② 派遣期間はできれば1年間が望ましい。

(iii) 携行機材

① 受入れ校への到着の早急化を図るための措置を，日本側及び政府当局ともに行う必要がある。

② 過去において事業協力を実施した専門家受入れ校で補充のきかないスペアパーツ等については，その後に派遣する専門家を通して補充できる可能性を検討すべきである。

③ 電気機器はできる限り２２０Ｖ，５０Hzの規格のものを供与すべきである。

(vi) カウンターパートの受入れ

カウンターパートの日本の研修コースへの受け入れの可能性について検討すべきである。

(v) その他

① A1, A4 フォームの養成書作成に当たっての文部省教員養成局と教員養成大学との事前協議は，今後も継続して実施されるべきである。

また専門家受入れのための組織作りも継続されるべきである。

② ＩＰＳＴへの本協力事業適用の可能性について検討することが必要であろう。

2. マレイシア国

(1) 調査結果

(i) マレイシア国に対して，本事業による専門家派遣を行ったのは１９６７～１９７１年にかけてわずか3名であり，本調査団の調査日程が実質2日間に限られ，過去の派遣先がクアラルンプールから遠く離れていたこともあって，これまでに実施した理科教育協力事業の効果を，専門家派遣先に出向いて評価することはできなかった。

しかしながら，ちょうど昭和５５年度に本事業の協力対象として，マレイシア国文部省教育メディア局から視聴覚教育の専門家派遣の要請が来ており，この派遣は緊急を要する課題であるので，この領域の専門家の派遣先の実情調査を優先して行った。

(ii) マレイシア国では学校用教育放送番組の作成とそのテレビ放映による教育に力を入れており，学校向けに午前8時から午後5時まで国営テレビによる放送を行っているとのことである。本事業による派遣専門家に対しても教育放送番組の作成，編集などの技能を有する人が望ましいとの希望が出された。

(iii) 教育メディア局では，視聴覚教育のためのあらゆる教材を扱っており，例えばカラースライドの作成，ビデオ・テープや録音テープ教材の編集と利用，写真の現像・焼付・引伸ばし，掛図の作成，映画フィルムの保管と貸出し，それらの教材の作成と利用に関する現職教育・講習会の開催などの用務があげられる。この種の業務を実際に指導できる専門家の派遣及び機材の供与について，教育メディア局関係者から強い協力要請があった。

(iv) 派遣専門家の宿舎については，マレイシア政府がその経費を補填し，専門家の職場環境の整備に努めるなど，事業への積極的な対応が見られ，関係者の人的環境も良好であることが認められた。

(v) 理科教育（物理・化学領域）の協力事業がわが国からのオファーにも関らず昭和４６年以降皆無となっていた原因については十分な究明ができなかった。しかしながら教員養成局での調査によれば，ＥＰＵ（経済企画局）から関係文書が教員養成局に届いておらず，マレイシア国内の手続き上の問題から，協力要請が途絶したものと推定される。

(vi) 教員養成局における理科教育協力事業についての本調査団の説明に対し，当局者は強い関心を示した。

同国には２５の教員養成大学があり，今後これらの大学についての理科教育協力の要請が教員養成局を通じて，わが国にももたらされるものと思われる。

(vii) このほか同国文部省学校局も訪問し，懇談を行った。同局では小・中学校に対する広範な教材整備計画の説明があったが，本調査団の任務外のことであり，説明を聞くだけに止めた。また，同国学校教師の日本訪問及び日本の現職教育システムの見学（教育センターなど）についても，協力要請があったが，これも任務外のことであるので希望を聞くのみに止めた。

(2) 今後の展望

(i) 事業領域・形態

事業領域としては，１９８０年度の事業として実施する視聴覚教育（文部省教育メディア局所管）領域の継続，及び教員養成大学における物理・化学教育（同省教員養成局所管）領域への協力が適当である。

事業形態としては，前者の場合，教育メディア局の適切な部署に専門家を派遣し，事業を実施することが望ましい。後者については，全国に散在する２５校の教員養成大学

に１名ずつ専門家を派遣するよりは，全体を掌握できる教員養成局に専門家を配置し，国内の大学を必要に応じて指導することが適当であろう。

(ii) 専門家の派遣時期・期間

① 派遣時期は学年度開始に合わせて１月とすることが望ましい。

② 派遣期間はでき得れば１年以上とすることが望ましい。

(iii) 携行機材

タイ国の場合に同じ

(iv) カウンターパートの受入れ

タイ国の場合に同じ

(v) その他

A1，A4 フォームの要請書の作成に当っては，文部省当局関係者及び専門家受入れ機関との事前協議が十分に行われる必要がある。

また，受入れ機関においては，専門家受入れのための組織が編成されることが望ましい。

3. フィリピン国

(1) 調査結果

(i) フィリピン国においては，本件理科教育協力事業が徐々に成果を挙げつつある点を確認し，又，同事業の今後に対するフィリピン側の大きな期待感を感じとることができた。

(ii) 事業内容としては，日本政府は，これまで水産教育分野で継続して３名（漁撈・水産加工，養殖）の専門家を派遣し，又，昭和５５年度より新規に教育工学分野での専門家派遣を開始したが，それ以外の分野についての新たな専門家派遣の要望はなかった。

(iii) 正式要請書であるA1，A4 フォームの作成にあたっては，当該校の関係者が直接的に関与しており，当該校と所轄官庁との要請内容の食い違いといった問題はない。

(iv) 派遣専門家の受入れについては，当該校が事前に専門家の業務概要を作成している。これは，専門家着任後，協議の上で改めて適切なスケジュールとするもので特に問題はない。

(v) 専門家の派遣時期に関する意見は特に出なかったが，期間が短かい点が指摘された。アパッシブル水産学校にこれまで配属された水産教育専門家の場合，派遣期間が短かか

ったため，業務を充分に完了しないまま帰任せざるを得なかったようである。この点を勘案し，昭和５５年度には２名の専門家が１年間の任期で派遣されているが，少なくとも１年間の派遣期間の確保に引き続き，留意する必要があろう。

(vi) 専門家の資質については，高い評価を得ている。語学の面でも，先方とのコミュニケーションに何ら問題はなく，又，当該校関係者は，技術面における日本の専門家の水準の高さを評価している。特に，意欲を持ち，誠心誠意，業務に打ち込んだ専門家に対して当該校関係者は，強い感謝の念を表明した。

(vii) 供与機材について

① 機材の到着時期の遅れについては，タイ国と同様，不満が強かった。特に，これまで，専門家が短期で派遣されてきたため，機材の到着の遅れは致命的である。従って今後，供与機材の積み出し時期を早め，出来る限り専門家着任と同時に機材が到着するよう日本側で努力する必要が痛感された。

これは，本事業における機材の重要性からも特に強調されるべき点であろう。

② アパッシブル水産学校において供与機材の保管状況は極めて良好であり，錆・破損は全く見られなかった。しかし機材の利用に関しては，セミナーで１～２度使用されただけで，日常の学習に使用している状況は見当らなかった。

(viii) 理科教育専門家のカウンターパートの日本での研修については，教育文化省，アパッシブル水産学校，及びフィリピン大学科学教育センター（ＵＰＳＥＣ）のいずれからも実現への強い要望が表明された。アパッシブル水産学校の場合，昭和５１年度において，カウンターパート研修員１名をわが国研修機関に６ケ月間受入れ研修を行っている。そのカウンターパートが帰国後，本件理科教育協力事業の推進に大きな貢献をしている点からみても，本事業にかかるカウンターパートのわが国における研修の拡充が極めて重要であろう。

(ix) 昭和５５年度において新規に専門家派遣を行ったフィリピン大学科学教育センター（（ＵＰＳＥＣ）は施設々備，人員，研究・研修システム等にかなり充実した体制を有し，スタッフの意欲も旺盛で，教育工学の分野での本件協力事業の今後の成果が期待される。特に，ＵＰＳＥＣとネットワークを持つ地方教育センターを通じての理科教育の地方への波及効果については，本調査団としても大きな期待を有するものである。

(2) 今後の展望

(i) 事業領域・形態

事業領域に関しては，従来の水産教育及び１９８０年度に開始された視聴覚領域を継続するものとする。事業形態としては，水産教育に関してはアパッシブル水産学校にあと２年程度継続して協力を行い，全国約６０校の水産学校のモデル校として，文部省と協議の上，カリキュラム開発や全国セミナーの開催等を行い，フィリピン国水産教育の向上に寄与できるようにすることが適当であろう。

視聴覚教育に関しては，フィリピン大学科学教育センター（ＵＰＳＥＣ）を協力対象機関として，今後数年間継続して協力を実施する必要がある。

(ii) 専門家の派遣時期・期間

学年度開始の関係上，１月が派遣時期として適当であり，派遣期間は少くとも１年間以上とすることが望ましい。

(iii) 携行機材

① 到着時期の早急化の措置についてはタイ国に同じ。

② 携行機材のアフターケア特にスペア・パーツの補充体制の整備を，フィリピン及び日本の双方においてはからねばならない。

(iv) カウンターパートの受入れ

タイ国の場合と同じ。

(v) その他

① 関係当局間の事前協議，受入れ組織の必要についてはタイ国に同じ。

② ＵＰＳＥＣに対する視聴覚機材の単独供与の可能性について検討すべきである。

Ⅶ　総合評価及び勧告

1. 総合的評価

(1) 本事業は各国において，その国の近代化を促進する人造り分野における有効かつ適切な援助事業として，その重要性が高く評価されている。

(2) 本事業は相手国当局者の配慮，日本人専門家，わが国の関係機関及び受入れ機関等の努力により，その実施方法，形態等において改善すべき点が専門家の派遣時期，期間及び携行機材の到着時期等において若干見られるものの，全体的には効果的に実施・運営されている。

(3) 相手国の本事業に対する取り組みには多大なる努力と効率的活用への意欲がうかがえる。また，その受入れ体制は一般に良く整理されている。

(4) 本事業既協力機関における供与機材の活用等は，一部例外はあるものの大体において良好に実施されているといえる。

(5) 相手国当局者より，本事業の当該国の教育施設における重要性に鑑み，継続的協力の必要性が強調されており，我が国としても従来以上に積極的，かつ計画的に本事業に対応していく必要があろう。

2. 勧　　告

(1) 全般的勧告

(i) 上記の評価に鑑み，今後相手国のニーズ及び実情により即した，かつ全国的に波及効果を上げ得る事業内容・形態が各国とのより密接な連絡・調整のもとに検討されなければならない。

(ii) 各国においては，本事業を長期的展望のもとに自国の教育施策と関連させ実施することが重要である。

(2) 対象国，実施方法，事業対象領域等

(i) 本事業の対象国は事業をより実効性，継続性のあるものとするため，ＡＳＥＡＮから国を中心に実施することが適切であろう。

(ii) 本事業の実施方法としては，４～５年の長期計画を伴ったオファー方式とすることが望ましい。要請方式であれば本事業のような小規模な事業は関係省庁からの要請が相手

国の経済協力窓口機関でスポイルされる危険性が大きいと思われる。

(iii) 事業対象領域は現段階では基本的には現行通り（今回の調査対象国の場合－タイ国：理科教育２名，マレイシア：視聴覚教育１名，理科教育１名追加（予定），フィリッピン：水産教育１名，視聴覚教育１名）でも良いが，将来的には一部の国から要望のあった工芸教育・生物等の新たな領域を加えることも必要となろう。

(3) 派遣専門家

(i) 日本人派遣専門家に対する相手国の評価は一様にかなり高く，歓迎されていることがうかがえる。今後とも高い資質を備えた優秀な専門家を確保し，継続的，かつ計画的に送りうる体制をつくることが必要である。

(ii) 専門家の派遣時期は相手国の学年度編成上の事情を考慮に入れ決める必要がある。また，派遣期間については，従来の６ケ月を中心とする考え方では実際に効果の面で疑問があり，出来得れば実情に即して１年以上の派遣を考慮する必要がある。

(4) 携行機材

(i) 携行機材の専門家派遣先への到着時期をより早くするため，日本側における手続きの速やかな実施及び相手国における引き取り業務（税関手続き，内陸輸送等）の早急化が必要であろう。

(ii) 携行機材供与機関で補充不可能なスペアーパーツについては日本側において出来る限りアフタケアー出来る体制をつくる必要がある。

(iii) 供与機材の相手国側による評価はかなり高く，かつその活用も効率的に実施されている。しかし，１件当りの機材購入予算枠は各国の要請に照らしまだ十分とはいえず，今後予算増を図っていく必要があろう。

(5) その他

(i) 本事業の効率化を一層高めるため，派遣専門家のカウンターパート１～２名を日本に受け入れ研修させることが適切である。そのために，本事業のための個別研修コースの活用が望まれる。

(ii) 今後本事業の効率的実施を図るため，出来得れば毎年１回協力対象予定国へ事前調査団を派遣し，詳細な情報を入手し，当該国関係者等と協議を行わせしめることが重要である。

また，本事業の総合的方策を立案する上で，３年に１回程度，効果測定及び相手国の

ニーズ及び現状を把握するための調査団の派遣が必須であると考えられる。

(iii) 本事業の企画・立案及び実施に当っては，日本国内における関係当局間の十分な協議・調整が必要である。

付　録　資　料

資料 1.

Evaluation Mission on Technical Cooperation
Program in Science Education

1. Main Purpose

1) To evaluate the effectiveness and to identify the problems of past and ongoing technical cooperation programs in science education with Southeast Asian countries so as to improve the planning and implementation of the program.

2) To exchange the views with the authorities and staff concerned on the methods and ways of implementation of the program so as to further strengthen it.

3) To clarify the needs of each country towards the program so as to promote mutual cooperation in this field.

2. Countries to visit

Thailand, Malaysia, the philippines

3. Members of the Mission

Tomohisa Okui, Head of the Mission
Senior Specialist for Science
Elementary School Education Division, Elementary and Secondary Education Bureau, Ministry of Education, Science and Culture

Kazuro Iida
Unit Chief
Educational and Cultural Exchange Division, Science and International Affairs Bureau, Ministry of Education, Science and Culture

Masahiro Otsuka
First Experts Assignment Division, Expert Assignment Department
Japan International Cooperation Agency (JICA)

4. Schedule of the Mission

23 (Mon), Nov. -- 29 (Sat), Nov.

Thailand (Visiting institutions: DTEC, the Ministry of Education, Petchburi Teachers College, Bansomdej T/C, Tepsatri T/C, Pranakorn T/C, Chiangmai T/C, Chiangmai Univ., Japanese Embassy, UNESCO Regional Office, JICA Office)

29 (Sat), Nov. -- 3 (Wed), Dec.

Malaysia (Visiting institutions: EPU, the Ministry of Education, Japanese Embassy, JICA Office)

3 (Wed), Dec. -- 9 (Tue), Dec.

the Philippines (Visiting institutions: NEDA, the Ministry of Education and Culture, Apacible School of Fisheries, UPSEC, Japanese Embassy, JICA Office)

Technical Cooperation Program in Science Education

1. Purpose

Since 1966, the Government of Japan has sent the total of 75 educational experts with necessary equipment for instruction to 16 countries under Technical Cooperation Program in Science Education. The purpose of the program is to provide technical and educational assistance to the teachers of secondary schools in the recipient countries for theimprovement of their curriculum and teaching methods.

2. Organization

Offer by the Government of Japan

↓

Requests from recipient governments
w/ A1 Application Form for expert(s)
A4 Application Form for equipment

↓

JICA asks the Ministry of Education for the selection of expert(s)

↓

Preparation for the specification of equipment
based upon A4 Application Form and the expert's advice

↓

B1 Form for Agrément of the expert(s)

↓

Agrément

↓

Dispatch of expert(s)
Delivery of equipment

3. Budget

The program is implemented within JICA's budget for Expert Dispatch Program.

Year	No. of Experts
1966	5
67	5
68	5
69	5
70	5
71	6
72	8
73	9
74	8

Year	No. of Experts
1975	7
76	1
77	4
78	4
79	3 total / 75 experts

4. Area of Cooperation

Science Education (physics and chemistry)

Audio-visual Education

Agricultural Education

Fisheries Education

Industrial Education

5. Experts (cf. Appendix for the names of the experts dispatched)

6. Equipment

Necessary equipment for instruction such as laboratory equipment for physics and chemistry, audio-visual aids, etc., will be provided by the Japanese goverment. A budget available for accompanying equipment of an expert is about 19,000 US Dollars (1980). JICA prepares the specification of the equipment to be delivered, in accordance with the A4 Application Form and necessary additions and revisions made upon the expert's advice.

Appendix

1) Experts Dispatched to Thailand

Fiscal 1966 — Fiscal 1979

T. Inagaki	(1966)	5 months	Bangkok
Y. Sato	(1968)	6 "	"
T. Nozoe	(1970)	6 "	Mahasarakham
Y. Matsuda	(1971)	6 "	"
S. Yamana	(1971)	6 "	"
H. Kanetsuna	(1972)	6 "	Phitsanulok
M. Nakasaki	(1972)	4 "	Chiang Mai
T. Kitsutaka	(1973)	6 "	Phitsanulok
T. Nakajima	(1973)	6 "	Chiang Mai
E. Matsui	(1974)	6 "	Songkhla, Yala
Y. Takebayashi	(1974)	6 "	"
K. Shindo	(1975)	6 "	Songkhla
M. Murakami	(1975)	6 "	"
T. Fujikado	(1977)	6 "	Korat
M. Akiyama	(1977)	6 "	"
M. Hashizume	(1978)	6 "	Petchburi
K. Taya	(1978)	6 "	"
K. Torizuka	(1980)	6 "	Lopburi
S. Nakamura	(1980)	6 "	"

2) Experts Dispatched to Malaysia

Fiscal 1966 -- Fiscal 1979

S. Funamoto	(1966)	5 months	Penang
N. Morihisa	(1967)	6 "	"
T. Annen	(1970)	6 "	Johor Baru

3) Experts Dispatched to the Philippines

Fiscal 1966 -- Fiscal 1979

R. Honda	(1967)	6 months	Manila
K. Ohara	(1969)	6 "	"
I. Sekizawa	(1977)	6 "	Batangas
E. Oba	(1979)	9 "	"
S. Toda	(1980)	1 year	"
K. Hiura	(1980)	1 "	Quezon City

QUESTIONNAIRE ON TECHNICAL COOPERATION PROGRAM

IN SCIENCE EDUCATION

1. What are the objectives of the Program on the part of the recipient country?

2. Do you have a long-term plan in relation to the Program?

3. Please state the importance of science education in an overall educational policy.

4. In what educational level and area do you think a further cooperation under the Program is needed and their priority?

   1) Educational Level

   ( ) Lower than High School
   ( ) High School
   ( ) College
   ( ) University
   ( ) Education Center
   ( ) Others: _____

   2) Area

   ( ) Physics Education
   ( ) Chemistry Education
   ( ) Audio-visual Education
   ( ) Agricultural Education
   ( ) Fisheries Education
   ( ) Industrial Education
   ( ) Others: _____

5. Expert

1) Prior to an expert's arrival, do you prepare a particular curriculum or a working schedule for him?

2) Please state the problems (if any) in regard to:

expert's arrival

period of stay

technical ability

language proficiency

3) Do you cooperate with a Japanese expert on duty in the recipient country in preparing A1 and A4 Application Form for the following year?

4) What is your overall evaluation of the experts dispatched?

6. Donated equipment by the Government of Japan

1) Please state the problems (if any) in regard to:

the arrival of equipment

customs clearance

in-land transportation

installation

utilization

maintenance

repair

post-utilization

2) How do you evaluate the following points?

items of the equipment

quantity of the equipment

quality of the equipment

3) What is your overall assessment of the equipment?

7. Do you feel a strong necessity to send experts' counterparts for a training program in science education in Japan?

8. Finally, please give an overall evaluation of the program and a suggestion for its improvement.

資料 2.

理科教育協力評価調査団
(1980.11.23～12.9, タイ, マレーシア, フィリッピン)

派遣専門家に対する質問事項

1 事業の基本計画

1. 当初の要請内容と実施の段階での要請内容との違い

2. 業務に対する相手側との共通の理解

3. 相手側の指揮系統・責任・権限等

4. 専門家の任務・立場

5. カウンタパートの配属

6. 協力期間

7. 相手側受入れ体制（相手側予算，予算作成についてのアドバイス，事務所等）その他便宜供与

Ⅱ 事業準備段階

1. 着任後，事業開始までの準備期間（日数）

2. 交通手段の提供，住宅，大使館，ＪＩＣＡの支援

3. 事業に必要な建屋・施設の建設状況

4. 技術指導の相手が明確か

Ⅲ 事業実施段階

1. 事業に対する相手側の意欲

2. カウンタパートの能力，コミュニケーション上の障害

3. 英語によるマニュアル・テキストの作成の有無

Ⅳ 機　　材

1. 機材の質・量

2. 現地の調達の可能性

3. 現地到着時期，通関状況

4. 内国輸送上の問題点及び日数

5. 着荷状態

6. 機材の使用状況

7. 修理・保守の可能性

V 相手国の事業計画

1. 事業計画作成上の現状とその問題点（内容，作成責任者，専門家よりの助言）

2. 翌年度事業のためのA1，A4フォームの作成状況，作成責任者

VI 事業効果

1. 事業の再検討の必要性

2. 事業の今後の展開（拡大，現状維持，縮少）

3. 相手側の行政面での改善

4. 事業内容，実施上の問題点

5. 具体的事業成果

6. 事業の知名度

7. 改善のための提言

Ⅶ ＪＩＣＡの派遣制度に対する意見

1. 派遣前オリエンテーションについて

2. 在勤俸について

3. 現地業務費について

Ⅶ 現地の生活環境

1. 食品，日常用品

2. 医療施設

3. 住宅状況

4. そ の 他

Ⅸ そ の 他

1. 相手側に報告書を提出しているか

2. 相手側当局との接触

3. 大使館・ＪＩＣＡとの接触

THE MINISTRY OF EDUCATION

The Ministry of Education consists of four offices, one institution and eight departments, namely:

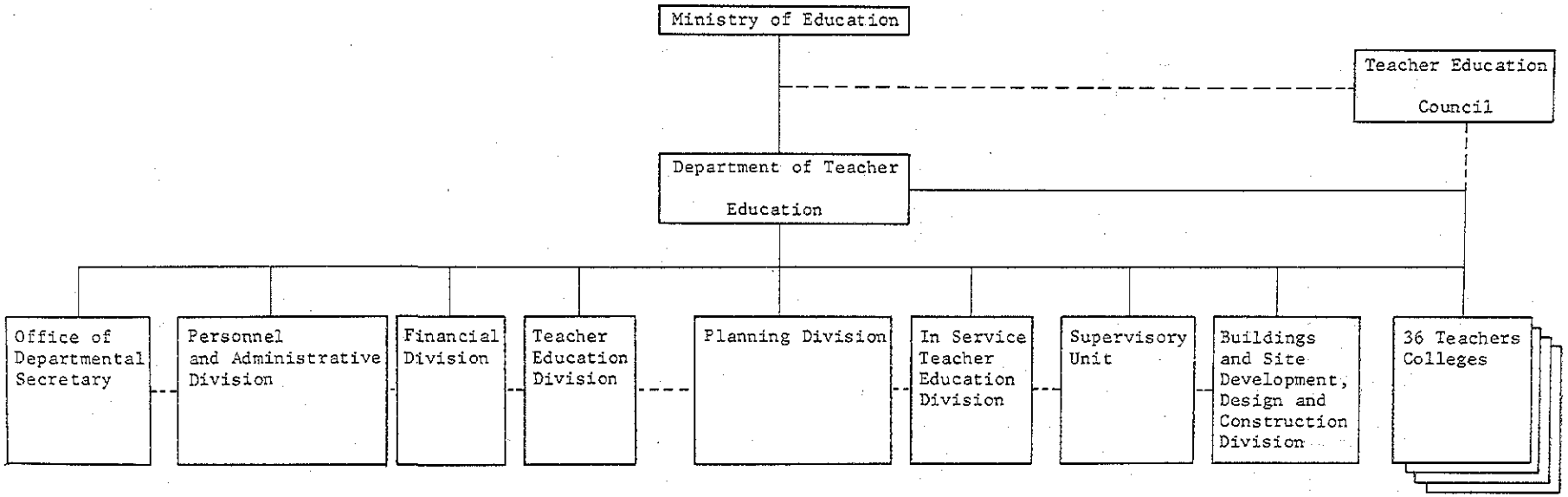
1. The Office of the Secretary to the Minister
2. The Office of the Under-Secretary of State for Education
3. The Office of the Private Education Commission
4. The Office of National Commission on Culture
5. The Department of General Education
6. The Department of Vocational Education
7. The Department of Physical Education
8. The Department of Teacher Education
9. The Department of Educational Techniques
10. The Department of Religious Affairs
11. The Department of Fine Arts
12. The Department of Non-Formal Education
13. Institute of Technology and Vocational Education

The Department of Teacher Education

The Department of Teacher Education consists of eight divisions as follows:

1. The Office of Departmental Secretary
2. Personnel and Administrative Division
3. Financial Division
4. Planning Division
5. In-Service Training Division
6. Teacher Training Division
7. Supervisory Unit
8. Building and Site Development, Design and Construction Division

Administrative Chart of the Department of Teacher Education



Source : An Introduction to the Department of Teacher Education, Planning Division, Department of Teacher Education, Bangkok, September 1980, pp. 1-2.

資料 4.

NAMES AND ADDRESSES OF TEACHERS' COLLEGES

THE DEPARTMENT OF TEACHER TRAINING

No.	Names	Addresses
1	Chankasem Teachers' College	Lardpraw, Bangkok 10
2	Ban Somdej Chao Phya Teachers' College	Isaraparb Rd. Thonburi, Bangkok 6
3	Suan Sunandha Teachers' College	Uthong Nork Rd. Dusit, Bangkok 3
4	Suan Dusit Teachers' College	Prachatippatai Rd. Dusit, Bangkok 3
5	Pranakorn Teachers' College	Chaengwathana Rd., Bangkaen, Bangkok 9
6	Dhonburi Teachers' College	Isaraparb Rd. Thonburi, Bangkok 6
7	Petchburi Vidayalongkorn Teachers' College	Pratunamphra-in, Patoomthani
8	Nakorn Pathom Teachers' College	Amphur Mueng, Nakorn Pathom
9	Yala Teachers' College	Amphur Mueng, Yala
10	Songkhla Teachers' College	Amphur Mueng, Songkhla
11	Nakornsri Thammaraj Teachers' College	Amphur Mueng, Nakornsri Thammaraj
12	Surat Thani Teachers' College	Amphur Mueng, Surat Thani
13	Phuket Teachers' College	Amphur Mueng, Phuket
14	Petchburi Teachers' College	Amphur Mueng, Petchburi
15	Mooban Chombueng Teachers' College	Amphur Chombueng, Ratchburi
16	Kanchanaburi Teachers' College	Amphur Mueng, Kanchanaburi

17	Tepsatree Teachers' College	Amphur Mueng, Lopburi
18	Pranakorn Sri Ayuddhaya Teachers' College	Amphur Mueng, Pranakorn Sri Ayuddhaya
19	Piboonsongkram Teachers' College	Amphur Mueng, Pisanoolok
20	Nakorn Sawan Teachers' College	Amphur Mueng, Nakorn Sawan
21	Utaradit Teachers' College	Amphur Mueng, Utaradit
22	Kampaengpetch Teachers' College	Amphur Mueng, Kampaengpetch
23	Petchaboon Teachers' College	Amphur Mueng, Petchaboon
24	Cheingmai Teachers' College	Amphur Mueng, Cheingmai
25	Cheingrai Teachers' College	Amphur Mueng,Cheingrai
26	Lampang Teachers' College	Amphur Mueng, Lampang
27	Udorn Thani Teachers' College	Amphur Mueng, Udorn Thani
28	Sakon Nakorn Teachers' College	Amphur Mueng, Sakon Nakorn
29	Loey Teachers' College	Amphur Mueng, Loey
30	Ubon Rajathani Teachers' College	Amphur Mueng, Ubon Rajathani
31	Mahasarakarm Teachers' College	Amphur Mueng, Mahasarakarm
32	Nakorn Rajasrima Teachers' College	Amphur Mueng, Nakorn Rajasrima
33	Buriram Teachers' College	Amphur Mueng, Buriram
34	Surin Teachers' College	Amphur Mueng, Surin
35	Chachoengsao Teachers' College	Amphur Mueng, Chachoengsao
36	Chantaburi Teachers' College	Amphur Mueng, Chantaburi

Source : An Introduction to the Department of Teacher Education, op. cit. Appendix.

資料 5.

Request for New Technical Assistance Project

Project Title : Staff Development Programme of the Teacher Training Institutions.

Requesting Agency : Department of Teacher Education
Ministry of Education

Proposed Sources of Assistance :
Japan International Cooperation Agency (JICA)
Tokyo, Japan.

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1. Background information and justification for the project

Teachers Colleges, under the administration of the Department of Teacher Education, Ministry of Education, have been expanding rapidly during the past several years. At present Elementary and Secondary school curriculum has been changed to include larger percentage of vocational education courses. To cope effectively with this accelerated expansion, and changed curriculum, considerable efforts must be made to upgrade the quality of the instructional staff, and administrative personnel in teacher training institutions. To do this successfully, a well organized staff development programme is necessary, both to help college instructors and administrators become more competent and more professional, and to assume the new roles and responsibilities. It is also hoped that professional upgrading of college teachers will in turn bring about the improvement of instruction not only in the teacher training institutions, schools at various levels, but also people in the community as well.

2. Details of the project

2.1 Programme goal:

To upgrade the quality of instructional staff, academic service to

the community, in-service Training and school at various levels.

2.2 Project objective:

2.2.1 To upgrade instructional staff in both academic and professional fields.

2.2.2 To upgrade the quality of instructional staff and administrative personnel in schools at various level through a programme of in-service education.

2.2.3 To fulfill manpower needs of teacher college personnel at various educational level.

2.2.4 To set up centers and extension equipped with training materials and equipment in teachers colleges for the purpose of academic services to the community.

2.2.5 To prepare the way for more service to the country in cooperation with the Department of Vocational Education, Fine Arts, Physical Education, General Education Department and Office of the Elementary Education Committee.

2.3 Condition expected at completion of project:

Effectiveness of college instruction,in-service training as well as academic service to the community.

(Tentative Table see attached sheet)

2.4 The proposal is prepared in consultation with Deputy Director-General and Planning Division, Department of Teacher Education, Ministry of Education, Bangkok, Thailand.

2.5 Duration of the project:

Starting January 1982 - December 1986

2.6 Project site:

36 Teachers Colleges and the Department of Teacher Education.

2.7 Project work plan or project activities and scope of work:

2.7.1 Sending instructional staff member to train abroad on a short term basis in such areas as indicated in the table.

2.7.2 Time schedule of project activities.

(See attached sheet)

2.7.3 Setting up a center and extension in each teachers college equipped with necessary training materials and equipment to be used for the purpose of in-service education and community service.

3. Details of the implementing/operating agency:

3.1 36 teachers colleges will participate in the project. The Planning Division of the Department of Teacher Education will serve as a coordinating agency for project implementation and evaluation.

3.2 Staff/personnel participating in project implementation.

36 Teachers Colleges	Number	Availability
Doctor's	34	
Master's	2056	
Graduate Diploma in Specialization	102	
Bachelor's	2064	
Below Bachelor's	203	
Studying	787	
Working away from campus	175	
Total	6021	

4. Assistance requested:

4.1 Expert (To be advised by JICA)

Field of Operation/ Activity	Total		1982		1983		1984		1985		1986	
	No.	m/m	No.	m/m	No.	m/m	No.	m/m	No.	m/m	No.	m/m
1. Coordinator	5	5/15	1	1/3	1	1/3	1	1/3	1	1/3	1	1/3
2. Advisor	5	5/15	1	1/3	1	1/3	1	1/3	1	1/3	1	1/3
Total	10	10/30	2	2/6	2	2/6	2	2/6	2	2/6	2	2/6

4.1.1 Justification for requesting experts:

Systematic staff development programme are still a new concept for teachers colleges in Thailand. Without sufficient assistance from foreign experts, especially in the earlier stage of operation, major difficulties in implementing this programme are anticipated.

4.1.2 Job description of each expert requested :

Coordinator; An expert in this field is expected to be responsible for

- planning, orientation, and organizing systematic staff development programmes for the Department of Teacher Education, and Teacher colleges personnel before leaving for training in Japan.
- organizing in-service training for college personnel in Japan.
- providing consultation in training programme for the Department of Teacher Education.

Advisor ; Experts in this field are expected to be responsible for

- Orientation for the trainee before leaving for Japan.
- Organizing in-service training for instructional staff for the purpose of improving college instruc-

tion through use of behavioral objectives, micro-teaching, small and large group instruction, modularised instruction, protocol materials, role-playing, simulation, sensitivity training, inter-acting analysis and etc. as necessary for them in Japan.

- doing action research for improvement of the programme.
- providing consultation in planning and implementing instructional strategies for Department of Teacher Education.
- accompanying the groups throughout the training period in Thailand and Japan.

4.2 Fellowship (see attached sheet)

4.2.1 Justification for requesting fellowships:

Teachers colleges are greatly in need of better trained personnel in various fields to cope effectively with the rapid expansion, curriculum change, in-service training and academic service to the community.

4.3 Equipment and books:

To be advised by JICA as necessary to perform effective teaching and workshop service.

4.4 Others:

None.

5. Thai Government counterpart contribution to the project:

5.1 Cost of plane round trip is supposed to be born by each trainee.

5.2 Coordinating cost and staff cost are paid from regular department budget.

6. Related project/activities:

None.

7. Future work plan:

Trainees are required to

1. improve their teaching performance.
2. set-up workshop/center to train their students, in-service teacher and fellow staff member.
3. set-up extension/ center in their responsible area (province) away from campus to provide academic service to the community.
4. revise teacher curriculum related to their training experience in order to match elementary and secondary school curriculum.
5. cooperate with other educational institute i.e. vocational college, physical education college, etc. in pre-service, in-service training and academic service to the community.

Tentative Table 1982-1986 (to be advised by JICA)

	Available	Need
1. Physical Education Instructors	120	30
2. Art Education Instructors	150	30
3. Music Education Instructors	92	30
4. Dramatic Education Instructors	92	30
5. Home Economic Instructors	188	30
6. Kindergarten Education Instructors	50	30
7. Agricultural Extension Service	0	30
8. Vegetable Crops Production	184	30
9. City Planning	0	30
10. Electric Power Distribution	0	30

11. Welding Technology	0	30
12. Ceramic Engineering	0	30
13. Industrial Design	0	30
14. Medical Science Technology	0	30
15. Machinery Trade Instructors	215	30
16. Electric Trade Instructors		30
17. Woodworking Trade Instructors		30
18. Automative Trade Instructors		30
19. Electronic Trade Instructors		30
20. Offset Printing	0	30
21. Computer Technology	4	30
22. Behavioral Science Research	105	30
23. National Health Administration	0	30
24. Weaving Engineering	0	30
25. Ground Water Resources Development	0	30
26. Teaching Chemistry	171	30
27. Teaching Biology	207	30
28. Teaching Physics and General Science	249	30
29. Teaching Mathematics	265	30
30. Educational Technology	119	30
Total		900

2.7.2 Tentative Schedule (to be advised by JICA)

Fields	1982	1983	1984	1985	1986
1. Physical Education Instructors	30				
2. Art Education Instructors	30				
3. Music Education Instructors	30				
4. Dramatic Education Instructors	30				
5. Home Economic Instructors	30				
6. Kindergarten Education Instructors	30				
7. Agricultural Extension Service		30			
8. Vegetable Crops Production		30			
9. City Planning		30			
10. Electric Power Distribution		30			
11. Welding Technology		30			
12. Ceramic Engineering		30			
13. Industrial Design			30		
14. Medical Science Technology			30		
15. Machinery Trade Instructors			30		
16. Electric Trade Instructors			30		
17. Woodworking Trade Instructors			30		
18. Automative Trade Instructors			30		
19. Electronic Trade Instructors				30	
20. Offset Printing				30	
21. Computer Technology				30	
22. Behavioral Science Research				30	
23. National Health Administration				30	
24. Weaving Engineering				30	
25. Ground Water Resources Development					30
26. Teaching Chemistry					30
27. Teaching Biology					30
28. Teaching Physics and General Science					30
29. Teaching Mathematics					30
30. Educational Technology					30
Total	180	180	180	180	180

Fellowship - Short Term Training (to be advised by JICA)

Field	No.	m/m	No.	m/m	No.	m/m	No.	m/m	No.	m/m	No.	m/m
Physical Education Instructors	30	30/90	30	30/90								
Art Education Instructors	30	30/90	30	30/90								
Music Education Instructors	30	30/90	30	30/90								
Ceramic Education Instructors	30	30/90	30	30/90								
Home Economic Instructors	30	30/90	30	30/90								
Kindergarten Education Instructors	30	30/90	30	30/90								
Agricultural Extension Service	30	30/90			30	30/90						
Vegetable Crops Production	30	30/90			30	30/90						
City Planning	30	30/90			30	30/90						
Electric Power Distribution	30	30/90			30	30/90						
Welding Technology	30	30/90			30	30/90						
Ceramic Engineering	30	30/90			30	30/90						
Industrial Design	30	30/90					30	30/90				
Medical Science Technology	30	30/90					30	30/90				
Machinery Trade Instructors	30	30/90					30	30/90				
Electric Trade Instructors	30	30/90					30	30/90				
Woodworking Trade Instructors	30	30/90					30	30/90				
Automative Trade Instructors	30	30/90					30	30/90				
Electronic Trade Instructors	30	30/90							30	30/90		
Offset Printing	30	30/90							30	30/90		
Computer Technology	30	30/90							30	30/90		
Behavioral Science Research	30	30/90							30	30/90		
National Health Administration	30	30/90							30	30/90		
Weaving Engineering	30	30/90							30	30/90		
Ground Water Resources Development	30	30/90									30	30/90
Teaching Chemistry	30	30/90									30	30/90
Teaching Biology	30	30/90									30	30/90
Teaching Physics and General Science	30	30/90									30	30/90
Teaching Mathematics	30	30/90									30	30/90
Educational Technology	30	30/90									30	30/90
Total	900	900/2700	180	180/540	180	180/540	180	180/540	180	180/540	180	180/540

資料 6.

A Resume about Used Chemistry Equipment Given by JICA

1. Glassware is mostly used and it works well.
   For example:
   -- Measuring cylider
   -- Buret
   -- Weighing bottle
   -- Test tube
   -- Measuring pipette
   -- Volumetrie pippette
2. Other items such as litmus paper, filter paper are all used up.
3. Teaching aids are as follows:
   -- Overhead Projector is used often and it helps teaching more effectively.
   -- Crystal structure model set and Molecular Model is used for the teaching of Inorganic, Organic and Physical Chemistry.
3. Other equipments for experimenting are always in use.
   For example:
   -- Hand centrifuge
   -- Gas generator, Kipp
   -- Mortar
   -- pH meter is well used both for the students experimenting and for other analytical works.
   -- Viscosmeter, Ostwald ....most of equipments are used well but the ones with small diameters can not be used effectively.
   -- Universal Power House is well used, but we have only one. We should have three as many as the Electrolysis apparatus.
   -- Vacuum Manometer is necessary for experimenting in Physical Chemistry. We have only one which is not enough.
   -- Distilling apparatus is good in use. But the double distilling apparatus is not put into use because the College's water carries too much sediment and silt and the water does not run constantly, not proper for this apparatus.
   -- Distilling Apparatus for Nitrogen Determination Apparatus. We used in quatitative analysis of Nitrogen in normal urine.
   -- Drying Oven Electric heater, Desiccator and Refrigerator are always used.

-- Ion exchange resin and crucible with cover are not used, but they will be used when we have students majoring in Chemistry.
-- Stirrer is well used, it will be better if we have heating stirrer.
-- Film developing tank and tray. We lend them to the Physics Department.
-- Electric mixer. we used one and we lend the other one to the Agricultural Department.
-- Semi-micro analysis glass-ware are not used now because we do not have proper experimental directions for it.
-- Heating mantle is not in order and is not mended yet.
-- Periodic table of element is not much in use because it is in Japanese language and we have enough of our own.
-- Water baths with constant temperature. We need to use, but can not use because we got a wrong transformer(5A). We need a 10A transformer.

4. Most Chemical reagent are not used, we still have enough of our own. We will use it in the future. All chemicals can be used.

We appreciate the help from JICA very much. Most equipments are very useful in our teaching and experimenting. We hope we will have other assistance from JICA.

The Chemistry Department,
Petchaburi's Teacher College

SCIENCE AND TECHNOLOGY TEACHING SERVICING CENTRE

PETCHBURI TEACHER'S COLLEGE

Servicing Centre Activities

The centre is responsible for science and mathematic teachers in its own or more adjacent provinces. Its activities are as follows:

1. Technology Servicing :

1.1 To organize workshops for training science and mathematic teachers.

1.2 To provide knowledge of various science related to the IPST'scurriculum.

2. Material and Equipment Servicing :

2.1 To advise teachers in repairing science and mathematic equipments. Each school has to pay its own expense in repairing the equipments.

2.2 To organize workshops on training in the use, maintenance and repairing of equipments.

2.3 To promote construction, modification and improvisation of equipments including to encourage teachers to produce equipments from unused materials.

2.4 To provide for the loan of resource materials and equipments.

2.5 To provide location, materials and apparatus for repairing equipments.

2.6 To duplicate audio-visual materials such as transparencies, slide sets for schools as requested. Those schools have to bring their own materials to be duplicated or pay for own expense.

2.7 To provide biological materials such as plant and animal specimens and produce teacher's manuals including the information of living things inhabited in the school area.

2.8 To exchange idea, materials and cquipments among the centres.

Area of Responsibility

Concerning with material and equipment servicing, the centre is responsible for the area of Petchburi and Prachubkirikhan province, for the work of teacher training, the centre is responsible for the province in the area of Education Region 5.

Operation

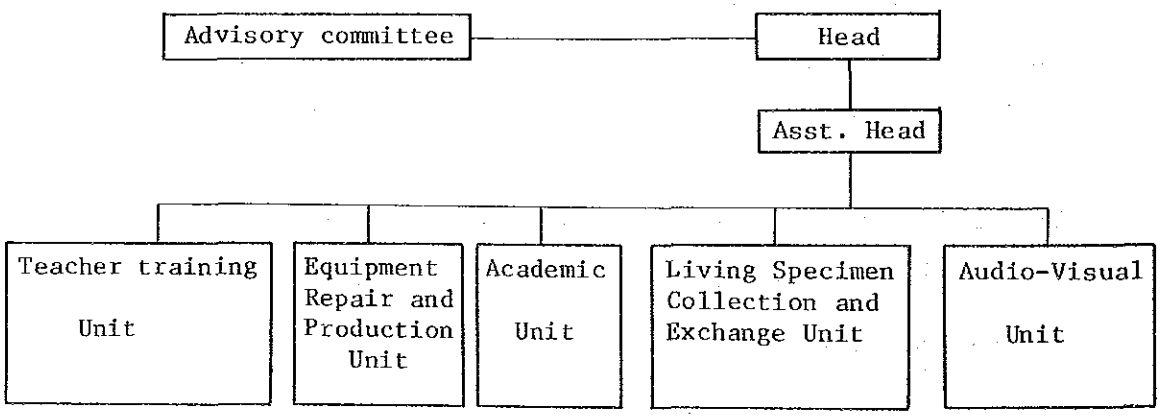
The work is done by the following:

- Collecting data
- Organizing seminars and workshops
- Laboratory works
- Servicing schools and teachers

The activities may be done at the centre or as a mobile unit with cooperation of the Education Region 5 and the Institute for the Promotion of teaching Science and Technology (IPST).

Structure of the Science Teaching Servicing Centre

Petchburi Science Teaching Servicing Centre is a special unit belonging to Science Faculty, Petchburi Teacher's College.



Project Budget

The budget is supported from the following :

1. Petchburi Teacher's College through the Faculty of Science.

2. Department of Teacher Training of the Ministry of Education.

3. Foreign organizations through the IPST.

4. Petchburi Science Teaching Servicing Centre's income.

Expected Outcome

It is intended that the centre will become largely benefit to the teachers in the responsible area, and able to solve the teachers' problems related to equipments and teaching method.

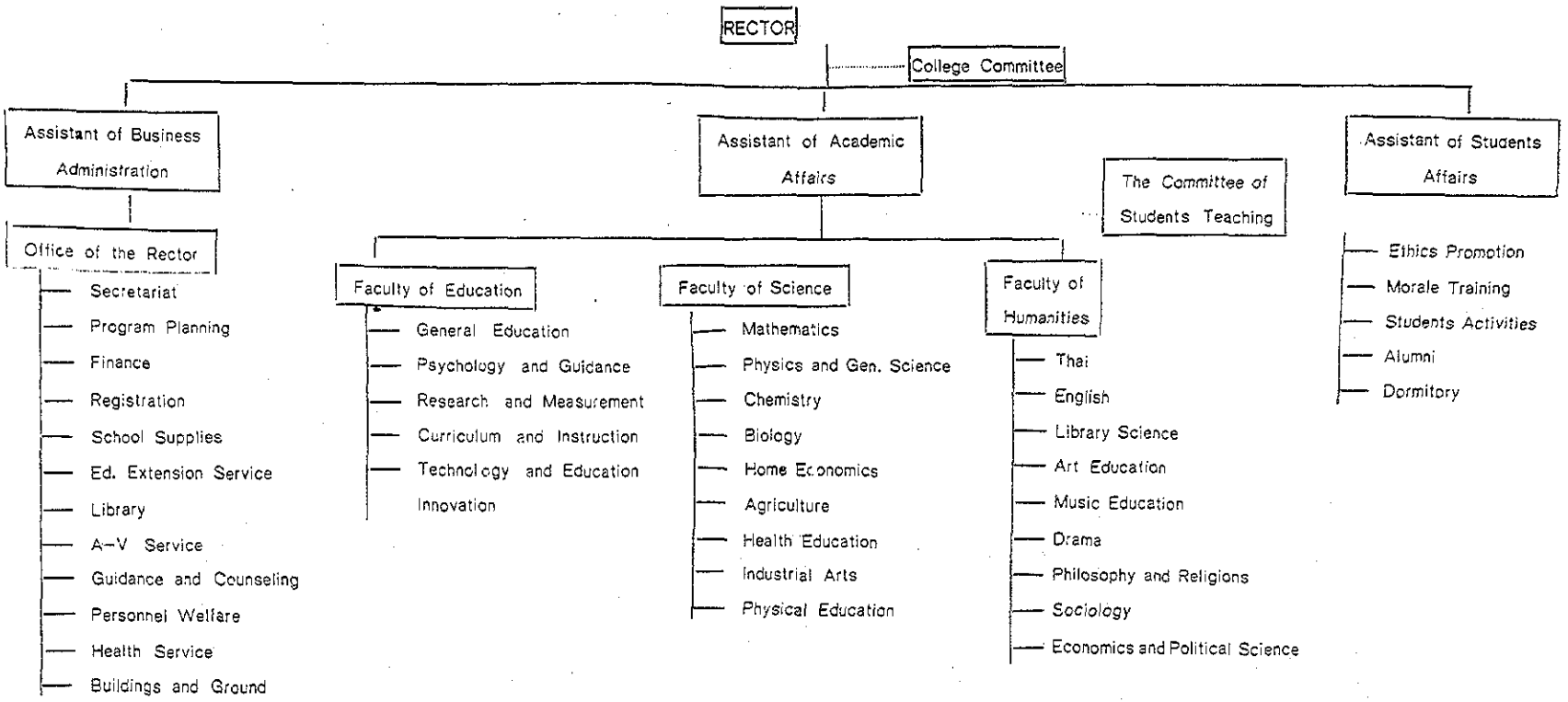
WORK PLAN BUDGET YEAR 1980

No.	Project	Duration	Participants	Budget (Baht)				Note
				Honorarium	Materials	Expendables	Total	
1	Workshop on construction of science equipments	16-20 June, 1980	20 (Science or Math. teachers)	500 (Technical officers)	19,500	500	20,500	The constructed equipments are intened to take back to be used in schools
2	Workshop on writing test items for high school level	7-11 July, 1980	80 (20 per science subject)	1,600	2,800	500	4,900	
3	Workshop on construction and repairing of science and mathematic equipments	4-8 August 1980	20 (Science or Math. teachers)	200 (Technical officers)	1,000	300	1,500	
4	Seminar on development of science teaching and learning method for high school level	18-20 Sep., 1980	60 (Secondary and high school teachers in science)	1,200	2,500	500	4,200	
5	Seminar on problem of teaching and learning Mathematic for secondary school level	26-27 Sep., 1980	80 (M.S. 1, 2 Math. teachers)	1,000	2,500	500	4,000	
6	Analysis of high school test items	6-10 Oct., 1980	-	-	2,700	500	3,200	The analysed items will be tried in Schools
7	Mobile Unit	July - December 1980	-	-	2,000	5,000	7,000	The serviced schools have to pay for their own materials and expence.
8	Workshop on training teachers to teach behavior and genetics	20-21 Nov., 1980	20 Biology teachers	1,200	2,000	500	3,700	
9	Production of transparencies and slides	July - October 1980	-	-	3,100	3,000	6,100	1. Duplicate from master copies for loaning service. 2. Produce new own master copies.
10	Production the prototypes of science equipment by using local materials	July - September 1980	-	1,000	-	-	1,000	Honorarium is made for the teacher whose prototype is selected.
11	Cultivation of small living organism in laboratory	Through the school year	-	-	1,200	-	1,200	
12	Workshop on study IPST' biology curriculum	9-20 June, 1980	34 (Instructors from Teacher Colleges)	-	-	-	-	Fund from Teacher Training Department

Note : Project No. 1-8 Supported by UNDP 49,000 bahts.

Project No. 9-11 Supported by Teacher Training Department 42,500 bahts separated in to fund for materials 33,200 bahts, for project No. 9-11 8,300 bahts, for allowance 1,000 bahts.

ADMINISTRATION OF CHIENGMAI TEACHERS COLLEGE



การทดลองที่ 1

การใช้ แอมมิเตอร์ และโวลท์มิเตอร์

วัตถุประสงค์

1. เพื่อศึกษาการใช้แอมมิเตอร์และโวลท์มิเตอร์วัดกระแสไฟฟ้าและแรงดันไฟฟ้า
2. เพื่อศึกษาการอ่านค่ากระแสไฟฟ้าและแรงดันไฟฟ้าเมื่อใช้สเกลต่าง ๆ
3. เพื่อรู้จักหาความไวของมิเตอร์

อุปกรณ์

1. ดีซี และเอซี โวลท์มิเตอร์
2. ดีซี และเอซี แอมมิเตอร์
3. แหล่งจ่ายกระแสไฟตรงและกระแสไฟสลับอย่างละ 1 เครื่อง
4. ตัวต้านทานค่าต่าง ๆ สายไฟ และที่พักสาย

ทฤษฎี

แอมมิเตอร์เป็นเครื่องมือที่ใช้วัดค่ากระแสไฟฟ้า ส่วนโวลท์มิเตอร์เป็นเครื่องมือที่ใช้วัดค่าแรงดันไฟฟ้า ทั้งแอมมิเตอร์และโวลท์มิเตอร์อาศัยหลักการของมิเตอร์พื้นฐาน (basic meter) เหมือนกันในการวัดค่าปริมาณทางไฟฟ้า เมื่อมีกระแสไหลผ่านมิเตอร์ เข็มมิเตอร์จะแกว่งไปตามสเกล กระแสที่ทำให้เข็มแกว่งจนเต็มสเกลมีค่าเท่ากับค่าแรงดันที่ทำให้เข็มแกว่งเต็มสเกลหารด้วยความต้านทานภายในของตัวมิเตอร์ ค่ากระแสนี้เรียกว่า "กระแสแกว่งเต็มสเกล (full - scale deflection current)" ใช้อักษรย่อว่า I_{FS} ค่า I_{FS} มีความสำคัญในการหาค่าความไวของมิเตอร์มาก กล่าวคือความไวของมิเตอร์มีค่าเป็นส่วนกลับของ I_{FS} ถ้ามิเตอร์ต้องการกระแสน้อยลงก็แสดงว่ามิเตอร์ไวมากขึ้น ความไวของมิเตอร์มีหน่วยเป็นโอห์มต่อโวลท์ แต่ในบางครั้งจะพบว่ามีการเรียกมิเตอร์พื้นฐานเป็นมิเตอร์ 1 มิลลิแอมแปร์บาง มิเตอร์ 50 โวลท์บาง ขอให้เข้าใจว่า มิเตอร์ 1 มิลลิแอมแปร์นี้หมายถึงค่า I_{FS} ของมิเตอร์ = 1 mA จึงมีความไวเป็น 1000 โอห์มต่อโวลท์ มิเตอร์ 50 มิลลิโวลท์ก็มีค่าแรงดันที่ที่เข็มแกว่งเต็มสเกลเป็น 50 mV ซึ่งจะต้องทราบความต้านทานภายในของมิเตอร์ด้วย จึงจะรู้ว่ามิเตอร์มีความไวเท่าใด ถ้ามิเตอร์มีความต้านทานภายใน 50 โอห์ม ความไวก็จะเป็น

$\frac{1}{I_{FS}} = \frac{1}{\frac{50}{1,000 \times 50}}$ = 1,000 โอห์มต่อโวลต์เช่นกัน ที่กล่าวมาแล้วนี้เป็นมิเตอร์

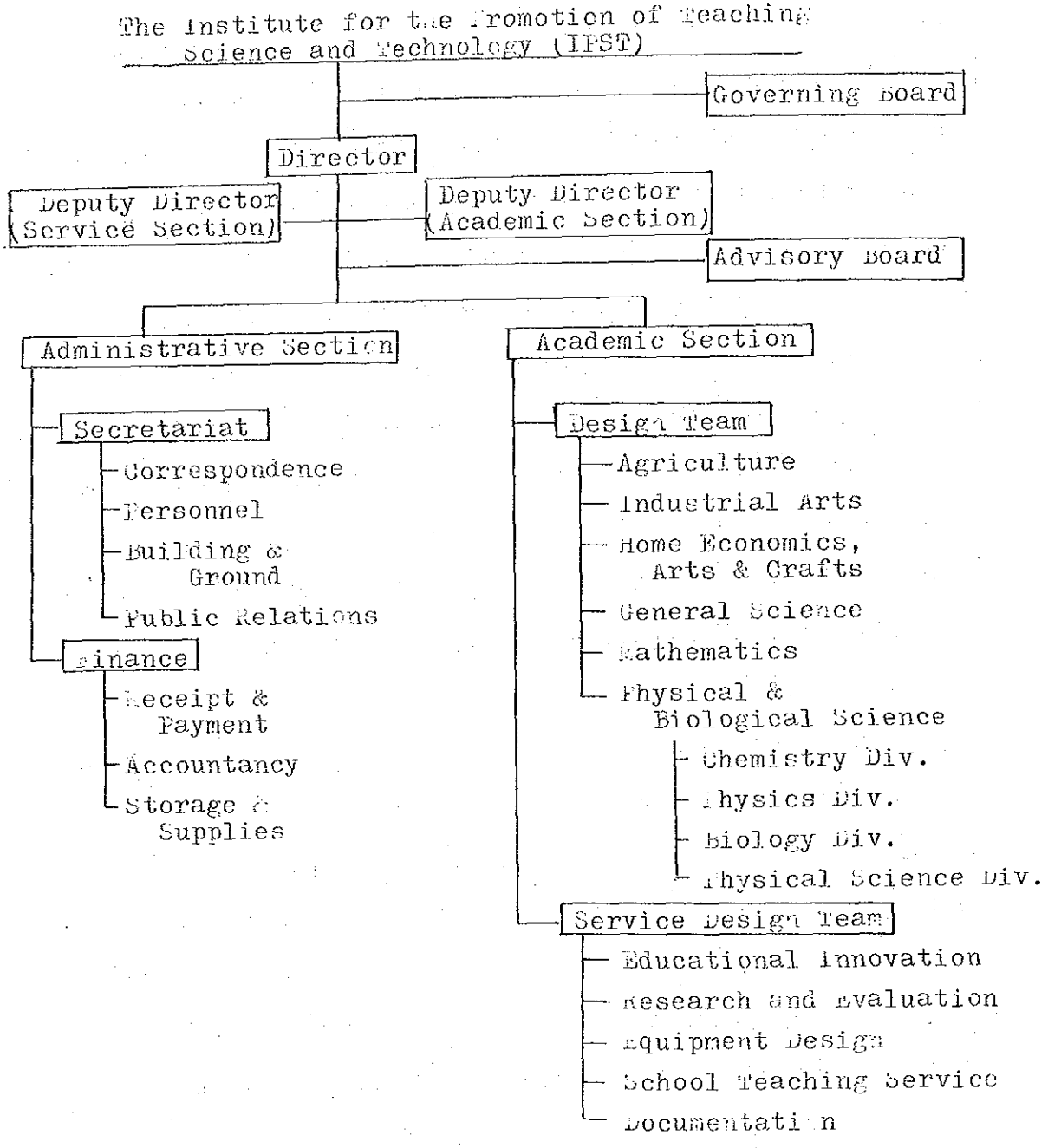
เป็นมิเตอร์พื้นฐาน บางครั้งอาจจะพบมิเตอร์ที่มีสเกล 50 mV หรือ 1 mA ซึ่งจะบอกว่ามิเตอร์นั้นใช่มิเตอร์พื้นฐาน 50 mV หรือ 1 mA ตามลำดับไม่ได้ มิเตอร์พื้นฐานที่ใช้อาจมีความไวเป็น 50 mV หรือน้อยกว่าก็ได้ หรือมีความไวเท่ากับมิเตอร์ 1 mA หรือน้อยกว่าก็ได้ ที่สำคัญอีกประการหนึ่งคือ ความต้านทานภายในของมิเตอร์ มิเตอร์พื้นฐานจะมีค่าความต้านทานภายในอยู่เสมอ ความต้านทานภายในของมิเตอร์นี้เองที่จะมีผลให้การวัดค่ากระแสและแรงดันไม่ตรงตามอุดมคติ เพราะว่าเมื่อมีมิเตอร์เข้าเกี่ยวข้องกับวงจร จะทำให้ค่าความต้านทานรวมในวงจรเปลี่ยนไป ผลการวัดจึงมีความผิดพลาดเสมอ อย่างไรก็ตามเปอร์เซนต์ความผิดพลาดนี้ขึ้นกับอัตราส่วนของความต้านทานภายในมิเตอร์กับความต้านทานของวงจร ในการวัดค่ากระแสไฟฟ้าต้องต่อแอมมิเตอร์อนุกรมกับวงจร ดังนั้นผลการวัดจะถูกต้องมาก (คือผิดพลาดน้อย) ต่อเมื่อความต้านทานภายในของแอมมิเตอร์มีค่าน้อยมาก ๆเมื่อเทียบกับความต้านทานในวงจร ในการวัดค่าแรงดันไฟฟ้าต้องต่อโวลท์มิเตอร์ขนานกับวงจร ดังนั้นผลการวัดจะผิดพลาดน้อย เมื่อความต้านทานภายในของโวลท์มิเตอร์มีค่าสูงมาก ๆ เมื่อเทียบกับความต้านทานในวงจร

แอมมิเตอร์ที่สามารถวัดค่ากระแสได้หลายช่วงการวัด เช่น 0-50 A , 0-1 mA , 0-50, A ,.... ใช้วิธีเลือกตัวต้านทานต่อขนานกับตัวมิเตอร์พื้นฐานซึ่งมักจะวัดกระแสได้น้อย เมื่อต่อตัวต้านทานขนานกับมิเตอร์พื้นฐาน ตัวต้านทานนี้จะแบ่งกระแสไปบางส่วน ดังนั้นแม้ว่ากระแสจะสูงขึ้น แต่เข็มมิเตอร์จะแกว่งไม่เกินสเกล ทั้งนี้ต้องทำการปรับค่ากระแสที่จะอ่านให้ถูกต้องด้วย อย่างไรก็ตามแม้ว่าสเกลของมิเตอร์จะเปลี่ยนไป แต่ความไวของมิเตอร์ยังคงเท่าเดิมไม่เปลี่ยนตามสเกล สำหรับโวลท์มิเตอร์จะดัดแปลงให้วัดค่าแรงดันสูงขึ้นได้โดยต่อตัวต้านทานอนุกรมกับมิเตอร์ ซึ่งก็ต้องทำการปรับค่าที่จะอ่าน และความไวของโวลท์มิเตอร์ก็ไม่เปลี่ยนเหมือนกับหลักการของแอมมิเตอร์เช่นกัน

การใช้โวลท์มิเตอร์กับแอมมิเตอร์ในการวัดค่าแรงดันและกระแสไฟฟ้าในวงจร ต้องระวังการต่อให้ถูกวิธี โวลท์มิเตอร์ต้องต่อขนานกับอุปกรณ์หรือจุดที่ต้องการวัดค่าแรงดันในวงจร ส่วนแอมมิเตอร์ต้องต่ออนุกรมในวงจร ถ้าต่อโวลท์มิเตอร์อนุกรมในวงจร โวลท์มิเตอร์จะไม่เป็นอันตรายแต่ถ้าแอมมิเตอร์ขนานกับวงจรแอมมิเตอร์อาจเสียได้ เนื่องจากแอมมิเตอร์มี

(以下略)

Organizational Chart of IPST



Source : The Institute for the Promotion of Teaching Science and Technology, Leaflet by IPST, Bangkok.

Project: Science and Technology Teacher Servicing Centres. (STSC's)

Responsible Organization:

Department of Teacher Education and the Institute for the Promotion of Teaching Science and Technology (IPST).

I. Principle and Rationale:

According to the announcement of the Ministry of Education on the implementation of the new curricula of Science and Mathematics prepared by the Institute for the Promotion of Teaching Science and Technology (IPST). The problems that most schools and their teachers are encountering have been thoroughly documented.

Firstly, some schools have limited funds and are unable to provide adequate equipment for the teaching of the new science, and mathematics. Others have funds, but the necessary equipment is not available to them. In many cases, teachers do not know how to maintain equipment nor to repair damage. They also need training in the development and production of simple equipment and materials which can be made from local and low cost materials.

Secondly, the teachers need the assistance of academic advisors who can help them in solving problems related to the teaching and learning processes. There is a shortage of knowledge of the newer methodologies and technologies for the teaching of science and mathematics. The effective use of teaching aids, both natural and man-made can be enhanced through additional opportunities for workshops and other training opportunities.

Thirdly, data gathering for purposes of implementation, evaluation, research, revision and further improvement and innovation is too massive an endeavor for IPST alone. Through the Teacher Servicing Centres, any necessary studies can be facilitated. Data can be generated and processed in manageable units. Provincial and regional

patterns, as well as those of Kingdom - wide scope, will become evident. Thus, decision-making and policy-making data bases that are responsive to local, regional or national needs will be readily available.

As a result of the follow-up programme, IPST has brought these problems and opportunities into focus. The needs of science and mathematics teachers across the country have been identified. The development of the 36 Teacher Servicing Centres will help provide solutions to implementation problems and extend the effectiveness of the Curriculum Development and Teacher Education effort for beyond the capability of IPST alone.

The Centres will offer training in the maintenance, repair, production and improvisation of equipment. They will produce audio-visual softwares for the schools. The Centres will also actively promote the use of new methodologies and technologies in teaching science and mathematics in all schools in each region and serve as academic advisors in solving teaching-learning problems. The Centres will correct data, disseminate information, provide back-up support and generally encourage direct and real participation in the conception and development of improved science, mathematics and vocational education. In reality, they will provide professional development opportunities to every science and mathematics teacher in the Kingdom.

In planning for the establishment of Science and Technology Teacher Servicing Centres, the Department of Teacher Training of the Ministry of Education has obtained the cooperation of IPST. Infact, development of such centres is already underway. During 1979, six centres chosen from the 36 teacher training colleges, have begun operation. The six were selected on the basis of geographic distribution and readiness to assume servicing responsibilities.

II. Objectives of the STSC's

The objectives of the Teacher Servicing Centres can be defined in terms of both long-range developmental goals and the more specific immediate needs.

Development Objectives

1. To decentralize services in science and mathematics teaching to regional centres throughout Thailand through Teacher Training Colleges.

2. To set up efficient machinery to facilitate the implementation and the evaluation of science, mathematics and technology curricula.

3. To strengthen science and mathematics teaching in schools throughout Thailand, especially in the rural areas.

Immediate Objectives

1. To provide locations where teachers can work together in improvising, producting and repairing low-cost science and mathematics equipment.

2. To give inservice training for teachers in the production, maintenance and repair of science equipment and in the use of audio-visual materials.

3. To provide for the loan of resource materials, visual and audio visual, for use in the teaching of science and mathematics.

4. To advise teachers in academic subjects, modern teaching methodologies and educational technology.

5. To serve as inservice as well as preservice training centres to extend methodology, learning theory, evaluation and other competancies of teachers.

III. Outputs

The Department of Teacher Education, with the cooperation of IPST will establish 36 Science and Technology Teacher Servicing Centres (STSC's) by 1981. Each of these 36 centres will be allocated responsibility for all schools within their province and one or more adjacent provinces so that all 72 provinces in the Kingdom will be served by these Centres.

It is intended that the Centres will become largely self-reliant and able to approach the problems related to the teaching and learning

of science and mathematics in ways most suitable for each locale and situation. Although reasonable autonomy of action will be encouraged among the teachers, the centre personnel will plan and run workshops, visit schools and in other ways encourage teachers to make use of the Centre and its resources. While each centre will set its own priorities, IPST and the Department of Teacher Education, through regional and national seminars and workshops, will continue to prepare and disseminate guidelines to be used in the exchange of idea and experiences and in the further education of personnel in the Centres and in the schools.

IV. Workplan

To achieve the output described, the following activities will be undertaken by the Centres.

Each centre is responsible for all school in its own and one or more adjacent provinces. Its activities are as follow:

1. To set up its own steering committee for the operation of the centre.
2. To prepare a work plan and activities to service schools in its provinces in close co-operation with IPST.
3. To conduct surveys of the needs of schools in the region.
4. To organize workshops to train teachers in certain aspects such as construction and repair of low-cost equipment, specific teaching competencies such as evaluation techniques and questioning behavior or others as requested.
5. To duplicate audio-visual materials for schools as requested.
6. To develop resource materials such as plants and animal specimens for schools if needed.
7. To organize a mobile unit to collect information as well as to give assistance to teachers in the field.
8. To evaluate its own efforts for further improvement of its own work-plan and activities.

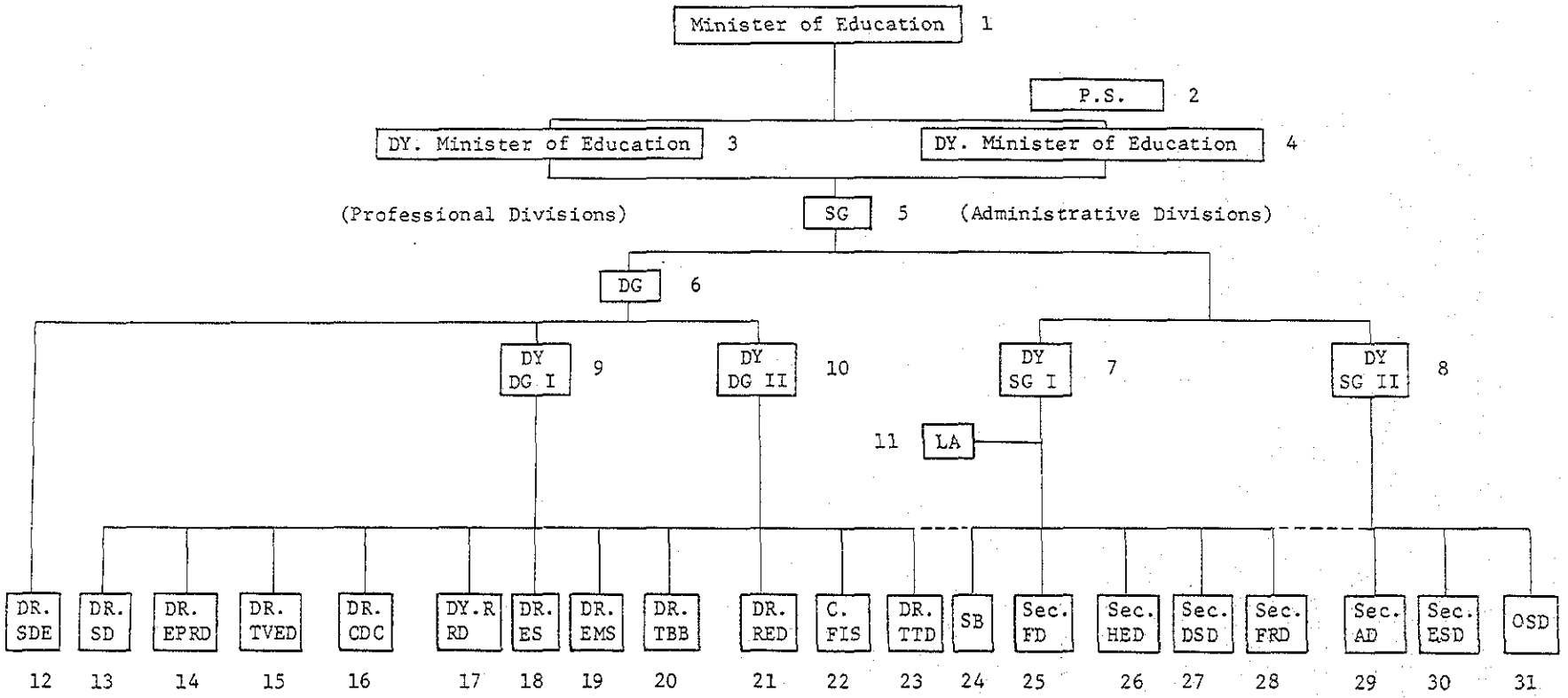
V. Inputs

IPST will serve as the core centre to co-ordinate all of the servicing centres in the various regions. The existing buildings and grounds and all other facilities will be utilized for this project. Personnels will be recruited from universities, teacher's colleges, the ministry and schools to carry out the various activities. Subject Design Teams (Physics, Chemistry, Biology, Physical Science, General Science and Mathematics) will assist in all academic matters and in the development of supplementary materials, prototype equipment and audio-visual materials. The IPST supporting teams (Educational Innovation, Equipment Design, Research and Evaluation) will co-operate in the development of new technology for teaching and the evaluation of all activities.

The 36 Teachers' College will provide personnel for the servicing centres to carry out the work according to the plan. School teachers in the vicinity of each college will assist in some activities. They will collect resource materials, conduct surveys for the needs of schools, collect data for research and evaluation activities and share ideas and activities directed toward the improvement of science teaching in all schools in their region.

ORGANIZATIONAL CHART

Ministry of Education, Malaysia



KEY TO ORGANIZATIONAL CHART

Ministry of Education, Malaysia

1. Minister of Education
2. Political Secretary
3. Deputy Minister of Education
4. Deputy Minister of Education
5. Secretary General
6. Director General
7. Deputy Secretary General I
8. Deputy Secretary General II
9. Deputy Director General I
10. Deputy Director General II
11. Legal Adviser
12. Directors of State Education Departments
13. Director of Schools Division
14. Director of Educational Planning and Research Division
15. Director of Vocational and Technical Education Division
16. Director of Curriculum Development Centre
17. Deputy Registrar of Registration Division
18. Director of Examinations Syndicate
19. Director of Educational Media Service
20. Director of Text Book Bureau
21. Director of Religious Education
22. Chief of Federal Inspectorate of Schools

23. Director of Teacher Training Division

24. Statutory Bodies (Universities, Language and Literary Agency etc.)

25. Secretary of Finance Division

26. Secretary of Higher Education Division

27. Secretary of Development and Supplies Division

28. Secretary of Foreign Relations Division

29. Secretary of Administration Division

30. Secretary of Establishments and Services Division

31. Overseas Students' Department

資料１３.

EDUCATIONAL MEDIA

SERVICE DIVISION

MINISTRY OF EDUCATION
MALAYSIA

PROJECT PROPOSALS

Under

FOURTH MALAYSIA

PLAN

EDUCATION DEVELOPMENT PROJECT OF EDUCATIONAL MEDIA
SERVICE DIVISION FOR FOURTH MALAYSIA PLAN(YEAR 1981 - 1985)

1. Proposed Projects in brief

1.1. New Projects proposed during 1981 - 1985 period

Name of Project		Expected Expenditure	
		Sub Total	Total
1.1.1. EMS Building Complex and facilities/equipment (including cost of land and service fees) at the Headquarters, Kuala Lumpur			
(a) EMS Complex Building			
(i) Cost estimate for project works	$13,555,120		
(ii) Cost estimate for infra-structure and facilities	$9,808,518	$23,363,638	
(b) Facilities/Equipment			
(i) Audio Visual Aids Section	$948,720		
(ii) Educational Radio Section & Oditorium	$3650,000		
(iii) Educational TV Section	$13145,000		
(iv) Contigencies	$1774,372	$19,518,092	
(c) Land and Service Fees			
(i) Land cost with an area of 10 acres (about (M)$2.75 per sq.ft.)	$1,200,000		
(ii) Consultant Service			
(1) Civil Works	$2,500,000		
(2) Electronic Works	$1,463,857		
(iii) Payment to National Electricity Board	$ 100,000		
(iv) Payment to City Council (drainage, sewage road)	$ 800,000		
(v) Payment to Telecoms - telephone (trunking)	$ 30,000	$6,093,857	
(d) Broadcasts through Radio Television Malaysia(RTM)	$ 580,000	580,000	$49,555,587

1.1.2. Audio Visual Aids Equipment for District Media Centres and State EMS/Division		Sub-Total	Total
(a) Transparencies Maker			
(i) Peninsular Malaysia(District Media Centres and State EMS)	$2,500 x 320 =$800,000		
(ii) Sabah & Sarawak (State EMS & EMS Division	$2,500 x 15 =$37,500	$837,500	
(b) Graphic Visual Maker			
(i) Peninsular Malaysia(District Media Centres and State EMS)	$600 x 320 =$192,000		
(ii) Sabah & Sarawak (State EMS & EM Division)	$600 x 15 =$9,000	$201,000	
(c) Basic Camera & Accessories with Copying Stand			
(i) Peninsular Malaysia(District Media Centres and State EMS)	$2,000x320 =$640,000		
(ii) Sabah and Sarawak (State EMS and EMS Division	$2,000x15 =$30,000	$670,000	
(d) Overhead Projectors			
(i) Peninsular Malaysia(District Media Centres)	$700 x 300 =$210,000		
(ii) Sabah & Sarawak (EMS Division)	$700 x 13 =$9,100	$219,100	
(e) Outomatic Slide Projectors(with Syncrocoder)			
(i) Peninsular Malaysia (State EMS)	$2,500x11 =$27,500		
(ii) Sabah & Sarawak (EMS Division)	$2,500 x 13 =$32,500	$ 60,000	
(f) 16m.m. Projectors (Malacca & Perlis) One for each state($3,500x2)		$ 7,000	
(g) Generators for EMS Division in Sabah & Sarawak with a total of 32 ($1,600 x 32)		$ 51,200	$2,045,800

		Sub-Total	Total
1.1.3.	Air-Conditioned Store Rooms for 11 States in Peninsular Malaysia and 5 Residences in Sabah		
	(a) Peninsular Malaysia 11 Rooms ($10,000 x 11)	$110,000	
	(b) Sabah 5 Rooms ($10,000 x 5)	50,000	
	(2 sets of single unit air-con equipment for each store room @ $3,000 ($3,000 x 16)	48,000	$208,000
1.1.4.	Studio Equipment for Sarawak		
	(a) Film Editing Machine (1 unit)	50,000	
	(b) Radio Studio Equipment		
	(i) Audio Mixer (1 unit)		
	(ii) Turntable		
	(iii) Recorder Reproducer(2 units)		
	(iv) Monitor Speakers (2 units)	80,000	
	(v) Microphones		
	Other Equipment		
	(i) Fast Duplicator(open reel to open reel & open reel to cassette)	30,000	
	(ii) Turntable (2 units)	12,000	$172,000
1.1.5.	Supply of Video Cassette Recorders(VCR) to Secondary Schools		
	(a) Peninsular Malaysia (784 schools @ $4,000 per school)	$4,000x784	$3,136,000
	(b) Sabah(85 schools @ $4,000 per school)	$4,000x 85	$ 340,000
	(c) Sarawak (83 schools @ $4,000 per school)	$4,000x 83	$ 332,000
	(d) Video Tapes(10 tapes for each school @ $150 per tape)	$150x10x952	$1,428,000
	(e) VCR Dubbing Machine (13 units @ $12,000 each	$12,000x13	156,000
	(f) Duplicating/Copying Machine(Slave VCR - a set of five) 13 sets @ $19,000 each)	$19,000x13	$ 247,000 $5,639,000

			Sub-Total	Total
1.1.6. Equipment for Colour Studio ETV Sabah			$525,250	$525,250
			Grand Total	$58,145,637
1.2. Brief on Continuation Project ✓				
1.2.1. Equipment for Audio Visual Aids, Educational Radio, Educational TV for Headquarters			$1,500,000	$1,500,000
1.2.2. Other Projects which are to be continued in Sabah & Serawak				
(a) Studio Construction in Kuching, Serawak	$200,000			
(b) Radio Complex Construction, Kota Kinabalu, Sabah (including furniture and studio equipment)	$3,000,000			
(c) Equipment for ETV Sabah(telecine chain, kine recording machine)	650,000			
(d) Workshop for EMS Serawak	450,000		$4,300,000	$4,300,000
			Grand Total	$5,800,000

1.3. It is necessary to note here that EMS Building Complex and Equipment Needed actually consist of two components, that is:-

(i) Building plus production facilities and transmission;

(ii) Broadcast/transmission of ETV and Educational Radio programmes.

1.3.1. Building and Facilities

The details and estimate for building production facilities and transmission are elaborated in Appendix "C". The plan submitted would enable the building to be used as Transmission Centre either through RTM Broadcast Channel/Network or as separate Broadcast Network for ETV and Educational Radio.

1.3.2. Broadcast/Transmission of Programmes

There are two alternatives to broadcast ETV and Educational Radio programmes, that is:-

(i) Through RTM Broadcast Network, as of now;

(ii) With the creation of Broadcast Network for ETV and Educational Radio with using RTM Network.

(i) For broadcast through RTM, what is needed is TV linkage and Radio linkage between EMS building at Bukit Kiara and Angkasapuri. Because of limited vote or funding, the estimate for this project in Appendix "C" is based on this alternative. Estimated allocation for transmission facilities is $580,000/-. If EMS building has to be used as Transmission Centre by RTM in time of emergency, this agency - that is RTM - has to take steps to establish Radio and TV Linkage between EMS building at Bukit Kiara and Telecommunication Station at Bukit Nenas. The estimate for this additional facilities is not included in the estimate in Appendix "C". This particular needs has to be funded by the Ministry of Information as its project.

(ii) If it is decided that all transmission of ETV and Educational Radio programmes be broadcast through separate channel, an estimated additional allocation of $114,487,795/- is needed, over and above the estimated(M) $49,555,587/- for this project. Thus the total estimate for EMS building project with separate transmission network/channel would cost $164,043,382/-. Because of financial constraints, it is suggested this alternative be postponed for consideration during Fourth Malaysia Plan Mid-Term Review or to be considered for Fifth Malaysia Plan. In order to implement separate transmission project in future after the construction of EMS building the following facilities are needed:-

(a) Relay stations throughout Peninsular Malaysia, Sabah and Sarawak;

(b) TV Bearers and Radio Links throughout Peninsular Malaysia, Sabah and Sarawak for transmitting and receiving UHF broadcast wave for TV and FM wave for Radio.

(c) Supply of TV sets/receivers which could receive UHF wave to all schools. If these facilities

are provided, this means that this country will have or provide two separate Broadcasting/ Transmission Centres i.e. RTM and EMS. In this situation, EMS Broadcasting Centre could be used by RTM in time of emergency without providing additional facilities. Although the estimate as tabled in appendix "C" does not include this additional facilities, as it is based on broadcast alternative (i), it is proposed that this aspect be submitted and forwarded to National Development Planning Committee(NDPC) for decision.

The projects proposed are related to recommendations No.5 and 115 of Cabinet Committee Report on the Study of Implementation of Education Policy i.e. with reference to the provision of suitable teaching aids and facilities at school level for educational technology activities. At the same time solving problems faced by secondary schools in pocket areas which could not receive strong TV signals by supplying them with Video Cassette Recorders which also help to overcome the problem of adjusting school time-table and broadcasting time-table. This is stated in recommendation No: 115 of the Cabinet Report.

2. Programmes Revised 1981 - 85

2.1. If there should be separate broadcast network for ETV and Educational Radio, then ETV and Educational Radio would not use RTM Radio and TV Broadcast networks.

2.2. With the supply of audio visual aids to District Media Centres in Peninsular Malaysia and Media Centres in Sabah and Sarawak, there would then be a situation where there are additional facilities in rural areas for educational technology activities in schools. Thus, it is hoped that the quality of teaching and learning in rural areas could be equated with the facilities available in towns.

2.3. If Video Cassette Recorders are supplied to Secondary Schools, then Sixth Form Science Programmes would not be broadcast, while recording/dubbing of this programme series would either be handled at EMS Headquarters level or at State EMS for use by schools. The transmission time/hours would be utilised by transmitting Primary School Programmes which numerically have more following/ views.

2.4. Educational TV programmes which are currently broadcast in Sabah and Sarawak are produced at the EMS Headquarters in Kuala Lumpur, except one local series "Teachers World" which is of magazine type and which high lights aspects of educational interests in the two states. With the provision of TV Studio in Sabah, EMS Sabah could produce other programmes which are only suitable for Sabah and Sarawak.

3. 1981 Financial Estimate

Please see column 5 in Format A attached.

4. Brief Description of New Projects

4.1. EMS Building Project with Equipment facilities
Please see Appendix C(in bookform)

4.2. Supply of Audio Visual Aids Porject.
Please see Appendix D.

4.3. *Air Conditioned Store Room Project for State EMS.*
Please see Appendix E

44. Supply of Studio Equipment Project in Sarawak
Please see Appendix F.

4.5. *Supply of Video Cassette Recorder Project.*
Please see Appendix G.

4.6. Supply of Educational TV Studio Equipment Project in Sabah.
Please see Appendix H.

4.7. Continuation Project
Please see Appendix I.

HEAD 29 : MINISTRY OF EDUCATION
PARTICULARS:
STATE : FEDERAL TERRITORY

FORMAT A

(1) District	(2) Project Number/ Code	(3) Project Name	(4) PROJECT COST ($000) Land	Construction	Equipment/ Supply	Total	(5) ESTIMATED EXPENDITURE ($000) 1981	1982	1983	1984	1985	Total 1981 - 1985		(6) COST ANALYSIS ($000) Local	Foreign Exchange Indirect	Direct
A. New Project																
1. Bukit Kiara Estate, Kuala Lumpur.		EMS Building Complex and Equipment Fixtures														
		(a) Land	6,094	-	-		6,094	-	-	-	-	6,094				
		(b) Construction	-	23,364		49,556	4,000	4,000	4,000	4,000	7,364	23,364	49,556	49,556		
		(c) Equipment/Supply	-	-	20,098		-	-	-	9,518	10,580	20,098				
2. All States in the Peninsular, Sabah and Sarawak.		Audio Visual Equipment														
		(a) Transparencies Maker	-	-	838	838	-	838	-	-	-	838				
		(b) Graphic Visual Maker	-	-	201	201	-	201	-	-	-	201				
		(c) Basic Camera & Accessories with copying stand	-	-	670	670	670	-	-	-	-	670				
		(d) Overhead Projectors	-	-	219	219	-	219	-	-	-	219				
		(e) Automatic Slide Projectors (with synrocoder)	-	-	60	60	-	60	-	-	-	60	2,046	2,046		
		(f) 16mm Projector	-	-	7	7	7	-	-	-	-	7				
		(g) Generator for Sabah and Sarawak Divisions	-	-	51	51	51	-	-	-	-	51				
3. All States in the Peninsular and Sabah		Air-conditioned Storage Room	-	160	48	208	208	-	-	-	-	208	208	208		
4. Sarawak		Studio Equipment for Sarawak	-	-	172	172	172	-	-	-	-	172	172	172		
5. All States in the Peninsular, Sabah and Sarawak.		Supply of Video Cassette Recorder (VCR)[2] including Video Tape to secondary schools, VCR Dubbing Machine and Transfer Machine (slave VCR - a set of five) to state PSP Centres														
		(a) Video Cassette Recorder supply	-	-	3,808	3,808	-	-	3,808	-	-	3,808				
		(b) Video Tape (10 roll for each school)	-	-	1,428	1,428	-	-	1,428	-	-	1,428				
		(c) VCR Dubbing Machine	-	-	156	156	-	-	156	-	-	156	5,639	5,639		
		(d) Transfer Machine(slave VCR - a set of five)	-	-	247	247	-	-	247	-	-	247				
6. Sabah		TV Equipment for Colour Studio in Sabah[3]	-	-	525	525	-	-	525	-	-	525	525	525		
													58,146	58,146		
B. Continuity Project																
1. Kuala Lumpur		Equipment for AVA, ER, ETV Headquarters(for Peninsular Malaysia)	-	-	1,500	1,500	1,500	-	-	-	-	1,500	1,500	1,500		
2. Sarawak		Radio Studio Construction in Sarawak	-	200[4]	-	200	100	100	-	-	-	200	200	200		
3. Sabah		Radio Complex Construction in Kota Kinabalu	-	-	-	3,000[5]	2,000	1,000	-	-	-	3,000	3,000	3,000		
4. Sabah		Equipment for Sabah ETV	-	-	650	650[6]	350	300	-	-	-	650	650	650		
5. Sarawak		Workshop for Sarawak PSP	-	-	450	450	250	200	-	-	-	450	450	450		
													5,800	5,800		

Note:
1. Including service building for agencies such as MEB, City Hall and Telecoms.
2. This supply will be reviewed during the Mid Term Review of the Fourth Malaysia Plan.
3. This project will be looked into in more detail and will be included in Mid Term Review of the Fourth Malaysia Plan.
4. Application has been made for an additional allocation of $100,000/- as the present allocation is insufficient.
5. Original allocation of $1,000,000/- was for building radio studio, $70,400/- for furniture and $300,000/- for studio equipment. It is envisaged that even the additional request will not be sufficient.
6. This sum was based on the current price estimate of the equipment.

LAF/SZ.
3.6.1980.

COST ESTIMATES AND MANPOWER NEEDS

APPENDIX B (i)

Department: Educational Media Service Division

Project No:.....

Development: P 29

Details :.....

	Year ($000)						Development Cost Analysis($000)			
	1980	1981	1982	1983	1984	1985	Total 1981 - 85	Local	Foreign Exchange	
									Indirect	Direct
Development Cost -										
Construction	47	4,160	4,000	4,000	4,000	7,364	23,524	23,524		
Equipment and Machinery	1,814	948	1,318	6,164	9,518	10,580	28,528	28,528		
Investment	-	-	-	-	-	-	-	-		
Land Acquisition	($10)	6,094	-	-	-	-	6,094	6,094		
Other Development Expenditure	-	-	-	-	-	-	-	-		
TOTAL DEVELOPMENT COST	1,861	11,202	5,318	10,164	13,518	17,544	58,146	58,146		
Recurring Cost -										
Salaries and Wages	3,155	3,633.24	4,238.78	4,844.32	5,449.86	6,055.40	24,221.60	24,221.60		
Travelling and Transportation of Personnel	100	168	196	224	252	280	1,120	1,120		
Public Amenities(Lights, water,Electricity etc)	90	108	126	144	162	180	720	720		
Rent	1,200	1,440	1,680	1,920	2,160	2,400	9,600	9,600		
Supplies and Materials	150	360	420	480	540	600	2,400	2,400		
Maintenance and Repair of things purchased	50	60	70	80	90	100	400	400		
Other Professional and Entertainment Services	300	360	420	480	540	600	2,400	2,400		
Other Recurring Expenditure	100	120	140	160	180	200	800	800		
	5,145	6,249.24	7,290.78	8,332.32	9,373.86	10,415.40	41,661.60	41,661.60		

* These estimates do not include yearly operational cost of expenditure for Sabah and Sarawak

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APPENDIX 8 (ii)

ADJUSTMENT OF PERSONNEL

Group Code	Post Code	Group Management dan Professional Group	Posts	Analysis of requirements for additional staff					Nett Increase 1975 - 80
				1981	1982	1983	1984	1985	
1	1.01	.. ..	Managers and Administrators	4	4	5	11	5	+1
	1.02	.. ..	Accountants						
	1.03	.. ..	Architects						
	1.04	.. ..	Chemists and Physicists						
	1.05	.. ..	Dental Officers						
	1.06	.. ..	Medical Doctors						
	1.07	.. ..	Civil Engineers						
	1.08	.. ..	Electrical and Electronic Engineers	0	2	4	1	4	+2
	1.09	.. ..	Mechanical Engineers						
	1.10	.. ..	Petroleum Engineers						
	1.11	.. ..	Other Engineers						
	1.12	.. ..	Town and Country Planners						
	1.13	.. ..	Surveyors						
	1.14	.. ..	Agriculture Officers						
	1.15	.. ..	Fishery Officers						
	1.16	.. ..	Forest Officers						
	1.17	.. ..	Veterinary Officers						
	1.18	.. ..	Lecturers, Assistant Lecturers and Instructors						
	1.19	.. ..	Teachers(Degree Holder)	0	1	1	2	2	-2*
	1.20	.. ..	Other Management and Professional Staff						
	2.01	.. ..	Administrative Officers	0	1	2	2	2	+1
	2.02	.. ..	Hospital Assistants						
	2.03	.. ..	Dental Nurses						
	2.04	.. ..	Dispensers						
	2.05	.. ..	Nurses						
	2.06	.. ..	Physical Science Technicians						
	2.07	.. ..	Assistant Civil Engineers						
	2.08	.. ..	Assistant Electrical Engineers	0	1	3	14	5	0
	2.09	.. ..	Assistant Mechanical						

* 10 posts allocated to 10 states in Peninsula Malaysia.

Group Code	Post Code	Group	Posts	Analysis of requirements for additional staff					Nett Increase
				1981	1982	1983	1984	1985	1975 - 85
		Management and Professional Group							
	2.10	.. ..	Engineers Other Asst.Engineers/ Architects						
	2.11	.. ..	Assistant Town and Country Planners						
	2.12	.. ..	Agriculture Assistants						
	2.13	.. ..	Fishery Assistant						
	2.14	.. ..	Forest Assistants						
	2.15	.. ..	Veterinary Assistants						
	2.16	.. ..	Secondary School Teachers(Diploma Holder)						
	2.17	.. ..	Primary School Teachers	3	5	20	15	13	+31
	2.18	.. ..	Vocational Training Instructors						
	3.01	.. ..	Junior Agriculture Assistants						
	3.02	.. ..	Field Assistants						
	3.03	.. ..	Other Agricultural Operations						
	3.04	.. ..	Electrical Technicians	1	4	40	35	18	+ 15
	3.06	.. ..	Mechanical Technicians						
	3.07	.. ..	Technicians (others)	-	-	5	5	5	0
	3.08	.. ..	Stenographers	0	0	1	0	1	+ 1
	3.09	.. ..	Typists	2	0	4	3	3	+ 1
	3.11	.. ..	Other clerical and Technical Staff	6	6	8	12	11	- 1 *
		Junior Staff and Labourers Group							
	4.01	.. ..	Skilled and Semi Skilled	2	2	15	20	16	- 27
	4.02	.. ..	Unskilled	0	3	11	10	13	+ 5

* 16 posts of Broadcasting Assistants are cancelled.

APPENDIX V

Supply of Audio-Visual Aids to District Media Centres/State EMS/EMS Division Centres in Sabah and Sarawak

1. Background and aim

Among considerations to be undertaken as a positive step to realise the objective of EMS is to provide facilities in educational technology in every school.

To date facilities provided to schools, District Media Centres, State EMS and Divisional EMS centres in Sabah and Sarawak were:-

1.1. Hardware

(i) Supply of 5,500 TV sets and 2,500 generators for primary and secondary schools in Peninsular Malaysia in 1972 - 1974.

(ii) Supply of 2,125 TV sets and 1,662 generators to Sabah and Sarawak expected to complete before the end of 1980.

(iii) Supply of 900 radio cassettes to schools in Sabah in 1976/77.

(iv) Supply of about 5,200 radio cassette recorders to schools in Peninsular Malaysia before the end of 1980.

(v) Supply of 332 slide projectors to Media Resource Centres in Peninsular Malaysia.

(vi) 33 Video Cassette Recorders(VCR) have been purchased in 1975 and supplied to National Secondary Schools with Form 6 and Teachers' Training Colleges in Peninsular Malaysia.

(vii) The launchig of VCR pilot project in 90 schools in Peninsular Malaysia. Supply of fast audio cassette duplicator Overhead Projectors(OHP), 16mm projectors, VCRs, VCR cameras to State EMS Centres.

1.2. Software

(i) ETV Section has produced 391 primary level programmes 320 secondary level programmes and 112 programmes for teachers and general public, making a total of 823 programmes. All these are categorised under 29 series of programmes.

(ii) Educational Radio Section has produced approximately 77 programme series weekly for primary and secondary schools, and for the general public through the Blue Network(for National Schools), Red Network(for Tamil Schools) and the Green Network(for Chinese Schools). Besides, a pilot 'off-the-air' programme has also been introduced.

(iii) The AVA Section has:-

(a) Provided Educational film loan service, cassette tape recordings, filmstrips and film-slides, production of multi-media kits, educational charts and guide-books.

(b) Undertaking tape dubbing service for schools which are unable to receive the transmission satisfactorily.

(c) Design and produce media resources and guide-books.

2. Project Plan

(a) To provide the educational media sesources like:-

	Name of Project	Estimated cost($) by Ministry of Education	
(i)	Transparency makers Peninsular Malaysia(State EMS & District, Media Centres and State EMS)	$2,500 x 320	$800,000/-
	Sabah and Sarawak(State.EMS.Centres and EMS Centres in the Division)	$2,500 x 15	$ 37,500/-
(ii)	Graphic Visual Makers Peninsular Malaysia (State EMS and District/ Media Centres)	$600 x 320	$192,000/-
	Sabah and Sarawak (State EMS Centres and EMS Centres in the Divisions)	$600 x 15	$ 9,000/-
(iii)	Basic cameras and accessories with copying stand. Peninsular Malaysia(State EMS and District Media Centres)	$2,000 x 320	$640,000/-
	Sabah and Sarawak (State EMS Centres and EMS Centres in the Division)	$2,000 x 15	$30,000/-
(iv)	Overhead Projectors Peninsular Malaysia (District Media Centres)	$700 x 300	$210,000/-
	Sabah and Sarawak (EMS Centres in the Divisions)	$700 x 13	$ 9,100/-
(v)	Automatic Slide Projectors (with synchrocorder) Peninsular Malaysia (State EMS)	$2,500 x 11	$ 27,500/-
	Sabah and Sarawak (EMS Centres in the Divisions)	$2,500 x 13	$ 32,500/-
(vi)	16mm Projectors (Perlis and Malacca)	$3,500 x 2	$7,000
(vii)	Generators for EMS Centres in the Divisions in Sabah and Sarawak (1000 - 1500 watts)	$1,600 x 32	$51,200
		Total	$2,045,800.00

(b) This Project needs to be implemented beginning 1981.

(c) This Project is to supply the paid centres with media hardware equipment.

(d) The Project is to be undertaken by existing agencies - newly appointed or temporary agencies are not necessary.

(e) The Project is to supply equipment to complement facilities for involvement in educational technology activities/ programmes in schools.

3. Probabilities

Physical conditions have been determined. Lowest cost could be obtained from lowest tender.

4. Financial and Manpower Needs.

Estimates as per Appendix (8)(1).

5. Justifications and Project Benefits

In accordance with the Cabinet Committee Report which recommends provision of additional media resources to enhance effective teaching and learning, it is felt that to do so for every school would be too costly. Therefore the following lines of approach are suggested:-

Basic Equipment Resources for Schools

(a) Radio cassette recorders, TV sets and generators, if necessary, for all schools.

(b) Video Cassette Recorders already supplied to schools should form as a basis for supply of the equipment to new schools.

Initially the EMS Division has established 300 District/Media Centres in Peninsular Malaysia, each to provide facilities and usage of media materials to 15 or 20 neighbouring schools. These centres will be replenished with media equipment and resources such as OHP, Transparency Makers, Graphic Visual Makers, Basic Camera and accessories with Copying Stand.

The supply of media equipment and resources to Sabah and Sarawak to be first at State Division level. Plans for the supply of these resources to District Centres in Sabah and Sarawak will be considered under the Mid-Term Review of 4th Malaysia Plan.

State EMS Centres in the Division will be furnished with generators(1,000 - 1,500 watts) to supply power for 16mm., slide and filmstrip projectors, OHP and cassette recorders. This is because the existing generators are capable of operating TV and radio sets only. With the supply of these generators, it is hoped that schools with electricity supply will have equal opportunity of providing better teaching learning situation.

The rationale behind the setting-up of these centres is the very high cost of media equipment. Therefore the cost to supply the schools with these equipment will be correspondingly high. Through District Media Centres, more schools will utilise the equipment to the optimum. As a result teachers will gain more experience. Should there be need to extend the service vis - a - vis supply of media equipment to all schools, plans will be considered under the 5th Malaysia Plan.

The functions of District Media Centres in Peninsular Malaysia and the EMS Centres in the Divisions in Sabah and Sarawak are amongst others, will be to encourage schools to design and produce low-cost and local-based materials on 'collective and cooperative' effort in order to improve teaching and learning.

6. Project Implementation

Implementation of the project to supply media equipment and materials to District/Media Centres/State EMS Centres/EMS Centres in the Division in Sabah and Sarawak will be undertaken by the Account and Supply Division of the Ministry of Education.

APPENDIX 'E'

Project: To air-condition the stores at State EMS and EMS Divisions in Sabah.

I. Background and Objectives

The State EMS Centres have been already equipped with the educational media hardware such as Video Cassette Recorders(VCR) VCR Cameras, Film Projectors Slide and filmstrip projectors, OHP and other support teaching materials i.e. 16mm films, video cassettes, film slides and film strips Multi Media resources and others.

At the moment, those valuable and delicate equipment and materials are being stored in any corner deamed suitable for the purpose in the State Education Departments. This condition is far from being satisfactory for reasons that these equipment and materials must be kept under constant temperature and dust-free room condition. Therefore, it is proposed that a fully air-conditioned store be built at each State Education Department.

II. Project Plan

(a) To build fully air-conditioned stores at all EMS Centres in Peninsular Malaysia and at all Division Centres in Sabah.

EMS Peninsular Malaysia - 11
EMS Division in Sabah - 5

(b) It is necessary to start this project from 1982.

(c) This project is meant to provide, maintain and operate educational media equipment.

(d) This project is to be undertaken through Public Works Department (JKR) and existing agencies - There is no necessity for temporary or new agencies.

(e) This project is to provide a space for store and its paraphernalia.

III. Probabilities

Physical probabilities have been determined. These stores will be sited as the State EMS Centres in Peninsular Malaysia and EMS Centres in the Divisions in Sabah.

IV. Financial and Manpower Needs

Following allocations all sought:-

(i) 16 Stores @ $10,000.00 each x 16 = $160,000.00

(ii) 32 units air-conditioning @ $1,500 x 32 (2 units to each room) = $ 48,000.00

Total - $208,000.00

V. Justifications and Project Benefits

Educational Media Service has expended. Various media equipment and materials have been supplied to State EMS Centres. These include cameras, film projectors, video recorders, Overhead Projectors, photographic equipment, cassette recorders,slide projectors and film strip projectors. Needless to say they are expensive and are damaged by and not resistant to temperature and dust and at the moment, there is no provision made for storage and maintenance of such equipment and materials. These expensive equipment are stored and placed in places where they are deemed suitable. Thus, under such conditions, the media equipment supplied would be easily damaged, and from the security point of view it is not satisfactory.

It is therefore important to provide a fully air-conditioned store at the State EMS Centres, in order to provide facilities for proper storage, utilisation, maintenance and operation of these expensive equipment and materials. Provision of air-conditioned store would avoid damages, ensured security and increase the life performance of the said equipment and materials.

VI. Project implementation

Implementation of the project will be undertaken by the Development and Supply Division, Ministry of Education and by related local agencies.

Note

There is no provision made for such stores at EMS Offices in the Division in Sarawak. Proposals have already been made for the setting-up of EMS workshops in Sarawak under the Mid-Term Review of the 3rd Malaysia Plan.

MY/sz.

Appendix "F"

The Supply of Studio Equipment Project for Sarawak.

I. Background and Objectives.

EMS Seksyen Sarawak has ETV Unit, Educational Radio Unit and AVA Unit. This Seksyen uses 16 mm film for local ETV programmes, records 55 educational radio programme series, and broadcast the programmes through two RTM networks i.e. Red network and Blue Network. This seksyen also organises/carries out AVA activities. Televisyen sets and radio cassette recorders have been supplied to all schools and projectors have been distributed to all Divisional centres.

Equipment consisting of (a) Film Editing Machine, (b) radio studio equipment (audio mixer, turutable, recorder reproducer, monitor speaker, microphones) and (c) other equipment (fast duplicator - open reel to open reel and open reel to cassette and turntable) are some of the additional equipment requested for the purpose improving the broadeast service undertaken by EMS Seksyen for the benefits of schools, especially those in the rural areas.

II. Project Plan

These equipment estimated at $172.000/- would be housed in radio studio building, EMS sektion, Kuching. The purchase would be made through Supply Unit, Development and Supply Division, Ministry of Education.

The equipment requested are additional to those already approved under Building of Educational Radio Studio Project, Sarawak (with complete equipment) which has been allocated for $200,000/- under third Malaysia Plan. Additional allocation of $100,000/- has already been asked for this project.

The supply of these equipment is planned for 1981.

III. Probabilities.

The estimate asked is based on the current costs of equipment.

IV. Financial and Manpower Needs.

The estimated costs to purchase these equipment amount to $172,000/- and there is no additional need for manpower for this project.

V. Justification and Project Benefits.

Allocation for additional studio equipment for Educational Radio Unit, EMS Section is needed because when EMS Section, Sarawak is given the place and own studio at RTM Complex the existing studio is not enough to undertake dubbing and editing work. With these additional equipment, EMS Sarawak would be able to give more effective service when producing radio programmes, including local ones broadcast in local dialects.

...2/.

Film Editing Machine is necessary for editing 16mm films used for ETV programmes produced by Sabah EMS Section, Kota Kinabalu. Fast Duplicator is equally needed for dubbing radio programmes needed by schools in the interior, which are situated in pocket areas where signals are weak for good reception.

All these equipment are necessary to assist rural schools in utilising Educational Radio and ETV programmes more effectively. This is related to recommendation No. 115 of Cabinet Committee Report on the Study of Impelementation of Education Policy.

VI. Project Implementation.

This project is undertaken EMS Division, Ministry of Education, with the help of Development and supply Division, Ministry of Education.

Appendix G

Supply of Video Cassette Recorders (VCR) to schools Project.

I. Background and Objectives.

Since the launching of Educational Televisyen service in 1972, concerted efforts have made to produce programmes for Secondary and Primary schools, while at the same time producing programmes for teachers and the general public. The main objective of ETV programmes is to assist in improving further the quality of education and learning especially in schools in the rural areas. In this respect, the utilisation of ETV programmes become more widespread since all schools in Peninsular Malaysia, and most schools in Sabah and Sarawak have already been supplied with Televisyen sets and also generators (when necessary). However it is a fact that there are problems which hinder and limit the extensive and intensive utilisation of ETV programmes. These problems are universal. Some of the problems faced are as follows:-

a) Problems of adjusting school time-table to broadcast time-table of ETV programmes. This problem is clearly evident in big schools which only have one Televisyen set each.

b) Problems of broadcasting certain programme(s) to suitable to the time needed by a teacher as scheduled in his teaching scheme.

c) Problems relating to the difficulties faced by teachers in determining certain programme(s) before deciding how and when the programme(s) could be included in his teaching scheme.

d) Problems of inablity to refer to certain segments in the programme(s) which are difficult for children to understand while following the broadcast. Pupils might pose questions in order to seek further explanation or clarification to those segments.

e) Problems of schools in pocket areas which are unable to receive broadcast signals satisfactorily because of physical conditions.

VCR Project is a new venture undertaken during Fourth Malaysia Plan. To date, this project is at pioneer stage in schools. Evaluation of this project is currently being done and will continue until the middle of 1981. It is hereby noted that the objective of this pioneer project is to find out information on two different aspects in the use of VCR i.e. the effectiveness and influence of VCR in teaching-learning situation and the reliability/ability of the electro-mechanical system of the VCR. In implementing this project, 30 schools in Selangor, including 20 schools have been chosen. Apart from this, 6 schools from each state in Peninsular Malaysia have been selected for participating in VCR off Air Project. This VCR off air project is part of VCR Pioneer Project.

To date, there are some schools especially Secondary schools which are unable to follow ETV brodcast programmes. The reasons have already been mentioned above. It is undeniable that similar problems also exist in Primary Schools. However, secondary schools face more acute problems in adjusting their school time-table to broadcast time-table. For Primary Schools, these problems are not as evident or acute because most teachers in each class teach almost all subjects and adjustments could be made.

With the supply of VCR machines to Secondary Schools, the utilisation of ETV programmes could be planned properly. Thus, this would enable schools to determine the need and frequency of its use according to the varied abilities of children. Its intensive utilisation

would further increase/enhance children's interests in education, since this machine would provide them as one important source of reference which are beneficial to them. It is suggested that every state would be supplied with VCR duplicator.

With the scheme of providing each state with VCR Duplicator, the dubbing of ETV programmes would produce multiplying effects in hastening the distribution of programmes to schools. This would doubly increase the schools' effort in optimising the use media technology. With the dubbing system facilities in each state, problems of utilising ETV programmes in schools, especially in areas of weak signals, could be overcome.

VCR Supply Project to secondary schools, including the dubbing sistem at state level, is proposed because, based on preliminary investigations (findings) from VCR pioneer project which are currently being carried out in schools, it is found that some problems as stated in paragraph (a) above could be overcome.

With regards to inputs needed from other agencies, it is hereby noted that the Teachers' Training Division, Ministry of Education would include in their Teacher Training Scheme courses which are related to media technology. Teachers would in future employ VCR machine when using ETV programmes in teaching their teaching practices in schools.

II. Project Plan.

a) VCR machines would be placed in all Secondary Schools in the country, including Sabah and Sarawak, the latest by 1983.

b) This project is planned for long-term implementation.

c) VCR Project is meant to assist schools to further intensify the utilisation of ETV programmes in order to achieve meaningful and effective level of teaching and learning.

d) This project would be jointly implemented by EMS Headquarters and all State Education Offices. This project is undertaken by the existing agencies i.e. EMS Headquarters and State Education offices. In order to ascertain the success of the implementation of this project, one technician would be posted to every state in order to operate and maintain equipment and dubbing system. It is planned that this staff be recruited on or before 1983 and discharge his duties actively in 1983. The service of temporary agency is not needed.

III. Probabilities.

a) In this project, VCR machines would be supplied to Secondary Schools. Cassette dubbing system would be established at State Centres and schools would be given cassetted programmes. It is hoped that the pioneer project report to be submitted would show the cost efficiency aspect and others.

b) One study/research as pioneer project is currently being done.

IV. Financial and Manpower Needs.

Please refer to Format A attached.

V. Justification and Project Benefits.

a) This project will be beneficial and effective to pupils in Secondary Schools. This means that Secondary school pupils throughout the country would share the benefits. With VCR service, teachers could use the programme(s) any time needed, suitable to the topics taught.

b) For slow - learners and for lessons that emphasise detailed explanation, VCR could play its roles, because it provides facilities for "playback" and "pauses" when using the programme. This would enable pupils to ask or discuss with their teachers segments in the lesson(s), which are difficult to comprehend.

c) In scheming their teaching programme, teachers could include the use of VCR as supportive agent in learning so that it meets the objective of topics taught.

d) With the facilities and convenience like playback and pause, these elements would encourage and instil interests among children to discuss in order to increase their understanding.

e) This project would enable schools children in pocket areas where signals are weak to benefit from this service.

VI. Project Implementation.

a) The supply of hardware like VCR machine with video cassette tapes is the responsibility Supply and Development Division, Ministry of Education. Supervision and Implementation of this project is the responsibility of EMS Headquarters and State Education Offices.

b) This project will be implemented in 1983. By that time the results of the research of VCR pioneer project would be known.

Appendix H.

Supply of Equipment for Colour Studio Project for ETV Sabah.

1. Background.

ETV in Sabah and Sarawak was launchedon 30th. August, 1976. Since then and until the end of third Term 1976, daily broadcast hours were 4 hours i.e. from 10.30 a.m. to 12.30 p.m. The broadcast was repeated in the afternoon from 2.00 p.m. to 4.00 p.m. In 1977 the broadcast time was unchanged as in the previous year. However, the broadcast for that year started in the First and Second Terms as well. Programmes transmitted in the years 1976/1977 are Bahasa Malaysia, English Language, Mathematics Science and Civics for Standards 3, 4, 5 and Form 1. In 1978, STV underwent a big and significant change. The time for broadcasts has been increased to 3 hours in the morning i.e. from 9.00 a.m. to 12.00 noon and 3 more hours in the afternoon from 2.00 p.m. to 5.00 p.m. for 5 days in a week (Mondays to Fridays). With the increase in broadcast time, the number of programmes broadcast also increased. The additional elements were Bahasa Malaysia, English Language, Mathematics, Science and Civics for Standard 6, Forms II and III. The increase was double. Compared 1978 there was no additional elements in 1979 broadcast - wise as well as the number of hours and the number subjects transmitted. For this year 1980 - there is one addition i.e History for Standard 4. With this new addition, there is a change in broadcast schedules in order to suit the schools time - table. All programmes have been broadcast according to plans and schedules through RTM'S Channel/Network 3.

2. Programmes from Kuala Lumpur.

All programmes transmitted are programmes produced and recorded in Kuala Lumpur. Copies of those programmes are sent to Sabah for broadcast to schools in Sabah and Sarawak. No programme is produced in Sabah except Civic programmes titled "Friends from Sabah", and "Friends from Sarawak" and "Teachers' World". The reason are the absence of own studio, number constraints in ETV staff and also lack of materials and graphic artists for producing ETV programmes in Sabah and Sarawak. Furthermore it is the wishes of EMS Division in Kuala Lumpur that Sabah and Sarawak uses all programmes produced in Kuala Lumpur. The rationale is that subjects and scheme of studies are the same for Sabah, Sarawak and Peninsular Malaysia. Thus ETV Sabah and Sarawak uses all the programmes in toto. Over the years, the number of trained staff has increased, and it is felt that it is necessary to make adjustments to programmes for Bahasa Malaysia, English Language and Civics to suit the needs of local audience in schools in Sabah and Sarawak. Local pictures and films could be used as inserts in those programmes without changing script arrangement and language format as planned according scheme of teaching. Towards this own studio facilities must be provided and without own studio the same situation will prevail.

3. Local Productions.

Local productions started in 1977, when the member of staff increased. In that year, ETV Sabah started to produce one local series called "Education Here and There". This series gave coverage on activities related to education in Sabah and Sarawak. It was produced once in two months. The reason was there was no camera and RTM Studio facilities was limited. In 1978 this series was replaced by "Teachers World" series. Its contents are meant specially for teachers and teacher-trainees. The production of this series is still current and it is produced once a month. ETV section cannot increase the number produced because of limited studio facilities

allowable by RTM Sabah. Because of this constraint, its production is well scheduled and the topics for "Teachers' World" could not be included in the Daily Broadcast schedule. Each programme produced successfully would be transmitted the week after. To date, ETV Sabah has two producers, two script assistants and one graphic designer- all of them trained in their fields. However because of limited studio use available the number of programmes locally produced is limited.

4. RTM Studio Facilities.

Televisyen Malaysia Network 3 has allowed ETV Section to use its studio for recording of "Teachers' World" programmes. Since RTM Sabah has only one studio, so its use has determined. ETV could use the studio on saturdays only i.e. from 2.00 p.m. - to 5.00 p.m. The entire studio facilities including MCR, Telecine and VTR are being given for this purpose. However, the booking for studio has to be submitted in advance, even though the Saturday afternoon slot is reserved for use by ETV.

5. Problems.

Although the use of studio by ETV has been decided on Saturday afternoons, this Section frequently faces problems of completing the assignment - i.e. recording assignment - within the time-frame allowable. Some of the problems are:-

i) The time given is 3 hours only and everything has to be completed with the time specified. This is enough for rehearsal and recording of magazine programmes like Teachers World. Transfer of Film to VTR (this must be done in studio. Telecine machine is unreliable since it frequently gets into trouble during rehearsal and recording) has to be done in other days. This same applies to video editing. The production that uses the entire studio includes full set with lightings could not be done within the time specified. Local productions by ETV Sabah are only limited to magazine-type programmes.

ii) Studio booking depends on the latest change by Controller of Programmes TV (RTM) as instructed by the Director of Broadcasting. This situation usually happens when the studio is needed for last minute recording by RTM of programmes which are more important and had to be broadcast that same night. As such, priorities have to be given to RTM production and they can cancel ETV booking anytime whenever the needs arise. There were a number of occasions when ETV recordings have to be postponed to other dates. Thus, the reason why Teachers' World programmes are not scheduled in Broadcast Time-Table.

iii) Technicions and Studio Staff are not happy because they have to be on duty on Saturday afternoons and there are indications that they show less interest to work for ETV.

iv) Electrical power failure frequently happens. When such a situation arises, the recording has to be postponed to the coming week.

The points illustrated above are very pressing. Because of these problems, it is felt that ETV Sabah should be provided with a studio of its own in the EMS Building Complex which will be built soon. Because of the current technological situation, it is proposed that this studio is provided with colour recording facilities.

Appendix I.

Continuation Projects - Brief Description.

A. Peninsular Malaysia.

1. Equipment for AVA, Educational Radio ETV for Headquarters.

A total of $5,210,010/- has been allocated in the 3rd. Malaysia Plan (1976 - 1980) for (a) renovation of Building and Studios in Jalan Ampang, (b) purchasing of equipment for ETV Studio, ETV filem, ETV Graphics, Radio Studio, AVA equipment and others (c) supply of radio cassette recorders to schools in Peninsular Malaysia, and (d) taken money of (M)$10.00 for land for EMS Building Complex at Bukit Kiara Estate.

From the money provided a sum of $3,710,000/- has and is currently being spent. The balance of $1,500,010/- has been requested to be brought forward to Fourth Malaysia Plan.

Second World Bank Loan money to the total of $890,396/- is part of the total balance of $1,500,010/-. The balance of $890,396/- could not be spent on time. Thus the stated sum has been used to finance the purchase of equipment allocated for state Resource Centres Projects. However, this balance of $890,396/- is still available for EMS Division to use for the purchase of equipment needed.

It is expected that the balance totalling $1,500,010/- would be spent completely in 1981/1982.

B. Sabah and Sarawak

2. Other Projects which have to be continued.

a) Construction of Radio Studio in Kuching, Sarawak.

Originally the sum allocated for the construction Radio Studio was $200,000/-. This studio is now being built in RTM Complex, Kuching, Sarawak. It is found that the allocation of $200,000/- is insufficient.

Requests have been made for additional allocation of $100,000/-

b) Building of Educational Radio Complex in Kota Kinabalu, Sabah.

A sum total of $1,900,000/- has been allocated for the construction of Educational Radio Complex, Kota Kinabalu, Sabah and $70,400/- for furniture and $300,000/- for equipment in the two radio studios. A new sum of $3,000,000/- needed is based on tender price made. However the offer period has expored, and a new tender has to be called. It is expected the request for additional allocation will still be not enough when the new tender price for this project is made.

When the tender for the building is approved, then only would steps be taken to acquire furniture and studio equipment.

This project is expected to be completed in 1981/1982.

...2/.

c) Sabah ETV Equipment.
(Telecine Chain, Kine Recording Machine)

Both of the equipment of which the money has already been allocated for $650,000/- have not yet been purchased. The reason is the construction of Radio Complex, Kota Kinabalu is still in the proses of calling for tender.

d) Workshop for EMS Sarawak.

A sum of $600,000/- has been allocated for the construction of EMS workshops in all the seven Divisions in Sarawak. These workshops are to be used as place for maintenance of TV sets, radio and other AVA equipment. It is also meant for storing EMS equipment.

Two of the workshops have been completed; one is still in the proses of construction and the other four still have not been constructed. The reason for the delay is because it ties up with the construction of other Federal Buildings in the some area.

A balance of $450,000/- requested to be brought forward to Fourth Malaysia Plan is expected to be spent in 1981/1982.

資料１４.

研修員受入れについての要望（教育メディア局）

Training Needs for
Educational TV Staff
Ministry of Education
Malaysia

Type and Level of Training	Category of Officers.	Areas of Interest
1. TV Production (Basic)	1. ETV Producers (Directors)	(a) Production in general (i) Understanding some basic and practical concepts:- - doing simple graphics and animated graphics. - use and application of letraset in graphics. (ii) Understanding the basic mechanics of studio cameras - handling of cameras - choice of lenses/shot compositions - preparation and function of floor plans. (iii) Studio lighting - understanding the use of various lights e.g. field light, filler lights, key lights etc. (iv) Writing ETV scripts with emphasis to primary and secondary pupils. (v) Understanding and performing the task of any member of studio production crew (team) - involved in various aspects of studio work i.e. sound, vision mixing, camera, direction, camera control unit (CCU), caption changing, floor managing, etc. (vi) Understanding and practical exposure to ENG Cameras and the video editing of such tapes. Note: Useful for future development of Educational TV news coverage "Currer Affairs." Every ETV producer is invol on rotation basis to produce two Curren Affairs programme a year. There are 19 Current Affairs programmes scheduled for each year. (vii) Lectures/talks on other important areas of media application, plus some practical exposures, wherever possible. - basic editing techniques - basic filming techniques - set/props/models - budgetting procedures/techniques. - presentation techniques including techniques of interviews, dramas, forums, presentation by TV teacher, demonstrators etc. etc. - vision mixing - consideration and use of low-cost educational materials including the available local resources. (viii) Trainee producers to produce one programme each towards end of course. (ix) Short working attachment, if possible, during course.

Type and Level of Training	Category of Officers.	Areas of Interest
2. TV Production (Advance)	1. TV Producers (Directors)	This is meant for ETV Producers who have had some basic training in ETV production. (a) Various filming and animation techniques plus some lectures on designing the various techniques. To relate its purposefulness with regards to nature, type and level of target audience i.e. primary, secondary, teachers. (b) Drama directing in studio and on location. (c) Understanding the various techniques involved in auditioning for selection of presenters, TV teachers, demonstrators, casts and actors for ETV programmes for primary, secondary and teachers audience. (d) Understanding the roles and choice of music in relation to the types of programmes presented. (e) Dubbing and lip-sync techniques. An important area of professionalism because a large number of drama sequences filmed outside are affected by environmental noise or sound disturbances. (f) Use and improvisation of low-cost materials for effective ETV lessons.
3(a) Graphics and Design (Basic)	1. Graphic Designers	This is meant for new graphic designers who have not had any training in graphics and design. (a) Basic educational graphic designing - black and white as well as colour. (b) Animated graphics/graphics meant for animation work - emphasis on techniques of art work. - black-glove method. (c) Understanding the use of other types of techniques and material for ETV programmes - low-cost materials but equally effective for ETV presentation. (d) Model Making like puppetry, science models, special effects such as the simulation of 'stormy scenes' in the studio, spaceships in motion. (e) Exposures on various good modern lettering effective for ETV programme production. (f) Animated graphics. (g) Short attachment, if possible, during course. (h) Should be introduced to the basic mechanics of the Studio Camera.
(b) Graphic and Design (Advance)	2. Graphic Designers	This is meant for graphic designers who have received some basic training in graphics and design. (a) Advance level of graphics and design - exposures to various techniques useful for educational TV Production.

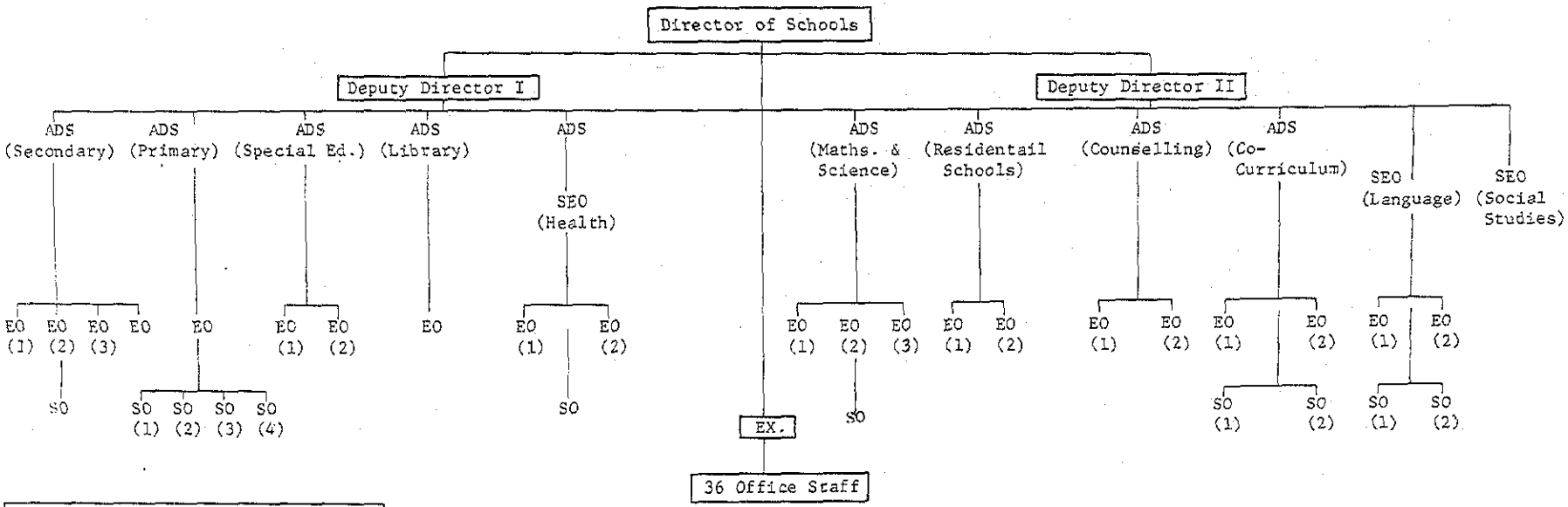
Type and Level of Training	Category of Officers.	Areas of Interest
		(b) Various animation techniques - involving art work, cut-outs and cel, cartoons, aerial photography etc. (c) Short working attachment, if possible during course.
4. Set Designing (Basic leading to Advance)	1. Set Designers 2. Graphic Designers (Special Effects)	(a) Set Designing and its purpose in STV production. (b) Techniques of set designing. (c) The economical consideration in effective set designing. (d) Set designing pertaining to Colour TV technique e.g. chroma key technique and the use of Colour Separation Overlay (C50) Blue etc. (e) Special effects. (f) Short working attachment, if possible. Note: Graphic Designer (special effects) needs a lot of exposures since the demands for special effects are more frequent in ETV programmes for purposes of effective presentation.
5. Filming Technique (Advance)	1. Film Cameramen	This is meant for film cameraman who have had basic exposures to filming techniques. (a) Various aspects of filming technique with special reference to the need for educational TV Programmes. (b) Macro-filming techniques i.e. extreme close-ups filming. (c) ENG Camera techniques i.e. understanding the use and application of ENG Cameras and Video Editing the tapes. (d) Maintenance of film equipment and accessories. (e) Time lapse photography.
6. Animation Filming (Basic leading to Intermediate)	1. Film Cameramen	ETV is widely using animation techniques in its programmes. (a) Understanding the mechanics and operation of rostrum cameras. (b) Basic filming for table-top animation, aerial image and multi-plane set-up. (c) Basic maintenance of film equipment and accessories. (d) Short working attachment, if possible. Note: It is hoped by the end of the course the participant would be able to carry out animation filming independently i.e. working purely from dope-sheets.

Type and Level of Training	Category of Officers.	Areas of Interest
7. Photography (Intermediate leading to Advance)	1. Photographer	Training for educational TV photography. (a) Processing and printing colour materials. (b) Special effects colour printing. (c) Tone separation. (d) Lighting for colour photography. (e) Macro and photomicrography. (f) Short working attachment, if possible, during the course with emphasis on laboratory work.

PENOLONG PENGARAH (TVP)
BAHAGIAN PERKEMBANGAN SEBERAN
PENDIDIKAN, KEMENTERIAN PELAJARAN,
MALAYSIA.

ORGANIZATIONAL CHART

Schools Division 1980



ADS	=	Asistant Director Schools
SEO	=	Senior Education Officer
EO	=	Education Officer
SO	=	Senior Organiser
EX.O	=	Executive Officer

The System of Organisers in the Administration of Academic and Non-academic Activities in the School System in Malaysia

Historical Background

At the turn of the century, with the British intervention in Malaya and East Malaysia and the conversion of Koranic Schools to teach secular subjects so as to receive grants of money[1]; school administration in the States and Settlements was undertaken by the Inspector of Schools, who was usually a European. Some Inspectors were literate in Malay or Chinese language. But many were not, and had to be assisted by local officers who were literate in English and Arabic, Malay or Chinese. These officers were, in the pre-war days, known as Assistant Inspector of Schools. As Tamil education prior to 1951; came under the Labour Code, there were no Assistant Inspector of Tamil Schools then, but only Assistant Inspector of Malay or Chinese Schools. It was only during the Japanese occupation of 1942 - 1945, that the Japanese Bunkyo Ka-Cho was assisted by the Malay, Chinese and Indian assistant.

After World War II and, more especially so after the beginning of the Emergency years in 1949 school administration was organized to come under the jurisdiction of the State Senior Inspector of Schools, assisted by the Assistant Inspector of Malay, Chinese and Tamil schools. Adjunct and ancilliary areas of education i.e. examinations, teacher selection and training were co-ordinated by the clerks in the State Education Departments. This organization was the system during the periods of the Education Code 1937, and the Education Ordinance of 1951.

With Independance in 1957 and subsequently the promulgation of the Education Act of 1961, the Federal Inspectorate of Schools was established and were assigned the task of "ensuring and maintaining the standards of education in schools"[2]. Meanwhile with the rapid expansion of the school curricula going beyond the teaching of the 3Rs and into such areas as

Science and Mathematics, Art and Craft, Physical Education and Sports, Industrial Arts such as Wood work, Metal work, power mechanics and Industrial drawing, Agriculture and Home Sciences, Commercial subjects i.e. short-hand and typewriting, elements of Commerce, Accounts and Book-keeping; the function of the Assistant Inspector of Schools went beyond that merely administrating vernacular schools to ensure that they conformed with the laws and regulations and to respond to instructions and communications of the State Departments[3]; to that of requiring a certain amount of expertise as the administrator was expected to ensure that the subject area was well covered as to its introduction, administration, expansion and well-being in the schools. By nature of the duties of the officer the appellalation of the officer at Ministry level was Organiser and subsequently to include Senior Organisers, and those at State levels as Assistant Organisers and subsequently to include Organisers depending on the scope and extent of the subject area.

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1. Hikayat Abdullah & White Paper on Koranic Education in Malaya.
2. Education Act 1961.
3. Education Code 1937.

Organization

By and large the chain of command would have a corresponding officer between the Ministry and the State Department. Whilst the Chief Adviser of Schools, now known as the Director General of Education; ensured the smooth running of the various departments in the ministry that were headed by Assistant Advisers now known as Directors. The smooth implementation of school programmes in the State was in the over-all charge of the Chief Education Officers, now known as State Director of Education; supervising the work of the various Organisers and Assistant Organisers, not to mention the Service or Finance, Examinations, Posting of Teachers, distribution of pupils and to a lesser extent the development and establishing of new schools and their buildings.

Expansion

With the greater participation of Malaysia in International Educational Activities, and the expansion of education areas, some of the departments in the Schools Section have expanded to the degree that they themselves have become sentions in the Ministry. These are the A.V.A. Department developing into the Mass Media Section, the Book Publication vetting department into the Book Loan Section, the vocational subjects department to the Vocational and Technical Section, the Curricula Committee to the Education Development Council, and the Evaluation Programme and Research Department maturing from a Statistical Unit into a full section under its own director. The Development of activities in schools have also seen the expansion of departments in the School Section and are now headed by Senior Officers. They are the Co-Curricula Department, the Sports Council, School Health, School Guidance & Careers, Music, Library Services, Language Development, Social Studies, Special Education (Deaf, Blind and Spastic). Whereas the Schools Section of yesteryear was divided into the three sections of Secondary, Primary and Girls education only, each under a Chief Organiser; with Girls education carrying the burden of any other activities such as music and special education.

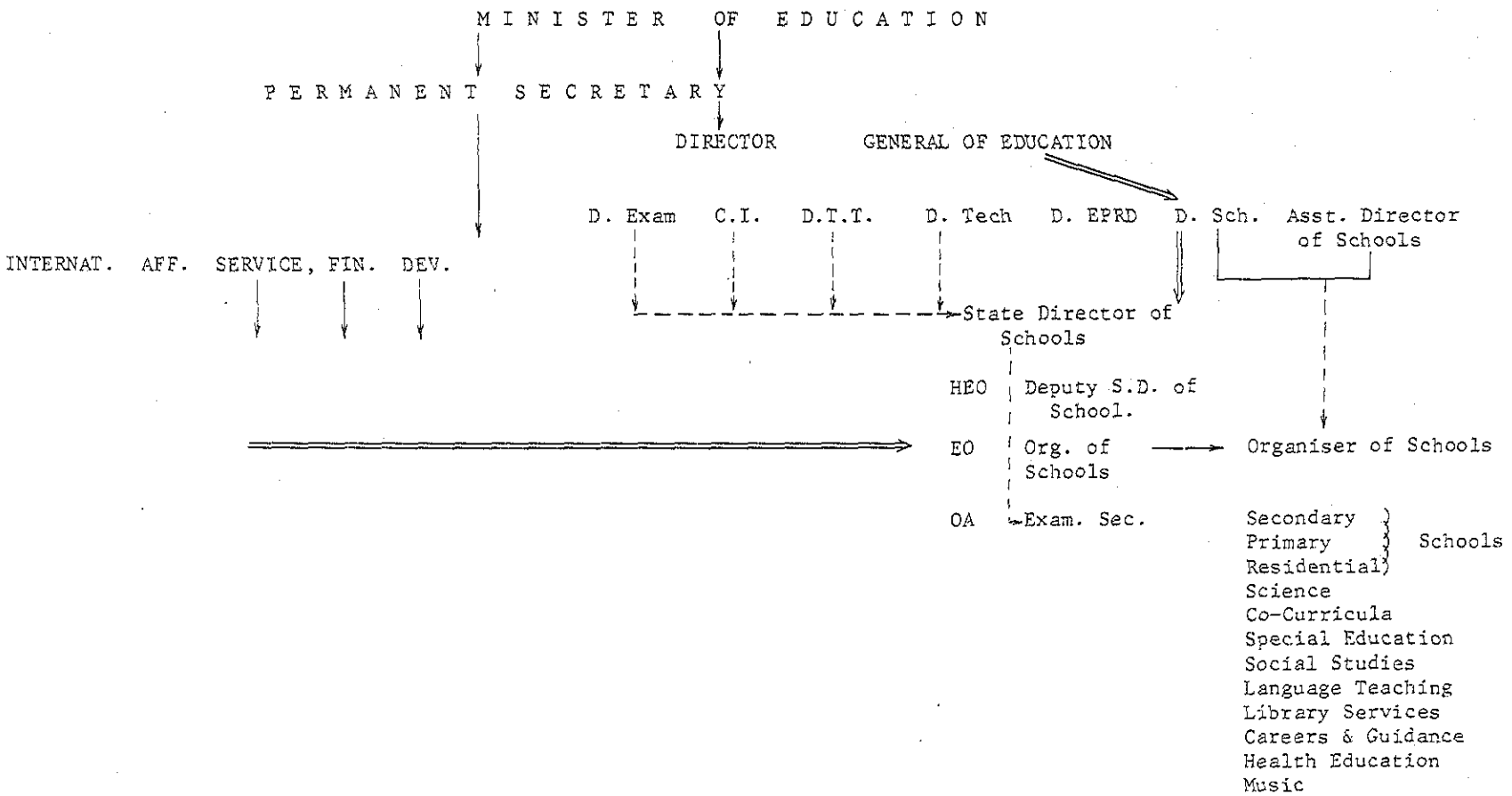
Operations

While strategies are planned at Ministry level, each State Director will have to work out his own tactics for implementation taking into consideration the physical, political and personnel problems, and conditions in each area; while each school would have to consider the background and socio-economic levels of the pupils when implementing each programme.

The present Administrative set-up would appear thus:

(See Chart attached)

ADMINISTRATIVE CHART



General

In general terms the Schools Section of the Ministry of Education may be described as the Operations Group in an Organization and that it is responsible for the strategies in the implementation of the academic and co-curricula activities in schools. To this end, the Section plans the Organization and directing of these programmes, liaise with the related Sections in the Ministry and if need be with the other Ministries or Public Bodies; Co-ordinates the Operations, feed-back information; and prepares the budget for them.

On the other hand, the State Departments, taking into consideration the variables that occur in the various States implement the programmes accordingly. If changes are necessary, the State Director of Education would have to clear with the Director of Schools before acting. The magnitude of the problem is indicated by the fact that there is a total of about 8,000 schools involved, of which more than 5,000 of them are Primary Schools. Each State presents a variety of problems and these may be listed, when analysing their distribution; as follows:

1. Communications i.e. via boats, foot-tracks.
2. Uplands or in swamps and padi-fields.
3. Extreme isolation: jungle, upstream, estate.
4. Preference due to mother-tongue, prestige or tradition.
5. Segregation, Sex, religion and the handicapped.

The directing of children on their first entry into schools, especially of their parent's choice; is a big problem in the larger towns. Being a democratic society and as the Education Act allows for the parents to indicate the language media for their children's primary education, the demand for a particular type of school can give rise to the shortage of class-rooms and teachers in these schools. This problem can be heightened if the number of that type of schools is limited, giving rise to the problem of the distance a child has to travel to reach the nearest school to the home. It is for this and many of the other attendant problems that the Organizer of Primary Schools, now known as the Assistant Director of Primary Schools, has an Assistant Organizer for each of the media schools (National, Chinese, Tamil and Former-English) to assist him. On the state

level, this problem is so great that different Assistant Organizers are given the separate portfolio of co-ordinating the entry, transfer and placement of pupils to primary and secondary schools.

In the case of Secondary Schools they may be divided into: Fully Residential Schools, schools with hostels, day-schools, and, conforming schools. The early development in Secondary Schools was the emphasis on the teaching of Mathematics and Science. This resulted in the establishment of Residential Science Schools that came under the jurisdiction of the Assistant Director of Residential Schools. Conforming Schools are former Chinese Secondary Schools that had agreed to conform with the requirements of the Education Act 1961 so as to receive Government Grants for the running of the school and the payment of the teachers' salaries. The taking-over of the Islamic religious schools has expanded the religious department in the Schools Section into a separate Religious Section in the Ministry and is now under the direction of its own Director of Religious Education. Extra-mural activities, sports and games and the development of other agencies contributing to the all-round education of a school-child has resulted in the establishment of the co-curricula department in the section. With the emphasis of these areas in the Cabinet Report of Education 1979 it is envisaged that there could be an expansion in this department.

The emphasis in each area of a child's education has given rise to the development of departments within the Section. The introduction of feeding schemes, Applied Nutrition Projects, Mental Health and Drug abuse problems saw the establishment of the School Health Department, the activities of which previously came under the wing of the Chief Organizer Girls Education and now under the over-all charge of Deputy Director of Schools (I). With the expansion of mental-health education and the introduction of school guidance and career information, coupled with the need to combat the abuse in the use of drugs in schools, the Careers and Guidance Department was established and is now headed by its own Assistant Director of Schools. Thus leaving the remaining areas of special education i.e. deaf and dumb, blind and spastic to be handled by the original department.

The need for separate Departments to handle Library Services, Music, Language development and Social Studies (as opposed to Science studies) have been established and the 1981 budget has shown that the activities in

these departments have reached the stage where the department has to be headed by an Assistant Director, indicates the extent and importance of these areas in the field of education of today in Malaysia. The need to give specialised to the officers administrating the work in the various department, and the search for suitably qualified personnel to head each of the departments in a clear indication that the educated child that is needed in a developing nation like Malaysia is one that goes beyond that of a literate one at primary level, and the secondary one of being knowledgeable in Maths, Science and general knowledge or skilled in artisan trades and technology, but that he should also be one who is resilient to the viscissitutes of modern-day life, sensitive to the aesthetic beauty of his environment, in sympathy to the sufferings of his fellow-beings, and is also able to enjoy developing his manual dexterity and physical prowess for the glory of sports and the service of mankind.

MALAYSIAN TEACHERS' COLLEGES

資料16.

COLLEGE	TOWN	STATE
1. Malayan Teachers' College	Penang	Pulau Pinang
2. Sri Pinang Teachers' College	Penang	Pulau Pinang
3. Sultan Abdul Halim Teachers' College	Sg. Patani	Kedah
4. Kinta Teachers' College	Ipoh	Perak
5. Ipoh Teachers' College	Ipoh	Perak
6. Sultan Idris Training College	Tanjong Malim	Perak
7. Language Institute	Kuala Lumpur	Kuala Lumpur
8. Seri Kota Teachers' College	Kuala Lumpur	Kuala Lumpur
9. Specialist Teachers' Training Institute	Kuala Lumpur	Kuala Lumpur
10. Technical Teachers' College	Kuala Lumpur	Kuala Lumpur
11. Lembah Pantai Teachers' College	Kuala Lumpur	Kuala Lumpur
12. Islamic Teachers' College	Petaling Jaya	Selangor
13. Raja Melewar Teachers' College	Seremban	N.Sembilan
14. Malay Women Teachers' College	Melaka	Melaka
15. Temenggong Ibrahim Teachers' College	Johor Bahru	Johor
16. Mohd. Khalid Teachers' College	Johor Bahru	Johor
17. Kuantan Teachers' College	Kuantan	Pahang
18. Health and Nutrition Teachers' College	K. Trengganu	Trengganu
19. Kota Bharu Teachers' College	Kota Bharu	Kelantan
20. Batu Lintang Teachers' College	Kuching	Sarawak
21. Rajang Teachers' College	Binatang	Sarawak
22. Sibu Teachers' College	Sibu	Sarawak
23. Gaya Teachers' College	Kota Kinabalu	Sabah
24. Sandakan Teachers' College	Sandakan	Sabah
25. Kent Teachers' College	Tuaran	Sabah

Teacher Training Division,
Ministry of Education,
Malaysia.

April 1980.

資料17.

TEACHER TRAINING IN MALAYSIA

1. Introduction

1.1 Teacher education in Malaysia is organised at two levels.

(a) Diploma in Education - This course, available in the universities, could either be taken concurrently with an undergraduate degree or consecutively for a period of one year after completing the degree. Teachers thus trained, known as graduate teachers, are normally assigned to teach in upper secondary classes.

(b) Certificate on Education - This is a two-year training programme organised by the Teacher Training Division of the Ministry of Education through its 25 training colleges of which 19 are in Peninsular Malaysia, 3 in Sabah and 3 in Sarawak. Teachers graduating from these colleges are usually placed in the primary schools or in the lower forms of the secondary schools.

1.2 As the majority of the teachers are trained through the college system the report will focus mainly on this type of training.

2. Administration of Teacher Training

2.1 The Teacher Training Division is headed by a Director who is assisted by two Deputy Directors and six assistant directors. Each assistant director is responsible for one of the following units in the division:

(a) Planning and Development

(b) Curriculum Development and Evaluation

(c) In-Service Courses

(d) Student Intake and Welfare

(e) Examinations and Certification

(f) Administration and Coordination

2.2 Duties and Responsibilities of the Division:

(a) To advise and represent the Ministry of Education in all matters related to teacher training;

(b) To give advise and guidance to all teacher-training institutions in the implementation of the Ministry's policy;

(c) To organise basic teacher-training as well as in service courses;

(d) To set up and coordinate panels of examiners for the assessment of the trainees, and for their certification.

(e) To select candidates for training through a selection system with the co-operation of the Teachers' Service Commission.

3. Training Programmes

3.1 The objectives of teacher training programmes may be stated as follows:-

(a) To produce trained teachers of high calibre in sufficient numbers to meet the requirements of all types of schools within the educational system - primary, secondary, vocational and technical.

(b) To produce teachers who are highly motivated;

(i) to become active agents in efforts to build a united Malaysian nation dedicated to a democratic way of life;

(ii) to inculcate in their pupils the spirit of Rukunegara (National Ideology);

(iii) to respond to the challenge of meeting the country's manpower needs through the development of human potential among the youths of the country.

(iv) to encourage aesthetic, moral, physical and spiritual development necessary for living a full and meaningful life.

3.2 Two types of training programmes are organised by the Teacher Training Division:-

(a) Pre-Service Training

(b) In-Service Training

3.3 Pre-Service Training

(a) The two-year basic course: This is an Integrated Teacher Training Programme aimed at preparing teachers to teach from primary grades right up to lower secondary level. The two-year programme is divided into two parts. In the first year, students follow a common curriculum to prepare them to teach Standard Four (Grade Four) to Form One (Grade Seven). In the second year, students are channelled into one of two streams - One specialises in the teaching of lower primary classes - Standards one to Three, while the other specialises in handling the lower secondary classes - Forms One to Three. Stream 'A' students are trained to teach all subjects in the primary school curriculum. Stream 'B' students, on the other hand, are given the choice of concentrating one one or two special subjects.

(b) The three-year basic course in trade subjects: This is a three year programme offered to selected students at the Teachnical Techers' Training College. The professional aspects of teacher preparation are the same as in the Integrated Programme but students for this course have to specialise in one of the following areas:-

(i) Electrical Installation and Maintenance

(ii) Machine Shop Practice

(iii) Refrigeration and Air-Conditioning

(iv) Motor Mechnics

(v) Building Construction

(vi) Radio/Television and Electronics

(vii) Welding and Sheetmetal

(c) The Special one-year course in Commerce: This is a special one-year course in commerce also available at the Technical Teachers' College, designed for graduates from the "Politeknik Ungku Omar" who have made the grade in their commercial studies.

3.4 In-Service Training

(a) In-Service Course for Temporary Teachers

At the moment approximately 6,500 temporary teachers are undergoing professional training at various centres in the country. These courses are run during college vacations using college facilities. This form of training, introduced in 1967 is expected to come to an end by 1981.

(b) One year Supplementary Courses for Trained Teachers

Trained teachers with a minimum of five years teaching experience may apply to attend the above courses organised by the Teacher Training Division either at the Specialist Teachers' Training Institute in Kuala Lumpur or the Temenggong Teachers' College in Johor Bahru. Every year between 25 to 30 teachers are selected to attend any one of the following courses:-

At the Specialist Teachers' Training Institute:

(i) Health and Physical Education

(ii) Art and Craft

(iii) Music

(iv) Library Science

(v) Audio-Visual Education

(vi) Remedial Education

(vii) Education for the Blind

(viii) Education for the Deaf

(ix) Guidance and Counselling

at the Temenggong Teachers' College

(x) Home Science

(xi) Agricultural Science

Many of the above courses are those not normally offered at any of the local universities. On completion of the course, candidates are awarded certificates. These courses are now under review by the Ministry of Education.

(c) Three-Month Language Course

This is a methodology course conducted for teachers teaching Malay (Bahasa Malaysia) and English in schools and is run at the Language Institute, Kuala Lumpur. The aim is to update the teachers' knowledge and increase their competence besides acquainting them with the latest techniques in language teaching. Such courses have just been reorganised and extended to six months from 1980.

(d) Three-Month Course on Health and Nutrition Education

This Course is offered to about 90 trained teachers at a time at the Teachers' College in Trengganu.

3.5 Besides the above, other Divisions of the Ministry of Education - the Curriculum Development Centre, the Schools Division, the Education Media Service Division, the Examinations Syndicate etc., - also conduct courses of various types and duration covering not only the whole spectrum of the school curriculum but also such areas as administration, supervision, evaluation and so forth.

Teacher educators/lecturers at the teacher training colleges are recruited from those teachers, graduates or non graduates, who besides having had considerable experience have performed outstandingly in and outside the classrooms.

Requests for financing such courses are channelled through

the Teacher Training Division which acts as the Secretariat for the whole Ministry of Education in the administration of these in-service courses.

4. Teaching Staff in Teachers' Colleges

4.1 In the early sixties the majority of the training college lecturers were non graduates. In the last few years a great number of graduates have joined the colleges and they now form the majority of the teaching staff.

4.2 Staff Training Programme: Various programmes are carried out by the Teacher Training Division aimed at improving, enriching and updating the knowledge, competencies and qualifications of its lecturers.

These include:-

(a) Seminars and workshops on specific areas of the teacher-education curriculum held locally with assistance from local universities, other Divisions of the Ministry of Education and related government agencies;

(b) Short-term courses ranging from one to two weeks held locally with assistance from educationists drawn from local or British universities;

(c) Three-month courses on specific subject areas held at SEAMEO Centres like RECSAM, RELC & INNOTECH;

(d) Sandwich courses on Education, Linguistics and Educational Tech,ology held with the help of the Universiti Sains Malaysia. Such courses last between two to three months;

(e) One to two years advanced professional studies at post-graduate level mainly in the United Kingdom and the United States for selected teacher-educators under the Ministry of Education Staff Training Programme. There is also a possibility of pursuing these studies in other countries particularly Australia and New Zealand.

5. Some Recent Developments in Malaysian Teacher Education

5.1 Instructional Strategies

(a) Modular Instruction: The Teacher Training Division is currently engaged in the development of modular instructional materials as a means of improving instructional strategies as well as optimising students' own learning experiences in the colleges. The aim is to introduce the modular concept of learning utilising self-contained instructional packages involving multi-media approaches.

For a start only printed materials will be produced covering four subject areas: educational philosophy, sociology, psychology and classroom management. Twelve education lecturers from six colleges, who were identified as potential module writers, started work some time in early 1979 and have since produced about six modules for try-out in their respective colleges. From this group, three have been sent to the United States to attend a two-month preliminary course on module writing.

From this initial start, it is hoped to extend this activity to other subject areas of the teacher education curriculum.

(b) Resource-based learning: In line with the new thinking that students' active learning is to be preferred rather than passive participation in lecturers, the colleges are now introducing the concept of resource-based learning. Under current development plans each college will eventually be equipped with the latest audio-visual equipment, language laboratories and microteaching facilities. It is hoped that these facilities, together with existing libraries in colleges, can lead to the establishment of learning resource centres that can encourage active and meaningful teaching/learning activities among lecturers and students. A number of seminars and courses have been held in order to update lecturers' knowledge in the media field

and to familiarise them with various aspects of media utilisation.

In addition to the above, the Teacher Training Division have also finalised plans with the Educational Media Service Division of the Ministry to produce a series of educational television programmes specifically for students in teachers' colleges.

(c) Microteaching: Microteaching techniques have been found to be effective and are increasingly being tried out in the colleges in preparing student-teachers for practical teaching.

5.2 New Curriculum Components

(a) Music, Islamic Religious Knowledge and Moral Education in Pre-service Training.

Up to 1978, Music was only an option subject for lower secondary level training. Beginning with the 1979 intake, however, a similar option was also started for the primary group. It is realised now that music can play a wider role in the context of the primary school curriculum. Besides giving opportunity for aesthetic expression, the subject also gives scope for the achievement of national and cultural unity as well as the acquisition of language skills. The introduction of this option is also seen as an effort to overcome the acute shortage of music teachers at the primary level, especially in the rural areas.

The government feels that a good grounding in religious knowledge is essential for producing good citizens and has made the teaching of Islamic Religious Knowledge compulsory in schools for all Muslim pupils. As a result of this, a separate teachers' college was set up in 1977 for training teachers specialising in this area, for the primary as well as the lower secondary level.

At the college, it was also felt that Muslim students undergoing training be exposed to a course in Islamic Religious

Knowledge and Non-muslims to Moral Education. This component was introduced in 1978 and all colleges are now provided with lecturers qualified in Islamic Religious Knowledge. Prior to this, the teaching of the subject was done only by part-time lecturers.

(b) Co-curricular activities: The pre-service training programme continues to place emphasis on co-curricular activities and community service. Student teachers are required to choose and participants actively in one sport and game, one club or society, and one uniformed movement so that they may acquire the necessary competencies to assist with the organisation and running of such activities in schools. Since the implementation of this programme, the Teacher Training Division has worked closely with the National Associations of Scouts and Guides, the Red Crescent and St. John's Ambulance to hold leadership training courses and seminars for the benefit of lecturers who are involved with such activities in their colleges. Funds are also provided to enable colleges to bring in coaches and instructors from outside to conduct clinics and training programme for student teachers.

(c) Leadership Training: Leadership training for students is a recent innovation undertaken with the cooperation of the Ministry of Culture, Youth and Sports. Under this scheme, student leaders undergo an intensive two-week training programme at the National Youth Training Centre at Kuala Kubu Bharu. On their return to their respective colleges they play the role of key personnel and conduct similar training courses for other student teachers. The training programme emphasises physical development as well as the acquisition of organisational and managerial skills to cope with stress and emergency situations. Courses held so far have proved to be very successful and it has been decided to make this programme an on-going activity.

(d) New areas in In-service Courses: The one-year supplementary courses at the Specialist Teachers' Training Institute and the

Temenggong Ibrahim Teachers' College continue to be popular among teachers. Recent educational developments in the country have resulted in the introduction of new courses. One example is the supplementary course on Remedial Education which was started in 1979 as a result of an awareness for the need to equalise learning opportunities among the socio-economically disdavantaged pupils especially in the rural areas. The course equips teachers with special skills to takle the slow learners in the 3Rs. Another recently-introduced course is on Agricultural Science which complements the Mobile In-service Agricultural Science Programme which was started some time ago at the Temenggong Ibrahim Teachers' College. In addition some 20 teachers will form the first group this year to attend the course on Educational Guidance and Counselling.

5.3 Teaching Practice

The system for teaching practice has undergone a major change since the introduction of the Integrated Teacher Training Programme. Under the new system, student teachers will do a three-week orientation programme in their first year of training and a full term teaching practice (about 14 weeks) in the final segment of their second year. This final teaching practice is held immediately after the final written examinations and students will be posted according to vacancies existing in schools throughout the country. This means that they will continue to serve in their respective schools as qualified teachers after their teaching practice is over.

5.4 Staff Training Programme

Establishment of the Malaysian Education Service Training Institute (MESTI)

The Ministry of Education in 1979 established a Staff Training Institute which aims at improving the quality of education and increasing the effectiveness of educational operations and

management.

MESTI is concerned with the training needs in the development of human resources for educational management and leadership as inputs and improved competencies among educational planners and implementers as outputs. As such, the training needs among teacher educators for improved competencies in organising teacher education programmes shall be part of MESTI's objectives.

Basically, MESTI would have two types of courses: the in-service component and the professional (six-month advance management) component. The in-service component would have 240 trainees at each session, while the professional component 160 trainees. It is expected that, when the institute is fully operational by 1984, some 400 participants would be taking different types of courses there at each session.

5.5 The Three-Year Teacher Training Programme

A National Seminar was held recently to evaluate the existing teacher education curriculum and to give an opportunity for teacher educators to exchange their experiences, to discuss common problems and to find solutions to them. The major findings of this Seminar may be summarised as follows:

- the period of basic teacher training be extended to three years;
- the curriculum be reorganised and revamped to provide trainees with more time for self-study;
- opportunity be created for more time for self-development;
- teaching practice be reorganised to make it more effective;
- the co-curricular component be reexamined to achieve optimum results.

The recommendation that the period of training be extended to three years was favourably received by educators and planners

alike. A high-level Cabinet Committee which was appointed to examine the whole educational system of the country alsorrecommended that basic teacher-training be extended to thred years. It is found that the present two-year period of training could be further improved to produce the right calibre of teachers to meet the demands of a fast developing country. Further the knowledge explosion and the increasing demands of new curriculum components in the training programme have resulted in a very overloaded curriculum. Teacher educators generally feel that the present two-year training period makes heavy demands on atudent teachers and gives them very little time for self-study, recapitulation and consolidation of what they learn from their lecturers. The lengthening of the training period to three years is to allow for more consolidation of the teacher education programme which is necessary for the development of an 'all round' teacher so that he can become an agent of change in the true sense of the word rather than a mere instructor or a giver of knowledge.

The Teacher Training Division is now in the process of formulating strategies for the implementation of the three year programme which it hopes to introduce in 1981.

Teacher Training Division
Ministry of Education,
Wisma Mirama
Kuala Lumpur.

Scope and Sequence Interrelating Fisheries

CONTENT/TOPIC	SPECIFIC SCIENCE CONCEPT	TASKS		
		INLANT FISHERIES	MARINE FISHERIES	FISH PROCESSING
I. Force	I. (a) Changes indicating presence of force	I. (a)	I. (a) Lift bag nets	I. (a) Cut shells for shell craft
	(b) Forces in nature acting on earth surface	(b) Observe water movement in fishpond	(b) Sail a boat	(b)
	(c) Measuring force	(c) Make a mud block	(c)	(c)
	(d) Difference between weight and mass	(d)	(d) Determine the mass of floats and sinkers	(d) Determine the altitude of place for canning
II. Work	II. (a) Work is the product of force and distance	II. (a) Clear the (a.1) fishpond site (a.2) Layout and design a fishpond compartment (a.3) Prepare building tank	II. (a) Haul a net	II. (a) Cut fish into different forms and sizes
III. Energy	III. (a) Forms of energy	III. (a.1) Drain a pond	III. (a.1) Dry a net	III. (a.1) Dry fish and other fishery product (a.2) Smoke fish,
IV. Mass	IV. (a) Definition of mass	IV. (a)	IV. (a) Determine the mass of different twines used in net making	IV. (a) prepare brine (a.1) Solution (a.2) Determine the mass of different cured products
V. Volume	V. (a) Volume is space occupied by an object	V. (a) Determine the water level in the different fishpond compartments	V. (a) Compare volume or the different manmade floats	
VI. Density	VI. (a) Density is mass per unit volume	VI.	VI. (a) Compute the density of floats and sinkers used in making fishing nets	
VII. Matter	VII. Definition of matter	VII.	VII.	VII.
VIII. Soil	VIII. (a) Soils differ in color, texture, moisture content, and the sizes of their particles	VIII. (a) Select appropriate fishpond site	VIII.	VIII. (a)
	(b) Prosity of soil	(b) Determine dike seepage and leakage		
IX. Water	IX. Polarity of water	IX. (a) Observe the effect of water on the base of the dike	IX. (a) Observe the effect of water on the hull of the boat.	IX. (a) Give the importance of water to cured products
X. Effects of Heat on Water	X. Factors that affect the rate of evaporation	X. (a) Observe the effect of solar radiation on solar salt making	X. (a) Compare net drying during windy and sunny days	X. (a.1) Observe the surface of the fish while drying and smoking (a.2) Identify the different factors affecting the rate of evaporation in fish drying and smoking

(i) 水産加工工場設立計画※

資料１９.

A) 背景と目的

（背　景）

フィリピン政府Human Settlement省の主唱するBLISS Ⅱ計画（Bagong Lipunan(new society)Implement Sites and Services）の目的とする所は次の三点に要約される。

(1) 適切な住居の建設促進。

(2) 質の高い教育を施す事。

(3) 適切なレクレーション（recreation）施設の拡充と住民の福祉向上を期する事。

上記(2)との関連に於て比国文部省（MEC）は，このBLISS Ⅱ計画に参画し，教育関係の統合調整促進を計っている。折しも昭和５４年よりBiyaya ng Dagat（blessings from the sea）五ケ年計画がスタートし，漁民への融資（総額１０００万ペソ（約３億円））を含め漁獲高増進に積極的な姿勢を示している。

この様な背景を受けて比国文部省は，地域水産業並びに住民の福祉向上を目ざし，パタンガス州ナスブの国立アパッシブル水産学校（生徒数１１００名）内に水産加工センターを設立する運びに至った。

（目　的）

上記APACIBLE水産学校に水産加工センターが設立される目的は次の三点に要約される。

(1) 漁獲高増進五ケ年計画（Biyaya ng Dagat Program)に伴う漁獲物の有効利用を計り，漁民の福祉向上を期する事。

(2) 積極的に水産加工技術を導入し，人材養成並びに再教育を計る事。

(3) 計練センターとして活用し，併せ水産加工業の発展と雇用の増進を計る。

(4) 安価で良質の蛋白質を供給し，地域住民の栄養改善と食生活の向上を期する。

以上の背景と目的を受け，かつNew Society建設の基盤でもある地域住民の生活レベル向上の手段としての意図をも兼ねた水産加工センターの設立が，比国パタンガス州ナスブのアパシブル水産学校に計画されている現状に在る。

※　大庭専門家の最終業務報告書より抜粋。

かつ，本専門家の派遣目的が理科（物理・化学・生物・理科一般）と水産教育（特に水産製造加工）の指導にあり，要請により当計画案作成に指導と助言を行って来た経緯，並びに当加工センターに必要な加工機材類（１２基合計額１２００万円相当）の無償供与と加工技術者の派遣も強い前提条件として，その背景にある。

この設立計画案は，比国文部省並びに関係機関に提示され検討の運びの予定である。NEDA(National Economic Development Agency)を経由しＪＩＣＡに何らかの要請が出されるものと予想される。

尚，当比国の水産加工技術は幼年期の段階にあり，鮮魚としての消費の他，塩乾魚を主体とした低次加工の段階にある。漁撈，保蔵・加工・流通・消費体系の不備と併せ前途多難が予想されるが，秀れた日本の機器並びに技術を積極的に導入し，水産業発展の原動力である人材養成に強い姿勢がうかがわれる。

これらの点からも，当水産加工センターの設立の意義は大きいと考えられる。

B）水産加工センター設立計画案の概要

a．名　　称

・APACIBLE SCHOOL of FISHERY and BLISS FISH PROCESSING CENTER

b．設立場所

・パタンガス州　ナスブ　アパッシブル水産学校内（ｈの項参照）

c．所管と分掌

・BLISS 委員会 …… 設立に必要な機材並びに設立要員の派遣。

・文部省並びに当該地方局

…… 工事用地を提供する。必要な建物を建設する。
必要な人員を確保する。電力・水道施設を完備する。

・アパッシブル水産学校

…… 管理と運営の責にあり，派遣専門家と協力して設立計画案の作成を行う。

d．研修対象者

・全国水産学校（７２校）製造担当教師。

・職業訓練生（BLISS 雇用促進委員会所属）。

・アパッシブル水産学校生徒。

・地域水産業者並びに子弟。

e．工場規模

区分	面　　積	単　　価	必 要 金 額	備　考
建物	88㎡（26.7坪）	₱1,440／㎡（142,596円／坪）	₱126,720（¥3,801,600）	巾7m×14m
用地	500㎡（151.5坪）	₱　200／㎡（19,800円／坪）	₱100,000（¥3,000,000）	学校用地

f．生産品目

◦缶詰類

原　料	種　　類	原料受入可能量	生産時期	目標生産数量
魚介類	マグロ，カツオ，アジ，サバ，イワシ類	1000kg／日	乾　期（11月～6月）	40～50函／日
農産物	果物，トマト，野菜類	500kg／日	雨　期（6月～11月）	20～27函／日

◦その他原魚を利用して塩乾品（300～500kg／日），くん製品（200kg／日），ねり製品（200～350kg／日），醗酵品（1,300kg／日），魚粕（24kg／日），の処理加工が可能である。1函＝T 2／4打

g．魚肉缶詰生産に必要な主要材料並びに電力，水（1日当り）

1₱ ＝30円

	単　　価	必要量（1日当り）	計
原　魚	₱8.0／kg	1,000kg	₱8,000.00
空　缶	1.25／缶	3,000缶（最大）	3,750.00
電　力	0.43／KWH	105KWH	45.00
水	0.70／m^3	15m^3	10.00
計			₱12,411,00

その他の副資材（砂糖，食用油），燃料，通信連絡費等の経費を合計額の約5.1％（₱606）と見て，一日当り総合計₱12,411.00（¥372,330）。故に生産

原価（一缶当り）₱4.1（￥１２３）で人件費等を含めると市価より割高になるが研修施設である限りやむを得ないものと考える。

尚，空缶は現地調達が可能である。

h．生産に必要な施設，設備等について

※日本で購入する場合の推定見積り額を現地通貨ペソに換算（１ペソ＝３０円）

項　目	必要数量	平均単価	計	備　考
工場用地	５００m^2	₱　２００／m^2	₱１００,０００.００	￥　3,０００,０００－
建　物	８８m^2	1,４４０／m^2	１２６,７２０,００	3,８０１,６００－
冷蔵施設	6.5m^2	4,０００／基	※　４０,０００.００	1,２００,０００－
機械類	１１基	３１,８１８／基	※３５０,０００.００	１０,５００,０００－
排水施設	１基	１５０,０００／３０m^3	1,５００.００	４５,０００－
計			₱６１８,２２０.００	￥１８,５４６,６００－

註　・排水施設について

大きさ	4.０×3.０×2.５m，３０m^3
方　式	密閉嫌気分解方式（排水は地下に自然に吸収される為，維持管理費は必要無く建設費のみ）

・機械類について

No.	内　訳	使用目的と特徴
1	フィッシュカッター	原魚（かつお等）の頭を切断する。
2	魚肉切断器	クック後の精肉を缶サイズに合わせ切断する。
3	ウォーターポンプ	給水タンク（既設1.５m^3）への給水用
4	シラッパー	果物缶詰のシラップ並びに油漬け缶詰の注油
5	仮巻締機	脱気函（既設，２C／S用）と連用
6	魚肉採取機	魚肉ねり製品加工用（又は小型擂かい機）
7	小型ボイラー	蒸発量１００～１５０kg／h・燈油使用
8	小型クッカー	生原料２００～２５０kgクック可能
9	真空巻締機	モデル"O"－type（１０缶／分真空ポンプ３HP）
10	模型レトルト	レトルトカー／車入れ
11	マーカー	モーター駆動，１００～１５０枚／分

・冷蔵施設について

プレハブ冷蔵庫（パネル組立方式）

寸　法	３６００×１８００×２４００m／m
面　積	6.5 m^2（ 2.0 坪）
容　積	約１３ m^3
冷却温度	－５℃～＋１０℃，５０m／mパネル

i．生産に必要な人員と人件費（１日当り）

役　職	人　員	一人一日当りの給料	一日当りの計(₱)	日本通貨(₱＝３０円)
管理運営責任者（兼）	１人	₱ １５.0	１５.0	４５０
副責任者（兼務）	1	３０.0	３０.0	９００
資材担当購入（兼）	1	１０.0	１０.0	３００
監査担当（兼務）	1	１０.0	１０.0	３００
交渉担当（兼務）	1	１０.0	１０.0	３００
技術者	2	２０.0	４０.0	1,２００
補助係	8	１３.5	１０８.0	3,２４０
研修員	２０	5.0	１００.0	3,０００
計	３５人	－	３２３	9,６９０

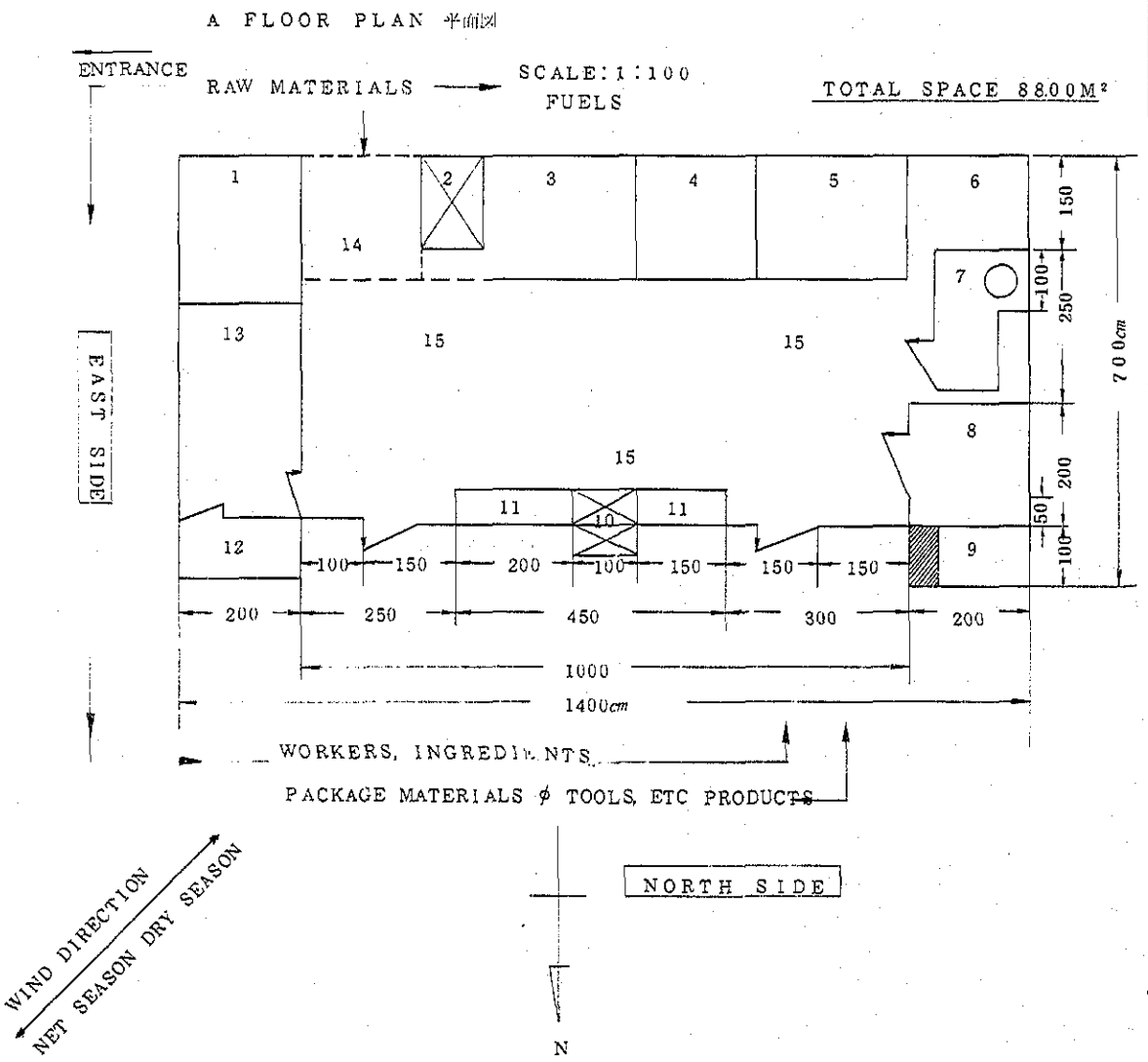
j．日程等

(1) １９７９．　８～　９月　　◦設立計画案作成

(2) １９７９．１０～１１月　　◦文部省（ＭＥＣ）並びに地方局へ計画案の提示，検討依頼と予算交渉。
◦関係機関（ＮＥＤＡ）経由ＪＩＣＡへ
◦ＢＬＩＳＳの特別プロジェクト事業として認可申請。

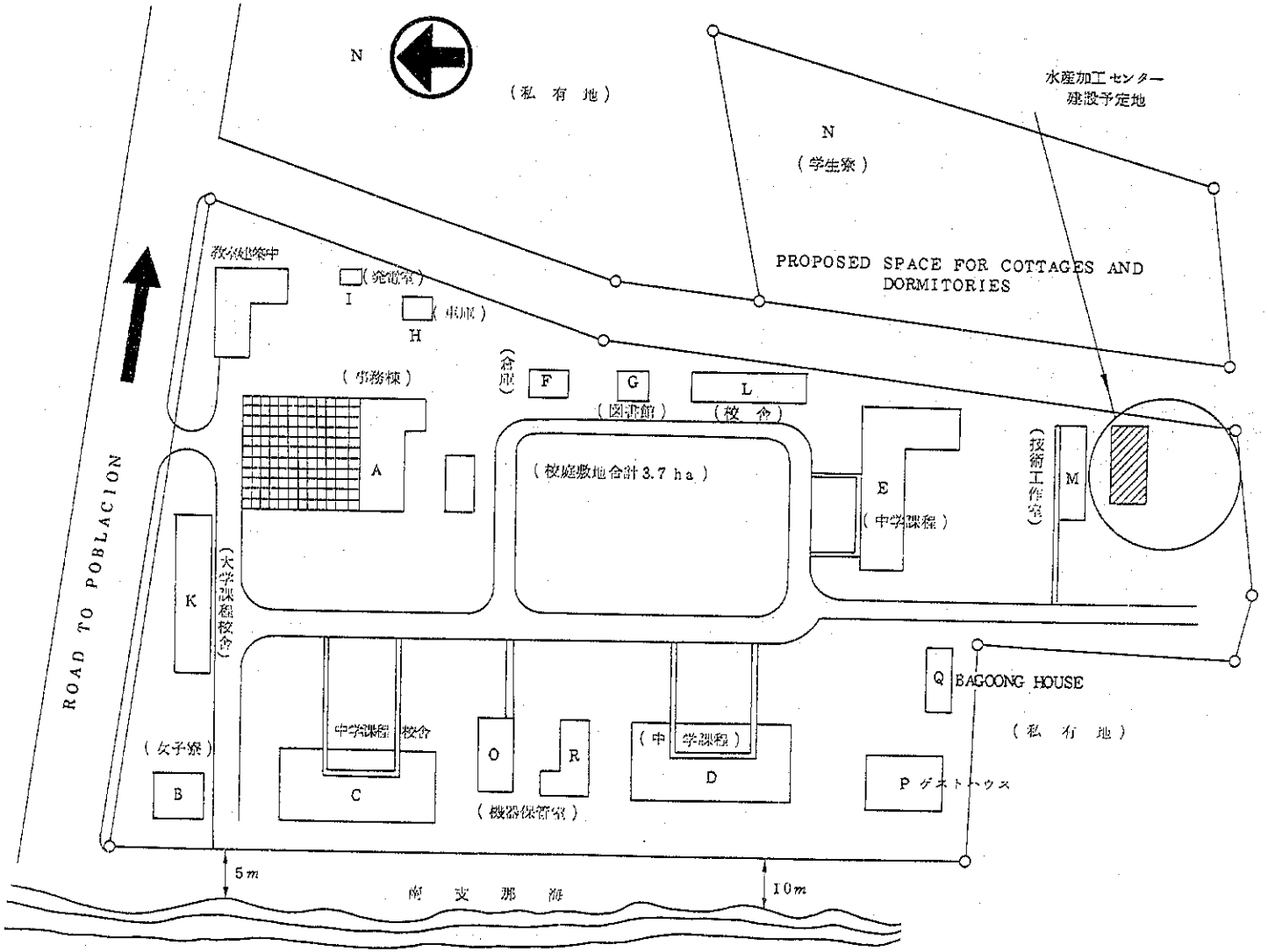
(3) １９８０．　１～　３月　　◦設立認可並びに予算の裏付け有り次第土地造成着工予定。

水産加工センター平面・配置図（単位cm，）　縮尺1:100



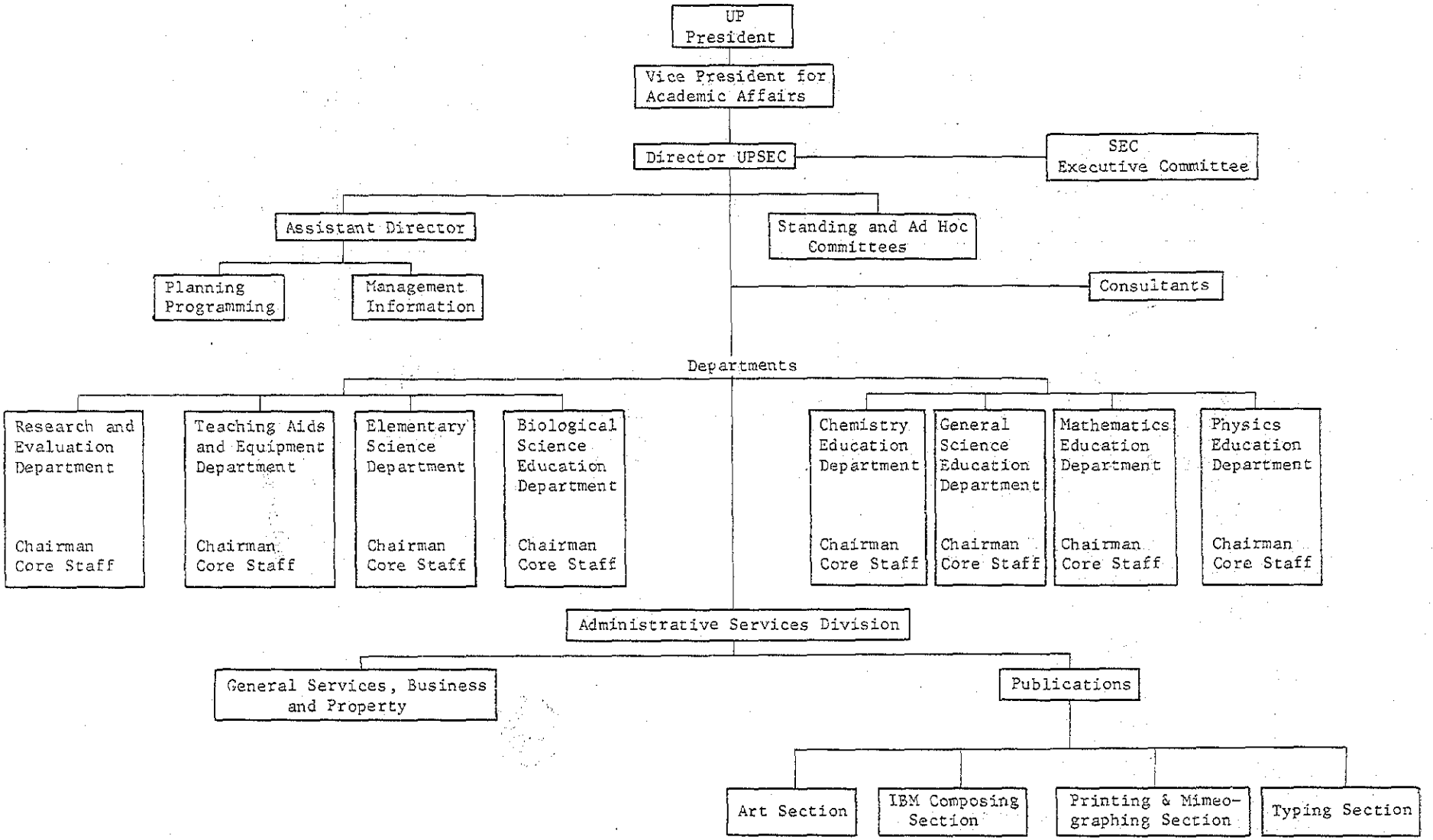
No.	DETAILS NAME OF SNE	DMSNSION (M) W × L	SPACE
1	COLDSTORAGE	2.0M × 2.5M(H)	5.0
2	TANK	1.0×1.5×1.0 (H)	1.5
3	MINCING GRINDING ∮	2.5 × 2.0	5.0
4	SEAMING SITE	2.0 × 2.0	4.0
5	STERILIZA —TION SITE	2.5 × 2.0	5.0
6	BOILERS ROOM	2.0 × 1.5	3.0
7	SEASONING PROP	2.0 × 2.5	5.0
8	WAREHOUSE	2.0 × 2.0	4.0
9	SMOKEHOUSE	2.0 × 1.0	2.0
10	WASHING PLACE	1.0×0.5×2PAS	1.0
11	MULTI—PURP —OSE TABLES	3.5 × 0.5	1.75
12	COMFORT ROOM	2.0 × 1.0	2.0
13	LAB, ∮OFFICE	2.0 × 3.5	7.0
14	RAW MATERIAL RECEPTION CORNER	2.0 × 2.0	4.0
15	WORKING AREA ∮BROKEN SPACE	10.0×3.5 (27.5)	87.75
TOTAL			88.00
	(14.0×7.0—	(10.0×1.0)	

建設予定敷地 <パタンガス州ナスブ国立アパッシブル水産学校内>



資料２０.

Tentative Organizational Chart, 1978-79



LIST OF ACTIVE AND/OR NSDB SUPPORTED RSTCS

1. RSTC, Saint Louis University, Baguio City
2. RSTC, Ateneo de Davao, Davao City
3. RSTC, Notre Dame of Marbel College Koronadal, South Cotabato
4. RSTC, Western Minadanao State University,Zamboanga City
5. RSTC, West Visayas State College, Iloilo City
6. RSTC, Mariano Marcos State University,Laoag City
7. RSTC, Aquinas University, Legaspi City
8. RSTC, Divine Word University, Tacloban City
9. RSTC, University of San Carlos, Cebu City
10. RSTC, University of Santo Tomas, Manila

Note: RSTC : Regional Science Teaching Center


JICA