

インドネシア・スラバヤ
電子工学ポリテクニク
計画打合せ調査団報告書

平成2年8月

国際協力事業団
社会開発協力部

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序 文

近年、インドネシア国内では、エレクトロニクス分野の技術者が甚だしく不足しており、これが当該産業の発展を指向するうえでの隘路となっている。このため、インドネシア政府は同分野における中堅・高級技術者の育成を図ることを目的とし、スラバヤに電子工学ポリテクニック(EEPIS)を設置することを計画し、わが国に対し同校設立に係る協力を要請してきた。

これを受けて、わが国は昭和62年に無償資金協力により施設建設及び機材供与を実施し、引き続き、同年3月18日に締結された当議事録(R/D)に基づき、同ポリテクニック設立に係る5年間の技術協力を開始した。

同校は昭和63年秋に開講し、学生の受け入れを開始して以来順調に技術移転が進められているが、今般、現在までの本プロジェクトの投入実績のレビュー及びプロジェクト運営上の問題点についてインドネシア側関係者と協議し、今後のプロジェクトの円滑な展開を図るため、平成元年11月1日から11月10日までの日程で計画打合せ調査団を派遣した。

本報告書は、同調査団の調査結果を取りまとめたものである。

本調査の実施にあたって多大なご協力をいただいた関係者各位に対し、深甚なる謝意を表す次第である。

平成2年8月

国際協力事業団
社会開発協力部
部長 小泉 純作



ミニッツ署名：中央左 中村団長
中央右 ウジュスラバヤ工科大学学長

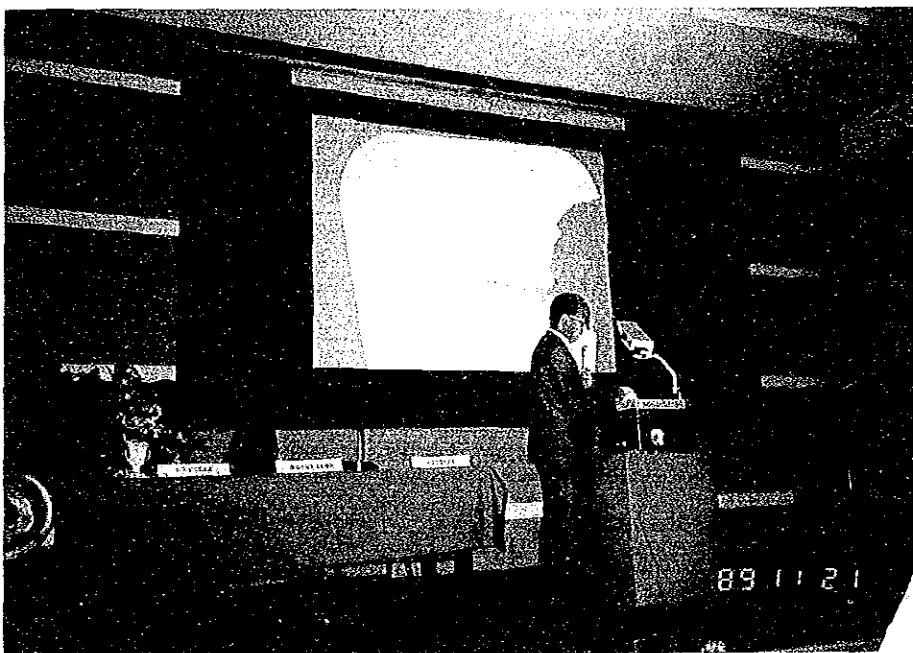


合同委員会出席者



合同委員会協議風景

中央 スカジ高等教育総局長
左 バンバン学術局長
右 北野インドネシア事務所長



第1回全国ポリテクフォーラムで記念講演を行う中村団長

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1. 計画打合せ調査団派遣

1-1 調査団派遣の目的

プロジェクト協力が発足した後、実施計画の妥当性の検討を行うための計画打合せ調査団であり、相手国プロジェクト関係者と詳細な詰めを行うものである。そのため、今次調査団はプロジェクトの進捗状況と問題点の把握に努め、R/D及びTSI締結後の詳細な年次計画を検討し、プロジェクト協力の適正化を図ることを目的とする。

1-2 調査団の構成

総括・通信工学	中村 勝吾	国立熊本電波工業高等専門学校校長
電子工学	正木 進	国立東京工業高等専門学校教授
技術教育	小山 五朗	文部省高等教育局専門教育課専門官
協力計画	橋本 明彦	JICA社会開発協力部第一課課長
業務調整	中村 俊之	JICA社会開発協力部第一課職員

1-3 調査日程

月日	曜日	行 程	調 査 内 容
11/14	(火)	東 京——(GA873)——→ ジャカルタ	移 動
15	(水)	ジャカルタ	大使館/JICA表敬・打合せ, 教育文化省表敬
16	(木)	ジャカルタ——(GA334)——→ スラバヤ	移動/長期専門家との打合せ
17	(金)	スラバヤ	学長及びスサント校長表敬
18	(土)		専門家との協議
19	(日)		〃
20	(月)	スラバヤ	分野別協議
21	(火)	〃	合同会議
22	(水)	〃	C/Pとの協議
23	(木)	スラバヤ——→ ジャカルタ(GA341)	移 動
24	(金)	ジャカルタ——→ (GA872)	大使館, JICA, 教育文化省報告/移動
25	(土)	——→ 東 京	

1-4 主要面談者

[インドネシア側]

Prof. Dr Sukadji R.	教育文化省高等教育総局長
Prof. Dr Bambang S.	教育文化省高等教育総局学術局長
Prof. Dr Oedjoe D.	スラバヤ工科大学学長
Mr. Susanto	スラバヤ電子工学ポリテクニク校長
Mr. Supardi	” 副校長
Ms. Henny	” 副校長

[日 本 側] (敬称略)

中野 信隆	長期専門家 (チーフアドバイザー)	スラバヤ電子工学ポリテクニクプロジェクト
牧野 修	” (通信工学兼アシスタントリーダー)	”
蓮田裕太郎	” (調 整 員)	”
下塩 義文	” (通 信 工 学)	”
京兼 純	” (電 子 工 学)	”
平林 紘治	” (電 子 工 学)	”
原 健彦	” (コンピュータ工学)	”
大田 慎一	一等書記官	在インドネシア日本国大使館
北野 康夫	所 長	JICAインドネシア事務所
米田 一弘	所 員	”

2. 調査協議結果概要

2-1 団長総括

ジャカルタ到着後、まずインドネシア共和国、教育文化省の高等教育総局を表敬訪問した。総局長のSukadji氏は、国際協力事業団(JICA)によるスラバヤ電子工学ポリテクニク(EEPIS)のプロジェクトに対して強い期待と好意的かつ協力的な態度を表明するとともに、これまでの成果を高く評価していた。

スラバヤ到着後、JICA派遣専門家及び調査団の各メンバーの間で合同会議並びにそれぞれの調査項目について個別の会議を重ね、プロジェクトの進行状況問題点等の説明を受け、また機材設備の準備稼働状況を調査し、また学生の授業風景及び学生実験の状況を視察した。さらにEEPISカウンターパート(C/P)から彼等の希望、意見等を直接聴取して、専門家からC/Pへの技術移転の現状を認識し、問題点を把握した。また、調査団として日・伊合同会議に提示すべき意見等を整理した。

日・伊合同会議は総局長Sukadji氏の司会で進められた。インドネシア側からはITS学長が、日本側からJICA技術協力専門家代表が、それぞれ配付された資料に基づいて平成元年度のプロジェクトの進行状況、運営上の問題点、新しい提案事項等について詳しく説明した。次いで、これらの内容について予定時間を超過して熱心に討議された。

いずれにしても、今回のプロジェクトは予定どおり順調に進行しており、日本側、インドネシア側双方とも満足すべき状況であると判断される。このような成果はJICA技術協力専門家達の熱心な指導と、彼らが理想的な教育機関を創成しようとする献身的な努力によることとは言うまでもないが、インドネシア側のEEPIS関係者を初め高等教育総局の積極的なバックアップの賜物である。特に昨年1988年7月9日の日・伊合同会議の結果、JICA調査団長及びITS学長が署名したEEPISの技術協力に関するMinutes of discussionに盛り込まれている内容がインドネシア側でも忠実に履行されている。例えば、EEPIS校長を補佐するための専任の幹部教職員が増強され、また経費負担についても最大限の努力が払われている。調査団としても、この努力が今後とも継続的に続けられることを期待している。

今回のプロジェクトが最終的に成功したかどうかは、EEPISの卒業生が関連企業に入社し、在学中に習得した実践的技術を活用して優れた成果を上げ、企業から高い評価を受けることによって初めて信頼性の高い評価が下せるはずである。このことを考慮して日本側から卒業生に対する企業のニーズ、就職後の卒業生の昇進及び活動状況を継続的に調査するための組織を学内に確立するよう求めた。

EEPISの現在のレベルが維持され、インドネシア国内における高い評価が5ヶ年間のプロジェクトが完了した後も続くためには、日本側から供与された教育機材や設備が常に有効

に活用されることが必要である。このためメンテナンスの要員を訓練し、配置するとともに機材の整備、補修のための資材や部品等がインドネシア側より迅速かつ確実に供給されなければならぬ。このためにJICA側からも適切な助言と協力をする必要がある。

合同会議の席上、インドネシア側からEEPISに電気工学科をさらに増設したい旨要求があり、計画の概要が提示された。これを受け入れるには、すでに設定されているR/Dの修成によって対応するには余りにも大幅な変更を必要とするため、新しい要求として公式の政府間レベルのチャンネルを通じて申し入れるよう求めた。しかし、現在のインドネシアの産業界のニーズを考慮するとき、彼等の自助努力によって電気工学科を実現するための道は、現在のR/Dの枠内でも、できる限り考慮しておくべきではなかろうか。

EEPISに派遣されているJICA専門家から見れば、現在のC/Pの能力や意欲が完全に満足できるレベルに達しているとは言えぬようであるが、C/P自身はいずれも若く成長しつつあり、彼等なりの高い誇りと強い自信を持っている様子が見られる。生活習慣や文化的背景の相違を超えて、今後も順調に技術移転が進行するよう願っている。

最近、日・伊合同会議終了後引き続きEEPIS主催で第1回インドネシア電気系ポリテクニク技術教育研究会が3日間にわたって開催され、インドネシア各地のポリテクニクの教官及び教育文化関係者が集まって講演会及び討論が行われ、さらに見学会が行われていた。

EEPISの成り行きに関心をもつヨーロッパの関係者も参加していたが、このプロジェクトがインドネシア国内ばかりでなく他の国々からも注目されているとの印象を受けたことを付記する。

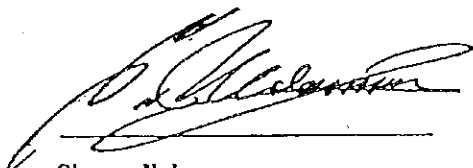
MINUTES OF DISCUSSIONS ON
THE TECHNICAL COOPERATION FOR
THE ELECTRONIC ENGINEERING POLYTECHNIC INSTITUTE OF SURABAYA

The Japanese Mutual Consultation Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency, visited the Republic of Indonesia from November 13 to November 24, 1988 and had a series of meeting with the authorities concerned of the Government of Indonesia (hereinafter referred to as "Indonesian side") on the implementation of the Japanese Technical Cooperation for the Project of the Electronic Engineering Polytechnic Institute of Surabaya. (hereinafter referred as "the Project")

Both sides discussed the progress of the Project based on the report which the Indonesian side as well as the JICA expert team presented on matters of review and future plan. The results of the discussions are as described in the document attached hereto.

November 22, 1988

Surabaya, Indonesia

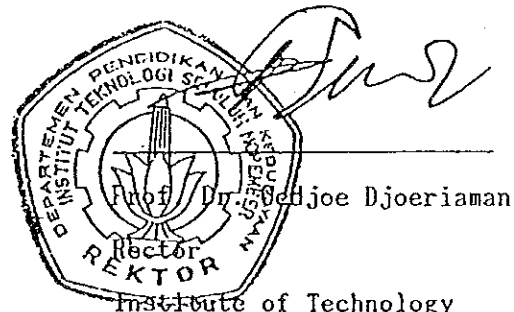


Shogo Nakamura

Leader

Japanese Mutual Consultation Team

Japan International Cooperation Agency



Prof. Dr. Sedjoe Djoeriaman

Institute of Technology

Sepuluh Nopember

1. Present Situation of the Project

Both sides reviewed the achievements made so far up to the present stage, and recognized that the implementation of the Project made smooth progress in line with the schedule which was planned in the Record of Discussions and revised by the First Joint Committee.

Japanese side especially appreciated the efforts made by the Indonesian side for the improvement of the Project staffing.

2. Sustainability of the Project

The Japanese side drew attention of the Indonesian side to the importance of the sustainability of the Project after the end of the Japanese cooperation, and suggested the Indonesian side to take necessary measures as follows.

1) Maintenance/Calibration of the educational equipment

The Japanese side recommended to establish some sort of system for the continuous maintenance and calibration of educational equipment as soon as possible for which JICA may extend necessary assistance.

2) Budget

The Japanese side highly evaluated the great efforts made by the Indonesian side for increasing in its budget in the last fiscal



year, and asked for its continuous efforts so that the Project could be sustained by Indonesian side at the earliest possible stage.

3. Evaluation of the Project

Both sides came to a common understanding that the success of the Project should be judged by the credibility of the graduates in industries. In connection with this understanding, Japanese side suggested to establish some sort of system which covers survey on industrial needs, employment promotion and monitoring graduates' activities.

For the above-mentioned suggestions (refer to the article 2 and 3) Indonesian side replied to make concrete measures in consultation with the Japanese expert team.

4. Request from the Indonesian side

 Indonesian side requested the additional Japan's cooperation for the establishment of the Electrical Engineering Department in EEPIS by presenting its project digest. The Japanese side replied that the scope of the request is too broad to cope with by the amendment of the present R/D; accordingly, suggested the Indonesian side to make a new official request through due channel to the Government of Japan. 

3. プロジェクトの現状及び日本側協力実績

3-1 プロジェクトの現状

3-1-1 実施体制

「イ」側における実施機関は教育文化省，運営管理はスラバヤ工科大学であり，現行のR/Dの範囲内で実施体制上問題ないことを確認した。

3-1-2 カウンターパート配置

表-1 カウンターパート一覧表

〔担当カウンターパート〕

氏名 関川 三男 Susanto校長
分野 チーフ・アドバイザー
派遣期間 ～平成4年3月31日

〔専門家〕	
氏名	牧野 修
分野	通信工学・サブリーダー
派遣期間	昭和62年12月1日～ 平成元年11月30日
住所	EEPIS Surabaya Indonesia (☑)

〔担当カウンターパート〕				
氏名(年齢)	分野	職位	配置時期	備考
△ Yoedy	通信工学	教官	昭和63年4月～	昭和62年度日本研修7ヶ月間実施済
△ Halimah	電子工学	"	"	
△ Gatet	通信工学	"	"	平成2年度、日本研修1年間予定 "
Dadet	電子工学	"	"	
Budi	通信工学	"	"	

〔長期専門家〕	
氏名	平林 絃治
分野	電子工学
派遣期間	平成元年3月23日～2年3月22日
住所	EEPIS-ITS Surabaya (☑)

〔担当カウンターパート〕				
氏名(年齢)	分野	職位	配置時期	備考
○ Hendik (27)	電子工学	講師	平成元年4月～	
Yoedy (31)	通信工学	"	"	
Halimah(33)	電子工学	"	"	
Dadet (27)	"	"	"	

〔長期専門家〕	
氏名	下埜 義文
分野	通信工学
派遣期間	1989. 3. 23～1990. 3. 22
住所	JL.DARMO BARU 1/2 (☑) SURABAYA(60221-EXT171)

〔担当カウンターパート〕				
氏名(年齢)	分野	職位	配置時期	備考
○ Titan Dulana (28才)	通信工学	講師	1989. 4. 1～ 1990. 3. 22	1988. 5月～1989. 3月まで日本の高専にて研修 同上
○ Henggar Budiman (30才)	通信工学	講師	1989. 4. 1～ 1990. 3. 22	

〔長期専門家〕	
氏名	京兼 純
分野	電子工学
派遣期間	平成元年3月23日～ 平成2年3月22日
住所	EEPIS-ITS-Surabaya (☎) 731-596114

〔担当カウンターパート〕				
氏名(年齢)	分野	職位	配置時期	備考
○ Mauridly (32)	電力, デジタル回路	講師	昭和63年7月～	昭和63年4月～平成元年3月の間日本研修 同上
○ Sulisty (31)	デジタル回路, 自動制御	講師	平成元年4月～	
Elly (27)	電気材料	講師	平成元年4月～	
Son (26)	自動制御	講師	平成元年4月～	

〔長期専門家〕	
氏名	原 健彦
分野	情報工学
派遣期間	平成元年3月23日～2年3月22日
住所	EEPIS, ITS, Surabaya (☎) 031-596114

〔担当カウンターパート〕				
氏名(年齢)	分野	職位	配置時期	備考
Supardi (45)	コンピュータ, 教務	講師	1989.4～	
Henny U (39)	"	"	" ~	
○ Sulisty M (31)	"	"	1988.7～	
△ Era P (28)	"	"	1989.4～	
Eny H (23)	"	助手	"	

※ { △……62年度日本研修
 { ○……63年度 "

表-2 カウンターパート配置計画・実績

分野	氏名	日本派遣計画・実績	4	5	6	7	8	9	10	11	12	1	2	3	備考
1) I.T.S 学長	Ir. OEDJOE Phd														
2) EPIS 校長	Ir. SUSANTO	S.63.2.2 - S.63.2.11													
3) 副校長	Ir. SUPARDI														
4) 副校長	Ir. HENY UTAMI														
5) 学生課長	Ir. RATNA ADIL														
	[電子工学科]														
1) 学科長	SITI HALIMA	S.62.7. - S.63.3.													
2) 教官	ERA PURWANTO	S.62.7. - S.63.3.													
3) 教官	HENY UTAMI =f)														
4) 教官	MAURIDHI HERY P.	S.63.3. - H.1.4.													
5) 教官	HENDIK EKO HS.	S.63.3. - H.1.4.													
6) 教官	SULISTYO MB.	S.63.3. - H.1.4.													
7) 教官	ENDRA P.	H.1.4. - H.2.4.													
8) 教官	DEDIT CAHYA H. =v)	H.1.4. - H.2.4.													
9) 教官	RATNA ADIL	H.3. 予定													
10) 教官	ELLY P.	H.2. 予定													
11) 教官	SON KUSWADI	H.2. 予定													
12) 教官	DADET P.	H.2. 予定													
13) 教官	SUTEDJO	H.3. 予定													
14) 教官	JOKE P.	H.1.4. - H.2.4.													
15) 教官	YARYA	H.2. 予定													
	[通商工学科]														
1) 学科長	GATOT K.	S.62.7. - S.63.3.													
2) 教官	YOEDI M.	S.62.7. - S.63.3.													
3) 教官	DJOKO S.	S.62.7. - S.63.3.													
4) 教官	M. WILCHAN	H.1.4. - H.2.4.													
5) 教官	R. HENGGAR B.	S.63.3. - H.1.4.													
6) 教官	TYTON D.	S.63.3. - H.1.4.													
7) 教官	HARI W.	H.1.4. - H.2.4.													
8) 教官	BUDHI	H.2. 予定													
9) 教官	MAULUDI Y.	H.3. 予定													
10) 教官	PRIMA K.														

表-1及び表-2のとおり各専門家、各学科のもとに校長を初め教官を配している。専門家からのC/Pに対する技術移転は個々に行われているが、スタッフが一同に会して協議する必要があることから、現在、月2～3回のスタッフ・ミーティングを行い（日本人専門家チーム、校長、副校長、学科長、教官が出席）、ここで教材開発、学校運営等プロジェクト全体に係る問題について討議されている。

なお、現在の教官数は、第1回ジョイント・コミッティーで合意した教官配置計画（20名）を満たしている。

3-1-3 相手国の自助努力

「イ」側は、同プロジェクトにかかる経費を負担すべく十分な努力を行っているとは判断した。これまでの主な実績としては、当方の経費負担によって作成した英語教科書からインドネシア語版を作成する費用、2時（定時）までの秘書、タイピスト等の庸上費などがある。また、同プロジェクトには、「イ」側政府からのプロジェクト予算^注が計上されており、これを有効に利用して、校内のインフラ整備（フェンス・電燈・自転車置場等）を行っている。

特筆すべきこととしては、「日」「イ」双方の協力による『日本・インドネシアEEPIS友好育英基金』（別添資料参照）と『P.T.A.』の設立がある。前者は、EEPISに在籍中で経済的援助を必要としている学生で、かつ成績優秀な者が学業を継続するための援助をするために設立されたもので、後者は日本におけるP.T.A.制度に基づき設置されたもので、学生の親の学校運営に係る意識の向上の一助となっている。

注）現在、EEPISはJICAプロジェクトであるため、一般管理費の他に開発費予算が計上されている。プロジェクト終了後はこの開発費予算が削除されることとなるが、入学試験料、入学金等の収入が大幅に増加するため、最終的には「日」側の経費負担なしに学校運営を行っていくことが可能であると考えられる。

予 算 科 目	予算額（現地通貨）
1. 一般管理費予算	Rp. 156, 000, 000-
1) 人件費	(62, 464, 000-)
2) 建物維持、光熱費	(93, 536, 000-)
2. 開発費予算	Rp. 116, 000, 000-
1) 教材開発費	
2) 資機材購入費	
3) インフラ整備	
3. その他の予算	Rp. 43, 920, 000-
1) 入学金等	
合計	Rp. 315, 920, 000-

3-2 日本側協力実績

3-2-1 専門家派遣及び研修員受け入れ

専門家派遣及び研修員受け入れは、計画どおり順調に行われていることを確認した。なお、平成元年11月現在の実績及び計画は、別紙一覧表のとおりである。

3-2-2 機材供与

専門家チームから、供与機材購送の遅れについて指摘があったが、その主な理由としては、高度な機材であるため仕様の細部をつめるのに時間を要したこと、正式要請書が遅れたこと、機材の引き取りに時間がかかったこと等が考えられる。

3-2-3 ローカルコスト負担

「日」側のローカルコスト負担として、現地業務費、貧困国対策費の他に平成元年度に計画されているものは下記のとおりである。

特に、本調査団派遣時にわが方の経費負担で実施された第1回ポリテクフォーラムでは、インドネシア各地のポリテク教官及び教育文化関係者がつどい、ポリテクの現状や将来について熱のこもった討論が行われた。

項目	内容	承認額
現地研究費	教材開発	3,469千円
技術普及広報費	広報用VTR作成	1,444千円
現地語教科書作成費	翻訳・検収・製本印刷代	1,623千円
セミナー開催費	第1回ポリテクフォーラム開催	2,706千円

3-3 プロジェクト目的達成状況

3-3-1 供与機材の活用

このプロジェクトに供与されている機材は、プロジェクト発足時におけるカリキュラム計画によって導入されたものであり、第1セミスタから第6セミスタに必要な実験の基幹機材が主である。

学年進行に伴い、専門家、C/Pとの共同による教材（講義テキスト、実験指導書）の開発が進み、初期に導入された機材に加えて新しく実験機材の必要性が生じていた。

これらは、現地調達、各年度における購送、補充機材等により補っており問題点を解決している。

購送、遂行機材の現地での利用状況の一例を示す。

雑音発生器

第4, 5, 6セミスタに実施される高周波関連の計測、通信回路に関する実験準備のため、下塩専門家が中心となって教材の開発に使用されている。

インテリジェント・ロジックトレナ

1989年7月に現地に搬入された機器である。第4セミスタのデジタル回路に実験用に原専門家を中心に教材の開発が進められている。

この機器は、さらに一部教材を加えることにより、より高度な実験の内容が実施できるため第6セミスタの実験を目標に準備が進められている。

半導体素子実験装置

第3セミスタにおける電子素子の基本特製測定の実験及び電気材料の実験に計画されているが、この機器は現時点では現地に搬入されていない。

しかし、京兼専門家により実験テキストの開発が準備されており、機材の搬入後ただちに実験題目に組み入れる準備がされている。

直流電位差計

この機器は、平林専門家により第2, 第3の各種の実験の開発用として利用されている。

メカトロラボ

第3期に派遣予定の大淵専門家により教材が開発される予定の機器である。

この機器は、早期に計画が確立されており、第2期の専門家により現在は管理がされている。第3, 第4セミスタに実施される電力関連の教科のデモンストレーションとしても有効に活用されている。教材の一部は、京兼専門家により開発がされていた。

超低周波発振器

自動制御関連の教科の実験に利用されている。特に、制御素子の入出力特性用に用いられている。

購送、携行機材の活用状況について現状を調査した。専門家とC/Pとが共用し、実験の準備、教材の開発等に有効に活用されており、その管理も他の機材と同様に管理運営がされていた。

3-3-2 専門家による技術移転

EEPISにおける教材の開発は、現在第4セミスタに必要なテキスト、実験指導書など着々と準備が進められている。本年11月1日現在で指導書55項目にわたるテキスト及び実験指導書の中で、No.41までのうち35巻が専門家によって英文で作成された。それらのうち、No.35までの19巻がインドネシア語（INと略記）に翻訳が終わって出版され、利用されている。見本として、各1部すでにJICA本部に送付済みとのことである。

従って、教材の開発は第4セメストまでは完了し、教材の技術移転は予定どおり進行している。実験機材の整備状況及び供与機材の活用状況からみて、専門家による技術移転は順調に進んでいる。

3-3-3 各学科の実施達成状況

実験の実施形態は（2学科、各学科2クラス、1クラス定員30人）学生を3人で1班構成とし、特に第1から第3セミスタは工学基礎科目の学習が多く、学習効果を高めるため、同一題目による同時一斉実験の形態で実施されている。

EEPISの学年、学期分けは、終業年限3年を6セミスタに分けており、1989年11月現在では第3セミスタが進行中であった。

基本的には第1から第3までのセミスタは工学基礎科目に関する講義と実験が、第5、第6セミスタには応用工学に関する科目が主となり、第4セミスタは、これらの中間的な講義、実験題目がオーバーラップしているセミスタと考えられる。

実験室は、ワークショップ、コンピュータ室を含め13室で、現在すでに各室は満杯である。今後第6セミスタの完成後には卒業研究、実験題目の改良、修理、及び準備等を勘案すると、実験室が不足するのではないかと思われる。

各セミスタにおける教材の開発中に生じた不足分の機材については、逐次補充されていることはすでに述べた。初年度に配備された供与機材は、各実験室に配分され、管理番号を付記し、スペアパーツの補充管理ができるように保管管理がなされていた。

現在は第3セミスタが実施されているが、初期に導入された機材の一部には、最終セミスタにおいて実施される機材も多々あるが、専門家により逐次教材の開発に使用されていた。

各セミスタの教材、特に学生実験のような教材開発には、今後とも若干の機材部品等の補充が必要になるものと推定される。

また、第6セミスタの完成される1991年には全ての機材が学生により使用され、特に、計測関連機器のメンテナンスシステムの準備が必要となることが予測される。

現在では、C/Pを中心として、EEPIS内において専門家はその指導、相談に当たっているが、スタッフ数、時間的な諸問題からメンテナンスシステムの実現は、現状のままでは難しいものと思われる。

しかし、多数の機材の有効活用、保守管理、技術移転の連続性等を考えると、テクニシャン、C/Pを含むメンテナンス要員の確保と教育研修が重要かつ不可欠なものと思われる。

機材の管理、保守に関しては、EEPISの教職員間においても関心が高く、学生の父兄による(PTA)の活動の中にも現われており、すでに(PTA)からのコンピュータ等の寄付行為も行われていた。

4. プロジェクト実施上の留意点及び今後の対応

4-1 専門家派遣と研修員の受け入れ

本プロジェクトは、すでに長期専門家を4期に分けて派遣される計画がなされており、各期の派遣予定専門家についても高等専門学校から選出されており、現在は、その2期目の専門家の派遣が進行している。

EEPISのプロジェクトは、インドネシア国において企業内教育システムの確立されていない現状では、通産省、産業界から、また実践的工業教育の施設が十分でない文部省関連機関のような各方面からの期待が大きい。

このことは、日本における高専、大学のそれ以上に卒業生が期待されている。

しかし、日本と異なる教育システム、卒業生の評価、基本的な生活習慣が専門家からの技術移転の難しさになっているようである。

工業教育に関する技術移転は、そこで学ぶ学生の学年進行状態、それに関連したカリキュラムと機材の相互関係を把握しながら、C/Pへの技術移転を実行しなければならない難しさがあると思われる。

本プロジェクトの専門家の派遣予定はあと2期ある。現在の進行状況を各専門家が把握できるように、3、4期の専門家間及び現地からの十分な情報交換が行われることが望ましいと思われる。

このことは、専門家の派遣前に日本へ研修派遣されるC/Pの効果的な教育、指導が行われることが期待できるとともに、EEPISで学ぶ学生が十分に検討された機材とトレーニングされたC/Pに教育を受ける環境ができるものと思われる。さらに日本における専門家の環境が許されるならば、長期の専門家による帰国後のフォロー、例えば、短期専門家としての再度の派遣、または夏休みを利用した派遣等が考えられる。

セミスタの進行により工学基礎の教材開発、指導体制の基盤が完成しつつあるが、さらに専門家が深く実践的な機器の実験指導に関しては、企業内教育の経験者または企業からの短期、長期の専門家としての派遣も必要になるかと思われる。

4-2 その他

長期専門家の任期は1年であり、この間に教材の開発、実験機材の整備、調整そしてC/Pへの技術移転が行われている。専門家の在任中の期間に技術移転を効率よく行うには、各期の専門家間の連絡、情報交換の重要性はもとより、さらに補充、購送機材等の現地搬入が任期当初に実行されることが望ましい。

このことは、現地における補充機材の現状を踏まえ、学年進行計画をスムーズに展開さ

せ、技術移転も十分に行われることが可能と思われる。

在インドネシアのプロジェクトメンバーによる市場調査から、現カリキュラム中の<電力工学>に関する科目を強化させる必要性が明らかになった。

そのために、現在予定されている専門家に加え、新たに長期または短期のいずれかの<電力工学>が担当できる専門家の要請があった。

5. 資 料

- 5-1 第2回合同委員会ミニッツ
- 5-2 第1回インドネシア電気系ポリテク技術教育研究会議
- 5-3 EEPIS物品リスト
- 5-4 日本・インドネシアEEPIS友好育英基金

5-1 第2回合同委員会ミニッツ

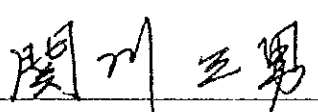
Minutes of Discussions

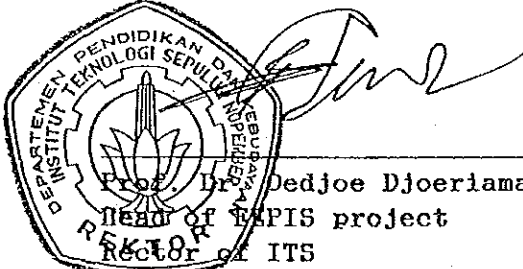
On the 21st of November, 1989, the second Joint Committee of Electronic Engineering Polytechnic Institute in Surabaya (hereinafter referred to as EEPIS) which was stipulated in "Record of Discussions" signed by Dr. Tominaga Keii, JICA Implementation Survey Team and Prof. Dr. Sukadji Ranuwihardjo, Director General of Higher Education, on March 18, 1987 was held to discuss various matters concerning the project implementation.

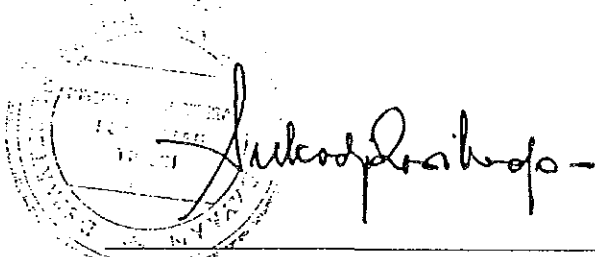
The Joint Committee was chaired by Dr. Sukadji Ranuwihardjo and the list of participants and the agenda of the meeting are as attached hereto.

As a result of discussions, both parties reached an agreement on the matters referred to in the document attached hereto:

Surabaya, November 21, 1989.


Prof. Mitsuo Sekigawa
Chief Adviser
JICA expert team, Surabaya


Prof. Dr. Djedjoe Djoeriaman
Head of EEPIS project
Rector of ITS


Prof. Dr. Sukadji Ranuwihardjo
Director General of Higher Education
Ministry of Education and Culture

Attached document

Main points of the discussions and conclusions are as follows :

1. 1989 project implementation.

The project activities carried out by EKPIS members and JICA expert team were reported by Prof. Dr. Oedjoe, Head of EKPIS project and Prof. Mitsuo Sekigawa, JICA Chief Adviser respectively. The 1989 reports from both of them are attached in Attachment 1 and 2.

2. Teaching materials

It was pointed out by JICA expert team that teaching materials such as textbooks and instruction books in Indonesian version translated by the counterparts should be checked and evaluated by Indonesian authorities. The proposal is attached in Attachment 3. It was agreed to carry out the check by Indonesian authorities.

Also, it was agreed that Indonesian side should make plans for the translation schedules, number of books to be translated, and necessary budget.

3. Maintenance of equipment

MS
The proposal on the maintenance of equipment prepared by the JICA expert team is attached in Attachment 4. It was agreed that the EKPIS project should prepare for the complete and comprehensive plans for the maintenance center. JICA expert team will request JICA headquarter to support this plan.

4. Teaching staff

It was agreed that teaching staff for Mathematics and English should belong to EKPIS exclusively. Indonesian side agreed to take necessary measures to employ them at EKPIS.

5. Components and materials

The problems about the components and materials for student experiments and practice were reported by the JICA expert team. It was agreed that the procurement ways should be improved by ITS. And it was suggested by Prof. Dr. Sukadji that ITS should study the way how to procure specific items which may be purchased from specific suppliers. *MS*

6. Future development

KEPIS proposed to discuss on the establishment of Electrical Department in KEPIS. The proposal is included in the report from Indonesian side. JICA advisory survey team advised that the proposal should be requested through official channel by the Government of Indonesia.

7. Employment division

It was suggested by JICA expert team that KEPIS should establish an employment division in KEPIS in order to make a research about employers who may employ the graduates from KEPIS. It was agreed to make a complete plan for the division.

In response to the proposal, Prof. Dr. Sukadji Ranuwihardjo suggested that a committee for the employment survey in the Higher Education welcome to have joint research activities with the KEPIS. In relation with employment promotion, Dr. Sukadji informed that attractive promotion system for technician in Higher Education Institution has been recently established

8. 1990 project implementation plans

1990 project implementation plans prepared by the KEPIS director, his staff and JICA expert team were proposed. The plans are attached in Attachment 5.

It was agreed to request JICA for JICA expert dispatch, counterpart training in Japan and in the third country, provision of educational equipment and others which were described in the plans.

Also, it was agreed to request the Ministry of Education and Culture for a budget for KEPIS costs which were described in the plans.

9. Radio Station License

JICA expert team, Surabaya proposed to discuss on the necessity of obtaining radio station license for some radio equipment installed in the Communication Laboratory which will be used for the technical education. The proposal is attached in Attachment 6. It was agreed that the Higher Education would assist KEPIS in obtaining the station license and frequency assignment from the authority

10. D4 program

It was agreed that the feasibility study of the D4 program at
KEPIS will be continued by JICA expert team and KEPIS staff.

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Agenda of the second EEPIS Joint Committee

21 November, 1989

At 9:00 am, at EEPIS

- | | |
|--|--|
| 1. Opening address by Chairman | Prof. Dr. Sukadji Ranuwihardjo
Director General of Higher
Education |
| 2. Address | Prof. Dr. Shogo Nakamura
President, Kumamoto National
College of Technology

Mr. Yasuo Kitano
Director, JICA Indonesia Office |
| 3. Introduction of participants | Ir. Susanto, EEPIS Director
Prof. Sekigawa, JICA Chief Adviser |
| 4. Report on the 1989 project implementation | Prof. Oejoe, Head of EEPIS project
Prof. Sekigawa, JICA Chief Adviser |
| 5. Adoption of agenda items | Chairman |
| 6. Discussions | |
| 7. Conclusions | Chairman |
| 8. Closing address | Chairman |

Agenda items for discussions (Draft)

- 1) Maintenance of equipment
- 2) Future development
- 3) 1990 project implementation plans
- 4) Others

LIST OF PARTICIPANTS IN JOINT COMMITTEE

1. Prof. Dr. Sukadji Ranuwihardjo : Director General of Higher Education.
2. Prof. Dr. Bambang Suhendro : Director of Academic Affairs, DGHE
3. Ir. Oetomo Djajanegara : Secretary Directorate General of Higher Education
4. Prof. Dr. H.A.R. Tilaar : Head Biro of Education and Culture (BAPPENAS)
5. Prof. Dr. Oedjoe Djoeriaman : Rector of ITS
6. Ir. Susanto : Director of EEPIS
7. Ir. Supardi : Ass. Director Academic Affairs
8. Ir. Henny Utami : Ass. Director Administration Affairs.
9. Ir. Gatot Kusrahardjo : Head of Telecommunication Dept.
10. Ir. Siti Halimah Baki : Head of Electronic Dept.
11. Dr. Ir. S. Soekardjono : Vice Rector I of ITS
12. Ir. Rachmat Purwono : Vice Rector II of ITS
13. Prof. M. Sekikawa : JICA Team Leader, Surabaya
14. Prof. O. Makino : JICA Expert Surabaya
15. Prof. Dr. T. Hara : JICA Expert Surabaya
16. Prof. Dr. J. Kyokane : JICA Expert Surabaya
17. Prof. Dr. Yasuda : JICA Expert Surabaya
18. Prof. H. Hirabayashi : JICA Expert Surabaya
19. Prof. Y. Shimoshio : JICA Expert Surabaya
20. Mr. Hasuda : Coordinator of JICA team
21. Prof. Dr. Yamada : Monbusho Jakarta
22. Mr. Kitano : JICA Jakarta
23. Mr. Yoneda : JICA Jakarta
24. Mr. Hashimoto : JICA Tokyo
25. Mr. Nakamura : JICA Tokyo
26. Prof. Dr. Nakamura : Kumamoto National College of Technology
27. Prof. Dr. Koyama : Monbusho, Tokyo
28. Prof. Dr. Masaki : Tokyo National College of Technology
29. Mr. Chiba : Vice Consul, Surabaya

November 21, 1989

1989 Progress Report by JICA expert team

JICA technical cooperation team in Surabaya (hereinafter called the team) have carried out the following activities in cooperation with EEPIS staff members. The tables describing the progress of the projects in 1989 are attached in Table 1 and 2.

1) Syllabus study and development

The team have advised on the syllabus development for the subjects of EEPIS which will be used for the lectures and experiments in the 3rd, 4th, 5th and 6th semesters;

Electrical Materials and Components, Electronic Circuits, Digital Electronics, Computer Language 2, Computer Aided Problem Solving, Communication Circuits and Systems, Electronic Workshop, Applied Communication, Automatic Control, Signal Processing, Radiowave Transmission Lines and Microwave, Radiowave Measurement

2) Development of teaching materials for theory and practice

The team have worked on the production of teaching materials (reference book for theory and devices for practice) for the above mentioned subjects together with our counterparts. Also, we gave technical guidance on the methodology of student experiments in the laboratories to the teaching staff.

3) Guidance to 1st and 2nd semesters' subjects

The team have given technical guidance on the following subjects of the 1st and 2nd semesters (Electrical Materials and Components, Electrical Measurement, Computer Language 1, Electric Circuits, Electricity and Magnetism, Electronic Devices, Electronic Circuits, Electric Power System, etc.).

4) Advice on Management of Laboratories

The team have advised heads of laboratories on the management of laboratories and on the establishment of spare parts center. Also, we made instruction manuals which described how

to treat and use chemical materials in the Dark Room for our counterparts.

In addition, we gave advice on acceptance test for newly installed equipment in some laboratories.

5) Advice on Project Management

The team have advised on activities of committees; Academic affairs committee, Student affairs committee and Financial affairs committee.

6) Equipment provision

The team requested JICA for some additional equipment for our technical guidance to our counterparts at EEPIS. Some of the requested items (about 15 million yen) have already supplied.

7) Feasibility study on in-plant-training for students

The team and EEPIS have agreed on the importance of in-plant-training for our students. So, the team carried out feasibility study on the matter, visiting some companies; PT. INTI, IPTN, National Gobel, INDOSAT, PT. RFC, PT. ELNUSA, SONY, Toshiba, Easterntex, PT. Petro Kemia, Polytron, Gudang Garam, etc.

Now, the team and EEPIS are studying the possibility of introducing the in-plant-training in the EEPIS curriculum.

In addition, the team made a survey of the companies' requirements to the graduates from polytechnic institutes.

8) Survey of teachers' recruitment

To recruit new teaching staff for EEPIS from other universities, the team made a survey of current situations of university students from the view point of employment. The universities were Universitas Diponegoro, Semarang, Universitas Gadjah Mada, Yogyakarta, and Institut Teknologi Bandung.

9) Survey of world bank polytechnics

For the preparation of the first nationwide polytechnic education forum at EEPIS, the team have made surveys of the nine polytechnics which possess departments of Electric, Electronics and Telecommunications, some universities, institutes and industries.

10) Production of EEPIS brochure and poster

To introduce EEPIS widely to Indonesian industries, society and organizations concerned, the team produced 3000 copies of brochure explaining about EEPIS. The brochures have been delivered to industries, government offices and educational institutions including high schools.

The team also produced a poster to advertise EEPIS to the public, inviting EEPIS students and staff to join in a prize contest for the design. The one singled out was printed and delivered to some high schools.

11) Radio station license

The team have carried out preparatory works for obtaining a radio station license for the radio equipment installed in communication laboratory of EEPIS.

12) Establishment of EEPIS scholarship

The team and EEPIS have agreed to establish a scholarship fund for EEPIS students which is called "Japan-Indonesia EEPIS Friendship Fund". The capital of the fund is donation from the team members and others. The list of the donators and the details are attached.

The team also donated EEPIS library 200 books in Indonesian language, and 200 books in English in the field of Electronics, Telecommunications and Computer.

13) Junior expert

The team have assisted EEPIS to request a junior expert in Japanese language for the EEPIS teaching staff and students. The Japanese language lessons will be regarded as optional and additional subjects for the students.

It is scheduled that the junior expert will be dispatched to EEPIS in January, 1990.

14) Monbusho study programs

In order for EEPIS teaching staff to have much incentive to work on education and research and to enhance their technological ability, the team have encouraged them to apply for Monbusho Master' degree study course program in Japan.

As a result, Mr. Titon, Department of Telecommunication, was selected to be a candidate for the program and will begin his study at Kumamoto University in Japan in April, 1990.

The team also encouraged EEPIS students to apply for Monbusho undergraduate study program at National College of Technology in Japan.

As a result, 6 EEPIS students applied for the program and now in process of selection.

15) Recommendation

The team recommended EEPIS on the following matters (only main items) ;

A) Research and Development Activities

It is important for the institute to develop capable teaching staff who are willing to catch up new technology in the field of electronics which is rapidly innovating day by day. Some of the EEPIS teaching staff have been already sent to some Technological Colleges in Japan to enhance their ability to be a good teacher and a researcher.

In addition, we hope they have research mind and plan for their own study at EEPIS which will help them guide students study. JICA experts are ready to give guidance on the research activities.

B) Subject assignment

EEPIS teachers should teach one or two subjects continuously

for the several years because it is better for them to understand the contents of the subjects deeply and to obtain teaching skills and methodology.

C) Check of teaching materials

The textbooks translated into Indonesian language by EEPIS teachers should be checked by Indonesian authorities in the field concerned.

D) Mathematics and English teachers

Mathematics is an important general subject without which students cannot build up their specialized abilities later, having close relation with technological subjects in Electronics and Telecommunications.

English is also an important subject because English reading and writing abilities are strongly required to our graduates from industries.

It seems that problems with regard to the general subjects are difficulty in the management of the teachers who belong to ITS and lack of linkage between the general subjects and technological subjects.

The team, therefore, would like to recommend that EEPIS should own the teachers who belong to EEPIS exclusively.

E) Materials and components for student practice

EEPIS is facing difficulty in having electrical components and materials for student practice in time which were budgeted for the 3rd and 4th semesters due to the ITS procurement system. The team would like to request ITS to take measures to solve the problems for smooth implementation of technical cooperation.

F) Establishment of Repair Center

There are plenty of educational equipment and measuring instruments at EEPIS laboratories. It is obvious that in the near future those instruments will have malfunctions and face

difficulty in education programs.

The team would like to recommend EEPIS to prepare for the problems. To solve the problems, it is advisable:

- a) to request Higher Education the budget for the repair, maintenance and spareparts
- b) to have some assistant instructors or technicians train for the some specific items such as oscilloscopes, personal computers, etc. at some factories in Indonesia or in Japan
- c) to establish an unit for the repair and maintenance in EEPIS organization

G) Physical exercises

The team would like to recommend EEPIS that student activities of physical exercises like badminton, table tennis, soccer, etc. should be more encouraged at the campus.

H) Electric power system

Especially, in rainy season, there are frequent black-outs which cause difficulty in student practical works.

Since EEPIS has an engine generator of which capacity (65kVA) is enough to supply all facilities of EEPIS, it should be used not only for present limited facilities but for student laboratory works and others when the electric power from PLN is stopped. The team advised EEPIS staff on how to reconstruct the power system.

Table 1

November 21, 1989

1989 EEPIS Project Implementation Plans and Progress

Prepared by JICA expert team in Surabaya

1. Expert Dispatch

1) Long term expert

<u>Field</u>	<u>Number of expert</u>	
	<u>Planned</u>	<u>Progress</u>
Chief Adviser	1	1
Coordinator	1	1
Electronic engineering	2	2
Electronic communication engineering	2	2
Computer engineering	1	1
Total	7	7

2) Short term expert

<u>Field</u>		
Signal Processing	1	1 (1 month)
Automatic Control	1	1 (2.5 months)
Transmission Lines, Wave Propagation and Antenna, Radiowave Measurement	1	1 (5 months)
Electronics Engineering	1	1 (1 week)
Network and Switching	1	Scheduled in March
	5	4

2. Counterpart training

<u>Field</u>	<u>Number of Counterpart</u>	
	<u>Planned</u>	<u>Progress</u>
<u>In Japan</u>		
Electronic engineering	2	2
Electronic communication engineering	2	2
Computer engineering	1	1
Total	5	5

In the third country

Computer Management course in Singapore	2	2
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3. Equipment Provision

Necessary equipment for 1989 project implementation, total amount of 1.5 million yen was already supplied by JICA. In addition, the provision of 3 million equivalent equipment is now in process. The list of main equipment is attached below.

List of Equipment

- 1 Digital Storage Oscilloscope
 - 2 A.C. Electronic Voltmeter
 - 3 Slide Resistance
 - 4 RF Standard Signal Generator
 - 5 Hole Effect Measurement Equipment
 - 6 Torque Meter
 - 7 Franck-Hertz Aparatus
 - 8 Planck's Constant Aparatus
 - 9 Power Supply
 - 10 Variable Filter
 - 11 Random Noise Generator
 - 12 Portable DC Potentiometer
 - 13 Low Frequency Oscillator
 - 14 Intelligent Logic Trainer
 - 15 EPROM Programmer
 - 16 Hardware Test Kit
 - 17 Mechatrolabo
 - 18 Variable Self Inductor
 - 19 Standard Self Inductor
 - 20 Decade Capacitor
- and other equipment

Table-2

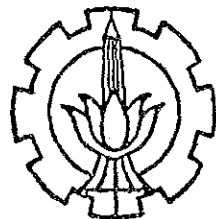
Electronic Engineering Polytechnic Institute, SURABAYA

[PROGRESS OF GENERAL PLAN]

October, 1989

1987												1988												1989												1990												1991																																																																																															
1												2												3												4												5												6												7												8												9												10												11												12											
Jan. : Building Construction												Apr. 3: C/P No. I Training												Apr. 11: C/P No. I Training												Apr. : C/P No. I Training												Apr. : C/P No. V Training																																																																																															
Jul. : C/P No. I Training in Jap.												Jun. 2: EEPIS's Opening												Aug. 5: Entrance Exam No. I												Aug. : Entrance Exam No. I												Aug. : Entrance Exam No. I																																																																																															
Oct. 15: Coordinator arrived												Jul. 6: JICA Mission No. I												Sep. 2: Semester I & II start												Sep. : Semester I, II & V start												Sep. : Semester I, II & V start																																																																																															
Nov. 1: Leader arrived												Aug. 30: Entrance Exam No. I												Sep. 14: Leader I left												Nov. : JICA Mission No. I.												Nov. : The 4th Joint Committee																																																																																															
Dec. 1: Sub Leader arrived												Oct. 3: Semester I start												Oct. 24: Leader I arrived												Nov. : The 3rd Joint Committee												Nov. : Semester I, II & III start																																																																																															
Mar. 15: Hand over of Building												Oct. 6: Coordinator I arrived												Nov. 16: JICA Mission No. I												Mar. : Experts No. I												Mar. : Semester I, II & III start																																																																																															
Mar. 30: Experts No. I arrived												Nov. 7: The 1st Joint Committee												Nov. 21: The 2nd Joint Committee												Nov. 21: The 1st Polytec. Forum												Mar. : Semester I, II & III start																																																																																															
Mar. 27: Semester I start												Mar. 23: Experts No. I arrived												Mar. : Semester I & V start												Mar. : Semester I & V start												Mar. : Semester I, II & III start																																																																																															
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2. Sub Leader: MAKINO, O. (JICA)												2. Sub Leader: MAKINO, O. (JICA)												2. Sub Leader: MAKINO, O. (JICA)												2. Sub Leader: MAKINO, O. (JICA)												2. Sub Leader: MAKINO, O. (JICA)																																																																																															
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2. Quality Control : - - -												2. Quality Control : - - -												2. Signal Processing : MIYOSHI, M.												2. Optical Communication : - - -												2. Optical Communication : - - -																																																																																															
3. Electric Power System: SHIBATA, H.												3. Electric Power System: SHIBATA, H.												3. Radio Wave Transmission: YASUDA, Y.												3. Practice, Electronics : - - -												3. Practice, Electronics : - - -																																																																																															
4. Audio Visual : IENO, S.												4. Audio Visual : IENO, S.												4. Radio Wave Measurement: - - -												4. Practice, Telecomm. : - - -												4. Practice, Telecomm. : - - -																																																																																															
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C/P Training in Japan (Jul-Mar)												C/P Training in Japan (Apr-Mar '88)												C/P Training in Japan (Apr-Mar '89)												C/P Training in Japan (Apr-Mar '90)												C/P Training in Jepang (Apr-Mar)																																																																																															
1. Eics: Siti Halimah (Takuma)												1. Eics: Mauridhy Hery (Nara)												1. Eics: Dedi Cahya H. (Kurume)												1. Eics: Elly Purwanti (Osaka)												1. Eics: - - - (Osaka)																																																																																															
2. Eics: Yoedy Nugiharto (Kumamoto)												2. Eics: Hendik Eko (Tokyo)												2. Eics: Joke Pratilastiarso (Tokyo)												2. Eics: Son Kuswadi (Nara)												2. Eics: - - - (Nara)																																																																																															
3. Comm: Gatot Kusraharjo (Sendai)												3. Comm: Henggal Budiman (Kumamoto)												3. Comm: H. M. M. M. (Sendai)												3. Comm: Budi Aswoyo (Kisarazu)												3. Comm: - - - (Kisarazu)																																																																																															
4. Comm: Djoko Suprajitno (Kumamoto)												4. Comm: Titon Duto (Kumamoto)												4. Comm: Hari Wahjuningrat (Sendai)												4. Comm: Yahya Chusna A. (Kisarazu)												4. Comm: - - - (Kisarazu)																																																																																															
5. Comp: Era Purwanto (Numazu)												5. Comp: Sulistylo Maharogyo (Ibaraki)												5. Comp: Endra Pitowarno (Kumamoto)												5. Comp: Dedy Pranadihanto (Nara)												5. Comp: - - - (Nara)																																																																																															

IMPLEMENTATION REPORT
OF
POLITEKNIK
ELEKTRONIKA & TELEKOMUNIKASI
FNGT - ITS
SURABAYA



1989 - 1990

FORWORD

A. FUNDAMENTAL

This report is prepared prior to the meeting of the second "Joint Committee" that will be held on November 21, 1989. This report consists of the achievement of the academic arrangement of the academic year of 1988/1989 and the program of the academic year of 1989/1990 in the Polytechnic of Electronics and Telecommunication FNGT ITS.

B. OBJECTIVE

This report reviews the achievement of the 1988/1989 work program of the Electronic Engineering Polytechnic in Surabaya. Included also the constrains to the program of the work and the attempts to restrain them.

C. SCOPE OF THE REPORT

The activities which were carried out : routine activities, preparation of the educational arrangement, academic staff establishment and administrative matters.

In the educational arrangement, syllabus for the first up to fourth semester, some lecture notes and supporting instruments for laboratory works have been completed. An effort has been made in giving the equal load among the academic personnels, while improving either their quality or quantity has been managed. Training for technician (graduated from STM) and academic service establishment has also been arranged.

This report will also present the annual-work plan and the program for the academic year of 1989/1990.

PROGRESS OF THE WORK PLAN
AND THE TECHNICAL COOPERATION PROGRAM

A. THE ACHIEVEMENTS OF THE WORK PLAN AND PROGRAM

1. Preparation of the Educational Arrangement

- a. In 1988, 5 teaching staffs were sent to some College of Technology in Japan (second period) for about one year to deepen their knowledge. They were already back in March 1989. For the same purpose, five other teaching staffs have been in Japan since April 1989 (third period)
- b. The Syllabi for the first and second semester which were prepared by the teaching staff assisted by 7 long term experts and 4 short term experts from JICA could be finished on July 1st, 1988. In April 1989, 7 long term experts and 2 short term experts were dispatched from Japan to assist them in preparing the syllabi for semester III & IV.
- c. Some lecture notes for the third semester which were prepared since May 1989 were written in English and will be finished in October 1989.
- d. Progress in completing lecture notes written in Bahasa Indonesia which are needed for semester III is not like what we expect, and it is only 25% of it that could be finished.
- e. The practical guidance note is necessarily improved, and some additional small instrument are still needed for completing the activities at the laboratory.

2. Student entry examination and total of students for semester I and III academic year of 1989/1990.

- a. In accordance with the announcement of the Director General of Higher Education no. 1646/D/Q/89, June 1989, the entry examination was carried out on August 5, 1989.
Number of the applicants :
 1. Electronic Engineering Department 471 candidates
 2. Telecommunication Engineering Department 710 candidates

The intake for each field of study was planned 70 students or 140 students for both fields of study (15 % more than the real capacity).

- b. The result of the examination was announced on August 21, 1989 with students intaken as follow :
- | | |
|--|-------------|
| Electronic Engineering Department | 67 students |
| Telecommunication Engineering Department | 74 students |
- With the possibility of drop out or withdrawal students in the next semester.
- c. Diklatsar Menwa was held in Malang since September 4 up to September 17, 1989, attended by 126 students. The rest were not allowed to attend this Diklatsar Menwa as they could not fulfill the qualifications. (15 students)
- d. Number of students for semester III :
- | | |
|--|-------------|
| - Electronic Engineering Department | 57 students |
| - Telecommunication Engineering Department | 63 students |
- e. Number of students who were on leave in the academic year of 1988/1989 and repeated in semester I academic year of 1989/1990 :
- | | |
|--|-----------|
| - Electronic Engineering Department | 1 student |
| - Telecommunication Engineering Department | 1 student |

3. The arrangement of the education

- a. The result of students evaluation for semester I and II academic year of 1988/1989 has been announced and handed over student's parents. The evaluation result for semester I has been announced on March 25, 1989, for semester II has been announced on September 28, 1989.
- b. The first and third semester of 1989/1990 began on the third of October 1989 or Polytechnic, while the other programs started in the first week of September. Due to one and a half month delay in commencing the education, it was rather difficult to arrange some of the teaching schedule.

- c. There is a little shortage of academic facilities, such as, furniture for the classroom, computers etc., due to number of students intaken mentioned before. The facilities were provided for 60 students intaken for each department.

4. Budget

- a. Fee acceptance and others for :
- Semester I academic year of 1988/1989 Rp. 35.042.500,-
 - Semester II academic year of 1988/1989 Rp. 15.120.000,-
 - Semester I, III academic year of 1989/90 Rp. 52.929.000,-
- b. Budget for educational arrangement from DIP of 1988/1989 is Rp. 78.000.000,- (120 students x Rp. 650.000,-/year/student).
DIP budget 1989/1990 is Rp. 156.000.000,- (240 students x Rp. 650.000,-/year/student).
- c. DIP budget for assisting the technical cooperation with JICA in the academic year of :
- 1988/1989 Rp. 90.000.000,-
 - 1989/1990 Rp. 116.000.000,-
- The budget is planned for fitting-up the existing building facilities, such as parking area expansion, water works, fencing, etc.
- d. DIP budget 1989/1990 for inland handling is Rp. 18.600.000,-.
Those for JICA budget 1989/1990 is about Y 50.000.000 for equipping the laboratory and others.
JICA budget for the next year is still expected.

5. Academic and administration staffs establishment.

- a. Academic staff establishment.
- 5 teaching staffs were sent to Japan in April 1989 for about one year to deepen their knowledge.
 - To increase the ability of lecturers in learning and teaching process, the lecturers should prepare the lecture notes with the experts before the lectures begin.

- 2 lecturers have attended the seminar of TOP MANAGEMENT COMPUTER in Singapore on September 13, 1989 up to September 10, 1989.
- 6 instructor's assistant (allumni of D.III program) were given opportunity to attend the S1 program in ITS to overcome the lack of lecturers.

b. Administrative establishment.

- The technicians (STM graduation) are participated in practice activities to increase their ability.
- In 21st century ASEAN friendship program, Instructor's assistant was dispatched to Japan on October 15, 1989 for one month.

MANAGEMENT AND ORGANIZATION

A. MANAGEMENT AND ORGANIZATION

According to the State Regulation no. 5/1980, Letter of Decision no. 0144/1983, the Electronic and Telecommunication Engineering Polytechnic Institute is managed under the Non Degree Faculty of Technology ITS, with the other departments in ITS.

Job description and functional chart have been completed.

B. ACADEMIC AND ADMINISTRATIVE STAFF

1. Number of academic staff at the Electronic and Telecommunication Engineering Polytechnic in Surabaya.

a. Lecturer/Instructor.

Civil service	
(herein after referred to as CS)	= 16 persons
CS in candidature	= 8 persons
Honorair	= 3 persons
(Being processed to be appointed as CS in candidature)	

- b. Instructor's assistant.
- | | | |
|---|---|-----------|
| CS | = | 6 persons |
| CS in candidature | = | 8 persons |
| Honorair | = | 6 persons |
| (Being processed to be appointed as CS in candidature :
4 persons) | | |
2. Administrative staff
- a. CS classification II/b
- | | | |
|-------------------|---|-----------|
| CS | = | 3 persons |
| CS in candidature | = | 0 persons |
| Honorair | = | 0 persons |
- b. CS classification II/a
- | | | |
|--|---|------------|
| CS | = | 1 persons |
| CS in candidature | = | 6 persons |
| Honorair | = | 19 persons |
| (Being processed to be appointed as CS in candidature :
12 persons) | | |
- c. CS classification I
- | | | |
|---|---|------------|
| CS | = | 2 persons |
| CS in candidature | = | 6 persons |
| Honorair | = | 16 persons |
| (Being processed to be appointed as CS in candidature :
10 persons). | | |

Staff recruitmen plan for 1989/1990

- a. Academic staff.
- | | | |
|----------------------------------|---|--------------------------------|
| - Lecturer/instructor | = | 5 persons |
| Realization | = | 2 persons (CS in
candidate) |
| - Instructor's assistant (D.III) | = | 6 persons |
| Realization | = | 6 persons
(Honorair) |
- b. Non academic staff.
- | | | |
|-------------------------|---|--------------------------|
| - Technician (II/a) | = | 10 persons |
| Realization | = | 14 persons
(Honorair) |
| - Administration (II/a) | = | 5 persons |
| Realization | = | 5 persons
(Honorair) |

- Administration (I/b) = 10 persons
- Realization = 10 persons
- (Being processed to be appointed as CS in candidature)
- Administration (I/a) I = 4 persons
- Realization = 4 persons
- (Being processed to be appointed as CS in candidature)

THE OBSTACLES AND ATTEMPTS TO RESTRAIN THEM

1. THE OBSTACLES

a. Education and Tuition.

1. Education performance at Polytechnic sometimes gets obstacles because of the absence of lecturers, especially the lecturers from the other faculty.
2. Seeing the ability of the teaching staff in mastering foreign languages, it needs much time in furnishing some text books which must be written in English.
3. Due to the existing staff who are relatively juniors, the structural functions must be held by S1 staff of another faculty, which means an extra duty for them.
4. Difficulties in increasing the number of staffs who could fulfill the needs. There were no applicants in 1988 recruitment.
5. For better performance of the administration a continuous training for the administrative staff is necessary as a great deal of them are new personnels. It is again an extra duty for the structural personnel.

b. Administrative arrangement.

1. Procurement of accessories of laboratory equipment is still complicated for the existing suppliers could not fulfill the need.
2. Text book procurement is not as expected yet because of the lack of skilled man power and the equipment of printing.

2. THE ATTEMPTS IN RESTRAINING THEM.

a. Education and Tuition.

1. Education arrangement.

An effort is being made that education arrangement will be implemented by all academic staffs from Polytechnic.

2. An addition fund is a deemed necessary for finishing some lecture notes especially those which must be written in English, knowing the limited ability of the teaching staffs in that language, which needs correction by a third party.

3. Opportunity must be given to the assistant instructors (allumni of D.III program) to attend the S1 "cross path" program as a compulsory education to overcome the lack of lecturers.

4. To avoid ineffective time table caused by absence of lecturers, the help and attention of lecturers are needed to fulfill their obligation.

b. The administration performing.

1. It is necessary for the administrative staffs to participate in some courses either in or outside ITS to increase their knowledge.

2. Due to the fact that there is still a lot of honorairs employee, special attention must be paid to the allocations in portion of the civil service acceptance, so as to relieve the charge of the educational fund.

THE FOLLOWING ANNUAL WORK PLAN AND PROGRAM

Evaluation of the progress of the work plan is conducted while monitoring the program which is in progress.

This is so as to improve the technical program for the following year which is planned as follows :

1. Education and Tuition.

a. Intake : 60 students per year for each course (total 120 students per year) as planned with $\pm 15\%$ flexibility. Intake could be added by more or less 15% of the previous intake, realizing that there could be a decrease in the total number of student.

b. Lecture performance.

Lecture performance has been increased without decreasing the subject stipulated.

c. Equipment of laboratory.

The existing of addition of capacity, the addition of equipment quantity is needed. For the purpose of increasing the equipment, assistance from JICA 1989/1990 and students parent are hoped.

d. A joint research with the Japanese experts is being conducted. Such research with some Electronic companies will also be organized.

e. Curriculum execution.

It has been planned a seminar held on November 21 up to November 23, 1989 to get an input and curriculum evaluation in EEPIS. Guest lecturers, industries and Polytechnic lecturers dealing with Electronic and Telecommunication from Indonesia are invited.

2. Akademic staff recruitment and development.

a. It is necessary to recruit 8 more lecturers (graduated from S1) for the academic year of 1989 in accordance with the plan, nevertheless, there are 3 applicants only.

b. For lecturer's assistant (graduated from D.III), at least 10 more assistants must be added to the existing ones but the available assistants are still 6 persons.

- c. The increasing of academic staffs through cross path program is still necessary continued.
 - d. To increase knowledge & skill, it is still necessary to dispatch the teaching staff to some colleges in Japan besides chance to attend seminar in other countries.
 - e. It is also necessary to increase the skill and knowledge for the technicians of laboratory.
3. Administrative staff recruitment and development.
- a. In principle, administrative staff recruitment will be less than the existing ones except for the technician.
 - b. Training either for administrative staff or technician will be needed.
4. Building construction.
- The construction of the academic building of Electronic Engineering Polytechnic has been completed, yet an assisted budget is deemed necessary for the completion of the supporting facilities, such as :
- Motor cycle parking facilities
 - Entry and taxation expenses for the additional equipment from Japan.
 - Expenses for the courses on language for personnel who will be dispatched to Japan, etc.
 - Building for power laboratory (60 m²)
5. D.IV Program.
- In accordance with the result of Joint Committee on November 7, 1988, "feasibility study" for D.IV program is being processed by JICA team.
6. The Electronic Engineering Polytechnic Development.
- As EEPIS has had some equipment for Electrical Engineering program, it is planned to open a new department, Electrical Engineering Department, in the following year by adding more equipment for the department. It is hoped JICA will give the additional equipment.
- In accordance with the regulation no. 2/1989, there is a possibility that the Non Degree of Electrical Engineering Department of ITS will be directly included in EEPIS in the following year.
- The proposal is enclosed.

END OF THE REPORT

1. attached to this report is the budget of DIP for 1988/1989 and 1989/1990.
2. For increasing and development of the Electronic Engineering Polytechnic program, this report also encloses proposal for "power Engineering Department as the result of discussion with JICA team.

ANNEX 1

FUND ILLUSTRATION FOR THE IMPLEMENTATION PROJECT OF THE
ELECTRONIC AND TELECOMMUNICATION POLYTECHNIC FNGT ITS.

I. BUDGET FROM THE GOVERNMENT OF INDONESIA

DIP 1989/1990.

a. Operational Expenses	Rp. 156.000.000,-
b. CTA JICA	Rp. 116.000.000,-
c. Inland Handling	Rp. 18.000.000,-

NOTE :

CTA JICA budget is emphasized to the education program and the completion of the supporting facilities, such as :

1. Lecture notes procurement
2. Waterworks
3. Guard post
4. Fencing
5. Motor cycle parking facilities.

II. BUDGET PLAN FOR 1990/1991

In view of the building facilities and education are not completed yet, the budget necessity for 1990/1991 is amount to Rp. 120.000.000,- for completion the facilities mentioned above, i.e. :

1. Building for "power" laboratory
2. Motor cycle parking facility for dormitory
3. Waterworks
4. Textbooks procurement for semester V, VI
5. Accesories of laboratory equipment
6. Office equipment
7. Official Trip
8. Vehicle rent included service and petrol

PROJECT DIGEST

A. PROJECT TITLE :

The development of power system laboratory becomes POWER SYSTEM ENGINEERING department in Electronic Engineering Polytechnic Institute Surabaya (EEPIS)

B. LOCATION :

Electronic Engineering Polytechnic Institute Surabaya and Electric Department in the Faculty of Non Degree Technology, Institute of Technology Surabaya.

C. PROJECT SPONSOR/EXECUTING AGENCY :

The Grand Aid form Japanese Government

D. REQUESTING AGENCY :

The Government of the Republic Indonesia, Ministry of Education and Culture Directorate General of Higher Education.

E. OBJECTIVES :

Establishment of Power System Engineering Department in Electronic Engineering Polytechnic Institute Surabaya, in order to foster higher technicians in the field of Power system engineering and power electronic engineering.

F. PROJECT DESCRIPTION :

The power system department is to educate graduates of high school level with the practice - oriented curricula to meet the urgent demands for middle and upper middle level skilled manpower necessary for the further industrialization in Indonesia. Power system department admits 60 students annually and it is divided into two classes. Education in power system department emphasizes on experiment and theory that conform to job and service in the actual industry. However, the education program should include basic theory and experiment in order to ensure the graduate's adaptability to the technological innovation in the future.

G. IMPLEMENTATION TIME :

1990 - 1991.

H. SCOPE OF ASSISTANCE :

1. Physical Assistance :

- a. Building construction
- b. Laboratory facilities
- c. Equipment supplies
- d. Equipment installing
- e. Material, text book, etc
- f. Other related facilities.

2. Technical assistance :

- a. Fellowship training programmes for instructors
- b. Experts
- c. Other Technical Cooperations.

I. RELATED TO GRANT AID :

The Government of Japan (JICA - Japan International Cooperation Agency).

S E C T I O N I

BACKGROUND AND SUPPORTING INFORMATION

1. JUSTIFICATION FOR THIS PROJECT

Now the EEPIS has a Power System laboratory. We have also an electric department, in the Faculty of Non-Degree. From this faculty we will build up Power System Engineering department in EEPIS. We will be able to develop this project only by adding some equipment from the Power System Laboratory in EEPIS and the Laboratory in Electrical Engineering in the Faculty Non Degree Technology.

2. INSTITUTIONAL FRAMEWORKS

The lead agency of this project is the Directorate of Higher Education. The preparation of the establishment of Power System Department in EEPIS is executed by a team which is responsible to the Director of EEPIS. An approved team of experts of JICA will assist in the project planning and in the implementation of the project activities.

3. GOVERNMENT FOLLOW UP

Upon the completion of the establishment of Power system department in EEPIS, the Government of Indonesia will run the institution through the Department of Education and Culture which will provide all the operational cost needed by Power System Department. The cost includes :

- a. Recruitment of new staff
- b. Salaries
- c. Operating cost
- d. Maintenance of the buildings, laboratories and equipment
- e. Operation and maintenance spareparts.

S E C T I O N I I

OBJECTIVES OF THE PROJECT

1. IMMEDIATE OBJECTIVES.

The immediate objectives of the project :

- a. to receive expert from JICA
- b. to plan curricula
- c. to plan the necessary equipment for the Power System department
- d. to acquire supplies of printed materials
- e. to send teaching staffs and instructors to study abroad (Japan).

2. LONG RANGE OBJECTIVES

The long range objectives of the project :

- a. to educate graduates of high school to meet the urgent demand for higher technician. In order to do this, practice-oriented curricula will be used.
- b. to strengthen industries with qualified manpower, especially higher technician.
- c. to develop an educational center for higher technician in order to support industrialization in Indonesia.

S E C T I O N I I I
P L A N O P E R A T I O N

1. NAME OF THE PROJECT

"POWER SYSTEM ENGINEERING DEPARTMENT IN EEPIS ON SURABAYA".

2. LOCATION

Electronic Engineering Polytechnic Institute Surabaya and Electric Department in the Faculty of Non-Degree Technology, Institute of Technology Surabaya.

3. DETAIL OF THE PROJECT

a. Enrollment Qualification

Students who graduate from secondary senior high school and senior secondary vocationals, and pass the entry examination of EEPIS.

b. Contents of the Laboratory for Power System Department

- High Voltage Laboratory
- Electrical machine laboratory
- Power Electronic laboratory
- Distribution and Instalation laboratory
- Computer Application for Power System Laboratory
- Power Control Laboratory

c. Duration of Education : 3 years

d. Target of Education

The graduates from this department are given Diploma D-III of vocational/professional stream. They are planned to reach the special level of Higher technologist.

4. PROPOSED CURRICULUM

The curriculum of this department are based on new curriculum of electric department in the Faculty of Non-degree Technology, Institute Of Technology Surabaya and new curriculum from EEPIS with small modification and addition. This curricula is divided into six semesters and each semester consists of 22 weeks, (each week consists of 38 hours.)

CURRICULUM
DEPARTMENT OF POWER SYSTEM ENGINEERING
ELECTRONIC ENGINEERING POLYTECHNIC INSTITUTE SURABAYA

SUBJECT	SEMESTER	I	II	III	IV	V	VI	T/P
A. GENERAL SUBJECT								
1. PANCASILA		2						44/-
2. INDONESIAN		2						44/-
3. ENGLISH		3	3	3	3	3	3	396/-
4. KEWIRAAN		1						22/-
5. RELIGION		1						22/-
6. TECHNOLOGY CONCEPT		2						44/-
SUB TOTAL		11	3	3	3	3	3	572/-
B. BASIC SCIENCE & ENG.								
1. MATHEMATICS		2	3	3	3	3	2	352/-
2. APPLIED PHYSICS		2/1	2					88/22
3. BASIC COMMUNICATION				2				44/-
4. INDUSTRIAL MANAGEMENT						2	2	88/-
5. TECHNICAL DRAWING		1/3						22/66
6. ELECTRIC CIRCUIT		2	2	2				132/-
7. ELECTRICITY & MAGNET		2	2	2				132/-
8. ELECTRIC MEASUREMENT		2/2	2/3					88/110
9. COMPUTER LANGUAGE I		2/2	2/2					88/88
10. COMPUTER LANGUAGE II				1/2				22/44
SUB TOTAL		13/8	13/5	10/2	3	5	4	1056/330
C. ENGINEERING SUBJECT								
1. ELECTRICAL MACHINE			2	2	2			132/-
3. ELEC. MATERIAL & DEV.		2	2	2				132/-
4. DISTRIBUTION & INST.			2	2	2			132/-

SUBJECT	SEMESTER							T/P
	I	II	III	IV	V	VI		
5. ELECTRONIC CIRCUIT		2	2	2			132/-	
6. DIGITAL			2	3			110/-	
7. MICROPROCESSOR					3	2/2	110/44	
8. AUTOMATIC CONTROL				2	3		110/-	
9. TRANSFORMER		3	2	3			176/-	
10. COMPUTER PROBLEM SOLVING			1/2	2/2			66/88	
11. HIGH VOLTAGE					3	2	110/-	
12. POWER ELECTRONIC					3	2	110/-	
13. APPL. POWER SYSTEM						2	44/-	
14. COMPONENT POWER PLANT			2	2			88/-	
15. POWER SYSTEM ENG.						2	44/-	
16. COMPUTER APPLICATION IN POWER SYSTEM						2/2	44/44	
17. POWER SYSTEM PROTECTION				2	2	2	132/-	
18. MECHANICAL WORKSHOP	-/4						-/88	
19. PRACTICE 1		/3	/3	/3	/3	/3	-/330	
20. PRACTICE 2		/3	/3	/3	/3	/3	-/330	
21. INSTALLATION DRAWING				/4	/3		-/154	
22. PROJECT					/7	/7	-/308	
SUB TOTAL	2/4	11/6	15/8	20/ 12	14/ 16	14/ 17	1672/1386	
TOTAL	26/ 12	27/ 11	28/ 10	26/ 12	22/ 16	21/ 17	3300/1716	
THEORY : 66% PRACTICE : 34%								

SECTION IV LIST OF EQUIPMENT

	quantity
1. High Voltage Laboratory.	
a. DC HV TESTING INSTRUMENT UNIT.....	1 set
- grounding switch.	
- HV transformer 400 KV rms, 10 KVA.	
- Diode HV 400 KV DC.	
- Coupling Capacitor 400 KV DC 30 μ F.	
- Measuring Resistor JACK 200 KV DC 800 M Ω .	
- Grounding Resistor 400 KV DC.	
- Damping Resistor 25 KV Ω .	
- Arrester Ball.	
- Divider Circuit.	
b. IMPULS HV TESTING INSTRUMENT UNIT.....	1 set
- Impuls generator circuit HV.	
- Charging Condenser.	
- Discharging Gap.	
- Charging Resistor.	
- Discharging Resistor.	
- Starting Gap.	
c. AC HV TESTING INSTRUMENT UNIT.....	1 set
- Condenser HV.	
- Gap.	
- Leakage Transformer.	
- Tesla Coil.	
- Sample ceramic isolator for 20 KV, 70 KV, 150 KV, 500 KV.	
d. DIELEKTRIC POWER FAKTOR TEST INSTRUMENT.....	1 set
- Standart Capacitor.	
- Variable Non Inductive Resistor.	
- Variable Condenser.	
- Galvano meter.	
e. AC peak ampere meter.....	5 sets
f. AC peak Voltmeter.....	5 sets
g. Impuls Oscilloscope.....	5 sets
h. HV testing Control box.....	5 sets
i. Camera unit.....	2 sets
j. Computer For HV data Unit.....	2 sets

	quantity
2. Electrical Machine Laboratory.	
1. Torque meter.....	10 sets
2. Rheostat, 0 - 100 Ω , 220/380 V/3A.....	20 sets
3. Rheostat, 0 - 1 K Ω , 220/380 V/3A.....	20 sets

	quantity
4. Rheostat, 0 - 10 K Ω , 220/380 V/3A.....	20 sets
5. Rheostat, 0 - 100 K Ω , 220/380 V/3A.....	20 sets
6. slidak, 1 phasa, 2 KVA/220 V/ 380 V.....	10 sets
7. slidak, 3 phasa, 2 KVA/220 V/ 380 V.....	10 sets
8. DC power Supply.....	10 sets
output 0 - 70 V/ 0 - 10 A	
power source AC 220/380 V, 1KVA	
9. DC generator series, shunt, compound, sep. excited..	3 sets
10. DC motor series, shunt, compound, sep. excited.....	3 sets
11. squirrel cage motor.....	3 sets
12. universal motor.....	3 sets
13. split phase motor.....	3 sets
14. capasitor motor.....	3 sets
15. repulsion motor.....	3 sets
16. repulsion induction motor.....	3 sets
17. stepping motor.....	3 sets
18. servo motor.....	3 sets
19. induction motor, 2 speed, 2 winding.....	3 sets
20. induction motor, thermistor protected.....	3 sets
21. shynchronous generator.....	4 sets
22. cut DC motor series, shunt, compound.....	3 sets
23. cut DC generator.....	3 sets
24. cut induction motor.....	3 sets
25. cut shynchronous generator.....	3 sets
26. LCR load bank.....	3 set
1 phasa 220 V 1 KVA, cos ϕ 0.1 - 0.98	
1 phasa 220 V 3 KVA, cos ϕ 0.1 - 0.98	
1 phasa 220 V 5 KVA, cos ϕ 0.1 - 0.98	
3 phasa 220 V 1 KVA, cos ϕ 0.1 - 0.98	
3 phasa 220 V 3 KVA, cos ϕ 0.1 - 0.98	
3 phasa 220 V 5 KVA, cos ϕ 0.1 - 0.98	
27. Drop Test Device.....	5 sets
For DC machine Armature Coil test.	
28. Universal Machine Testing device.....	5 sets
Motor generator	
DC machine shunt, series compound 1 KW, 10 A	
1500/1800 rpm	
AC machine 3 ϕ synchronous 1 KW 200 V, 3.6 A	
4 P, 50/60 Hz	
accessories :	
DC motor stater	2 sets.
Field rheostats	2 sets.
control panel	1 sets.
common bed	1 sets.
29. Load Rheostas.....	3 set
2 KVA, 0 - 20 A, AC/DC 220 V	
5 KVA, 0 - 50 A, AC/DC 220 V	
10 KVA, 0 - 100A, AC/DC 220 V	

	quantity
30. Load Condensor.....	3 set
1 KVA, 1 phasa, 220 V, 0 - 10 A	
3 KVA, 1 phasa, 220 V, 0 - 30 A	
1 KVA, 3 phasa, 380 V, 0 - 3 A	
3 KVA, 3 phasa, 380 V, 0 - 9 A	
31. Load Reactor.....	3 set
1 KVA, 1 phasa, 220 V, 0 - 10 A	
3 KVA, 1 phasa, 220 V, 0 - 30 A	
1 KVA, 3 phasa, 380 V, 0 - 3 A	
3 KVA, 3 phasa, 380 V, 0 - 9 A	
32. Voltmeter AC/DC, range 0-10 V.....	10 sets
33. Voltmeter AC/DC, range 0-20 V.....	10 sets
34. Voltmeter AC/DC, range 0-100 V.....	10 sets
35. Voltmeter AC/DC, range 0-300 V.....	10 sets
36. Voltmeter AC/DC, range 0-1000 V.....	10 sets
37. Amperemeter AC/DC range 0-10 A.....	10 sets
38. Amperemeter AC/DC range 0-50 A.....	10 sets
39. µamperemeter AC range 0-10µA.....	10 sets
40. µamperemeter AC range 0-50µA.....	10 sets
41. wattmeter 3 phasa range Volt 0-300 volt ampere 0-20 A.....	10 sets
42. wattmeter 1 phasa range Volt 0-300 volt ampere 0-5 A.....	10 sets
43. power factor meter, range cap. 0.5...1...0.05ind....	10 sets
44. frekwensi meter, range 46-54 Hz.....	10 sets
45. multimeter digital.....	10 sets
46. multimeter analog.....	20 sets
47. Oscilloscope.....	10 sets
48. clampmeter.....	10 sets
49. insulation meter.....	10 sets

3. Computer Application in Power System Laboratory.

1. Computer AT for the serve	10 sets
main processor : intel 80386	
math processor : intel 80387	
multi I/O interface.	
2 diskdrive : 1.2 MB	
memory : 2048 KB	
2. Printer	4 sets
3. Computer multi Users	1 sets
with 36 terminals and VGA monitor	
4. UPS (Uniterupable Supply).....	5 sets
1 KVA.	
5. CAD / CAM software.....	5 sets
6. Software about Power System.....	5 sets
7. Voltage Stabilizer.....	2 sets
15 KVA	

4, Distribution And Instalation Laboratory.

	quantity
1. Transformer trainer,.....	1 sets
input voltage 3 phasa, 220/380 V, 50 Hz	
output voltage 3 phasa, 0 - 380 V, 50 Hz	
output current 10 A.	
Accessories :	
testing transformer, 3 phasa, 1 KVA.....	3 sets
testing transformer, 1 phasa, 1 KVA.....	3 sets
connecting cord.....	3 sets
2. Transformer 1 phasa, 10 KVA.....	3 set
primary voltage 20 KV, 50 Hz	
secondary voltage 220 V	
oil cooled.	
3. Transformer, 3 phasa, 10 KVA.....	3 set
primary voltage 20 KV, 50 Hz	
secondary voltage 220 V	
oil cooled.	
4. High & Low Tension Switch Board Trainer (open type)	3 set
High Tension switch board (OCB 10KV, 100 KVA)	3 set
Low Tension switch board (220/380 V)	3 sets
* motor circuit switch board	
* lighting circuit switch board	
Accessories :	
* ZCT, DS.	
5. Oil Circuit Breaker Trainer.....	3 set
3 phasa, 10 KV, 100 A, 50 MVA	
power supply 1 phasa, 220 V	
accessories :	
relay UVR, OCR, relay testing current generator,	
test lead.	
6. Rectifier.....	10 sets
input 3 phasa, 380 V	
output 0 - 220 V, 50 A	
capacity 5.8 KVA	
7. Automatic Oil Insulation Tester.....	5 sets
primary 1 phasa, 220 V/50 Hz	
secondary 0 - 50 KV	
capacity 0.5 KVA	
accessories	
oil cup, connecting cord.	
8. Luminance meter digital.....	5 sets
range 0 01 - 2000000 cd/m ²	
9. Protective Relay Trainer.....	3 set
UVR, OCR, OVR, GR	
10. Voltage Testing Transformer.....	3 set
input voltage : 1 phasa, 220 / 380 V, 50 Hz	
output voltage: 1 phasa, 20 KVA, 10 KV, 50 interval	
Accessories :	
* ACB, ball gap apparatus. conneting cord.	

	quantity
11. Voltage testing transformer.....	3 set
input voltage : 3 phasa, 220/380 V	
output voltage : 0 - 420 V, 50 interval	
capacity 20 KVA.	
12. Amperetude Testing Transformer.....	3 set
input 1 phasa, 220/380 V	
output 500 A at 12 V, 1000 A at 6 V, 2000 A at 3 V.	
capacity 10 KVA	
13. Induction Voltage regulator.....	3 sets
input 3 phasa, 220 / 380 V	
output 3 phasa, 220 ± 220 / 380 ± 380 / 415 ± 415 V	
capacity 10 KVA	
14. Induction Voltage regulator.....	3 sets
input 1 phasa, 110/220 V	
output 110 ± 110 / 220 ± 220 V	
capacity 10 KVA	
15. Slide voltage regulator.....	3 sets
input 1 phasa, 110/220 V	
output 0 - 240 V	
capacity 5 KVA	
16. Transformer.....	5 sets
1 phasa, input voltage 110/220 V	
output voltage 220 V	
17. Transformer.....	5 sets
3 phasa, input voltage 220/380 V	
output voltage 220 V	
18. Air Circuit Breaker Trainer.....	3 sets
3 phasa, capacity 10 KV, 200 A, 50 MVA	
power supply 1 phasa, 220 V	
accessories	
relay UVR, OCR.	
relay testing current generator, test lead.	
19. Relay Tester.....	5 sets
For all type relay testing and	
puncture test 0 - 30 KV, 2 KVA.	
Test item : - OCR test.	
- OVR test.	
- GR test.	
- UVR test.	
- dielectric test.	
20. Cut transformer.....	5 sets
3 phasa, air cooled, 220/380 V, 50 Hz	
3 phasa, oil cooled, 220/380 V, 50 Hz	
1 phasa, air cooled, 220/380 V, 50 Hz	
21. LCR load bank.....	3 set
1 phasa 220 V 1 KVA, cos ϕ 0.1 - 0.98	
1 phasa 220 V 3 KVA, cos ϕ 0.1 - 0.98	
1 phasa 220 V 5 KVA, cos ϕ 0.1 - 0.98	
3 phasa 220 V 1 KVA, cos ϕ 0.1 - 0.98	
3 phasa 220 V 3 KVA, cos ϕ 0.1 - 0.98	
3 phasa 220 V 5 KVA, cos ϕ 0.1 - 0.98	

	quantity
22. Load Rheostas.....	3 set
2 KVA, 0 - 20 A, AC/DC 220 V	
5 KVA, 0 - 50 A, AC/DC 220 V	
10 KVA, 0 - 100A, AC/DC 220 V	
23. Load Condensor.....	1 set
1 KVA, 1 phasa, 220 V, 0 - 10 A	
3 KVA, 1 phasa, 220 V, 0 - 30 A	
1 KVA, 3 phasa, 380 V, 0 - 3 A	
3 KVA, 3 phasa, 380 V, 0 - 9 A	
24. Load Reactor.....	1 set
1 KVA, 1 phasa, 220 V, 0 - 10 A	
3 KVA, 1 phasa, 220 V, 0 - 30 A	
1 KVA, 3 phasa, 380 V, 0 - 3 A	
25. Lux meter.....	5 set
range 0 - 300 - 3000 - 12000 lux	
output resistance 4 K Ω	
Accuracy \pm 5 % per scale.	
26. Lumen meter.....	5 set
1500 mm ϕ lumen meter for physically.	
range of all lumen measuring	
max electric lamp 1000 watt	
max flour lamp 100 watt	
27. photometer for physically.....	5 set
*measurement of horizontal luminous intensity.	
*measurement of vertical, horizontal light	
distribution curve.	
28. Low voltage relay trainer.....	3 set
DC power 24 V, 2 A	
AC power supply 1 phasa, 220 V, 50 Hz	
accessories :	
Knob switch	
toggle switch	
timer, relay.	
29. Relay Sequence control Trainer.....	3 sets
timer circuit, timer limit run circuit,	
AND circuit, OR circuit, incing circuit,	
reversible run circuit, Y circuit,	
serial circuit, self holding circuit,	
power supply 1 phasa, 220 V, 50 Hz.	
30. Voltmeter AC/DC, range 0-10 V.....	10 sets
31. Voltmeter AC/DC, range 0-20 V.....	10 sets
32. Voltmeter AC/DC, range 0-100 V.....	10 sets
33. Voltmeter AC/DC, range 0-300 V.....	10 sets
34. Voltmeter AC/DC, range 0-1000 V.....	10 sets
35. Amperemeter AC/DC range 0-10 A.....	10 sets
36. Amperemeter AC/DC range 0-50 A.....	10 sets
37. μ amperemeter AC range 0-10 μ A.....	10 sets
38. μ amperemeter AC range 0-50 μ A.....	10 sets
39. wattmeter 3 phasa range Volt 0-300 volt	
ampere 0-20 A.....	10 sets

EEP'S EMPLOYMENT PLAN
November 20, 1989

EMPLOYEE STATUS	1989			1990			1991			TOTAL	ADDITIONAL INFORMATION
	GOL III	GOL II	GOL I	GOL III	GOL II	GOL I	GOL III	GOL II	GOL I		
	15+18			29+18			30+18				
Civil Service	Lecturer	-	-	-	29+18	-	-	30+18	-	-	
	Instructor's Ass.	6	-	-	-	11	-	-	17	-	
	Technician	-	-	-	-	4	-	-	14	-	
Civil service in candidate	Staff	1	4	2	1	6	8	1	12	18	
	Lecturer	8	-	-	2	-	-	7	-	-	
	Instructor's Ass.	-	8	-	-	-	6	-	4	-	
Honorair	Technician	-	4	-	-	-	10	-	-	2	
	Staff	-	2	6	-	6	10	-	2	2	
	Lecturer	3	-	-	7	-	-	6	-	-	
Total	Instructor's Ass.	-	6	-	-	4	-	-	-	-	
	Technician	-	10	-	-	2	-	-	2	-	
	Staff	-	6	10	-	2	2	-	-	-	
Total	Lecturer	26+18	-	-	36+18	-	-	41+18	-	-	
	Instructor's Ass.	-	20	-	-	21	-	16	21	-	6 persons now studying for SI program
	Technician	-	14	-	-	16	-	20	18	-	
TOTAL AMOUNT	Staff	1	12	16	1	14	20	1	16	20	
		27+18	46	18	40+18	51	20	44+18	55	20	

Sol. III - SI

Sol. II - D.III & SGA

Sol. I - SMP & SD

ANNEX 4

TOTAL OF STUDENTS AT
POLYTECHNIC ELECTRONIC & TELECOMMUNICATION FNGT ITS

Academic year	1988/1989				1989/1990		Additional information
	Sem. I		Sem. II		Sem. I/III		
	E	T	E	T	E	T	
1988/1989	63	68	57	67	57	64	DROP OUT = 9 ON LEAVE = 2
1989/1990	-	-	-	-	68	75	

November 1, 1989

Teaching Materials

So far EEPIS has developed some books on engineering subjects for theoretical lecture and practical instructions for itself under the supervision of Japanese experts. The number of subjects of the books in English version is 14 and the number of volumes of them is 34 (theory: 20 vol. and practice: 14 vol.).

Some of the books out of them have already been translated into Indonesian language. The number of translated subjects is now 9 and the number of volumes is 16 (theory: 9 vol. and practice: 7).

However, it has been constraints on technical cooperation activities by JICA experts that the contents of the translated Indonesian version can not be checked and evaluated by themselves.

Therefore, the team would like to request EEPIS for the check of the contents by Indonesian authorities, for instance, professors of universities like ITS or ITB in the fields concerned.

September 30, 1989

Maintenance of educational equipment at EEPIS

JICA expert team

At present, more than 2000 items of educational equipment, devices and measuring instruments which were provided by JICA and produced by EEPIS teaching staff are installed in 13 laboratories and workshop of EEPIS. And the one year guarantee period for the items provided by JICA has already terminated.

It is, however, required for EEPIS to maintain them in good conditions all the time for the continuous technical education. For the maintenance, budget and technical staff are required. JICA expert team, therefore, would like to request the Higher Education for the necessary fiscal year 1990 budget and for the staffing.

We suppose the maintenance staff development at EEPIS will be one of the most difficult matters. We, therefore, would like to suggest that EEPIS establish a maintenance repair unit in the organization and that EEPIS provide training opportunities for the maintenance staff at some electronic manufacturing companies in Indonesia or in Japan, in addition to the our technical guidance. For the training in Japan, it could be one way to request JICA as a counterpart training program.

November 1, 1989

1990/91 EEPIS Project Implementation Plans

Prepared by JICA expert team in Surabaya

In Accordance with Record of Discussions and attached Master Plan for the project of Electronic Engineering Polytechnic Institute, Surabaya (EEPIS) signed by Dr. Tominaga Keii, Leader, JICA implementation survey team and Prof. Dr. Sukadji Ranuwihardjo, Director General of Higher Education on March 18, 1987, JICA expert team in Surabaya has prepared following plans for 1990/91 project implementation (from April 1990 to March 1991).

1. Expert Dispatch

1) Long term expert (more than 1 year)

<u>Field</u>	<u>Number of expert</u>
Chief Adviser	1
Coordinator	1
Electronic engineering	2
Electronic communication engineering	3
Computer engineering	<u>1</u>
Total	8

2) Short term expert

<u>Field</u>	<u>Number of expert</u>
Electronic/Electric/ Communication engineering	Total 8

Notes: The subjects of the short term experts, for example, "Opto-electronics", "Optical Communications", "Power Electronics", "Satellite Communications", "Experiments of Electric Engineering", "Experiments of Electronics Engineering", "Maintenance and Repair", etc. are considered. They will be selected in consideration of the expertise of the long term experts.

3) Junior expert in Japanese language

To assist the Indonesian staff in learning Japanese language, dispatch of one junior expert in Japanese language from Japan, was requested.

2. Counterpart training

<u>Program</u>	<u>Number of Counterpart</u>
<u>Teacher training in National Colleges of Technology in Japan for 1 year</u>	Total 5
Electronic engineering	2
Electronic communication engineering	2
Computer engineering	1
<u>JICA Friendship Program for 21st Century</u>	2
<u>JICA Group training in Japan for 2 to 3 months</u>	
Computer course	1
Japanese Language course	1
<u>In the third country</u>	
Computer advanced course	2
<u>Technician training</u>	
In-plant-training at manufacturers in Indonesia or in Japan for maintenance and repairs of educational equipment	2
<u>Monbusho Sholarship study for master's degree course</u> (if suitable candidates available)	1

3. Equipment Provision

Necessary equipment and spareparts for 1990 project implementation are attached. Some of the items in the attached list will be requested to JICA.

4. Polytechnic Education Forum '90

The second Forum, inviting teachers from other polytechnics, will be planned to enhance the polytechnic education in the fields of Electric, Electronic and Telecommunications, exchanging experiences and knowledge obtained through educational and research activities.

November 1, 1989

Radio Station License

In the Department of Telecommunication of Electronic Engineering Polytechnic Institute, Surabaya (EEPIS), there are some radio transmitters and receivers for the purpose of technical education in its laboratory. To use such radio equipment effectively as training tools, it is necessary for EEPIS to be authorized to use them obtaining station license of the radios and assignment of some frequencies from the frequency management authority, Ministry of Post and Telecommunication.

In this connection, EEPIS would like to request Higher Education, Ministry of Education and Culture, to assist us in obtaining the station license and frequency assignment from the authority with the recommendation of Higher Education describing that the use of actual radios is very effective and important for the polytechnic technical education and training.

In addition, it would be better conditions and circumstances for the radio operation practice at EEPIS if some other polytechnics could install the same radio system and they could establish radio linkage.

5 - 2 第1回インドネシア電気系ポリテク技術教育研究会議

1989.09.29

第1回インドネシア電気系ポリテク技術教育研究会議

1) 背景

インドネシア教育文化省高等教育総局のもとに設置されている電気、電子、通信の各科を有するポリテクニクは現在、全国に10校ある。このうち、日本が技術協力しているスラバヤポリテク以外のポリテクニクは、教員養成、カリキュラム開発、教材開発をバンドンのPEDC（ポリテク教育開発センター）に依存し、ここで開発されたカリキュラム、教材、機材を使って技術教育を行っている。しかしながら、PEDCで開発された教育システム等は「イ」国において十分な効果を発揮しているとは言い難い。

PEDC配下のポリテクはすでに5年以上の経験を持ち、融資機関である世界銀行の評価が行われるところである。一方、スラバヤのポリテクも第2回目の学生を入学させ、試行錯誤しながら教材開発を日本人専門家の指導のもと行っている。

2) 目的

- a) それぞれ異なった地で教育環境の違うポリテクニク教官が一同に会し、これまで培ってきた技術教育に関する経験や知見を報告、発表しあうことにより、今後のポリテク教育の質の向上に資する。
- b) 特別講演を主催し、電子、通信分野の世界の先端技術を紹介することにより参加者の技術教育及び研究意欲の啓発に資する。

3) 参加者

全国の電気、電子及び通信の各科を持つポリテクニクの教官、教育文化省関係者及びスラバヤのポリテク関係者

4) 日時及び場所

1989年11月21日より23日まで

スラバヤEEPIS

5) 会議日程

11月21日

13:00 参加者受付、オリエンテーション

- 14:00 開会式
1. スカジ高等総局総局長
 2. ウジュITS学長
 3. 北野JICAインドネシア所長

- 14:30 講演 1. PT. INDOSAT
 2. 中村勝吾熊本高専校長

18:00 夕食会

11月22日

- 08:00 講演 1. 吉野勝美大阪大学教授

09:00 2. POLYTRON

10:00 全体会議, 参加者紹介, 議題採択

10:45 EEPIS紹介

12:00 昼食休憩

13:00 分科会討議

18:00 夕食会

11月23日

08:00 分科会討議

12:00 昼食会

13:00 EEPIS校内見学

15:00 全体会議

分科会座長より討議内容の発表, 質疑応答, 全体総括

16:45 閉会式 1. スサントEEPIS校長

6) 会議議題

1. カリキュラムについて
2. 教材(教科書, 実験機材)の開発, 実験手法について
3. ポリテク学生の学力について
4. ドロップアウトについて
5. 卒業生の就職先について
6. 産業界との協力関係について
7. 機材及び部品について

30 September, 1989

The First Polytechnic Technical Education Forum

1) Background

At present, there are 10 polytechnics all over the country which possess Electric, Electronic or Telecommunication Department. The all polytechnics except the Electronic Engineering Polytechnic Institute, Surabaya (EEPIS), have been funded by World Bank and assisted by Polytechnic Education Development Center, Bandung in development of their curriculum and teaching materials and teacher training.

The project of the world bank polytechnics have been implemented for more than five years, and it is time for the evaluation of the project.

On the other hand, EEPIS which is still relatively new polytechnic with the second enrollment of 120 students in October 1989, is also developing teaching materials under the technical guidance by some experts in the field of Electronics, Communications, Computer Engineering, etc. from National Technological Colleges and Institutes in Japan.

2) Purpose of the forum

- a) To improve the quality of polytechnic education by reporting and exchanging their educational experience and knowledge which have got in their different circumstances
- b) To encourage the polytechnic educators to develop their technological/engineering study attitude by giving some seminars on world high technology by guest lecturers

3) Participants

- Nationwide polytechnic lecturers and instructors in the field of Electric, Electronic and Telecommunications
- Authorities from the Ministry of Education and Culture, Universities and Institute

4) Date and Place

- From 21 to 23 November, 1989
- At Electronic Engineering Polytechnic Institute, Surabaya

5) Schdule

21th

13:00 Registration and orientation

- 14:00 Opening Address
1. Prof. Dr. Soekaji,
Director General, Higer Education
 2. Prof. Dr. Oejoe,
Rector of ITS
 3. Mr. Kitano
Director, JICA Indonesia Office

14:30 Guest lecture 1. Team from PT INDOSAT
15:45 Coffee Break
16:00 Guest lecture 2. Prof. Dr. S. Nakamura,
President, Kumamoto National
College of Technology

18:00 Dinner

22th

08:00 Guest lecture 1. Prof. Dr. K. Yoshino
Osaka University

09:00 Guest lecture 2. Team from POLYTRON

10:00 General Meeting
-Intorduction of Participants,
-Selectin of Agenda

10:30 Coffee break

10:45 Presentation from EEPIS

12:00 Lunch break

13:00 Sectional committee meetings (2 groups)
-Presentation from 9 polytechnics

16:00 Coffee break

16:15 Sectional committee meetings (2 groups)
-Discussions at sectional committees

18:00 Dinner

23th

08:00 Sectional committee meetings (2 groups)
-Discussions at sectional committees

10:00 Coffee break

10:15 Sectional committee meetings (2 groups)
-Discussions at sectional committees

12:00 Lunch break

13:00 EEPIS observation

15:00 General Meeting
-Report of summary of discussions by head of
committees
-Question and Ansewer
-General summary

16:45 Closing Address 1. Mr. Susanto
Director, EEPIS

5) Agenda

1. Curriculum of polytechnics
2. Development of teaching materials (Text, Experiment) and teaching methodology
3. Scholastic ability of polytechnic students
4. Drop out
5. Employers of polytechnic graduates
6. Cooperation with industries
7. Components for practice, equipment maintenance