until May 1995 and will be extended in accordance with its results and effects.

Since the Japanese cooperation project was completed in 1984, CETEL has been providing higher skilled technicos to Brazilian industries. The training programs of CETEL are mostly highly appreciated by officials and related persons and CETEL has established its fame as a model training centre in Brazil.

The Brazilian side stated that the "Third Country Training Program" (TCTP) is very much appreciated not only in Brazil but in surrounding countries such as Colombia, Peru, Venezuela, Chile, Paraguay and Bolivia because of the technique transferred by Japanese and sponsored by the Japanese Government. It was already carried out 8 times in CETEL and ABC considered that this program was firmly established as one of the most important training programs in Brazil. The effects of the training program is widely appreciated and being strongly requested to undertake continuously by the governments of Brazil and surrounding countries.

An outline of the findings and evaluations is as follows.

3.1 OVERALL EVALUATION

3.1.1 EVALUATION RESULTS OF THE BRASILIAN SIDE

PRESENTATION

This report is fruit of a joint study executed by the Brazilian and Japanese Governments, through the Brazilian Cooperation Agency - ABC and the Japanese International Cooperation Agency - JICA aiming at the identification of the results obtained and the problems occurred in the planning and implementation of Japanese cooperation projects in Brazil, besides the use of these results to subsidize future projects development between these two countries.

The technological Center of Electro-Electronics "César Rodrigues"- CETEL, implemented through the technical cooperation Brazil/Japan , was one of the projects chosen as the planned evaluation target.

In spite of the time passed between the development of the cooperation project and the current moment which the evaluation was executed, SENAI as JICA partner and responsible for the planning, implementation and working of CETEL, has promptly identified with the purpose of the work, by means of the opportunity of getting subsidy that could assign the planning of future actions from the Centre.

It's expected that the results that are registered here can contribute, in a decisive way, for the development of new Japanese technical cooperation projects in Brazil and that the richness of information available can contribute effectively in raising the quality of the service rendered by CETEL in favour of the graduation and development of human resources and the technological development in the Brazilian industrial sector.

1 - CETEL - RESULT OF PARTNERSHIP BRAZIL/JAPAN

Conceived as PJ ("Projeto Japão") - CETEL had its planning started by the end of the years 70, when then the industrial development process had already missing specialized manpower to attend upon the needs of electro-electronics sector.

After a negotiation period between SENAI and JICA an agreement of technical cooperation was signed on March 29th, 1979 forecasting the donation of equipments, technical assistance and know-how tranference by the Japanese side and with SENAI taking responsibility by the building construction, complementary equipments acquisition, arrangement of the human resources and the unit maintainance.

On April 6th, 1981 were officially implemented two programmed technical courses: Electric and Electronic Training Courses, pioneers till then.

During these thirteen years of running the center, 476 trainees have concluded the technical course, that has established nowadays in one of the Centre's action strategy to attend upon the needs of the electro-electronics industry, that according to data from the RAIS/MTB (Annual Report of Social Information - Ministry of Labour) numbered 790 enterprises in 1991 absorbing 11.360 employees in Minas Gerais.

The Centre's profile has been objective of a continual evolution, influenced by the quick changes proceeding from the external ambient causing the deactivation of the Electric Training Course - extinct in 1989 - and the emerging of others, as the Industrial Computer Science, besides the enlargement of the possibilities available by the CETEL nowadays.

Thanks to this capacity of adequacy, incorpored progressively to its routine, CETEL has been recognized as a Vocational Training Center model in Brazil, soon being elevated to the category of National Technology Center, what makes it worth saying, that it's directed to absorption and diffusion of new technologies, additionally to the functions that it currently performs.

It's undeniable the contribution from Centres as CETEL in the elevation of the productivity level of the industries that need, more than ever, improve the quality of their products and services, facing the level of competitivity in the internal and external markets, impelled by the globalization of the economy and a higher level of the consumer demanding.

Although the serious crisis lived by the country, the high inflationary rate that endanger the expansion plan of the industries in general, the moment of great politics disorder which is passing the Brazilian nation, the country needs to grow searching its self-sufficiency.

The investment of graduating and developing human resources as part of a wider educational process, that includes in its goals the upbringing to work, as a way of citzenship redemption and structure of a fairer society, still constitutes as being the greater key for the country.

That's once more, the reason of the importance of CETEL as a reference centre to the technical training not only in Brazil as for other countries in Latin America and the necessities of permanent updating of its material and human resources.

2 - DEVELOPMENT OF EVALUATION

The operational systematic of the evaluation, led simultaneously by the Brazilian and Japanese teams, implied the following itens:

2.1 - Methodology used

The methodology allows a re-analyze of the cooperation project using the concept of logical framework that defines the overview of the project, indicating the basic components of the project, i.e. inputs, activities, outputs, project purpose sector goal and super goal. It defines these components.

The evaluation focuses the project under the following aspects:

- Efficiency: to judge the appropriateness of the means, methods, time, period and cost required to achieve the results. It's concerned with the tranformation of input into output, in terms of time, cost and the use of other resources;

- Effectiveness: to examine the degree to which the project purpose is being achieved, by comparing the original planned targets with the results actually achieved, and to analyze the factors and conditions which have led to the differences, if any;

- Impact: to analyze development effects including possible negative effects brought about by the project. These effects shall be evaluated mainly from the viewpoint of operational and managemental, technical, economic, and social aspects. Impact refers to the positive and negative effects, anticipated or not, on the concerned sector or on overall development within the recipient country.

- Sustainability: to assess the likelihood of the objectives of the project continuing after the project assistance is over. It shall be evaluated mainly from the viewpoint of operational and managemental, technical, and financial aspects;.

- Relevance: to examine the relevance of the project designs set up at the time of project preparation and those revised during project implementation, in accordance with changes in project circumstances. This is called project rationable. Based on an examination of the aspects previously state the relevance of the project can be discussed. Relevance is also related with whether or not the socio-economic needs are still existent to justify the continuation of the project.

2.2 - Target - Informant

Initially delimited by the Japanese study team, the target-people include:

. Beneficiaries from the project: trainees, graduates, graduates' supervisors and businessmen.

. Counterparts: instructors and technicians who have worked or who are presently working at CETEL.

.Managers: staff from SENAI who have, at the time of the project, supervised its implementation.

.Officials: specifically belonging to ABC and SENAI - National Department who have been responsible by the project at level of macro-system.

. Professionals: from universities and schools similar to CETEL who keep an interchange with the Centre.

2.3 - Data Collection

The necessary data collection to the evaluation was given through:

a - Fulfilment of the Indicator Table: it was performed a survey on a secundary data source in accordance with the indicators specified in the methodology evaluation model adopted (logical framework) including information about the project during the period from 1980 to 1993.

b - Interviews: 20 interviews were done in the period from November 16th to November 19th/93 including 35 people, from which originated a report with a synthesis of the information obtained.

c - Questionnaire: 5 different questionnaires previously prepared by the Japanese Study Team were adapted and translated into Portuguese by the Brazilian Work Team.

As a result of their distribution the following aspects were verified:

- Graduates: 222 questionnaires were mailed from which 23 were returned due to graduates' changing address and 68 were filled out and returned as asked.
- Graduates' supervisors: from the 54 questionnaires mailed, 10 were properly returned.
- Trainees: 07 from the 09 trainees who are attending the last period of the Electronic Training Course filled out the questionnaires.
- Instructors: 05 instructors integrating the target-public filled out the questionnaires.
- Counterparts: identified as the technical team, in this item were included 5 technicians who have already belonged to the working team of CETEL with those who are presently working in the Centre. From 10 questionnaires 7 were mailed back.

3 - RESULTS

According to the five aspects previously established it was analyzed the following:

3.1 - Efficiency

It can be asserted in a general way that the project was implemented in accordance with its initial planning.

The Japanese experts attended completely the purposes of the project, with a satisfactory training period, houwever the unlink of the team should have occurred gradually instead of all at once.

The technology transferred to the counterparts was positive.

Another aspect refers to the teaching materials translated at the time of the cooperation.

This material, in English, was worth for its technical contents, but the ones in Japanese were scarcely used since the translation takes time besides being expensive.

Regarding to the counterparts training in Japan it was adequate, contributing to increase their technological and training skillful level.

The difficulties found regarding to the training program, sometimes, incompatibles with the features and needs of the Brazilian counterparts, were surpassed through negotiation with the institutions responsible for the training in Japan.

The training period was considered adequate by the interviewed public on the whole, stressing that long training period (a year for example) can affect the familiar life of the counterparts.

The equipments donated to CETEL by the Japanese government were considered satisfactory, of good quality, requiring few spareparts up to now and being adequately provided .

However these equipments attended the needs of the industries during the cooperation period being up-to-date at that time what doesn't happen nowadays with most of them being considered obsolet.

Although the efforts carried out by SENAI to keep the Centre - CETEL - up-to-date and to complement the existente labs, there's shortage of equipments such as: Spectrum Analyzers, Digital Oscilioscopes, Digital True and RMS Multimiters.

Regarding to the Brazilian counterpart, the building and facilities were properly provided with enough space and in accordance with the project extent at that time.

The budget for installation and maintainance of the Centre was satisfactorily provided, allowing its entire operation not only during the cooperation period but up to the present moment.An investiment of US$ 1,176,694.00 was carried out by SENAI from the period of 1980 to 1993 aiming at the enlargement and continual adequacy of the CETEL facilities. Equipments and other materials acquired from 1987 to 1993 absorbed resources valuing US$ 1,029,278.00

The human resources required to the operation of the Centre were duly provided in 1980 the staff straight connected to the project was composed of 14 people, besides the administrative support from the team of the Vocational Training Center which was linked to the "Projeto Japão" (PJ).

At present CETEL counts with 46 employees.

Considering the aspects previously mentioned it can be asserted that the implementation of the cooperation project occurred in a effective way, with a positive balance as for the results accomplished and with regard to the solutions adopted to the problems which appeared at the time of the cooperation period.

3.2 - Effectiveness

The permanence of the Japanese experts in the centre during the cooperation period, made possible the transference of technology understanding and didactical skills for both counterparts and instructors and the realization of the training system in Electric and Electronics as initially planned.

From the implementation of CETEL to 1993, 476 trainees graduated in the Electronics and Electric courses, and according to information from the companies they're attending to their current needs.

According to data from the graduates' questionnaires, 92% are employed, perfoming jobs compatibles with the technical courses attendend at CETEL. (Two graduates are businessmen in the electro-electronics sector).

In addition to that, the technical level of the graduates was considered " high"by the technical/teaching team of CETEL and by the industries' supervisors.

Although the positive work out of the Electric course, it was deactivated in 1989 due to the low rate of applicants and increasing of dropout rate among the enrolled trainees.

Several points in the graduates' questionnaires, certify the good quality of the Electric course and advise a study about the possibility of its reintegration to the centre's activities.

Regarding to the centre's facilities, equipments and instruments available, they were considered satisfactory by either trainees, graduates and technical/teaching team.

It's worth saying that 57% of the graduates considered the equipments and tools available in the Centre similar to the ones they use in their companies.

The technical-pedagogical performance of the counterparts and instructors was esteemed satisfactory by 95% of the trainees and graduates.

The didactical material was esteemed properly by 95% of the trainees and graduates while 57% of the technicians and instructors esteemed it inadequate.

The companies searched showed themselves receptive to the graduates from the centre since they're quickly engaged to the productive power and for presenting a higher technological level than graduates from similar centres. (80% of the industries' supervisors have preferred graduates from CETEL).

3.3 - Impact

According to the opinion of 90% of the supervisors from the companies searched, it's easier, nowadays, to hire Electric and Electronics techinicians than ten years ago.

The knowledge acquired at CETEL is mostly applicable in the companies and transferred to the graduates' colleagues, being the first, recognized as technicians of good level and able to contribute to the improvement of other employees.

The transference of knowledge has been involved technical information, equipment maintainance, use of instruments and development of projects, according to the observations registered in the graduates' and supervisors' questionnaires.

The technical team and instructors of CETEL have transferred their knowledge to centres of SENAI located in other States, through the technical assistance, and so to the industries through development of joint projects (example: software development to simulation of measurement with CEMIG).

It can be asserted that CETEL has caused a positive impact on the companies contributing to increase their level of productivity.

According to the interviewed professionals, CETEL has been established as a model in its working field, succeding in being a reference center for technological update of universities' teachers and similar schools.

3.4 - Sustainability

CETEL has been competent to continue implementing its activities and run as a National Technology Center in a self-sufficient way, despite the difficulties of SENAI regarding to the continual updating of material and human resources.

The operational costs of CETEL have been kept by the budget of SENAI-MG. Nowadays SENAI has been facing problems related to its operational budget, at the same time CETEL needs to expand and to spreed out their activities.

Concerning this matter there is a national policy wich recommend the adoption of alternative ways to produce returns which can minimize the operational costs of the centre and assure major investments in its technological development.

Although the wages policy of SENAI aren't exempt of the reflection of the wages policy from the educational area on the whole, which levels aren't compensating, the centre personnel have been kept without major changes, as for the opportunities of technological update offered by SENAI and for its substructure that's reliable and steady.

CETEL has tried to develop seminars and update courses regards to the upgrade of technical-pedagogical level of its human resources, in the opinion of 50% of the instructors and 71% of the counterparts.

The number of turn over of instructors and technicians has been low and the replacement of the ones who left by graduates, who are hired at CETEL after a period of permanence as technicians in a company, is promptly provided.

As for the activities developed by CETEL, besides the technical training courses, other important ones have been implemented: technical and technological assistance to the industries regarding to resolution of specific problems, researches and projects development.

The analysis of the technical training courses implemented with their respective demanding, and the detection of the greater technological increased areas, has motivated the opening of the industrial computer science running for two years.

Nevertheless this duty of curriculum revision, which is not continuously performed isn't enough to promote its continual and needed adequacy.

According to the data obtained through the interviews and from the questionnaires filled, the curricula of the technical training courses should comprise other contents essential to the back ground of a technician, as for example:

development of software, data communication computer science, English language(considered as important tool by means of consultation of technical literature).

The establishment, at CETEL of a support service to the graduates, was an alternative suggested through the questionnaires, as a way of helping the ones who enter the work market for the first time. Such support service would be able to guarantee a close and systematic relationship between CETEL and the companies, starting during the probation phase and making possible the collect of subsidy to the reformulation of the curricula of the courses being developed.

Another aspect reported through the interviews and questionnaires refers to the little divulgations of CETEL next to the industries, schools and society in general.

All the aspects previously pointed will be very important to malke strength its efficacy even more, although the sustainability of CETEL is assured with base in the seriousness at the work SENAI performs for 51 years.

3.5 - Relevance

CETEL was planned to provide manpower assigned to attend identified needs to the industrial sector by the time of its implementation.

Implemented with update technology and advanced equipments for that time, CETEL has placed itself ahead of time, achieving the purposes for which it was implemented.

At present the companies have adopted even more advanced technology in their productive process, impelled by the necessity of elevating their competitive level and attending the policy of industrial promotion concerning to the quality improvement.

The initial purpose of the project continues to be relevant nowadays, becoming urgent the updating of human resources and equipments, and the access to the advanced technology.

The variety of the Centre activities regarding to execution of courses and seminars to the companies, technical and technological assistance and development of projects has made possible a gradual linkage of the relationship CETEL/companies, which should be increased.

According to data obtained through the questionnaires, the courses developed at CETEL are applicable to other regions of the country, fact this, considered positive. Most of the supervisors from the companies (90%) assure that they shall need technical staff with a higher level each day.

3.1.2 EVALUATION RESULTS OF THE JAPANESE SIDE

1. EFFICIENCY

(1) The Technical Cooperation Project (the Project) started in March 1979 on schedule, as soon as the R/D was signed. Components of the Project were technical transfer, provision of equipment, and counterpart training in Japan, as initially planned.

(2) According to R/D, the long-term and short-term experts were assigned and dispatched to CETEL from November 1979 to March 1984. Dispatch of the experts were initially planned as soon as R/D was signed. However, it was delayed for approximately 6 months due to assignment of the Brazilian counterparts.

According to the questionnaire survey and interviews of the counterparts and managers, technical transfer by the experts in the field of electric and electronic technique were completed in March 1984 with satisfactory results of the objectives of the Project in spite of delayed start.

(3) Provision of Training Equipment was provided by the Japanese side in compliance with the initial plan in R/D. There were some problems researching custom duties and permissions for import of electronic equipment in the beginning stage, however those problems were solved with the strong support of SENAI.

The biggest problems of the provision of equipment were that most of the instructions and manuals were written only in Japanese and none of the counterparts could read them. It was strongly pointed out by the Brazilian side as a serious obstructive element for the training of operation and maintenance of the equipment.

According to interviews of the counterparts and instructors, provided equipment have been fully utilized for the training and most of them are properly maintained by themselves. But the limited operation budget of CETEL prevents import of advanced equipment to catch up with the most progressive technique.

Obtaining of the spareparts was also pointed out as an nececsary factor to preserve the continuous use of the provided equipment.

At present, most of the necessary spareparts are available with the support of the previous experts and Japanese companies located in Minas Gerais. But frequent procurement of spareparts are not be carried out at all.

(4) Brazilian Inputs were implemented as soon as the R/D was signed in March 1979, and the Brazilian side started to take action in concert with Japanese Inputs as initially scheduled. Construction of the building was started in May 1979 and completed in August 1982. The building is assessed as an appropriate facility and has enough space for the training. It is still properly maintained and offers a favorable training environment.

Dispatch of trainees started in August 1979 with the financial support of the Japanese Government.

Recruitment of 15 counterparts was undertaken during the Project period. After the project period, 4 counterparts resigned and another 4 counterparts were employed.

The management staff of CETEL were also recruited by SENAI and allocated to CETEL as was stated in R/D.

The operation costs of CETEL are fully bared by SENAI as it was stated in R/D.

2. EFFECTIVENESS

(1) During the technical transfer, The Japanese experts focused to created the Training program, textbook and training materials in order to establish the effective training system of CETEL.

(2) According to the studies of Brazilian training methods and requirements for technicos in industries, 60% of the training was allocated for technical practice and 40% for academic subjects.

Production technique of the textbooks and training materials were also transferred through the cooperation and many textbooks have been produced by the instructors of CETEL after completion of the Project.

(3) Transfer of the electric and electronic techniques to Brazilian counterparts has been undertaken by the Japanese expert during the Project period and successfully completed in March 1984, although the start of the transfer was delayed for approximately 6 months due to the assignment of the Brazilian counterparts.

The practical subjects of the transfer were operation and maintenance of the equipments, instruction technique, training plan making, preparation technique for textbooks and training materials. According to the questionnaire, the training standard in CETEL is assessed to be satisfactory and meets the requirements of the companies,

(4) The Training Systems and technical transfer by Japanese experts were regarded to be successfully completed during the project period. And the results of the effort of the experts are highly appreciated by ABC (Brazilian International Cooperation Agency), SENAI, and the related persons in Universities, CETEL and other training facilities. According to the questionnaire and interview survey, 90% of supervisors in the companies answered that the training provided in CETEL was succeeded to upgrade the electric and electronic technical standard in Brazil. And the training and curriculum provided by the CETEL still meet current needs of the companies.

(5) According to the interview survey, all managers and supervisors expressed appreciation to the technical capability of graduateds, especially to their practical technical level and regarded them to be "superior technicos".

As for the training and its standard, the graduates of CETEL, 91% of surveyed graduated were satisfied with the training subjects practical and academic subjects, and 99% of them regards that the training was appropriate to requirements of the companies. The curriculum provided in CETEL also assessed by the supervisors and managers to be properly meeting the current needs of the companies.

Provided training equipment and facilities in CETEL were regarded to be appropriate by the graduates 100% of the graduates answered that they were adequately and properly utilized for training.

Textbooks and materials were regarded to be appropriate for the training in the Project period, 94%, but after graduative, 60% of the graduates are still making use the textbooks for the current job.

3. IMPACTS

(1) The graduates of CETEL are individually appreciated as higher skilled technicos in every interviewed company and contributed for improvement of the technique of the section. However, the impacts of the Project are still not strong in the industrial circles, especially in the big companies and could not establish their reputation even among industries in Minas Gerais.
This is because of the limited number of graduates from CETEL, only 30 graduates every year - 476 graduated during 1982 - 1993, so that the CETEL cannot provide many graduates to the industries and establish the bargaining power in the industrial circles.

(2) On the other hand, the technical capability is highly appreciated and established the fame of CETEL in the small sized enterprizes. This is caused by their working environment that

the results of the work is deeply dependent on the individual initiatives and the technicos can show their capability in the working process in the small companies. Technical transfer by the Japanese experts to the Brazilian counterparts is reflected to the appreciation to the technical standard of technicos who graduated from CETEL. According to the questionnaire survey and interviews of the professors and graduates, it is regarded that the CETEL is considered as a model training centre in the field of electric and electronic technical training in Brazil.

(3) Technical transfer conducted by employed technicos to the company colleague is one of the remarkable impacts of the Project. According to the questionnaire survey and interview of the graduates, most of the graduates of CETEL are playing the role technical advisor in the working team of the companies when problems occur. According to the supervisors, the technicos graduated from CETEL have basic technical knowledge and are capable of tackling the problems in order to solve those problems. As it was stated above, the impact of CETEL is limited but the technical level is highly appreciated by the supervisors.

(4) The technical transfer by the Japanese experts generated a will to follow the further technical innovation in the field of the electronics in accordance with the needs of the Brazilian industrial circles. Since 1991, new training course of "Industrial Information Technical Course" instead of previous electric training course. At present, this course is being effectively operated by the effort of CETEL itself.

Recently, SENAI decided to start a project for establishment of "National Technology Information Technology Centre" in the existing CETEL in cooperation of UNESCO." It is scheduled to be completed in 1995. In order to follow the technical innovation program, SENAI dispatched some of the counterparts to several International Congress and Technical Seminars held in Canada, USA and Europe.

(5) Through the implementation of the scheduled program of the Project, training systems and its results were fully recognized by SENAI as a very appropriate and effective method to train the higher skilled technicos. According to increase of demand for training of manpower in the field of electronic technique, SENAI intends to establish 4 more training centres for electronic technique in Minas Gerais using the established methods and systems which were formulated by the experience learned from the Project of CETEL.

4. SUSTAINABILITY

At present, CETEL has sufficient capability to continue the training program under support of SENAI. The study on sustainability of CETEL was carried out from the following 6 view points.

(1) Budget

Financial background of CETEL is regarded to be sustainable although it is not fully sufficient to purchase the new equipments. All the necessary operation costs, such as salary of the staff and maintenance costs, are provided by SENAI's budget. Financial arrangement of SENAI is undertaken by IAPAS (Secretary of Social Security Fund), which is a national organization under control of the Ministry of Social security.

The Financial source of budget for SENAI is the fund which is collected by IAPAS, 1% of salary allowance of all the companies in Brazil.

The recent economic recession, however, forced the rationalization and curtailment of operation for the member companies and the fund of IAPAS itself is decreasing. At the same time, rapid inflation makes the financial management of CETEL more difficult again. Increase of budget allocation to SENAI will be necessary to assist CETEL to make more frequent renewal of the training equipments.

(2) Human Resource

Preservation of the instructors is an essential for sustainability of CETEL. Present economic recession prevents the resignation of the instructors and CETEL succeeded in securing the instructors. However, once the economic situation will be recovered, outflow of the capable instructors may be one of the most critical issues for CETEL. It is an unavoidable economic and social principle that the capable persons will move to private companies to obtain the better salary and position. Therefore, CETEL will have to establish an effective system to secure the capable teaching staff to provide satisfactory training to the trainees.

(3) Technical Innovation

Technical Innovation of CETEL is regarded to be sustainable. In order to follow the worldwide rapid progress of electronic techniques, CETEL is making efforts to catch up with these advanced techniques. CETEL has a program to send their staff to international seminars and conferences in order to seek the exchange of information with advanced countries.

Since 1991, SENAI started a new training course for "Industrial Information Technique" which was designed to train more advanced computer techniques. This new training course was started in response to requests by member companies of the Industry Federation.

Another movement for technical innovation by SENAI is to establish "National Technology Information Centre" in cooperation with UNESCO. This project aimed to establish the information centre for advanced technology in order to catch up the progressed technique by themselves. It will be completed in 1995 and the technical innovation in CETEL will be strongly supported by the "National Technology Information Centre".

(4) Facilities

The building of CETEL was constructed by SENAI from May 1979 - June 1980. According to the observation of the Evaluation Team, the building is being properly maintained and is in good condition. The training workshop is appropriately arranged and maintained in good condition, although the equipment provided by the Project appears old. Other installations are properly arranged. As for the building facility, there is no defect to specify in the evaluation survey. But it is necessary to provide appropriate budget allocation for maintenance every year.

(5) Equipment

The training equipment provided by the Project are well maintained and in good condition. After completion of the Project, the counterparts constructed many kinds of necessary equipment by themselves with the domestically available parts and used for training. But most of fine measuring equipment are not available in the domestic market and also it is extremely difficult to import. In addition, all the spare parts for provided equipment were not available in the domestic market and sometimes lack of spare parts caused stop of the training. To establish the spare parts provision program and financial arrangement for purchasing will be a key factor to secure the effective training.

(6) Public Relations

Record of employment is the most important factor to attract the applicants with higher capability. At present, CETEL is not paying much attention to the Public Relations activities made by the management of CETEL. But according to the interview survey, many graduates and counterparts ponted out this policy as a negative attitude for promotion of employment of the graduates and to widely establish the fame of CETEL in the major companies in the industrial circle. It will secure the number and capability of the applicants every academic year.

5. RELEVANCE

(1) The establishment of CETEL in 1980 was very appropriate because it was at the time when the Brazilian Industrial Federation requested to SENAI to train enough electric and electric technicos for technical innovation of the industries in 1970's. So that the technicos who were trained in CETEL were very much welcomed by every relating industrial enterprise.

(2) Japanese technical transfer successfully contributed to establish the reputation of technical innovation capability of CETEL among the companies of Industrial Federation.
Since 1991, CETEL started "Industrial Information Technique Training Course" in accordance with the requests of the Industrial Federation. It is based upon the transfered computer technique and it is still contributing to technical innovation in the Brazilian industry.

(3) CETEL has been providing the technical seminars for the companies employees and the seminars are still contributing to upgrade the technical capability of the employees on the job site. Many companies appreciate these seminars and have requested to undertake many seminars. However, limited space and number of lecture rooms prevent to accept all the requests. But those seminars have been contributing to enhance the technical standard of Brazilian industries.

3.2 RECOMMENDATION

3.2.1 RECOMMENDATION FROM THE BRAZILIAN SIDE

Although the aspects enrolled in this item, are concerned to the evaluation of the cooperation project of CETEL, they were collected aiming at subsidy to the execution of future similar technical cooperation projects.

a) Initial Planning of the Project: the initial planning of the project should forecast besides the permanence of the Japanese experts during the cooperation development period their gradual unlink, aiming at preserving the continuity of the activities.

A major understanding of either the native or English languages as mediator is of fundamental importance to the transference of technology, training of counterparts and elaboration of didactical material and operational handbooks assigned to the working of the equipments.

b) Establishment of Chronogram: the comprehension of bureaucratic aspects relating to keeping track of projects thorough Governmental Departments shall contribute to the establishment of chronograms and terms more adequate to the reality.

c) Counterparts Training: the training of counterparts in Japan should be preceded by analyzing the level of difficulties presented by the counterparts, their level of technological development, and their real shortage.

This study should guide the training planning as for the contents, strategy to be adopted and duration of the activities in Japan. Such procedure could assure the optimization of the expected results.

d) Project's Follow up: following up the project during and after its conclusion should be organized aiming at favoring possible problem's detection during its implementation and to guarantee the consolidation of good results.

This system would give beginning, for example, to a program of assistance to CETEL, besides serving as a permanent channel of interchange between the cooperation agencies.

e) Guaranty of Continuity of the Project: during the cooperation period, strategies to guarantee the continuity of the project could be analyzed according to the real possibilities and local peculiarities, aiming at adopting domestic solutions to future problems.

In case of obsolescence of equipments for instance, the work up of partnership among CETEL and companies holder of technologies could bring great benefits to both parts.

f) Support Service to Graduates: the developments, by CETEL, of a support service to graduates at the execution of probation and at their entering in the work market, should make concrete as a way of promoting the linkage in the relationship CETEL/company, keeping syntony with the needs of the companies, and favoring the attendance to the graduates and their professional

performance, and consequently, of assuring the feedback process of the curriculum.

g) Divulgation of the Centre Activities: a project of a more intense divulgation of the Centre and the activities developed should be object of major attention by SENAI since the high concept it holds and the relevant services it grants are of noticing of a small number of industries and society in general. This procedure would contribute not only for the increasing of the applicants' number to the technical training courses as for making more accessible to the graduates the opportunities of working.

h) Knowledge of the Language: Knowledge of the Language: the understanding of the English language is considered of basic importance to the technical performance, since a great part of the specialized literature, catalogues, time table, etc, are in English in the electric and electronics areas.

CETEL should study alternatives to the development of English courses, even though being optional, parallelly with the technical training courses, aiming at its attendance by the trainees from the Centre.

i) Deactivation of the Electric Course: deactivation of the Electric course should be object of a deeper study, since the graduates from this course succeeded in the work market in accordance with the information held in the questionnaires.

The investigation about the real reasons of the applicants' decrease number and the elevation of the dropout rate could lead, for example, to a restructure of the course instead of its deactivation.

j) Graduates' Updating: as for the human resources of CETEL need periodic updating, the graduates should also be thought over this aspect.

Because of the large territorial extension of the country, and the location of graduates in different parts of the Brazilian territory, plans of periodic updating for them could be worked out in the pattern of TCTP.

Additionally to that, the utilization of the capacity settled in the centre, should be considered to night-shift courses and updating seminars opened to the public an alternative inclusively as source of additional income to CETEL.

3.2.2 RECOMMENDATION FROM THE JAPANESE SIDE

(1) A preliminary survey should be the most important starting process of the project and desisned to analyze the local situation and search the potential elements which will be influenced by the implementation of the project. Especially, great attention should be paid to socio-economic, political and environmental influences and to build up the future development framework of the local society.

At the same time, analysis of local technical capability and infrastructure which support the local technical development are essential factors to undertake the successful cooperation. It is definitely indispensable condition to establish a common staging point. And the study of local education and employment system should be included in the preliminary study items.

(2) Some communication problems were pointed out by both the Japanese and Brazilian sides. It is caused mains by the language problem. Considering the method and system of cooperation, working together on equal footing, using common language for communication. Language ability and communicable and flexible attitude should be the most priority element for assignment of the expert. It is fundamental element to conduct the study in smooth and friendly relationship.

(3) Assignment of the expert is also essential element to enhance effect of the project. Arrival of the expert should be properly coordinated with the start of the cooperation. Especially, schedule for repatriation of the experts should be carefully scheduled in order to avoid to give uneasiness and deserted feeling to local counterparts.

(4) The spare parts supply system for the provided equipment is also an important element to sustain the effects of the project. Long term spare parts supply system should be established during and after cooperation period. In the case of Brazil, the nationalization policy resulted in high import duties for spare parts. So it is essential to gradually increase local procurement ratio of the equipment and spare parts in order to secure the project sustainability.

(5) The projects operation budget is one of the most important factors to ensure the sustainability of the projects. A financial study of including the most effective and efficient financial arrangement should be conducted in the PROJECT study. On the planning stage, feasibility study and operation plan should be conducted in order to secure the project sustainability.

(6) Network system between the implementing organization and the project beneficiaries should be established to enhance the effects and impacts of the study. Other expected effects are

information and human networks which are the most important and effective accumulation for progress of the advanced technology.

(7) Establishment of third country training is considered as one of the most effective solution to make the counterparts independent from the assistance by Japanese expert. It will call the awareness of the counterparts as an independent professional and to make him self-confident. The third country training should be strongly supported by JICA to enhance the basic technical standard of the region. It will contribute to improve their living standard. The local technical standard is one of the most essential factors to conduct the effective cooperation.

4. BIOLOGICALS PRODUCTION PROJECT

Since 1980, the Ministry of Health had been strengthening a National Vaccination program of Immunization, whereby the Ministry was responsible for supplying the whole country with a certain number of biologicals that were considered essential to the health services network of the Brazil.

At that time, production of the number of the measles vaccine and quality control of the biologicals were important issues. In order to develop these capability the Government of Brazil requested the technical cooperation through bilateral bases.

In response to the request of the Brazilian Government, the Japan International Cooperation Agency (JICA) visited the Federative Republic of Brazil in August 1980 for the purpose of discussing (the Record of Discussions (R/D)) the technical cooperation program concerning the Biologicals Production project. The project aimed to establish Measles vaccine production and to strengthen quality control of Polio and Measles vaccines in Brazil through technology transfer to the Oswaldo Cruz Foundation (FIOCRUZ), Ministry of Health.

During the three years of the project implementation, nineteen(19) Japanese experts were dispatched, and nine (9) Brazilian counterparts were sent to Japan for technical training. Equipment necessary for the project was provided by the Japanese Government.

After the first stage of the cooperation project was completed in 1983, a Japanese Evaluation Survey Team was dispatched and it agreed to take the necessary measures for extending the duration of the Japanese Technical cooperation project for one year, from August 1983 to August 1984 and dispatched five (5) Japanese experts and accepted additional six (6) Brazilian counterpart trainees in Japan.
After this extension the Project was completed as scheduled.

Recently, FIOCRUZ (Ministry of Health) became virtually the largest Integrated Center for biomedical research in Latin America and its technical development was recognized by WHO branch for the Americas. In 1991, the regional branch of WHO for the Americas established FIOCRUZ as one of the two regional centers for the development of vaccines.

4.1 OVERALL EVALUATION

4.1.1 EVALUATION RESULTS OF THE BRAZILIAN SIDE

The joint evaluation study on the Biologicals Production Project was carried out with data collected from interviews to and questionnaires filled in by officials, beneficiaries, managers, counterparts and professionals involved in the project, and from an indicator table.

The overall appraisal based on the findings therein is that it was a successful project and that it attained the goals proposed at its outset. Minor flaws were also detected and commented upon, which however do not detract from the success of the endeavor.

Moreover, the project was considered to be a model for international cooperation projects and suggestions were made in that future cooperation should follow the same guidelines as those of the Biologicals project: a preparatory stage; carrying out, follow-up and aftercare activities, and a joint evaluation study by Japanese and Brazilian consultants, who should meet prior to evaluation, in order to discuss methodology, mainly regarding the content of the questionnaires and the categories of interviewees.

PROJECT IDENTIFICATION

Complying with a request of the Brazilian Government, representatives of JICA visited the Federative Republic of Brazil in August 1980, for the purpose of discussing the technical cooperation program on Biologicals Production in Brazil. A Record of Discussions was then signed, and the Project was duly launched. This was very timely, since, in 1980, according to a decision of the Ministry of Health, an important change in immunization policy took place. Based on epidemiological findings, the MOH made the decision to carry out massive vaccinations, with the establishment of National Vaccination Days, due to the low rates of coverage which had been attained until then through routine vaccination. This was a very daring step, requiring complicated logistics, a high investment for purchasing vaccines and improvement of cold-chain and storage systems.

The fact that there have been no reports of indigenous poliomyelitis cases in five years and that poliomyelitis is thus in the process of eradication, and that there has been a sharp drop in notification of measles cases after the adoption of this strategy proved that the change in policy was correct and that the Government has managed to curb the spread of the disease. The willingness and political decision of the MOH to continuously support the policy for several years, through different administrations, led to a better understanding of the importance of vaccination by the active participation of the population.

Hence, with both health and technology as Government priorities and with the increasing demands for more high-quality vaccines, the Biologicals project was very timely.

The first stage of the cooperation project was completed in 1983, and a Japanese Evaluation team carried out a survey which recommended that the duration of the Japanese

Technical Cooperation for the project be extended for one year, from August 1983 to August 1984.

The project was carried out within the planned schedule, and in March 1991, the Coordinator in Brazil for Technical Cooperation of JICA met with representatives of FIOCRUZ, to discuss the aftercare program, which comprised activities regarding the viral concentrate production, measles vaccine quality control and the supplying of necessary equipment.

The existing technical skill in viral vaccine production at FIOCRUZ contributed largely to the success of the project. Since the mid-30's, FIOCRUZ has been producing yellow fever vaccine, and in 1978, it began the production of measles vaccine from imported bulks and a polysaccharide vaccine against meningitis A and C. This previous experience was of utmost importance in order to prepare skilled professionals and an administrative structure compatible with the production of biologicals.

Continuous financial support was also extremely important and it was provided not only by the MOH/FIOCRUZ, but also by FINEP-Financiadora de Projetos (a project-financing agency which used to be part of the Ministry of Planning). It should be stressed that this financial support was given to FIOCRUZ because the project was considered technologically feasible.

However, not only Brazil gained with this project. Japan also improved its image within the Brazilian government, among researchers from University Centers and the Brazilian society, as well as having the successful transfer of technology recognized by agencies such as WHO - World Health Organization and PAHO - Pan-American Health Organization

For Japanese experts who took part in the development of the Project, living abroad was an excellent opportunity to expand their knowledge and apply it elsewhere, to exchange information and gain experience.

This project was very beneficial to Brazil and has certainly played an important role in further strengthening the relationship between the two countries.

1. EFFICIENCY

All goals were attained according to the Record of Discussions and the technology transfer of the measles vaccine production and quality control of poliomyelitis vaccines were completed during the cooperation in biologicals production.

Long and short-term experts were dispatched as planned.

Most of the equipment was provided by the Japanese side and the original manual machinery was reinforced by FIOCRUZ for increasing production capacity.

However, equipment was supplied with manuals on specifications and operational procedures in Japanese only, which was a minor hindrance after Japanese experts completed their terms in Brazil.

Respondents are fairly satisfied with Japanese expertise and counterparts in general. There were, on the other hand, certain comments on lack of facilities for expansion of the project which should be further examined, with a view to improving efficiency in production.

It was commented that at least a few months at the outset of the project were needed for adjustment of Brazilian counterparts, owing to the fact that the Japanese expertise was higher than that of the Brazilians.

The questionnaire survey showed that 100% of the Japanese experts were highly satisfied with the inputs from the Japanese Government, and 85% of counterparts working on the measles vaccine production are satisfied, whereas counterparts for polio account for only 47% and 50%

2. EFFECTIVENESS

From 1980 to 1985, with Japanese cooperation, FIOCRUZ has produced 6.678 liters of bulk and 4.1 millions doses of measles vaccines.

Of the total production during this period of time, only 4% of the batches were rejected by quality control. Sterility was the most important factor for rejection (47%), followed by process breakdown (30%) and vaccine potency (23%).

Regarding the poliomyelitis vaccine, 133.1 liters of bulk and 6.529.000 doses of the vaccine were produced and approved by quality control.

From 1986 to 1993, FIOCRUZ produced 822 batches of measles vaccines, a total of 99.188.856 doses, in 1,5 (72%) and 20 (18%) doses presentation.

During this same period, 526.25 liters of bulk were imported for the national production of poliomyelitis vaccines. 20.925.073 doses of the polio vaccine were produced from 1986 to 1993, and during cooperation, 6.529.000 doses were produced (1980-1985). On the other hand, 120 million doses were imported for the vaccination campaigns, which also underwent quality control tests carried out at FIOCRUZ.

It should be stressed that the production of poliomyelitis vaccines on a large scale was not carried out in the first place, because it was not envisaged in the activities on poliomyelitis vaccines in the 1980 Record of Discussions. On the other hand, since there have been no reports of indigenous poliomyelitis cases for 5 years, and, furthermore, since Brazil joined the Pan-American Health Organization Program for Eradication of Polio in the Americas in 1988, the disease is in the process of being eradicated, both in Brazil and elsewhere in the Americas. Thus, with the trend for decrease in demands and eradication in view, the Brazilian Government made the decision not to invest on production on a large scale, for it would be neither economically feasible nor justifiable in view of the aforementioned reasons.

Strengthening the capacity of quality control on imported vaccines; establishment of the quality control system for production of trivalent vaccines prepared from monovalent bulks, were activities successfully carried out within the scope of the cooperation on the poliomyelitis vaccine.

Soon after the Japanese cooperation began, counterparts evaluated their own knowledge from the transferred technology as of moderate to high level, and currently, the evaluation has shown a predominantly high level of understanding of the vaccine, of simple device handling and machine operation. Regarding maintenance, technicians seem not to be as well trained as in other cases; it shows in relatively poor maintenance abilities. Hence, the recommendation to strengthen training in maintenance within the project.

3. IMPACT

The impact of the project is mainly fourfold:

1) the transferred technology generated multiplying effects for research;
2) quality of inputs supplied by national manufacturers for vaccine production was improved, in order to meet the new requirements of FIOCRUZ;
3) the spread of the diseases was curbed;
4) quality control technology for the measles and poliomyelitis vaccines, strengthened through Japanese cooperation, was adapted and extended to other biologicals as well.

The impact of the project, be it socioeconomical or environmental, can also be seen in:

- transfer of quality control technology to third countries;
- the fact that PAHO (regional branch of WHO for the Americas) established FIOCRUZ since 1991 as one of the two regional centers for vaccine development;
- the TCTP - Third Country Training Program, established in 1988 is a direct socioeconomic contribution resulting from the Project. It involves training courses in the field of quality control of the measles vaccine for 9 countries (Bolivia, Paraguay, Argentina, Ecuador, Colombia, Venezuela, Peru, etc.) coordinated by JICA and ABC.

The success of the cooperation on biologicals was conducive to the establishment by the Brazilian Government of the National Self-Sufficiency Program in Biologicals, in 1985;
- since 1980, mass vaccination campaigns were implemented and high coverage rates were attained: incidence of measles dropped from 99,263 cases in 1980 to 2,931 cases in 1992, and incidence of poliomyelitis decreased from 1,290 cases in 1990 to zero (no cases) in 1992.

Economic measures for containment of inflation have had a negative impact as far as the project is concerned, in that the hiring of new personnel is forbidden, which does not allow FIOCRUZ to maintain an adequate number of highly skilled human resources consistent with the rate of production and the needs for replacing manpower.

4. SUSTAINABILITY

Government policy continues to attach importance to the domestic production of vaccines, so much so that it has proposed a cooperation on the transfer of Japanese technology for production of other vaccines.

The Production system is appropriately established and the storage and distribution system have been adequately strengthened.

Most of the trained counterparts continue to work for the vaccine production lines. Materials were sufficiently provided, except for some parts, which are lacking. The intensive use of the equipment for many years has resulted in a shortage of spare parts, and in a reduction of the output. Moreover, these parts were not available for purchasing in the Brazilian market.

Brazil is certainly capable of transferring technology to other countries, but since 10 years have elapsed, in which new technologies may have occurred in the field of biologicals, it is possible that there may be more efficient new methods; thus, continuous technical cooperation is desirable.

When the Aftercare Program mission visited Brazil in 1991, FIOCRUZ proposed a continuous cooperation to develop the technology transfer for

1) development of the DTP vaccine, especially the pertussis component,

2) recombinant DNA Hepatitis B vaccine and

3) triple viral (MMR) vaccine.

5. RELEVANCE

The Japanese cooperation was timely as far as the health policies of the Brazilian Government were concerned.

The MOH began the strategy of Brazilian National Vaccination Days against poliomyelitis and measles in 1980 and this strategy has proved to be efficient. A new approach was carried out to vaccinate all the population under 15 years of age against measles in 1991 through mass vaccination campaigns, with the goal of eliminating the disease.

In Brazil, approximately 3,500,000 children are born every year; a great part of these children are born in the urban peripheries of very low social classes, with no access to the health services. Therefore, it is very difficult to vaccinate all of them, specially in the case of vaccines that require injections. The polio vaccine is administered orally, which simplifies the immunization procedures.

According to the questionnaire survey, 92% of the Japanese experts, 91% of the counterparts for measles, and 82% of the beneficiaries evaluated, are willing to establish a self-sustainable system for production of measles vaccines on a large scale.

Up to this date, there has been no problem with the amount of vaccines for routine and campaign vaccination. However, problems have arisen for producing the necessary amount of vaccines for special vaccination efforts requiring very large extra amounts of vaccine.

4.1.2 EVALUATION RESULTS OF THE JAPANESE SIDE

1 EFFICIENCY

FIOCRUZ has been producing vaccine since the 1930s. This previous experience of the Brazilian side was of utmost importance in order to prepare specialized technical professionals and an administrative structure compatible with the production of biologicals. Public financial support was given to FIOCRUZ during cooperation because the project was considered well organized and technically feasible and gained in competition with several other projects in related fields. For Japanese side, materials and equipment were supplied accordingly and Japanese experts played a crucial role in all steps of the cooperation project with Brazilian counterparts.
FIOCRUZ has been sufficiently operated with utilizing the input from both Governments.

As for the project implementation, one long term expert and 23 short term experts were dispatched as planned. Technical transfer in the field of measles vaccine production and the quality control of the measles vaccine and poliomyelitis vaccine was completed during cooperation.

The former president of FIOCRUZ pointed out one thing that more time may have been necessary, for at least a few months in the beginning, in order for Brazilian counterparts to learn the methodology of production and quality control technology at the earliest time of the cooperation, because the higher technical knowledge was required to understand the Japanese experts' guidance.

Imported materials and equipment for measles production and for poliomyelitis quality control were provided by the Japanese side as planned and the original manual machinery was reinforced by the FIOCRUZ for increasing the capacity of production, such as the ampule filling machine.

2 EFFECTIVENESS

The technology transfer from Japanese experts to Brazilian counterparts were fully attained through the activities of measles vaccine production and quality control of poliomyelitis and measles vaccine. Well-organized project has been maintained during cooperation.

During the Japanese cooperation, FIOCRUZ came to produce 4.1 million doses of measles vaccines through the production of 6,678 liters of bulks.
Among the production of measles batches, due to the improved quality control system, the

rejection came down to only 4%. According to the quality control test, the sterility was the most important factor for rejection (47%), followed by process breakdown (30%) and vaccine potency (23%).

For poliomyelitis vaccine the amount of 6.5 million doses was produced through the imported 133.1 liters of bulks and were approved by the quality control.

From 1986 to 1993, FIOCRUZ produced 822 batches of measles vaccines which represents 99,188,856 doses in 1, 5 and 20 doses units presentation. The production was carried out according to the demands of the immunization program established by the Ministry of Health.

As for the poliomyelitis, 526.25 liters of concentrated bulks were imported for the national production and 120 million doses of vaccines were imported for the vaccination campaigns and all of them were approved by the quality control test.

On the whole, the questionnaire survey revealed that through the project counterparts have strengthened their ability of quality control and vaccine production and gained higher specialized technical professional level. Machine maintenance technician, however, do not feel that they are well-trained to obtain higher techniques.

3 IMPACT

The impact of the project is mainly fourfold: 1) reducing incidence of the disease, 2) generating multiplying effects for research activities through transferred technology, 3) improving quality of materials, equipment used for producing vaccines supplied by national manufactures and 4) transferring technology to third countries.

1) Reducing Incidence of the Disease

Through a mass vaccination campaign program implemented in 1980, national heath in Brazil has been much improved in the field of measles and poliomyelitis: the incidence of measles dropped from 99,263 cases in 1980 to 2,931 cases in 1992, and the incidence of poliomyelitis decreased from 1,290 cases in 1990 to zero (no cases) in 1992.

Considering the importance of the role of the project in the national vaccination campaign, it can be said that the project, through the activities of vaccine production and quality control, has contributed to reducing the measles and poliomyelitis cases in Brazil. Such contribution of the project is to be highly evaluated from the view point of "Impact".

2) Generating Multiplying Effects for Research Activities

Transferred techniques are now adapted and extended to other biologicals: not only for the vaccine production process but also for other more advanced research as well, and it was carried out by FIOCRUZ and transferred to another country, such as is the case of yellow fever vaccine production to Nigeria.

Another such activities is that Brazil has joined the Pan American Health Organization Eradication of Polio in the Americas Program; the regional branch of WHO for the Americas also established FIOCRUZ since 1991 as one of the two regional centers for the development of vaccines.

The National Institute for Quality Control in Health (INCQS) was established in 1981. It develops technologies and methodologies for the National Network of Laboratories for quality control in the field of health care. Through Japanese cooperation, the technology for quality control has contributed to the improvement of the National Quality Control program of all vaccines, mainly in the field of the specific laboratory methodology, and the basic methodology of analysis of control procedure utilized.

3) Improving Quality of Materials, Equipment for Vaccine Production

The strengthening of quality control through the cooperation contributed to the making of specifications of FIOCRUZ. As a result, supplies by local industries for the production process, such as glassware which were poor in quality, were improved to meet FIOCRUZ requirement.

4) Transferring Technology to Third Countries

The establishment of the Third Country Training Program (TCTP) in 1988 was given as a trial of professional activity of the counterparts, resulting from the Biologicals Production Project. This technology transfer involves training courses in the field of quality control of the measles vaccine for 9 countries (Bolivia, Paraguay, Argentina, Ecuador, Colombia, Venezuela, Peru, etc.) coordinated by JICA and ABC.

4 SUSTAINABILITY

1) Operation and Management

After completion of the project, FIOCRUZ itself invested in the strengthening of the different vaccine production, and also organized laboratory for technical development. The production system is appropriately established and the storage system have been adequately strengthened.

Already for more than 10 years FIOCRUZ has been supplying measles and poliomyelitis

vaccine to the Brazilian National Program of Immunization. Thus, there the activities of measles vaccine production, together with other vaccines, are reliable and self sustainable followed by the Government policy.

2) Facilities and Equipment

Materials and equipment were sufficiently provided, except for some spare parts, which are lacking. The intensive use of equipment for more than ten years has resulted in a shortage of spare parts and in a reduction of output. Therefore budget for purchasing spare parts should be fully allocated and a system for replacing spare parts should be installed according to the life span of the equipment. Materials were improved: glassware purchasing from industries were improved to meet the new requirement.

As for the facilities, FIOCRUZ has been expanding the building which is under construction. This will meet the further necessity space for amount and kind of vaccines production and its quality control areas.

3) Budget

At present, budget for biologicals is 1% of the total amount of vaccines sold which covered whole organization. The price of each vaccine has been determined by the MOH. This allocation system draw unbalanced the budget every year.

4) Human Resource

Concerning the staff employment in the field of biologicals production, most of the trained counterparts continue to work for the vaccine production lines.

However, economic measure for containment of inflation proscribes the employment of new personnel, which does not allow FIOCRUZ to have an adequate number of highly skilled personnel consistent with the rate of production and the need of personnel.

5 RELEVANCE

The Project developed under the Brazil-Japan Technical Cooperation, was started when Brazil had established its immunization program and when FIOCRUZ conducted internal restructuring and when the biologicals technology was considered one of institutional priority.

Therefore, the Japanese cooperation was timely as far as the Health administration policy of the Brazilian Government and organizational needs of FIOCRUZ were concerned.

The MOH began the strategy by Brazilian National Vaccination days against poliomyelitis and measles in 1980. This strategy is same at present.

For production of measles vaccines, it was planned initially to produce 10 million doses per year. In 1991, 15 million doses are already produced and also the machinery of FIOCRUZ is reinforced to increase the production according to the demands of the immunization program by the Ministry of Health.

According to the questionnaire survey, 92% of the Japanese experts, 91% of the counterparts for measles, and 82% of the beneficiaries, are willing to establish a self-sustainable system for measles vaccines production on a large scale. Although the incidence of measles is greatly reduced, more intensive vaccination is needed to eradicate from the continent.

4.2 RECOMMENDATION

4.2.1 RECOMMENDATION FROM THE BRAZILIAN SIDE

1) Future cooperation should follow the same guidelines of the Project: a preparatory stage, carrying out, follow-up and aftercare activities, in order to ensure that it be as successful as the Biologicals Production Project, which is considered a model for international cooperation projects.

2) Continuous cooperation should be carried out on Biologicals and a Japanese preparatory mission should possibly visit Brazil to discuss studies for cooperation on the production of the Recombinant DNA Hepatitis B vaccine, rubella and mumps vaccine (for MMR) and the pertussis component of the DTP vaccine.

3) Training should be carried out for Brazilian trainees by Japanese consultants over a length of time appropriate to the required transfer of knowledge and technology, according to the overall needs of the project.

4) Information on the new cooperation not approved by the Japanese Government should and be relayed to ABC together with information on the approved cooperation, so that there are no pending projects.

5) A project monitoring system should be carried out during and after cooperation in order to transfer updated technologies and to meet the needs and/or solve unforeseen problems which arise during the cooperation.

6) Equipment should be provided with specifications and manuals in English, and from manufacturers with branches in Brazil.

7) Greater emphasis should be given during training to maintenance and to advising trainees on the replacement of spare parts, as well as on the procedures for purchasing these parts in the international market.

8) Strong support should be provided for The Third Country Training Program (TCTP) activities for further socioeconomic contributions.

9) A steady flow of information on the updating of knowledge and technology as well as on the operational procedures for equipment maintenance should be relayed by Japanese experts in the field of Biologicals Production to their Brazilian counterparts.

4.2.2 RECOMMENDATION FROM THE JAPANESE SIDE

General lessons and recommendations for future cooperation projects are summarized below. Those are drawn from the above-mentioned evaluation results from the five viewpoints; Efficiency, Effectiveness, Impact, Sustainability and Relevance.

The poor quality of instruments purchased in the local market, such as glassware, hindered the Biologicals Production Project from being efficient in the operation. In order to preliminarily take an appropriate action to such problem, preliminary survey should be enhanced with a view to understanding the precise level and needs of the local technology concerned.

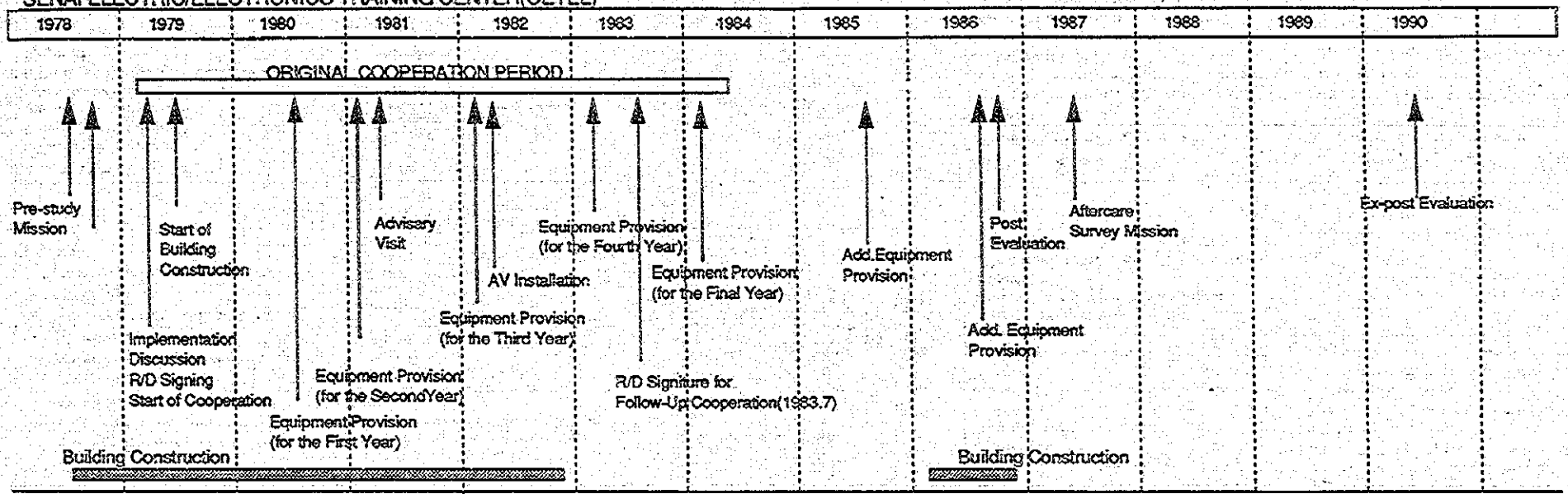
Less emphasis has been placed on machine maintenance training, compared to the training for vaccine production and quality control. To make the project sustainable, greater emphasis should be given for the training of technicians in the field of maintenance and replacement of spare parts. At the same time, budget for purchasing spare parts should be fully allocated by FIOCRUZ and a system for replacing spare parts should be installed within FIOCRUZ according to the life span of the equipment. And it is important to grasp the procedures for purchasing spare parts in the international market, as well.

An internal training system should be established, because the higher technical knowledge has been always required to understand the new methodology so that steady flow of information on the updating of knowledge and technology could be obtained by FIOCRUZ for itself.

It is essential to make even the level of the counterparts' skill and knowledge, in order to make the technology transfer from the Japanese Experts more effective and efficient. If needed, prior to project implementation, preliminary training for the counterparts by FIOCRUZ should be provided so that they can acquire basic skill and knowledge necessary for the technology transfer.

ANNEX-A SENAI ELECTRICAL AND ELECTRONIC VOCATIONAL TRAINING CENTER PROJECT

SENAI ELECTRIC/ELECTRONICS TRAINING CENTER(CETEL)



EXPERT DISPATCH													
a) Leader + Electronic	2 Experts									Total 2			
b) Electric + Electronic	2									2			
c) Electric + Electronic		2								2			
d) Electric		1		3	1			1	1	1			
e) Short Term Expert										6			
										13 Experts			
NO. of Trainees (First Year)			14	14	13	15	14	15	12				
a) Electric Course			16	16	15	17	16	15	14				
b) Electronic Course													
NO. of Trainees(SecondYear)													
a) Electric Course				12	9	10	8	11	14				
b) Electronic Course				16	14	12	16	14	22				
Total			30	58	51	54	54	55	62				
No. of Counterpart											Total (person)		
a) Electric			6	0	0	0		0	2		8 appointed		
b) Electronic			6	0	0	1		1	1		9 appointed	5 retired	
Total			12	0	0	1	0	1	3		(17)		
									0				
No.of Counterpart Training											Total (person)		
a) Electric Course			3	1	2	1			0		7 appointed		
b) Electronic Course			2	2	2	1			2		9 appointed		
Total			5	3	4	2			2		(16)		

A-1

LOGICAL FRAMEWORK–SENAI Electric and Electronic Vocational Training Centre Project (CETEL)

PROJECT SUMMARY	INDICATORS	ATTAINMENT	IMPORTANT ASSUMPTION	PRESENT SITUATION
I. OVERALL GOAL 1. Upgrade the technical standard of the electric and electronic technicos in Brazil. 2. To increase the number of the electric and electronic technicos in Brazil.	1.1 Technical standard of technicos. 2.1 No. of electric and electronic technicos in Minas Gerais.	1.1 Technical level of graduates is considered to be high by the companies. 2.1 1985 1986 1987 1988 1989 10,249 68,549 69,693 33,248 72,855		1. Electronics equipments are already became main stream in the companies and computer technique is required by advanced industry in Brazil.
II. PROJECT PURPOSE 1. To establish and appropriate training system for higher electric and electronic technique and supply technicos. 2. CETEL works as a model vocational training centre in the field of electric and electronic technique in Brazil.	After the Japanese cooperation 1.1.1 No. of training subjects. 1.1.2 Rate of implemented subjects to plan. 1.1.3 No. of companies implementing OJT program. 1.1.4 No. of trainees/graduate/dropout rate. 1.1.5 Companies'evaluation on CETEL. 1.1.6 Trainees' evaluation on CETEL. 1.1.7 Operation budget. 1.1.8 No. of equipment bought by CETEL. 1.1.9 No. of CETEL internal seminars for trainees. 1.1.10 No. of CETEL international seminar for trainers. 1.2.1 No. of staff members. 1.2.2 No. of newly development training materials and textbooks. 1.3.1 Evaluation on management/maintenance/ utilization of facilities/machines and equipment. 2.1 No. of training subjects developed by CETEL and comprehensively applicable in other region in Brazil. 2.2 No. of technical seminars for the instructors in other training centers.	1985 1992 1.1.1 (1) Electric 14 Subj 18* Subj (2) Electronic 15 Subj 15 Subj 1.1.2 (1) Electric/Electronic 100% 100% 1.1.3 16 Comp. 28 Comp. 1.1.4 (1) Trainee Electric 35 pers 27* pers Electronic 42 pers 81 pers (2) Graduates Electric 18 pers 3(`99`1) Electronic 25 pers 48 pers (3) Dropout Electric 5 pers 48 pers Electronic 2 pers 15 pers 1.1.5 Training is satisfactory and meet the needs of Companies. 1.1.6 Interviewed trainees are satisfied with the training program provided by CETEL. 1.2.7 US$ 2,805,613.00 (85/93) 1.2.8 34 pcs 39 pcs 1.2.9 NA $(89/93) 1.1.10 NA $(89/93) 1.2.1 2 pers 7 pers 1.2.2 Electric /Electronic 2 pcs 6 pcs 1.3.1 Evaluated to be satisfactory by trainees, graduates and counterparts ⁻ 2.1 Electric 10 9* Electronic 10 10 2.2 Electric 0 1* Electronic 0 2 * Industrial Information Technique Course	1. Graduates work as appreciated technicos 2. Trainings meet industrial needs. 3. Government continue to support industrialization policy and take suitable promotion measures. 4. The training system od technico was established and No. of technicos was increased in the country.	1.Graduates are appreciated as technicos with higher skill in the companies. 2. A new training course, "Industrial Information Course" started instead of previous Electric Technique Course in response to the industrial needs. 3. Government is taking a policy to conquer the economic recession. 4. The number of graduates of CETEL is in total 476 by the end of 1993. Federal Technology Centre is training more technicos than CETEL.
III. OUTPUTS 1. Training implementation system has been established for the following two fields: 1) Electric technique. 2) Electronic technique. 2. Counterpart instruct subjects, develop training materials and make a training plan. 3. C/Ps can operate and maintain facilities, machines and equipment. 4. Improved training module system for the program.	During the Japanese cooperation 1.1 No. of training subjects. 1.2 Rate of implemented subjects to plan. 1.3 No. of companies implementing OJT program. 1.4 No. of trainees/graduate/dropout rate. 1.5 SE/EVTC's evaluation on trainees. 1.6 Operation Budget. 2.1 No. of C/Ps 2.2 No. of newly developed training materials and text book. 2.3 Evaluation on C/Ps' training skill. 2.4 Evaluation on developed C/Ps'training plans 3.1 Evaluation on utilization of facilities/equipments. 3.2 Evaluation on machine maintenance. 4.1 No. of improved module system	1981 1984 1.1 (1) Electric 18 Subj 14* Subj (2) Electronic 20 Subj 15 Subj 1.2 (1) Electric/Electronic 100% 100% 1.3 NA 17 1.4 (1) Trainee Electric 14 pers 25 pers Electronic 16 pers 29 pers (2) Graduates Electric 12 pers 8 pers Electronic 16 pers 16 pers (3) Dropout rate 7.75%(81/84) 1.5 Instructors considered trainees'level to be satisfactory 1.6 F/Y(US$)1,742,888.50$ 69,153.94$(1993) 2.1 Electric 7 pers 7 pers Electronic 7 pers 8 pers 2.2 Electric 9 pers 0 pers Electronic 14 pers 3 pers 2.3 Level of C/Ps is high. 2.4 Mostly satisfactory. 3.1 Highly evaluated by C/Ps and instructors. 3.2 Properly conducted. 4.1 3 0	1. Trainees' education level is to be maintained appropriately. 2. Trained counterparts continues to work for CETEL. 3. Some of the graduates remain in the centre to be a future instructor. 4. Companies pay more appreciation to upgrade the technical standard. 5. Needs for technico are high: applicants to CETEL training course will be continuously popular. 6. Spareparts is continuously supplied. 7. Replacement of equipments is properly undertaken.	1. Trainees' education level is barely maintained by enthusiasm of instructors because all the equipments already became old. 2. 7 previous counterparts are working in CETEL, because economic recession. 3. Most of instructors are graduates. There are still unemployed graduates. CETEL does not take strong action for public relation for recruitment of the graduates. 6. At present spare parts are imported through individual relationship and trainers who visit in Japan. 7. There are some equipments properly maintained by domestic products.
IV. ACTIVITIES 1. Training and suggestion for c/p. 2. Development of textbook and training and suggestion for teaching method. 3. Seminar for company employees. 4. Training and suggessions for installation of equipments. 5. Training and suggessions for improvement of module education systems.	INPUT Japan 1. No. of despatched experts 2. No. of counterpart training in Japan. 3. Installation and equipments provided 4. Education material and Textbook provided Brazil 1. provision of land 2. Manpower (No. of C/Ps) 3. Establishment costs 4. Bldg. facilities constructed	INPUT Japan 1. 7 long-term and 2 short-term 2. 17 counterparts 3. 1972 items (Y28.4 Mill) 4. 66 materials and textbooks Brazil 1. 3,767.6m² 2. 14 pers(45 pers in total) 3. US$ 1,029,278.00 4. US$ 1,176,649.00	1. CETEL is well operated. 2. Facilities are well managed and maintained. PRE-ASSUMPTION 1. According to rapid industrialization by foreign investment, it was required to upgrade the technical standard of technicians in Brazil. 2. The Government of Brazil (SENAI) planned the establishment of vocational training centre for electric and electronic technique in Belo Horizonte	1. CETEL does not have enough financial incomes. 2. Until now, facilities are well maintained. 1. Needs for technical improvement of technicos increased more and more. 2. SENAI is planning to establish 4 more training centres and open the electronic course in Belo Horizonte.

CETEL: EVALUATION RESULTS ALONG THE FIVE POINTS OF EVALUATION
SENAI Electric and Electronic Vocational Training Centre (CETEL)

Evaluation Points	Evaluation Results
Efficiency	- Both Governments started cooperation as soon as R/D was signed. - Japanese experts were assigned as initially planned but dispatched 6 months later because assignment of Brazilian counterparts was late for scheduled time. - Training equipments were properly provided by Japanese side. - It was pointed out as an obstructive problem that all the instructions and manuals of equipments were written in Japanese and the experts had to spend a lot of time for translation and explanation. - Provided equipments were adequate for training and fully utilized. - Spare parts supply was supported by the Japanese experts and Japanese companies which were located in Minas Gerais. - Construction of the building facility was started by Brazilian as soon as R/D was signed. - All the operation costs have been bared by the Brazilian aide as it was greed in R/D.
Effectiveness	- Training of the Japanese experts was focused on establishment of training system such as program, textbook and training materials. The training was effectively conducted during the Project period and successfully completed in 1984. - Sixty percent of curriculum was designed for practical training and it properly met the needs of the companies. - Technical transfer was effectively conducted. According to the questionnaire survey, training program and technical level of CETEL are still assessed to be satisfactory and meeting the companies' requirements. - Japanese technical transfer was highly appreciated by SENAI and became a model type of technical cooperation for Brazil. - According to the questionnaire survey, most of graduates answered that the training, equipments, textbooks, materials and facilities were appropriate for training. And 65% of graduates found the job without any problems.
Direct Impacts	- The impacts of the Project is still not strong in the industrial circle because the number of the graduates is not big and cannot make strong influence, especially in the big companies. - Japanese Technical Transfer was succeeded in training of techicos with higher technical capability. - The graduate of CETEL conduct technical transfer to their company colleagues. - The Project established the training system in the fields of electronic technique in SENAI
Indirect Impacts	- The Project gave a motivation to CETEL to follow the further technical innovation and CETEL opened "Industrial Information Technical Course" in 1991 instead of previous Electric Training Course. Recently CETEL started cooperation with UNESCO to establish the National Technology Information Centre. - SENAI is going to open 4 more training centres for electronic technique with the technical basis and know-how established by the Project.
Sustainability	- Financial source of CETEL is supported by the fund of the government organization and it is considered to be stable, although it may be tightened by the national economic situation. - Preservation of the instructors is essential to continue operation of CETEL. At present, economic recession of the country prevent outflow of the instructors to private companies. But it is required to establish effective system for supply of training instructors before the economic recession is recovered. - Staff Training System to incorporate technical innovation such as attending to international seminars and conferences, establishment of training course of advanced technique and National Technology Information Centre were started by the Project. - Facilities of CETEL is properly maintained and standing in good condition. It is necessary to provide appropriate budget allocation for the maintenance every year. - Replacement of equipments into domestic products is slowly but gradually undertaken by CETEL. Sparparts provision system for equipments provision by the Project in considered to be important to secure the isective training. - More effort for public relation should be made. It is essential to attract capable applicants and activate the training of CETEL. It is also important for promotion of employment of the graduates.
Relevance of Planning	- Establishment of CETEL was appropriate in timing because the Industries in Brazil needed many higher skilled technicos for expansion of the industrialization. - The Project contributed to establishing the technical innovation capability of CETEL. - CETEL is requested by many companies to conduct technical seminars for the company employments and they are appreciated by the companies.

CETEL: FACTORS CONTRIBUTING TO IMPLEMENTATION AND PRODUCTION OF IMPACT
SENAI Electric and Electronic Vocational Training Centre (CETEL)

	Project Identification	Appraisal	Implementation Design	Implementation	Others
due to JICA side	1. Project was formulated in response to strong needs of Brazilian industries. 2. There was no other similar facilities and program at the same level in Brazil. 3. Japan side had sufficient technical accumulation in electric and electronic technology.		1. The Third Country Training was additionally conducted, which promote independence of the counterparts. 2. Preparation of the textbooks and training materials are included into the Project components.	1. Training equipments were provided as scheduled. 2. Textbooks and materials were developed as scheduled. 3. Experts were dispatched as scheduled.	
due to Brazil side	1. Brazilian industry had strong needs for technicos with higher skill for progress andinnovation of the industries. 2. Technical innovation was the common requirements of Brazilian industries to upgrade the technical level of Brazil. 3. There was no other training opportunity in electric and electronics technique in Brazil.	1. This project contributed to CETEL in the technical innovation especially in the field of electronics. 2. This project gave motivation to establish more training centres for electronics technique.	1. The project was designed to focus on the development of theoretical, practical and teaching skills. It was to contribute directly for reinforcement of training function of CETEL. 2. Training program included many advanced technique for technical innovation. It was to provide the practical knowledge of advanced technique to the counterparts and trainees. 3. The Third Country Training was an additional element of the Project. It was to promote a will of the self sustained technical development for the Brazilian staff.	1. Sufficient building facility and manpower were provided. 2. Operation costs was bared by SENAI. 3. Capable counterparts were available. 4. Third Country Training was successfully implemented as planned.	1. SENAI gives a strong support to CETEL for technical innovation to improve the technical standard of CETEL. 2. Training is still successfully continued by training method established by the Project. 3. Graduates met the needs of companies and appreciated as a higher skilled technicos.

CETEL: FACTORS INHIBITING IMPLEMENTATION AND PRODUCTION OF IMPACT
SENAI Electric and Electronic Vocational Training Centre (CETEL)

	Project Identification	Appraisal	Implementation Design	Implementation	Others
due to JICA side			1. Consideration of training for procurement ability of the counterparts was not sufficient. 2. Project schedule was not enough flexible to absorb the divergence by the progress of the Project.	1. Some experts has not enough language ability and hindered communication with counterparts. 2. Instruction and manuals of equipments were written in Japanese and could not use for training. 3. Technical level for counterparts was not fully understood by Japanese side. Some trainees could talk with the lecturer to adjust the level of program. Others could not do it because the training period were too short. Some counterparts were not satisfied with training in Japan. 4. English instruction and manuals were not available from the manufacture of the equipments.	
due to Brazil side			1. Public Relation was considered as a responsibility of SENAI, not of CETEL. So that the CETEL itself did not conduct public relation activities. 2. Preparation period for the Project was too short for SENAI.	1. Delay of the counterparts assignment caused late starts of technical transfer by the Japanese experts. 2. Some counterparts had not enough language ability and hindered communication with Japanese expert.. 3. Operation budget is limited to import new fine equipments. 4. Spareparts procurement system is not yet established. 5. Import of fine equipments are stopped for long time. 6. CETEL did not introduce the job information or services for employment of graduates. 7. Public Relation activities are not enough to establish the fame among the industrial circle. 8. CETEL conduct very limited Public Relation activities.	1. Many equipments were replaced to Brazilian products. But the counterparts are not satisfied with the quality. 2. There are many requests for training and seminars, but CETEL can respond to only a limited number of requests because of the limited capacity of the building. 3. Textbooks and materials are not deficient reviewed in accordance with the latest technical progress. 4. To find jib is difficult. 5. Some graduates had difficulty in employment because economic recession of the country and lack of assistance of CETEL.

LESSONS DRAWN FROM EVALUATION STUDY AND SUGGESTIONS FOR FUTURE COOPERATION:CETEL

	Lessons draw from evaluation study	Suggestion (short term)	Suggestion (mid term)	Suggestion (long term)
to JICA side	1. Assessment for technical level of the counterparts were not sufficiently conducted. 2. Maintenance training is essential to extend the life of the equipments. 3. Expert's language ability is essential to secure the effective technical transfer. 4. Promotion program for independence should be included in the cooperation project. 5. Spareparts procurement should be included in the training program.	1. To conduct the effective survey to assess the local technical capability. 2. Maintenance training shall be included as part of the cooperation projects. 4. Adaptation period should be included into the project schedule. 5. Transfer the spareparts procurement technique to the counterparts during the project period.	3. For appointing experts, language ability and adaptation ability to work with the local staff in different countries sould be high priority. 4. Last 6 month should be designed for adjustment period for hand over of the project. 5. Establishment of spareparts procurement should system be included in the training program.	1. To promote the Third Country Training and enhance the basic technical capability in the surrounding countries 4. To establish the monitoring system of the project effects to secure the self management capacity of the counterpart agency. 5. Regional spareparts supply centre will be established to save the time and costs for delivery.
to Brazil side	a. Financial support of the Government is essential to secure the project sustainability. b. In order to preserve the training standard, renewal of equipments should be carried out. c. Spareparts supply system is directly related to the training. d. Public Relation is essential to promote employment opportunity for the graduates.	a. Sufficient allocation of the budget to CETEL by SENA and IAPAS is required. b. To make the renewal plan equipment and arrange the budget. c. To make the detail list for stock and consumption of spareparts in order to prepare the procurement plan. d. Public Relation activity should be started as soon in charge of employment of the graduates.	a. To promote the income making undertaking such as seminar and publication in order to ease the financial load of operation. b. To increase domestic products ratio c. Computerized spareparts procurement system should be established.	b.c. Spareparts cycle system should be established.

INDICATOR TABLE - 1
SENAI ELECTRIC AND ELECTRONIC
VOCATIONAL TRAINING CENTRE (SE/EVTC) PROJECT

ITEM OF STUDY	UNIT	FISCAL YEAR													
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1.1 Technical standard of technicos															
2.1 No.of electric and electronic Technicos in Brasil.	Pers	-	-	-	-	-	10249	68594	69693	33248	72835	-	-	-	-
II. PROJECT PURPOSE [After the Japanese cooperation]															
1.1.1 No. of Training subjects															
A. Electric Training subjects	Subject						14	14	14	14	14	14	18*	18*	18*
B. Electoronic Training subjects	Subject						15	15	15	15	15	15	15	15	15
1.1.2 Rate of implemented subjects to Plan															
A. Electric Training subjects	%						100	100	100	100	100	100	100	100	100
B. Electoronic Training subjects	%						100	100	100	100	100	100	100	100	100
1.1.3 No. of Companies implementing OJT program	Comp						16	21	19	33	39	47	27	28	30
1.1.4 No. of Trainees/Graduates/Dropout Rate															
1.1.4.1 No. of Applicants															
1.1.4.2 No. of Trainees (First year)															
A. Electric training course	Pers						35	23	30	40	21	17	3	27*	60
B. Electronic training course	Pers						42	28	38	45	29	65	67	61	35
1.1.4.3 No. of Trainees (Second year)															
A. Electric training course	Pers						-	-	-	-	-	-	-	-	-
B. Electronic training course	Pers						-	-	-	-	-	-	-	-	-
1.1.4.4 Graduates															
A. Elective training course	Pers						18	12	14	24	27	17	3	-	-
B. Electronic training course	Pers						25	14	22	30	11	32	35	46	-
1.1.4.5 Dropout rate															
A. Electric training course	%						5	0	6	3	9	0	0	43	-
B. Electronic training course	%						2	2	1	3	3	5	2	15	-
1.1.5 Companies' evaluation on SE/EVTC															
A. No of employees graduated from electric training course of SE	Pers						70	18	0	0	21	5	0	3	5
A. No of employees graduated from electoroic training course of S	Pers						12	9	0	1	18	12	38	17	6
1.1.6 Trainees' Evaluation of SE/EVTC															
1.1.7 Operation Budget	Cr. Mil.						*	*	*	*	*	*	*	*	*
1.1.8 No. of equipments bought by SE/EVTC	Pcs						34	0	17	5	272	39	37	39	15
1.1.9 No. of SE/EVTC internal seminars for trainees															
A Electric training course	Times						0	0	0	0	1	2	0	1	1
B Electronic training course	Times						0	0	0	0	0	0	0	0	0
1.1.10 No. of SE/EVTC internal seminars for trainers	Times														
1.2.1 No. of staff members	Pers						2	3	7	7	7	7	7	7	7
1.2.2 No. of newly developed training materials and Textbooks															
A Electric training course	Pcs						2	0	6	7	29	7	10	6	5
B Electronic training course	Pcs						*	*	*	*	*	*	*	*	*
1.2.3 No. of textbooks translated into Portugese															
A Electric training course	Pcs						0	0	0	0	0	0	0	0	0
B Electronic training course	Pcs						0	0	0	0	0	0	0	0	0
1.3.1 Evaluation on management/maintenance/utilization of facilities/mechine and equipments															
2.1 No. of training subjects developed by SE/EVTC and Comprehensively Applicable in Other Region in Brazil															
A. Electric training Course	Subject						10	10	10	10	10	10	9*	9*	9*
B. Electronic training Course	Subject						10	10	10	10	10	10	10	10	10
2.2 No. of technical seminars for the instructors of other training centers															
A. in SE/EVTC	Times						0	0	0	0	1	2	0	1	1
B. in Other Places	Times						0	0	1	0	2	4	1	2	1

* Not necessary to fill in the GRAY COLUMN.

INDICATOR TABLE - 2

SENAI ELECTRIC AND ELECTRONIC

VOCATIONAL TRAINING CENTRE (SE/EVTC) PROJECT

ITEM OF STUDY	UNIT	FISCAL YEAR													
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
III. OUTPUT															
(During the Japanese cooperation)															
1.1 No. of Training subjects															
A. Electric training subjects	Subjects	-	18	18	14	14									
B. Electronic training subjects	Subjects	-	20	20	15	15									
C. General Education	Subjects	-	-	-	-	-									
1.2 Rate of Implemented subjects to plan															
A. Electric training subjects	Subjects	-	100	100	100	100									
B. Electronic training subjects	Subjects	-	100	100	100	100									
C. General Education	Subjects	-	-	-	-	-									
1.3 No. of companies implemeting OJT program	Comp	-	-	-	6	11									
1.4 No. of Trainees/Graduate/Dropout Rate															
1.4. 1 No. of Applicants	Pers	-	38	80	145	161									
1.4. 2 No. of Trainees (First year)															
A. Electric training course	Pers	-	14	14	13	15									
B. Electronic training course	Pers	-	16	16	15	17									
1.4. 3 No. of Trainees (Second year)															
A. Electric training course	Pers	-		12	9	10									
B. Electronic training course	Pers	-		16	14	12									
1.4. 4 No. of graduate															
A. Electric Engineering course	Pers	-	12	9	10	8									
B. Electronic engineering course	Pers		16	14	12	16									
1.4. 5 Dropout Rate															
A. Electric Engineering course	%	-	-	-	-	-									
B. Electronic engineering course	%	-	-	-	-	-									
1.5 SE/EVTC's evaluation on trainees															
1.5.1 1 Electric training course.															
A. Theoretical study	%														
B. Electric measurement	%														
C. Handling of tools	%														
D. Electric construction	%														
E. Sequence	%														
F. Electronic measurement	%														
G. Electric Circuit	%														
H. Drawing	%														
I. Electric equipments	%														
J. Electronic application	%														
K. Process control	%														
L. Product engineering	%														
1.5.2 2 Electronic training course															
A. Drawing	%														
B. Product engineering	%														
C. General electric engineering	%														
D. General electronic engineering	%														
E. Electronic application	%														
F. Basic computer technique	%														
G. Sequence control	%														
H. Process control	%														
I. Micro computer	%														
1.6 Operation budget	Cr.Mil/yr														

* Not necessary to fill in the GRAY COLUMN.

INDICATOR TABLE -3
SENAI ELECTRIC AND ELECTRONIC
VOCATIONAL TRAINING CENTRE (SE/EVTC) PROJECT

ITEM OF STUDY	UNIT	FISCAL YEAR														
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
2.1 No. of counterparts																
A. Electric training course	Pers	7	7	7	7	7										
B. Electronic training course	Pers	7	7	7	8	8										
2.2 No. of newly developed training materials and textbook																
A. Electric training course	Pcs	9	0	0	3	0										
B. Electronic training course	Pcs	9	3	0	2	3										
2.3 No. of textbooks translated into Portuguese																
A. Electric training course	-	0	0	3	0	0										
B. Electronic training course	-	5	15	3	0	0										
2.4 Evaluation on counterparts training skill																
A. Electric training course	2															
B. Electronic training course	2															
2.5 Evaluation on developed counterparts' training plan																
A. Electric training course	-															
B. Electronic training course	-															
3.1 Evaluation on utilization of facilities/ equipments																
A. A. Name of facilities and equipments	-															
B. B. Condition of utilization	-															
3.2 Evaluation on machine maintenance																
A. Name of the machines	-															
B. Maintenance condition	-															
4.1 No. of improved module system																
A. Electric training course	Unit	0	0	0	0	0										
B. Electronic training course	Unit	3	0	0	0	0										
INPUT																
<Japan>																
1. No of dispatched experts																
A. Electric training course	Pers	3	3	3	3	3										
B. Electronic training course	Pers	4	4	4	4	4										
2. No of Counterparts trained in Japan																
A. Electric training course	Pers	3	2	1	1	0										
B. Electronic training course	Pers	5	3	1	0	1										
3. Facilities provided	Cr.Mil	-	-	-	-	-										
4.1 Equipments provided, Name / No of equipments																
A. Electric training course	Name,Pcs	-	-	-	-	-										
B. Electronic training course	Name,Pcs	-	-	-	-	-										
4.2 Education material and Textbook provided																
A. Electric training course	Pcs	0	68	0	0	0										
B. Electronic training course	Pcs	0	0	0	0	0										
<Brazil>																
1. Provision of land	m2	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6	3,707.6
2. Manpower (No. of counterparts)	Pers	14	14	14	20	17	15	18	22	35	38	41	45	46	46	
3. Establishment costs	Cr.Mil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Building and facilities constructed	Cr.Mil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Not necessary to fill in the GRAY COLUMN.

RESULT OF QUESTIONNAIRE: JAPANESE EXPERTS

(IMPUT)

	Total	Yes		No		N/C	
1.1 Did the Japanese government provide enough project inputs for the Center?							
a. Were the training equipments adequate?	6	5	83%	1	17%	0	
b. Was the counterpart training in Japan adequate (in general)?	6	5	83%	1	17%	0	
c. Was the technology transfer from Japan to the Center adequate?	6	4	67%	1	23%	1	
d. Were the training materials and textbooks	6	5	83%	1	17%	0	
1.2 Did the Brazilian government provide enough inputs for the Center?							
a. Are the Center facilities (space, utilities) adequate?	6	6	100%		0	0	
b. Did they provide enough budget for the Center?	6	6	100%		0	0	
c. Did they provide enough budget for the Center?	6	5	83%		0	1	
1.3 Were the following inputs by Japanese and Brazilian governments property undertaken in compliance with the project schedule?							
a. By Japanese government	6	6	100%		0	0	
b. By Brazilian government							
o Supply of equipments			4		2		
o Counterparts training			6		0		
o Budget			5		1		
o Construction of facilities			1		1		
1.4 Do you think the public relation about the Center and training were effectively undertaken by Brazilian government?	6	5	83%		1	0	
	6	6	100%		0	0	
1.5 Do you think project was given enough support from the other sections and agencies of the government?	6	2	33%	2	33%	2	33%
1.6 Do you think that the Project was implemented by enough linkage with any other related international organizations such as World Bank and USAID?							

(EFFECTIVENESS)

	Total	Yes		No		N/C	
2.1 Do you think the SENAI Training Center Project was succeeded to establish an appropriate training system and supply technicos with higher skill in the Brazilian industry?	6	6	100%		0	0	
2.2 Do you think the SENAI Training Center has been a model vocational training center in the field of Electric and Electronic technique in Brazil?	6						
2.3 has the technology transfer to counterpart on the implementation of training by Japanese expert properly undertaken?	6						
2.4 Has the technical transfer in curriculum and training material development and training program development been properly undertaken?	6						
2.5 Has the implementation of training module been properly undertaken?	6						
2.6 Were the equipments and facilities been properly used for training?	6						
2.7 Was the maintenance of equipments properly undertaken?	6						
2.8 Was the training by counterparts, theoretical and practical, properly undertaken based upon the suggestions given by the Japanese experts?	6						
	LOW	MED		HIGH		NA	
2.9 Please evaluate the skill of counterparts							
a. General Education	2 33%	4	67%				
b. Theoretical		2	23%	4	67%		
c. Practical Technique		2	23%	4	67%		
d. Training Technique	2 33%	4	67%		67%		
e. Textbook and Material Development	2 33%	4	67%				
f. Training Program Development	2 33%	3	50%			1	17%
g. Any other Comments							
2.10 Did the textbooks and training materials developed by project meet to needs of Brazilian industry?	6				0		
2.11 Did the operation organization of the Center establish the functional operation system?	6				0		

(PROJECT EFFECTS)

	Total	Yes		No		N/C	
3.1 Do you think SENAI Center contributed to upgrade the technical standard of technicos to the needs of Brazilian industries?	6	6	100%	0		0	
3.2 Do you think the SENAI Training Center contributed to increase the number of technicos with higher skill in Brazil?	6	6	100%	0		0	
3.3 Was there any unexpected social and economical effects caused of this project?	6	3	50%	3	50%	0	
3.4 Was there any negative effects by the project?	6		0%	6	100%	0	
3.5 Was supply of the spare parts by Japanese government continuously undertaken?	6	6	100%	0		0	
3.6 Has the renewal of the equipments been properly undertaken?	6	6	100%	0		0	

(SUSTAINABILITY)

	Total	Yes		No		N/C	
4.1 Does the Training Center have enough capability to continue its activities?	0	5	83%	1	17%	0	

(RELEVANCE)

	Total	Yes		No		N/C	
5.1 From the view point project objective, do you think the timing of project implementation was adequate?	6	6	100%	0		0	
5.2 Do you think the objective of this project, to supply the technicos with higher skill, is still meet to the needs of Brazilian industry?	6	6	100%	0		0	
5.3 Do you think the technic standard of he graduates meet to needs of Brazilian industry?	6		67%	1	17%	1	17%
5.4 Do you think the curriculum of the center meets to needs of Brazilian industry?	6	6	100%	0		0	
5.5 Have there been any major changes in policy or technique during and other project in the Brazilian industry?	6	1	17%	2	33%	3	33%

RESULT OF QUESTIONNAIRE:COUNTERPARTS

(EFFECTIVENESS)

1.1 Did the Japanese Government project provide enough project inputs	Total		Yes		No		N/C	
Center?								
a. Were the training equipments adequate?	7		6	86%	1	14%	0	
b. Was the counterpart training in Japan adequate (in general)?	7		7	100%	0		0	
c. Was the technology transfer from Japan to the Center adequate?	7		7	100%	0		0	
1.2 Did the Brazilian Government provide enough inputs for the Center?								
a. Are the Center facilities(space, utilities etc.)adequate?	7		7	100%	0		0	
b. Did they provide enough beget for the Center?	7		6	86%	1	14%	0	
c. Did they provide enough manpower to operate the Center?	7		6	86%	1	14%	0	
1.3 Do you think that the Project was implemented at the appropriate								
timing?	7		6	86%	1	14%	0	
1.4 Do you think that the Project was given enough support from the other								
sections and agencies of the government?	7		7	100%	0		0	
1.5 Do you think that the Project was implemented with enough linkage								
with any other related international organizations such as World Bank								
and USAID?	7		7	100%	0		0	
1.6 Do you think the SENAI Training Center Project has succeeded to								
establish an appropriate training system and supply more technicians								
with higher skill in the Brazilian Industry?	7		7	100%	0		0	
1.7 Has SENAI Training Center been a model vocational training center								
in the field of Electric and Electronic technique in Brazil?	7		6	86%	1	14%	0	
1.8 Were you satisfied with the theoretical and practical/machine								
operation/maintenance/management training provided by the Japan								
expert?	7		7	100%	0		0	
1.9 Were you satisfied with instruction skill, training material and plan								
development provided by the Japanese experts?	7		6	86%	1	14%	0	
1.10 Were you satisfied with the training material and plan development								
provided by the Japanese experts?	7		7	100%	0		0	
1.11 Have you taken a counterpart training in Japan?	7		0		0		7	100%
	LOW		MED		HIGH		NA	
1.12 How do you evaluate your own current technical level?								
a. Theoretical			2	29%	5	71%		
b. Practical skill			2	29%	5	71%		
c. Instruction skill			3	43%	3	43%	1	14%
d. Training material development			3	43%	4	57%		
e. Training plan development			1	14%	5	71%	1	14%
f. Management			1	14%	5	71%	1	14%
1.13 How do you evaluate the skill level of the current graduates for								
each of the following skills?								
a. Overall				0	0		7	100%
b. Theoretical study				0	6	86%	1	14%
c. Electrical measure,emt			1	14%	6	86%	0	
d. Electric device handling				0	7	100%	0	
e. Understanding/drawing a working plan				0	7	100%	0	
f. Electric construction			1	14%	4	57%	2	29%
g. Electric circuit application				0	6	86%	0	
h. Electric equipments				0	6	86%	1	14%
i. Electronic circuit application				0	7	100%	0	
j. Sequence control			2	29%	5	71%	0	
k. Computer			1	14%	5	71%	1	14%
l. Industrial Instrumentation			2	29%	5	71%		
	Total		Yes		No		N/C	
1.14 Do you think the educational level of trainees is almost the same								
every year?	7		6	86%	1	14%	0	
1.15 Were you satisfied with the translation and usefulness of the textbooks								
developed during the project period?	7		3	43%	3	43%	1	14%
1.16 Have the training equipments been successfully utilized?	7		6	86%	1	14%	0	
1.17 Have the training equipments been properly maintained?	7		6	86%	1	14%	0	

	Total	Yes		No		N/C	
1.18 Has the operation system for implementing training courses in the center been well organized?	7	5	71%	1	14%	1	14%
1.19 Are the building constructed suitable for training?	7	7	100%	0		0	

(STAINABILITY)

	Total	Yes		No		N/C	
3.1 Does the Training Center have enough resource its activities?	7	6		1		0	
3.2 Is there any social/economical contribution by SENAI training center?							
3.3 Do you have an internal system to develop text books and training materials?	7	2	29%	1	14%	4	57%
3.4 Do you have an internal system to develop a training plan/curriculum?	6	1	14%	3	43%	2	29%
3.5 Dose the Center provide a internal seminar/training course to upgrade your instruction skill?	7	5	71%	0		2	29%
3.6 Dose the Government or any other organization provide a seminar/ training course to upgrade your instruction skill?	7	2	29%	2	29%	3	43%
3.7 Are you satisfied with your current situation in the Center?	7	1	14%	2	29%	4	57%
3.8 Do you plan to continue to worker this Center?	7	1	14%	0		6	86%
3.9 Is there promotion program of SE/EVTC to Companies and technicians	7	6	71%	0		2	29%

(RELEVANCE)

	Total	Yes		No		N/C	
4.1 Have there been any major policy changes relating to the individuallization promotion in Brazil?	7	3	43%	1	14%	3	43%
4.2 Dose the curriculum provided by the SENAI Center meet the current needs of the Companies?	7	7	100%	0		0	
4.3 Dose the skill level of the graduates meet the current needs of the Company?	7	7	100%	0		0	
4.4 Is the purpose of the Project to supply Electric and Electronic technical , still relevant to the current needs of the companies?	7	5	71%	1	14%	1	14%
4.5 Are the programs and training system comprehensively applicable in other region in Brazil?	7	7	100%	0		0	
4.6 Do you trained counterparts wan to continue to work in SE/EVTC?	7	2	29%	0		5	71%
4.7 Is the trainees' education level maintained appropriately?	7	6	86%	0		1	14%

RESULT OF QUESTIONNAIRE:INSTRUCTORS/TEACHERS

(EFFECTIVENESS)

	Total	Yes	No	N/C	
1.1 Do you think the SENAI Center has succeeded to establish an appropriate training system and supply more manpower with higher technical skill in the companies?	5	5 100%	0	0	
1.2 Is the SENAI Center recognized as a model vocational training center in Brazil?	5	4 80%	1 20%	0	
(OUTPUT)					
1.3 Where do you learn Electric and Electronic technical skill?					
a. University/college		2 40%		0	
b. Your previously belonging company/organization		3 60%			
c. SENAI Vocational Training center		4 80%			
d. Other vocational training center		2 40%			
e. Others		0			
1.4 Where did you learn how to teach at the training courses?					
a. University/college		1 20%			
b. SENAI Vocational Training Center		5 100%			
c. Other Vocational Training Center		1 20%			
d. Others					
	Low	Med	High	NA	
1.5 How do you evaluate your own current technical level?					
a. Theoretical			4 80%	1	20%
b. Practical skill			5 100%		
c. Instruction skill			5 100%		
d. Training material development		1 20%	3 60%	1	20%
e. Training plan development			4 80%	1	20%
f. Management		1 20%	4 80%		
1.6 How do you evaluate the skill level of the current graduates for each of the following skills?					
a. Overall		5 100%			
b. Theoretical study		3 60%		2	40%
c. Electrical measure,emt		1 20%	4 80%		
d. Simple electric device handling		3 60%		2	40%
e. Understanding/drawing a working plan	3 60%			2	40%
f. Machine operation		3 60%		2	40%
g. Repairing, taking apart, and assembling machines	1 20%	2 40%		2	40%
h. Parts management on taking apart/assembling machines		1 20%	4 80%		
i. Machine operation necessary to take apart/assemble machine		2 40%		3	60%
j. Maintenance of repairing machine and tools		3 60%	1 20%	1	20%
k. Sequence control		1 20%	1 20%	3	60%
	Total	Yes	No	NC	
1.7 Do you think the educational level of trainees is almost the same every year?		5 100%		0	
1.8 Are you satisfied with the usefulness of the textbooks?		1 20%	4 80%	0	
1.9 Have he training equipment been successfully utilized?		1 20%	4 80%	0	
1.10 Have the training equipments been properly maintained?		4 80%	0	1	10%
1.11 Are the Center facilities (space, utilities) adequate utilized?		5 100%	0	0	
1.12 Has the operation systems of the Center been well organized?		2 40%	0	3	60%

(IMPACT)

	Total	Yes	No	N/C	
2.1 Has the SENAI Training contributed to up grade the technical of standard of Electric and Electronic technicians?	5	5 100%	0		
2.2 has the SENAI Center contributed to supply more technicians with higher technical skill?	5	5 100%	0		
2.3 Have you ever had a chance to transfer your instruction to the other training centers or companies?	5	5 100%	0		
o What type of skill did you transfer to them?					
a. Machine maintenance/management/operation	2				
b. Course instruction	5				
c. Training material/plan development	1				

d. Others	1					
o How did you transfor that skill?						
a. Having a seminar/training course	5					
b. Personal contact	2					
c. Others	1					
2.4 Has there been any other social/economical contribution by the SENAI Training Center?	5		0	1 20%	4	80%
2.5 have there been any 'Negative Impacts' from the SENAI raining Center on the Brazilian Industry?	5	1 20%		4 80%		

(SUSTAINABILITY)

3.1 Does the Training Center have enough resources to continue its activities?	Total 5	Yes 4 80%	No 0	N/C 1	20%
3.2 Do you have an internal system to dovelop textbooks and training materials?	5	1 20%	4 80%	0	
o Are you satisfied with the usefulness of self-developed textbooks and training materials?	5	0 20%	1 20%	4	80%
3.3 Do you have an internal system to develop a training plan/curriculum?	5	0	5 100%	0	
o Are you satisfied with the self-developed plan/curriculum?	5	0	0	5	100%
3.4 Does the Center provide a internal seminar/training course to upgrade your instruction skill?	5	2 40%	3 60%	0	
3.5 Does the Government or any other organization provide a seminar/training course to upgrade your	5		2 40%	3	60%
3.6 Are you satisfies with your current in the Center?	5	1 20%	4 80%	0	
3.7 Do you plan to continue to worker the Center?	5	1 20%	0	4	80%

(RELEVANCE)

4.1 Have there been any major policy changes relating to the industrialization promotion in Brazil?	Total 5	Yes 0	No	N/C	
4.2 Does the curriculum provided by the SENAI Center meet the current needs of the companies?	5	5 100%			
4.3 Does the skill level of the graduates meet the current needs of the companies?	5	5 100%			
4.4 Is the purpose of the Project to supply Electric and Electronic technicians still relevant to the current needs id the companies?	5	5 100%			
4.5 Has the spaceports of equipments been continuously and properly supplied?	5	4 80%	0	1	20%
4.6 Has the Maintenance and replacement of equipments been under taken properly?	5	4 80%	0	1	20%

RESULT OF QUESTIONNAIRE:TRAINEES

(EFFECTIVENESS)

	Total	Yes	No	N/C	
1.1 Do you think the SENAI Center Project has succeeded to supply technicians with higher skill in your companies?	7	7 100%	0	0	
1.2 Are you satisfied with the curriculum provided by the SENAI Center?					
a. Cultural/Scientific Subject	7	6 86%	1 14%	0	
b. Technical/practical Subject	7	6 86%	1 14%	0	
1.3 Do you have any plan on your future job?	7	6 86%	1 14%	0	
1.4 Are you satisfied with the training skill of the instructors?					
a. Cultural/Scientific Subject	7	7 100%	0	0	
b. Technical/practical Subject	7	7 100%	0	0	
1.5 Are the textbooks useful?	7	7 100%	0	0	
1.6 Are the facilities (space, utilities.) adequate?	7	5 71%	2 29%	0	
1.7 Are the training equipments adequate?	7	7 100%	0	0	
1.8 Are the training equipments sufficiently provided?	7	7 100%	0	0	

(IMPACT)

	Total	Yes	No	N/C	
2.1 Is there any social/economical contribution by the SENAI Training to continue its activities?	7	0	0	7	100%

(SUSTAINABILITY)

	Total	Yes	No	N/C	
3.1 Does the Training Center have enough resources during your training to continue its activities?	7	6 86%	1 14%	0	
3.2 Do you want to remain in the center to be a future instructor?	7	3 43%	4 57%	0	
3.2 Has the courses been implemented as planned?	7	7 100%	0	0	
3.4 How do you evaluate your training program in SE/EVTC?	7	7 100%	0	0	

RESULT OF QUESTIONNAIRE: GRADUATES

[EFFECTIVENESS]

1.1	Do you think the SENAI Training Centre Project has succeeded to establish an appropriate training system and supply Electric/Electronic technicos with higher skill in your company?	Total	67	Yes	67	100%	No	0	0%	N/C	67	
1.2	How do you evaluate your technical skill just after you completed this training course and your current one?											
	Electric Engineering											
		As a graduation										
		Total	High				Low			Mod.	N/C	
	a. Overall	0	0				0			0	0	
	b. Theoretical study	68	44	65%			1	1%		21	2	
	c. Electrical measurement	68	38	56%			2	3%		26	2	
	d. Electrical device handling	68	40	59%			0	0%		26	2	
	e. Electric construction	68	18	26%			10	15%		35	5	
	f. Electric circuit application	68	34	50%			2	3%		30	2	
	g. Sequence control	68	26	38%			9	13%		28	5	
	h. Electric equipments	68	30	44%			0	0%		33	5	
	i. Electronic engineering	0	0				0			0	0	
	j. Electronic circuit application	63	21	33%			6	10%		34	2	
	k. Computer	68	12	18%			20	29%		31	5	
	l. Industrial Instrumentation	68	21	31%			4	6%		35	8	
		Current										
		Total	High				Low			Mod.	N/C	
	a. Overall	0	0				0			0	0	
	b. Theoretical study	68	20	29%			5	7%		39	4	
	c. Electrical measurement	68	31	46%			7	10%		26	4	
	d. Electrical device handling	68	41	60%			2	3%		21	4	
	e. Electric construction	68	23	34%			12	18%		26	7	
	f. Electric circuit application	68	30	44%			6	9%		28	4	
	g. Sequence control	68	10	15%			33	49%		18	7	
	h. Electric equipments	68	34	50%			4	6%		23	7	
	i. Electronic engineering	0	0				0			0	0	
	j. Electronic circuit application	68	21	31%			19	28%		24	4	
	k. Computer	68	16	24%			26	38%		18	6	
	l. Industrial Instrumentation	67	12	18%			27	40%		18	10	
1.3	Were you satisfied with the curriculum provided by the SENAI Centre?	Total	Yes				No			N/C		
	a. Cultural/Scientific Subject	68	62	91%			6	9%		0		
	b. Technical/Practical Subject	68	62	91%			6	9%		0		
1.4	Do you think the training in SE/EVTC is appropriate to requirements of companies?	68	67	99%			0	0%		1		
1.5	Did you have any problems when you found a job after the graduation from Centre?	68	5	7%			63	93%		0		
1.6	Did the SENAI Centre introduce appropriate jobs to you?	0	0				0			0		
1.7	Were you satisfied with the training skill of the instructors?											
	a. Cultural/Scientific Subject	68	68	100%			0	0%		0		
	b. Technical/Practical Subject	68	68	100%			0	0%		0		
1.8	Were the textbooks useful?	65	61	94%			1	2%		3		
1.9	Are you still making use of that textbooks for your current job?	68	41	60%			22	32%		5		
1.10	Were the facilities (space, utilities, etc.) adequate and properly utilized?	68	68	100%			0	0%		0		
1.11	Were the training equipments adequate?	68	68	100%			0	0%		0		
1.12	Were the traning equipments sufficiently provided?	67	65	97%			2	3%		0		

Legent: N/C = No comment

[IMPACT]

		Total	Yes		No		N/C	
2.1	Have you transferred your learned skill to your colleagues in the company?	63	48	76%	12	19%	3	
2.2	Does your company provide a seminar/training course to upgrade your skill?	62	52	84%	9	15%	1	
	And have you ever taken any of the seminar/traning courses?	0	0		0		0	
2.3	Is there any social/economical contribution by the SENAI Training Centre?	0	0		0		0	

[SUSTAINABILITY]

		Total	Yes		No		N/C	
3.1	Did the Training Center have enough resources during your training to continue its activities?	67	65	97%	2	3%	0	
	If 'NO', please specify which one of the following items is not sufficient:							
	(i) Equipment	0	0		0		0	
	(ii) Teaching staff	0	0		0		0	
	(iii) Facilities	0	0		0		0	
	(iv) Operation system	0	0		0		0	
	(v) Budget	0	0		0		0	
	(vi) Others	0	0		0		0	

[RELEVANCE]

		Total	Yes		No		N/C	
4.1	Is the purpose of the Project, to supply Electric and Electronic technicos, still relevant to the current needs of your company?	61	57	93%	4	7%	0	
4.2	Have the training courses been implemented as planned in the SE/EVTC	0	0		0		0	
4.3	Did you think to remain in SE/EVTC to be a future instructor?	68	30	44%	34	50%	4	
4.4	Any other comment.	0	0		0		0	

Legent: N/C = No comment

RESULT OF QUESTIONNAIRE:SUPERVISORS

EFFECTIVENESS

	Total	Yes	No	N/C
1.1 Do you think the SENAI has succeeded to establish an appropriate training system to supply higher trained technicos?	10	10 100%	0 0%	0
1.2 How do you think the SENAI Training Centre was established as a model training centre in Brazil?	10	6 60%	2 20%	2
1.3 Do you think it is now easier to recruit technicos than before, 10 years ago?	10	9 90%	0 0%	1
1.4 How many technicos are working for your company?	133			
1.5 How many of them are graduates from the SENAI Centre?	15			

1.6 How do you evaluate the necessary knowledge and technical level of the current graduates for each of the followings:	Total	High	Mod	Low	N/C
a. Overall	10	0 0%	0	0	10
b. Operation of various electric equipments and motors	10	4 40%	1 10%	0	5
c. Inspection of electric equipments and machines	10	6 60%	2 20%	0	2
d. Maintenance of electric equipments and machines such as distribution board.	10	4 40%	1 10%	0	5
e. Work schedule management	10	7 70%	2 20%	0	1
f. Electric and industrial measurements	10	8 80%	1 10%	0	1
g. Automatic control	10	1 10%	1 10%	0	8
h. Computer technique	10	4 40%	4 40%	2 20%	0

1.7 How do you evaluate the technical level of the current graduates for each of the following technique?	Total	High	Mod	Low	N/C
a. Overall	10	0 0%	0 0%	0 0%	10
b. Theoretical study	10	10 100%	0 0%	0 0%	0
c. Electrical measurement	10	9 90%	0 0%	0 0%	1
d. Simple electric device handling	10	9 90%	0 0%	0 0%	1
e. Understanding/drawing a working plan	10	6 60%	3 30%	0 0%	1
f. Electric construction	10	4 60%	2 20%	0 0%	4
g. Electric circuit application	10	4 40%	2 20%	0 0%	4
h. Electronic equipment	10	5 50%	3 20%	0 0%	2
i. Electronic circuit application	10	7 70%	0 20%	0 0%	3
j. Sequence control	10	0 0%	6 20%	0 0%	4
k. Computer	10	3 3%	5 50%	0 20%	0
l. Industrial instrumentaion	10	2 20%	4 40%	0 0%	4

	Total	Yes	No	N/C
1.8 Do you prefer to employ SENAI Centre graduate rather than the graduates from the other vocational training centre?	10	8 8%	2 20%	0
1.9 Has the practical training course of the CETEL implemented in your company?	10	6 60%	4 40%	0
And do you think this training system is effective?	6	6 100%	0 0%	0

IMPACT

	Total	Yes	No	N/C
2.1 Do you think the SENAI Training Centre Project has succeeded to upgrade the electric technical standard in Brazil?	10	9 90%	1 10%	0
2.2 Do the graduates from the CETEL transfer their electric and electronic technique to their colleagues in your company?	10	8 80%	0 0%	2
2.3 Does your company provide a seminar/on the job training course for your staff to upgrade their technique?	10	9 90%	0 0%	1
2.4 Has there been any other social/economical contribution by the SENAI Training Centre?	0	0	0	0
2.5 Have there been any 'Negative Impact' from the SENAI Training Centre on the Brazilian industry?	10	1 10%	7 70%	2

Legent:N/C=No comment

[RELEVANCE]

	Total	Yes	No	N/C
4.1 Is the purpose of the Project, to supply electric and electronic technicos, still relevant to the current needs of the Brazilian Industry?	10	10 100%	0 0%	0
4.2 Does the curriculum provided by the SENAI Center meet the current needs of your company?	10	9 90%	0 0%	1
4.3 Do you pay more appreciation to upgrade your technicos standard?	10	10 100%	0 0%	0
4.4 Do you expect that your company needs more technicos with higher skill?	10	9 90%	0 0%	1
4.5 Do you think SENAI training systems is comprehensively applicable in other region in Brazil?	10	9 90%	0 0%	1
4.6 Any other comment.	0	0	0	0

Legent: N/C = No comment

Interview Survey Results

16 NOV, 93

08:30 Afonso Greco -- SENAI(MG)Regional Director

1. CETEL is a successful project and it's very helpful to Brazilian industry, although the problems faced during its implementation. It was well-planned and the negotiations evolved as far as the meetings with the several Japanese mission happened.

2. The experts who stayed at the school during the period of cooperation were qualified and dedicated, but they should have left the project gradually, and the whole group at once.

3. The training of Brazilian technicians in Japan was very good. The first trainees had a longer training time and the others attended shorter and more specific courses. The ideal period would be a 6-month-course.
   The number of stayed at the schools since the beginning of the project should be considered.
   The training programs were modified concerning to that which was initially planned. Modifications ocarred in about 40% of them.

4. The major number of technicians who were trained in Japan remained at the school. The ones who left it had time to repasses what they have learned. They were substituted for graduates admitted by an Exams Selection Process, after a period of permanence at companies as a professional.

5. CETEL is considered as a model for Brazil as a whole in its area. It will be classified as a National Center of Technology according to the criterions which were established by SENAI National Department.

6. SENAI keeps agreements with foreign organizations aiming its technological updating (Example:GTZ - Germany)
   In Brazil it tries to keep exchange programs with universities and Federal technical schools.

7. The creation of new schools and new courses is planned according to the needs of the companies. The major challenge concerning to this is the equation of good equipment and competitive price. Another important fact is that regarding to the human resources in Brazil and abroad.

8. SENAI tries to follow the technological evaluation through the acquisition of equipments bureaucratic encumbrances by the Brazilian government.

10. There's a good exchange program among SENAI regional departments, and this way they can use all human and material resources available in the system.

16 NOV.93

10:00 Gilberto Duarte Amaral -- Superintendent of Vocational Programs

1. The results of the cooperation project were satisfactory. The technical level of SENAI is compatible with that of Brazilian industry. The enterprises have searched the SENAI training because they need to increase their products quality level.

2. After the implement of the cooperation project, some attempts to change the Brazilian vocational training programs policy were made, but they haven't succeeded.

3. CETEL performance hasn't caused any negative aspect in society.

4. The central administration of SENAI supports the development of CETEL specially supervision.

5. The most important fact for the development of CETEL is currently the technical and financial support and the emphasis which is being given to the national centers of technology.

6. SENAI-MG will set 4 more schools in a short period as part of its development program, and CETEL technicians will be able to cooperate technically in this process.

7. The origin of the resources for maintenance and development of SENAI comes from companies contribution.

16 NOV.93

10:55 Eulor Loyola da Silva -- Assistant Director of SENAI-MG

1. CETEL level is compatible with the level of the companies but there will be always a gap between theses levels.
   The school role is to provide basis for a faster adjustment of the professional in the company.

2. The technical level of CETEL graduates has been satisfactory to the companies needs.

3. The most important factor to keep the school up-to-date is the continues training of its human resources. Then comes the permanent contact with enterprises for capping and spreading new technologies, and finally the equipments renewal.

4. There is no survey of graduates in a methodical way and the mall modifications done in the curricula had as basis the technician's profile.

5. The Japanese experts achieved the purposes of the project satisfactorily their adjustment was good and Mr.Igarashi's leadership was quite positive.

6. The transference of the Japanese experts' technology for the counterparts was positive. Nevertheless there was great difficulty in training the teaching material which was in Japanese(high costs for translating).

7. A possible Japanese cooperation with SENAI-MG could be implemented in the food area.

8. Suggestions for future projects of cooperation; training programs abroad directed to the trainees needs; more attention on providing technical documents as a support to the project, and preparation of homologous to make discussions about common matters easier.

9. The creation of many technical courses isn't a purpose of CETEL, It's important to develop a greater number of technological updating courses for the companies' employees as it usually happens (Ex. CEMIG Petrobras).

10. The updating for graduates can be done by CETEL, although the difficulty in finding them in different places of the state or country.

11. There was a great development of the practical part of the curriculum during the cooperation project. This went through an evolution to get adjusted to the students needs.
The initial curriculum richer, but longer lasting and not suitable with Brazilian teaching structure.

12. CETEL graduates have a higher level than other schools, students though the comparison is hard, since many CETEL students have already attended similar schools.

16 NOV,93

14:00 Maoćario Gomes Rosa - Regional Director's Adviser

1. The Japanese experts achieved the purposes of the project satisfactorily. As to their permanence period, it was enough.

2. The training of counterparts in Japan was adequate that time. As long as the project was implemented the training period has been reduced.

3. The evaluation of the Project of Cooperation is positive in general. It made possible the advisory to other Regional Department after 3 years of its implementation and it created good conditions for the approachment between SENAI and Japanese enterprises which are set in Brazil (Ex. of cooperation with other schools: setting of elector-electronics labs in several schools, and automation labs in Uberaba).

4. The transference of technology of the experts for the technical staff of CETEL was satisfactory, including technology and dietetics.

5. There wasn't negative impact in society caused by the project.

6. The didatical material in English which was brought, by time if the cooperation was helpful concerning to the technical information. The one written in Japanese was barely used since its translation took much time and it was quite expensive.

7. For CETEL to keeps up-to-date it's essential to have access to advanced technology and promote the updating of its human resources.

8. CETEL has achieved to give the market technicians with the level which is expected by the companies. (In some cases it goes even further) but not in enough quantity.

9. After implementing the cooperation project, the change in the political area which interferes in CETEL's life, is the spreading of the philosophy of quality.
The Brazilian government has tried to emphasize technical teaching creating and installing several courses in different places, but they'er considered as insufficient.

18 NOV,93

17:00 Charles Lincoln Letite Duarte – Director of Technological Center of Elector–Electronic's Cesar Rodrigues – CETEL

1. The equipment sent to CETEL by the Japanese were satisfactory.

2. The level of the Japanese experts which stayed at CETEL during the cooperation period was satisfactory, even though they found challenges such as the instrumentation and control area for instance.

3. The number of vacancies for the counterparts training in Japan was enough. As to its length, the long training courses (1 year) could affect familiar life of the technicians.

4. The transference of technology through Japanese experts happened according to their ability in communication in Portuguese.

5. In general the cooperation given by the Japanese government was positive.

6. The didatical material was one of the great obstacles for the project, since the technological acknow/edgement could have been greater if the information wasn't in Japanese.

7. Regarding the Brazilian side of the cooperation, the adequate facilities were provided, ann the human resources were enough.

8. Currently there's lack of instructors in area such as computer science engineering (2), instrumentation and control (1), digital processing (1). This need can be supplied by relocating instructors who work for CETEL.

9. The level of competence of the technical and teaching staff of the center has evolved because of new challenges presented by enterprises.

10. The rate of turn–over is low in the center, as it's believed that the instructors have continual opportunities of technological increase, besides their salary.

11. The rate of candidates–Vacancy to technical courses has varied a lot because of greater interest of the candidates for University Courses, need to get into the market, little publicity about SENAI courses and performance.
The average of Candidates/vacancies has been 10/1 in electronics, as the search for the electric training course has decreased year after year, motivating its closing.

12. CETEL graduates have been joining the market by own initiative or by an indication by

CETEL as they are required by interested companies, as SENAI hasn't get a methodical support service for graduates regarding to this.

13. SENAI doesn't's execute a systematic attendance for graduates. A formal contract with them is promoted yearly by the occasion of the day which was implemented with this purpose(ex--student's day).

14. The maintenance of the equipment has been executed properly extending inclusively to similar equipment in other SENAI schools in MG.

15. The staff and students have adopted a critical position concerning CETEL functioning, taking it to a continual improvement of its activities.

16. Other factors that have conditioned the growing of CETEL:
Chaining in the macro-economic scenery, requiring CETEL new ways od actuating, and its rise to the category of National Center of technology alternative ways for an increasing of the budget; development of TCTP' as an opportunity of spreading technology to other countries and a factor of rising the technical level of instructors; emerging of new demands making possible the creation of new courses (computer science engineering) and the need of structuring new area (telecommunications)

'Third countries training programs

17. There aren't factors that allow any comparisons between CETEL current students level and those previously graduated.

18. Currently developed curricula have the officially stablished technician's profile as bases.

19. Ddatic material usually adopted by CETEL include the adoption of textbooks which are available in the market, besides specifically elaborated material regarding curriculum specify subject.

16 NOV,93

16:00 César Rodrigues SENAI--MG Regional Council President

1. The school has given great contribution for Brazil and Latin American Countries. SENAI is a well respected institution in Brazil and in other countries for its seriousness in its work.

2. The Japanese cooperation project was successful and there is a lot of respect for JICA and for Japanese government .

3. Brazilian industry is udder development and there's a need of more Center similar to CETEL.

4. New Japanese Cooperation Projects are expected to be performed with SENAI.

16 NOV,93

17:00 Tulio Marcos Machado -- Division Manager of Engineering, Electrical Measurement Installation and Customer--CEMIG

1. SENAI students'level is superior to the level of other school's students and it has contributed to increase Brazil industry's level.

2. At CEMIG, there are approximately 40 CETEL graduates who have contributed to raise the level of the services done by the company.

3. CEMIG tries to promote the technological updating of its employees through several programs and of its school in Sate Lagoas together with SENAI.

4. SENAI's professional preparation is compatible with the needs of Brazilian industry.

5. Although it's not possible to analyze the curriculum adopted by CETEL, its believed to be worthwhile, since former students have reached the best positions in the last CEMIG selection process rank in 1987.

17 NOV,93

08:30 Valceres Vieira Rocha da Silva – Assistant Teacher in the Instrumentation Control and Electrical Measurement Area–FUNREI

1. Facilities, labs, equipment and instruments available at CETEL favor a better quality at teaching at CETEL.

2. CETEL graduates have contributed to raise Brazilian industry level.

3. The difference between college students and SENAI students is that SENAI's have more experience in labs and gather theory and practice.
4. CETEL can be considered as a model–school. It's already been reported that source PUC students have quit their courses to attend CETEL's course for its pract city.

5. It's important for CETEL to keep ut–to–date, the availability of modern equipment and periodical updating of human resources. (although Brazilian industry make use of many obsolete equipments)

6. Aiming an up dating, university teachers search exchange with other institutions like SENAI, equipment in education coming from industry.

7. There's little investment in education coming from industry.

17 NOV,93

10:00 Roseli Ma. Veloso Campos – PUC Teacher responsible for Lab. Automation

1. CETEL is a technological referring point for exchange between universities and similar technological centers.

2. CETEL students are answering Brazilian industry satisfactorily and the school can be considered as a model for Brazil.

3. The lack of financial resources blocks the technological updating of universities and

public schools.

4. The work market is restricted and competitive, demanding competent professional with faster capacity of adjustment to productivity.

5. Technological updating opportunities are more concrete at cetel than at Universities.

6. Enterprises are already starting to invest in University searching a better qualified professional as result.

7. Course's curricula evolved and started having a more effective thiouracil basis. Even though they differ from CEFET curricula which are predominately thiouracil.

8. Government doesn't care about education as much as it should. Many aspects of the economic and financial politics (market reserve) block technological updating of teaching institutions.

9. Reasons of SENAI's success: up-to-date equipment; narrow links with enterprises exchange with other centers of acknowledgement from first world; international agreements and competent human resources.

17 NOV.93

14:30 Angelo Fares Menhem - Electronic Engineer (PUC graduate) and businessman

1. SENAI has achieved enterprises expectations and graduates have demonstrated satisfactory productivity and high level of creativity.

2. Within the limits offered by Brazil's situation, CETEL can be considered as a model of school and technological reference center.

3. Courses's curriculum should be more advanced, so that SENAI can satisfy the companies needs and anticipate in invasions.

4. CETEL should keep a closer relationship with enterprises and develop unificated projects with them in order to make a more frequent updating in its curriculum.

5. School should program courses with more emphasis in software, since current equipment area even more dependent on them.

6. Labs complementation in CETEL could make it able for a pre qualification of industrial products which need certification.

17 NOV.93

16:50 Rafael Carlos Mezzasalma and Fransergio Souza Alves - CETEL students

1. CETEL is training good technicians comparing it to other schools.

2. Courses's curriculum isn't satisfactory because some technologies are already adequate for the time being and should be periodically reviewed.

More emphasis should be given to Telecommunications.

3. The practical part of the curriculum is considered as sufficient

4. There's little publicity for CETEL courses, nd SENAI is known as a secondary school only.

5. Instructors performance is satisfactory.

6. Didatical material is good, but the books are expensive (Ex. a book of power electronics cost about US$25.00). Although there are some for consulting at the library, give the students some training material (textbooks) that they could take home at the end of the course would be the ideal.

7. Facilities at CETEL are satisfactory

8. It would be interesting if the graduate could remain at CETEL as an instructor at the end of the course, so for the continuous opportunity of learning.

9. A closer relationship between CETEL/companies can favor the study of the companies concrete problems.

10. SENAI should keep a support service for students to make the choice of where the apprenticeship will be done easier, as well their entry into the work market.

18 NOV,93

08:30 Counterparts:CETEL Instructors and Technicians

1. In general, training programs in Japan were altered for being incompatible with the counterparts needs and features (every technician negotiated changing in the program when necessary).
   The result of its training were positive, rasing the teaching staffs level as well technical assistance at CETEL.(EX. Exchange at instrumentation area)

2. The equipment which came from Japan are of a high quality, demanding few spare pieces up to now. maintenance problems have been solved satisfactorily.
   The major problem with the equipment is that it's obsolete.

3. During the Japanese cooperation period, the equipment was considered up-to-date and satisfied the enterprises. As time went by, equipment became obsolete besides there was a lack of spectrum analyzers, digital oscilloscopes and digital true RMS multimeters.

4. An important factor which interferes in the teaching/learning process is the lack of opportunities for technical updating which can be done through courses seminars,workshops and up-to-date books.

5. We propose that JICA creates a program of systematic assistance to CETEL regarding to keep its human and material resources up-to-date, adding efforts together with SENAI (After Care program wasn't executed due to Brazilian government matters).

6. Salary policy for the educational area professionals is inadequate since the low salaries leads the teachers to work in several shifts, which can often affect the quality of their work.

7. CETEL develops other activities besides the technical courses which aim to supply the companies' needs directory: technical assistance , research, and projects development, besides technological updating courses.

8. There has been a spreading of didatical material which is produced by CETEL though foreign students which attend T.C.T.P, which is done annually.

9. The technical and teaching staff at CETEL has searched a self improvement through, the acquisition of technical literature, training courses in foreign countries, development of study groups, seminars and speeches.

18 NOV.93

14:30 Zozimo Losé Calderia – Electronics Technician: professional at FMB (Metallugy industry)since May'92 in aluminum fusing for car pieces sector.

1. The course at CETEL has been 100% useful for his function at the company.

2. CETEL courses are superior to those given at other technical schools (this former student has attended other technical schools before getting to SENAI)

3. The company offers technological updating courses to its employees.

4. SENAI should keep a support service for students in order to make easer the choice of where the apprenticeship will be done, as well their starting at the market.

5. English language skill in very important for the technicians performance.

6. SENAI is highly regarded for what is heard in the company.

7. Self-improvement happens in the company through the exchange of ideas, solution of problems concerning to works, etc.

18 NOV.93

15:30 Dercy Eustáquio – Electronics Maintenance Staff Supervisor at FMB

1. Technician's performance changes from person to person, but CETEL's graduates can have a better performance since SENAI work has the industry as its aim.

2. The economy offers technological updating to its employees, developed in its most, by equipment suppliers (Ex. Programmable logical controllers–PLC)

3. Whenever it's needed, CETEL is required by FMB for execution of curse and speeches.

4. SENAI work isn't as known as it should, and there should be more publicity about it.

5. In a general evaluation we can attribute grade 8 to graduate in a scale ranging from zero to ten.

6. English language skill is very important, specially for comprehending technical manual.

19 NOV,93

09:00 Lu Yu Chong – Supervisor at the Research and Development of the Automation Systems of Distribution at CEMIG (employee at CEMIG for 14 years).

1. CETEL students have an excellent performance and they bring a technical acknowledgement which is superior to those of other similar schools, students or PUC and UFMG engineers.

2. The company executes a great internal restructuring program since 1988 ant it doesn't intend to have new admissions for the years, although there's lack of technicians (CEMIG has got approximately 17 thousand employees, and 3.5 million consumers).

3. There's systematic exchange between CEMIG and CETEL for the development of human resource and projects aswell. (Ex. Software development for measurement simulation.)

4. CEMIG keeps a vocational training center in agreement with SENAI in Sete Logoas, where courses and specific trainings are developed for the company's employees.

5. CETEL course's curriculum should give more emphasis to software development and programming.

6. English language skill is very important for the technician, since 80% of the technical literature is in English.

7. CETEL graduates have transferred their knowledge to other colleagues when doubts come up.

8. The profile of the student who had finished the course recently is better than these who have done it 10 years ago.

18 NOV,93

10:20 Valéria Nonat Nunes – Electronics Technician; graduated in Engineering at PUC; job at microprocessors maintenance are.
Carlos Alberto Monterio Leitão – Electronics Technician; graduates in Engineering ; job at computers area.

1. The knowledge acquired during the course are helpful in the company, except instrumentation and controlling.

2. There's a close relationship between CEMIG and CETEL for professional training and development of project.

3. SENAI graduates show a higher level in their knowledge if compared to other

professionals of their own area.

4. There's an informal relationship among professionals as they change technical information.

5. The equipment which is available at CETEL makes easier for the technicians to adjust to those available at the companies.

6. English language skill is highly important for the technician's performance.

7. There isn't publicity enough about SENAI, and so it's not as much known for its work.

8. The graduate follow--up done CETEL happens during the apprenticeship period only, which is not enough. SENAI should structure a support service for graduates as they start in the work market.

9. The search for technical courses after finishing high school and before getting into college is relates to the need of guaranteeing a wage which can pay university, which is quite expensive. Besides that, getting into companies as technicians makes easier for the professional to be promoted.

10. The graduates go back to CETEL for technical advisory and to exchange ideas whenever it's possible.

18 NOV,93

14:20 Milton wagner Brazil – Electronics Technician – job at CEMIG in the area of implementation of supervising, systems and confidential information.

1. The knowledge acquired during the course are applicable in the company in most of the cases.

2. CEMIG always promotes updating courses for its employees through equipment supplier companies, though its school in Sete Lagoas or through SENA.

3. Common problems concerning to work are discussed by the staff as a way to update its members.

4. CETEL can be considered is a model in Brazil since it overcomes the other schools in facilities, updating human resources, and reduced groups.

5. CETEL is highly regarded, but there should be more publicity about it High School students and population in general aren't aware of it.

6. SENAI should support the graduates in a systematic way, concerning their entry in the work market (there was no follow up by CETEL at the apprenticeship in CEMIG).

7. The practical part of the course at CETEL is quite good and makes easier the transfer of knowledge and adjusting at the company.

18 NOV,93

15:30 Robert Luis Assunção - Director of the control operational systems development at CEMIG.

1. CETEL graduates have a good reputation at CEMIG, and they start to produce faster than other similar schools, graduates.

2. If there's any change at the selection policy at CEMIG, SENAI graduates will survey have priority.

3. Courses curriculum should give more emphasis to computer science.

4. English language skills is highly important for the technician's performance.

5. CETEL graduates have a positive influence to raise the productivity level of the other professionals of the same department.

Note that the officials interviews weren't included in this report.

22 NOV,93

17:00 José Manoel de Aquiar Martins/SENAI, Director of International cooperation

1. SENAI appreciate the Project as a successful cooperation and wants to continue the similar program with Japan.

THE EVALUATION STUDY ON THE JAPANESE COOPERATION PROJECT IN BRAZIL

THE SENAI VOCATIONAL TRAINING CENTRE PROJECT

QUESTIONNAIRE TO COUNTERPARTS

OCTOBER, 1993

BACKGROUND OF RESPONDENT

Name:

Designation:

Division:

Organization/Firm:

Your educational background:

Month/Year when you joined the Centre:

You are a ☐ Engineer ☐ Instructor ☐ Teacher

Course you mainly instruct is:

☐ Electric Training Course ☐ Electronic Training Course

You teach/instruct:

☐ Technical Subject ☐ Scientific Subject

☐ Cultural Subject ☐ Practical Training

☐ Others (please specify: _____)

Date:

THE SENAI VOCATIONAL TRAINING CENTRE

Following are the question on the SENAI Vocational Training Centre. This survey is being conducted by the Brazilian Government and the Japanese Government in order to make a ex-post evaluation on the Brazil-Japan Project-type Technical Cooperation Program.

Kindly please tick (v) the most appropriate answers or write down your comments. You cooperation would be highly appreciated and your answers will be fully confidential and used exclusively for this survey.

[EFFECTIVENESS]

This section is concerned with the effectiveness of the Project; i.e. the extent whereby the objectives of the Project are successful.

(Input)

1-1. Did the Japanese Government provide enough project inputs for the Centre?

a. Were the training equipments adequate?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', what was the major problem?

☐ Number of equipment was not enough.
☐ Technical level of equipment was too high.
☐ Technical level of equipment was too low.
☐ Others (please specify:_____)

b. Was the counterpart training in Japan adequate (in general)?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', what was the major problem?

☐ Number of equipment was not enough.
☐ Technical level of equipment was too high.
☐ Technical level of equipment was too low.
☐ Others (please specify:_____)

c. Was the technology transfer from Japan to the Centre adequate?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', what was the major problem?

☐ Number of equipment was not enough.
☐ Technical level of equipment was too high.
☐ Technical level of equipment was too low.
☐ Others (please specify:_____)

d. If you have any comments on the Japanese inputs, please explain:

_____

_____

1-2. Did the Brazilian Government provide enough inputs for the Centre?

a. Are the Centre facilities(space, utilities etc.)adequate?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

b. Did they provide enough budget for the Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

c. Did they provide enough manpower to operate the Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

d. If you have any comments on the Brazilian Inputs, please explain:
_____

1-3. Do you think that the Project was implemented at the most appropriate timing?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-4. Do you think that the Project was given enough support from the other sections and agencies of the government?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-5. Do you think that the Project was implemented by enough linkage with any other related international organizations such as World Bank and USAID?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

Name of Project Implementation Organization

[EFFECTIVENESS]

This section is concerned with the effectiveness of the Project; i.e. the extent whereby the objectives of the Project are successful.

(Project Purpose)

1-6. Do you think the *SENAI Training Centre Project has succeeded to establish an appropriate training* system and supply technicos with higher skill in the Brazilian industry?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-7. Has SENAI Training Centre been a model vocational training centre in the field of Electric and Electronic technique in Brazil?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

(Output)

1-8. Were you satisfied with the theoretical and practical training such as machine operation, maintenance and management training provided by the Japanese experts?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-9. Were you satisfied with instruction skill, training material and plan development provided by the Japanese experts?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-10. Were you satisfied with the training program for training material and plan development provided by the Japanese experts?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-11. Have you taken a counterpart training in Japan?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', were you satisfied with it? _____

☐ YES ☐ NO ☐ NO COMMENT
What was the best point to be trained in Japan? Please explain.
_____

If 'NO', what was the major problem for you?

☐ Training period was too short.
☐ Technical level of equipment was too high.
☐ Technical level of equipment was too low.
☐ Training curriculum did not meet your needs.
☐ Others (please specify: _____)

1-12. How do you evaluate your own current technical level?

	No comment	Low	Moderate	High
a. Theoretical	☐	1	2	3
b. Practical skill	☐	1	2	3
c. Instruction skill	☐	1	2	3
d. Training material development	☐	1	2	3
e. Training plan development	☐	1	2	3
f. Management	☐	1	2	3

If you have any comments, please specify: _____

_____

1-13. How do you evaluate the skill level of the current graduates for each of the following skills?

	No comment	Low	Moderate	High
a. Overall	☐	1	2	3
b. Theoretical study	☐	1	2	3
c. Electrical measurement	☐	1	2	3
d. Electric device handling	☐	1	2	3
e. Understanding/drawing a working plan	☐	1	2	3
f. Electric construction	☐	1	2	3
g. Electric circuit application	☐	1	2	3
h. Electronic circuit application	☐	1	2	3
i. Electric and electronic equipments handling	☐	1	2	3
j. Sequence control	☐	1	2	3
k. Computer	☐	1	2	3
l. Industrial Instrumentation	☐	1	2	3

1-14. Do you think the educational level of trainees is almost the same every year?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

1-15. Were you satisfied with the translation and usefulness of the textbooks developed during the project period?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

1-16. Have the training equipments been successfully utilized?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

1-17. Have the training equipments been properly maintained?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-18. Has the operation system for implementing training courses in the Centre been well organized?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-19. Are the building constructed suitable for training?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

[SUSTAINABILITY]

This section is concerned with the sustainability of the Project: i. e. the extent of the Training Centre's technical impact after the assistance is completed.

3-1. Does the Training Centre have enough resources to continue its activities?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please specify which one of the following items is not sufficient:

☐ Equipments
☐ Teaching staff
☐ Facilities
☐ Operation system
☐ Budget
☐ Others (please specify: _____)

If you have any comments, please specify: _____

3-2. Is there any social/economical contribution by SENAI training centre?

If 'YES', please explain: _____

3-3. Do you have an internal system to develop text books and training materials?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

If 'YES', are you satisfied with the usefulness of self-developed textbooks and training materials?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

3-4. Do you have an internal system to develop a training plan/curriculum?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', are you satisfied with the self-developed plan/curriculum:

_____
_____

3-5. Dose the Centre provide a internal seminar/training course to upgrade your instruction skill?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____
_____

If 'NO', please explain how/where you upgrade your skill?

_____
_____

3-6. Dose the Government or any other organization provide a seminar/training course to upgrade your instruction skill?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____
_____

3-7. Are you satisfied with your current situation in the Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', what is the major problem for you?

☐ Salary is not enough
☐ Lack of opportunities to improve your technology
☐ Others (please specify: _____)

3-8. Do you plan to continue to work for this Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____
_____

3-9. Is there any promotion program of SE/EVTC to companies and students?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____
_____

[RELEVANCE]

This section is concerned with he relevance of the Project; i.e. whether the objectives of the Project are pertinent and worthwhile.

4-1. Have there been any major policy changes relating to the promotion of industrialization in Brazil?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____
_____

4-2. Dose the curriculum provided by the SENAI Centre meet the current needs of the companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

4-3. Dose the skill level of the graduates meet the current needs of the companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

4-4. Is the purpose of the Project to supply electric and electronic technical still relevant to the current needs of the companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

4-5. Are the programs and training system of the centre comprehensively applicable in other region in Brazil?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

4-6. Do you think other counterparts want to continue to work in SE/EVTC?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

4-7. Is the trainees' education level maintained appropriately?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

_____

4-8. Any other comment: _____

_____

_____

_____

_____

(Thank you for your cooperation.)

THE EVALUATION STUDY ON THE JAPANESE COOPERATION PROJECT IN BRAZIL

THE SENAI VOCATIONAL TRAINING CENTRE PROJECT

QUESTIONNAIRE TO INSTRUCTORS/TEACHERS

OCTOBER, 1993

BACKGROUND OF RESPONDENT

Name:

Designation:

Division:

Organization/Firm:

your educational background:

Month/Year when you joined the Centre:

You are a ☐ Engineer ☐ Instructor ☐ Teacher

Course you mainly instruct is:

☐ Electric Training Course ☐ Electronic Training Course

Your teacher/instruct:

☐ Technical Subject ☐ Scientific Subject
☐ Cultural Subject ☐ Practical Training
☐ Others (please specify: _____)

Date:

THE SENAI VOCATIONAL TRAINING CENTRE

Following are the question on the SENAI Vocational Training Centre. This survey is being conducted by the Brazilian Government and the Japanese Government in order to make a ex-post evaluation on the Brazil-Japan Project-type Technical Cooperation Program.

Kindly please tick (v) the most appropriate answer or write down your comments. Your cooperation would be highly appreciated and your answers will be fully confidential and used exclusively for this survey.

[EFFECTIVENESS]

This section is concerned with the effectiveness of the Project; i.e. the extent whereby the objectives of the Project are successful.

(Project Purpose)

1-1. Do you think the SENAI Centre has succeeded to establish an appropriate training system and supply technicos with higher technical skill in the companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____
_____

1-2. Is the SENAI Centre recognized as a model vocational training centre in Brazil?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____
_____

(Output)

1-3. Where did you learn electric and electronic technical skill?

☐ University/college
☐ Your previously belonging company/organization
☐ SENAI Vocational Training Centre
☐ Other vocational training centre
☐ Others (please specify: _____)

1-4. Where did you learn how to teach at the training courses?

☐ University/college
☐ SENAI Vocational Training Centre
☐ Other vocational training centre
☐ Others (please specify: _____)

1-5. How do you evaluate your own current technical level?

	No comment	Low	Moderate	High
a. Theoretical	☐	1	2	3
b. Practical	☐	1	2	3
c. Instruction skill	☐	1	2	3
d. Training material development	☐	1	2	3
e. Training plan development	☐	1	2	3
f. Management	☐	1	2	3

If you have any comments, please specify: _____

1-6. How do you evaluate the skill level of the current graduates for each of the following skills?

	No comment	Low	Moderate	High
a. Overall	☐	1	2	3
b. Theoretical study	☐	1	2	3
c. Electrical measurement	☐	1	2	3
d. Simple electric device handling	☐	1	2	3
e. Understanding/drawing a working plan	☐	1	2	3
f. Machine operation	☐	1	2	3
g. Repairing, taking apart, and assembling machines	☐	1	2	3
h. Parts management on taking apart/assembling machines	☐	1	2	3
i. Machine operation necessary to take apart/assemble machine	☐	1	2	3
j. Maintenance of repairing machine and tools	☐	1	2	3
k. Sequence control	☐	1	2	3

If you have any comments, please specify: _____

1-7. Do you think the training system in the centre was firmly established?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-8. Are you satisfied with the usefulness of the textbooks?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-9. Have the training equipments been successfully utilized?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-10. Have the training equipments been properly maintained?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-11. Are the Centre facilities (space, utilities, etc.) adequate and properly utilized?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-12. Has the operation systems of the Centre been well organized?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

[IMPACT]

This section is concerned with the impacts of the Project; i.e., direct or indirect, positive or negative.

(Sector Goal)

2-1. Has the SENAI Training Centre contributed to upgrade the technical standard of Electric and Electronic technicos?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

2-2. Has the SENAI Centre contributed to supply more technicos with higher technical skill?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

2-3. Have you ever had a chance to transfer your instruction skill to the other training centres or companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', how many times have you done? _____

What type of skill did you transfer to them?

☐ Machine maintenance/management/operation
☐ Course instruction
☐ Training material/plan development
☐ Others (please specify: _____)

How did you transfer that skill?

☐ Having a seminar/training course
☐ Personal contact
☐ Others (please specify: _____)

2-4. Has there been any social/economical contribution by the SENAI Training Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

2-5. Have there been any 'Negative Impacts' from the SENAI Training Centre on the Brazilian industry?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

[SUSTAINABILITY]

This section is concerned with the sustainability of the Project; i.e., the extent of the Training Centre's technical impact after the assistance is completed.

3-1 Does the Training Center have enough resources to continue its activities?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please specify which one of the following items is not sufficient:

☐ Equipments
☐ Teaching staff
☐ Facilities
☐ Operation system
☐ Budget
☐ Others (please specify: _____)
When you have any comments, please specify: _____

3-2 Do you have an internal system to develop textbooks and training materials?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', are you satisfied with the usefulness of self-developed textbooks and training materials?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

3-3 Do you have an internal system to develop a training plan/curriculum?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', are you satisfied with the self-developed plan/curriculum?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

3-4 Does the Centre provide a internal seminar/training course to upgrade your instruction skill?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

If 'NO', please explain how/where you upgrade your skill?
_____

3-5 Does the Government or any other organization provide a seminar/training course to upgrade your instruction skill?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

3-6 Are you satisfied with your current situation in the Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', what is the major problem for you?

☐ Salary is not enough.
☐ Lack of opportunities to improve your technology
☐ Others (please specify: _____)

3-7 Do you plan to continue to work for the Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

[RELEVANCE]

This section is concerned with the relevance of the Project; i.e., whether the objectives of the Project ate pertinent and worthwhile.

4-1 Have there been any major policy changes relating to the promotion of industrialization in Brazil?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

4-2 Does the curriculum provided by the SENAI Centre meet the current needs of the companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

4-3 Does the skill level of the graduates meet the current needs of the companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

4-4 Is the purpose of the Project to supply electric and electronic technicos still relevant to the current needs of the companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

4-5 Has the sparepaits of equipments been continuously and properly supplied?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____
_____

4-6 Has the maintenance and replacement of equipments been undertaken properly?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____
_____

4-7 Any other comment: _____
_____
_____
_____
_____

(Thank you for your cooperation.)

THE EVALUATION STUDY ON THE JAPANESE COOPERATION PROJECT IN BRAZIL

THE SENAI VOCATIONAL TRAINING CENTRE PROJECT

QUESTIONNAIRE TO TRAINEES

OCTOBER, 1993

BACKGROUND OF RESPONDENT

Name:

Year when you entered the Centre:

Currently you are a ☐ first year student
☐ second year student

Your belonging course was:

☐ Electric Training Course ☐ Electronic Training Course

Date:

THE SENAI VOCATIONAL TRAINING CENTRE

Following are the question on the SENAI Vocational Training Centre. This survey is being conducted by the Brazilian Government and the Japanese Government in order to make a ex-post evaluation on the Brazil-Japan Project-type Technical Cooperation Program.

Kindly please tick (v) the most appropriate answer or write down your comments. your cooperation would be highly appreciated and your answers will be fully confidential and used exclusively for this survey.

[EFFECTIVENESS]

This section is concerned with the effectiveness of the Project; i.e., the extent whereby the objectives of the Project are successful.

1-1. Do you think the SENAI Centre Project has succeeded to supply higher skill to you?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-2. Are you satisfied with the curriculum provided by the SENAI Centre?

a. Cultural/Scientific Subject

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

b. Technical/Practical Subject

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-3. Do you have any plan on your future job?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

1-4. Are you satisfied with the training skill of the instructors?

a. Cultural/Scientific Subject

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

b. Technical/Practical Subject

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-5. Are the textbooks useful?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-6. Are the facilities (space, utilities etc.) adequate?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-7. Are the training equipments adequate?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-8. Are the training equipments sufficiently provided?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

[IMPACT]

This section is concerned with the impact of the Project; i.e., direct or indirect, positive or negative.

2-1. Is there any social/economical contribution by the SENAI Training Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

[SUSTAINABILITY]

This section is concerned with the sustainability of the Project; i.e., the extent of the Training Centre's technical impact after the assistance is completed.

3-1. Does the Training Center have enough resources during your training to continue its activities?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please specify which one of the following items is not sufficient:

☐ Equipments
☐ Teaching staff
☐ Facilities
☐ Operation system
☐ Budget
☐ Others (please specify: _____)
When you have any comments, please specify: _____

3-2. Do you want to remain in the centre to be a future instructor?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

3-3. has the courses been implemented as planned?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

3-4. How do you evaluate your training program in SE/EVTC?

☐ Appropriate ☐ Useless ☐ NO COMMENT
If 'Useless', please explain; _____

3-5. Any other comment: _____

(Thank you for your cooperation.)

THE EVALUATION STUDY ON THE JAPANESE COOPERATION PROJECT IN BRAZIL

THE SENAI VOCATIONAL TRAINING CENTRE PROJECT

QUESTIONNAIRE TO GRADUATES

OCTOBER, 1993

BACKGROUND OF RESPONDENT

Name:

Designation:

Division:

Organization/Firm:

No. of workers/employees of your organization/firm:

Year when you entered the Centre:

Year when you graduated from the Centre:

Your belonging course was:

☐ Electric Training Course ☐ Electronic Training Course

Date:

THE SENAI VOCATIONAL TRAINING CENTRE

Following are the question on the SENAI Vocational Training Centre. This survey is being conducted by the Brazilian Government and the Japanese Government in order to make a ex-post evaluation on the Brazil-Japan Project-type Technical Cooperation Program.

Kindly please tick (v) the most appropriate answers or write down Your comments. Your cooperation would be highly appreciated and your answers will be fully confidential and used exclusively for this survey.

[EFFECTIVENESS]

This section is concerned with the effectiveness of the Project; i.e. the extent whereby the objectives of the Project are successful.

1-1. Do you think the SENAI Training Centre Project has succeeded to establish an appropriate training system and supply Electric/Electronic technicos with higher skill in your company?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-2. How do you evaluate your technical skill just after you completed this training course and your current one?

		As of graduation			Current		
Electric Engineering	No comment	Low	Moderate	High	Low	Moderate	High
a. Overall	☐	1	2	3	1	2	3
b. Theoretical study	☐	1	2	3	1	2	3
c. Electrical measurement	☐	1	2	3	1	2	3
d. Electric device handling	☐	1	2	3	1	2	3
e. Electric construction	☐	1	2	3	1	2	3
f. Electric circuit application	☐	1	2	3	1	2	3
g. Sequence control	☐	1	2	3	1	2	3
h. Electric equipments	☐	1	2	3	1	2	3
i. Electronic engineering	☐	1	2	3	1	2	3
j. Electronic circuit application	☐	1	2	3	1	2	3
k. Computer	☐	1	2	3	1	2	3
l. Industrial Instrumentation	☐	1	2	3	1	2	3

1-3. Were you satisfied with the curriculum provided by the SENAI Centre?

a. Cultural/Scientific Subject

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

b. Technical/Practical Subject

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-4. Do you think the training in SE/EVTC is appropriate to requirements of companies?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-5. Did you have any problems when you found a job after the graduation from Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

1-6. Did the SENAI Centre introduce appropriate jobs to you?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-7. Were you satisfied with the training skill of the instructors?

a. Cultural/Scientific Subject

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

b. Technical/Practical Subject

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-8. Were the textbooks useful?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-9. Are you still making use of that textbooks for your current job?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-10. Were the facilities (space, utilities, etc.) adequate and properly utilized?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-11. Were the training equipments adequate?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-12. Were the training equipments sufficiently provided?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

[IMPACT]

This section is concerned with the impact of the Project; i.e., direct or indirect, positive or negative.

2-1. Have you transferred your learned skill to your colleagues in the company?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

2-2. Does your company provide a seminar/training course to upgrade your skill?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

And have you ever taken any of the seminar/training courses?

☐ YES ☐ NO ☐ NO COMMENT
If you have any comments, please specify: _____

2-3. Is there any social/economical contribution by the SENAI Training Centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

[SUSTAINABILITY]

This section is concerned with the sustainability of the Project; i.e., the extent of the Training Centre's technical impact after the assistance is completed.

3-1. Did the Training Center have enough resources during your training to continue its activities?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please specify which one of the following items is not sufficient:

☐ Equipment
☐ Teaching staff
☐ Facilities
☐ Operation system

☐ Budget
☐ Others (please specify: _____)
If you have any comments, please specify: _____

[RELEVANCE]

This section is concerned with the relevance of the Project; i.e., whether the objectives of the Project are pertinent and worthwhile.

4-1. Is the purpose of the Project, to supply Electric and Electronic technicos, still relevant to the current needs of your company?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

4-2. Have the training courses been implemented as planned in the SE/EVTC?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

4-3. Did you think to remain in SE/EVTC to be a future instructor?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

If 'YES', please explain: _____

4-4. Any other comment: _____

(Thank you for your cooperation.)

THE EVALUATION STUDY ON THE JAPANESE COOPERATION PROJECT IN BRAZIL

THE SENAI VOCATIONAL TRAINING CENTRE PROJECT

QUESTIONNAIRE TO GRADUATES' SUPERVISORS

OCTOBER, 1993

BACKGROUND OF RESPONDENT

Name:

Designation:

Division:

Organization/Firm:

No. of workers/employees of your company:

Date:

THE SENAI VOCATIONAL TRAINING CENTRE

Following are the question on the SENAI Vocational Training Centre. This survey is being conducted by the Brazilian Government and the Japanese Government in order to make a ex-post evaluation on the Brazil-Japan Project-type Technical Cooperation Program.

Kindly please tick (v) the most appropriate answers or write your comments. Your cooperation would be fighly appreciated and your answer will be fully confidential and used exclusively for this survey.

[EFFECTIVENESS]

This section is concerned with the effectiveness of the Project; i.e. the extent whereby the objectives of the Project are successful.

1-1. Do you think the SENAI has succeeded to establish an appropriate training system to supply higher trained technicos?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____
_____

1-2. Do you think the SENAI Training Centre was established as a model training centre in Brazil?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____
_____

1-3. Do you think it is now easier to recruit technicos than before, 10 years ago?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____
_____

1-4. How many technicos are working for your company?

persons, Electric course persons, Electronic course persons

1-5. How many of them are the graduates form the SENAI Centre?

persons, Electric course persons, Electronic course persons

1-6. How do you evaluate the necessary knowledge and technical level of the current graduates for each of the followings?

		No Comment	Low	Moderate	High
a.	Overall	☐	1	2	3
b.	Operation of various electric equipments and motors.	☐	1	2	3
c.	Inspection of electric equipments and machines.	☐	1	2	3
d.	Maintenance of electric equipments and machines such as distribution board.	☐	1	2	3
e.	Work schedule management	☐	1	2	3
f.	Electric and industrial measurements.	☐	1	2	3
g.	Automatic control	☐	1	2	3
h.	Computer technique	☐	1	2	3

1-7. How do you evaluate the technical level of the current graduates for each of the following technique?

	No comment	Low	Moderate	High
a. Overall	☐	1	2	3
b. Theoretical study	☐	1	2	3
c. Electrical measurement	☐	1	2	3
d. Simple electric device handling	☐	1	2	3
e. Understanding/drawing a working plan	☐	1	2	3
f. Electric construction	☐	1	2	3
g. Electric circuit application	☐	1	2	3
h. Electric equipment	☐	1	2	3
i. Electronic circuit application	☐	1	2	3
j. Sequence control	☐	1	2	3
k. Computer	☐	1	2	3
l. Industrial instrumentation	☐	1	2	3

If you have any comments, please specify: _____

1-8. Do you prefer to employ SENAI Centre graduate rather than the graduates from the other vocational training centre?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-9. Has the practical training course of the SENAI Centre implemented in your company?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', how many times? _____

And do you think this training system is effective?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

[IMPACT]

This section is concerned with the impact of the Project; i.e., direct or indirect, positive or negative.

2-1. Do you think the SENAI Training Centre Project has succeeded to upgrade the electric and electronic technical standard in Brazil?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

2-2. Do the graduates from the SENAI Centre transfer their electric and electronic technique to their colleagues in your company?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

2-3. Does your company provide a seminar/on the job training course for your staff to upgrade their technique?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

2-4. Has there been any other social/economical contribution by the SENAI Training Centre?
☐ YES ☐ NO ☐ NO COMMENT

If 'YES', please explain: _____

2-5. Have there been any 'Negative Impacts' from the SENAI Training Centre on the Brazilian industry?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

[RELEVANCE]

This section is concerned with the relevance of the Project; i.e., whether the objectives of the Project ar pertinent and worthwhile.

4-1. Is the purpose of the Project, to supply electric and electronic technicos, still relevant to the current needs of the Brazilian industry?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

4-2. Does the curriculum provided by the SENAI Center meet the current needs of your company??

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

4-3. Do you pay more appreciation to upgrade your technicos standard?

☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

4-4. Do you expect that your company needs more technicos with higher skill?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

4-5. Do you think SENAI training systems is comprehensively applicable in other region in Brazil?

☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain the reason: _____

4-6. Any other comment: _____

(Thank you for your cooperation.)

THE EVALUATION STUDY ON THE JAPANESE COOPERATION PROJECT IN BRAZIL THE SENAI VOCATIONAL TRAINING CENTRE PROJECT

INTERVIEW SHEET TO OFFICIALS

[EFFECTIVENESS]

1-1 Has the Centre successfully supplied electric and electronic technicos to the industry in Brazil?

☐ YES ☐ NO

[IMPACT]

2-1 Have the electric and electronic technicos supplied by the SENAI Centre contributed to increase the productivity of the Brazilian industry?

☐ YES ☐ NO

2-2 Have the technicos supplied by the SENAI Centre contributed to improve the technical level in the Brazilian industry?

☐ YES ☐ NO

2-3 Is the SENAI Centre currently recognized as a model vocational training centre in Brazil? How many vocational training centres are there in Brazil?

☐ YES ☐ NO

2-4 Have the companies realized the importance of electric and electronic technicos and employed more technicos?

☐ YES ☐ NO

2-5 Has there been any unexpected social/economical contribution from the centre?

☐ YES ☐ NO

2-6 Have there been any negative impacts from the Centre?

☐ YES ☐ NO

[SUSTAINABILITY]

3-1 Does the Centre have enough resources to continue to implement the training successfully?

Facility:
Equipment:
Staff:
Budget:
Others:

3-2 Are there any special plan to expand the activities of SENAI Training Centre?
☐ YES ☐ NO

[RELEVANCE]

4-1 Do you think the purpose of the Centre, to supply electric and electronic technicos to the industry, meets the current needs of the electric and electronic industry in Brazil?
☐ YES ☐ NO

4-2 Do you think the curriculum of the Centre meets the current needs of the companies?
☐ YES ☐ NO

4-3 Do you think the technical level of the graduates satisfies the current needs of the companies?
☐ YES ☐ NO

4-4 Have there been any change of the policy relating to the SENAI Centre?
☐ YES ☐ NO

4-5 Have there been any change of policy in the Brazilian vocational training system? If 'YES', have you ever been required to change any system/curriculum of the Centre?
☐ YES ☐ NO

4-6 Has the Government focused on the promotion of industry? Have any remarkable promotion policies of industry been introduced?

☐ YES ☐ NO

4.7 Any other comments

THE EVALUATION STUDY ON THE JAPANESE COOPERATION PROJECT IN BRAZIL THE SENAI VOCATIONAL TRAINING CENTRE PROJECT

INTERVIEW SHEET TO MANAGER OF SENAI CENTRE

[EFFICIENCY]

1. Did the Japanese Government satisfactorily provide all the inputs for the Project?

   (1) How about training equipments? Number and technical level were appropriate?

   ☐ YES ☐ NO ☐ NO COMMENT

   (2) How about counterpart training? Number of counterparts, length, and training curriculum were appropriate?

   ☐ YES ☐ NO ☐ NO COMMENT

   (3) How about the guidance by the Japanese experts? No. of experts, length, technical level, etc.

   (4) Any other comments about the Japanese inputs?

2. Has the Brazilian Government satisfactorily provided all the necessary input for the Centre?

   (1) Are the Centre facility (space, utilities, etc.) sufficiently provided?
   ☐ YES ☐ NO ☐ NO COMMENT

   (2) How about the Centre building?
   ☐ APPROPRIATE ☐ INSUFFICIENT

(3) How about the staff members? Number of clerical staff, and counterparts/instructors, their technical level, etc.
☐ CLERICAL STAFF ☐ COUNTERPARTS/INSTRUCTORS

(4) How about the budget?

(5) Is the operation costs sufficiently allocated?
☐ SUFFICIENT ☐ INSUFFICIENT

[EFFECTIVENESS]

1-1 Has the Centre successfully supplied electric and electronic technicos to the companies?
☐ YES ☐ NO

1-2 Has the technical level of the instructors been the same as the Japanese cooperation period?
☐ YES ☐ NO

1-3 Have you found any difficulties in recruiting instructors?
☐ YES ☐ NO

1-4 Do the instructors usual prefer to work for the SENAI Centre rather than to work for private companies?
☐ YES ☐ NO

1-5 Has the educational level of the trainees been the same as the Japanese cooperation period?
☐ YES ☐ NO

1-6 Have you gotten enough trainee and applicants for each courses? Any problems?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain:

1-7 Which one of the two courses is currently more popular? How about the difference from Japanese cooperation period?
☐ ELECTRIC COURSE ☐ ELECTRONIC COURSE

1-8 Do you have any follow-up system for the Centre graduates?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-9 Have you bought any training equipments after the completion of Japanese cooperation? Please describe items and numbers.

_____	_____ PCS
_____	_____ PCS
_____	_____ PCS
_____	_____ PCS
_____	_____ PCS

1-10 Is the Centre operation system properly organized?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-11 Is the training equipments properly maintained?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-12 Please explain about how the graduates find their job?
_____

1-13 Do the graduates successfully find jobs?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

1-14 Have you gotten any complaints about the graduates' skill from the companies employed the graduates?
☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

1-15 Have you gotten any complaints form the graduates? Instructors or trainees?
☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

[IMPACT]

2-1 Is the SENAI Centre recognized as a model vocational training centre in Brazil?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

2-2 Have any of your instructors transferred their instruction skill or machine operation/maintenance skill to the other vocational training centre?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

2-3 Does the Centre have any exchange program with other vocational training centres or advanced countries?
☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

2-4 Have there been any unexpected social/economical contribution from the Project?
☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

2-5 Have you had any negative impacts form the Project?
☐ YES ☐ NO ☐ NO COMMENT
If 'YES', please explain: _____

[SUSTAINABILITY]

3-1 Does the Centre have enough resources to continue to implement training courses successfully?

Facility:
Equipment:
Staff:
Budget:
Others:

3-2 How do you make and implement the annual training plan?

_____

3-3 Did you establish an internal system to develop training textbooks and materials?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

3-4 Please let us know the mechanism of making an annual budget plan?

3-5 Do you have any budget for developing textbooks and training materials?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

3-6 Does the Centre provide any seminars/training courses to improve the instructors' standard?
☐ YES ☐ NO ☐ NO COMMENT
If 'NO', please explain: _____

[RELEVANCE]

4-1 Do you think the purpose of the Centre to supply electric and electronic technicos to the industry, meet the current needs of the companies?
☐ YES ☐ NO

4-2 Do you think the technical level of the graduates satisfies the current needs of the companies?
☐ YES ☐ NO

4-3 Have there been any changes of policy in the Brazilian vocational training system? And then, have you ever been required to change any of the systems/curriculum?
☐ YES ☐ NO

4-4 Has the Government focused on the promotion of industry? Have any remarkable industrial promotion policies been introduced?
☐ YES ☐ NO

4-5 Any other comments?

THE EVALUATION STUDY ON THE JAPANESE COOPERATION PROJECT IN BRAZIL THE SHOUBRA VOCATIONAL TRAINING CENTRE PROJECT

INTERVIEW SHEET TO PROFESSIONAL OF SENAI CENTRE

[EFFECTIVENESS]

1. Has the Centre successfully supplied Electric and Electronic technicians to the companies?

[IMPACT]

2. Have the Electric and Electronic technicians supplied by the SENAI Centre contributed to productivity increase of the companies?

3. Have the maintenance technicians supplied by the SENAI Centre contributed to improvement of the machine utilization rate in the companies?

4. Is the SENAI Centre currently recognized as a model vocational training centre in Brazil? How many vocational training centres are there in Brazil?

5. Have the companies realized the importance of Electric and Electronic technicians and employed the technicians?

6. Has there been any unexpected social/economical contribution from the centre?

7. Have there been any negative impacts from the Centre?

[SUSTAINABILITY]

8. Does the Centre have enough resources to continue to implement training courses successfully?

   Facility:
   Equipment:
   Staff:
   Budget:
   Others:

9. Are there any special plan to expand the activities of SENAI Training Centre?

[RELEVANCE]

10. Do you thing the purpose of the Centre to supply Electric and Electronic technicians to the industry meets the current needs of the companies?

11. Do you think the curriculum of the Centre meets the current needs of the companies?

12. Do you think the technical level of the graduates satisfies the current needs of the

companies?

13. Have there been any policy changes in the Brazilian vocational training system? And if 'yes', have you ever been required to change any of the Centre systems/curriculum?