

Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No. 4471

PROJECT COMPLETION REPORT

**MALAYSIA - SECOND EDUCATION PROJECT
(LOAN 810-MA)**

October 1981
(Revised March 1983)

Educational Financing Division of Unesco, Paris
Education Division, East Asia and Pacific Regional Office

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

ABBREVIATIONS

CDC	Curriculum Development Centre
EMS	Educational Media Services
EPU	Economic Planning Unit
ETU	Educational Technology Unit
ETV	Educational Television
FMP	Fourth Malaysia Plan (1981-85)
ICU	Implementation Coordination Unit
KP	Key Person
MESTI	Ministry of Education Staff Training Institute
MOE	Ministry of Education
MDU	Maintenance and Development Unit, Universiti Sains Malaysia
PCR	Project Completion Report
PIU	Project Implementation Unit
SMP	Second Malaysia Plan (1971-75)
SPVM	Malaysia Vocational Certificate Examination
TIAU	Teaching-Learning Advisory Unit
TMP	Third Malaysia Plan (1976-80)
TTC	Technical Teachers Training College
USM	Universiti Sains Malaysia (Penang)

--:--:--:--

CONTENTS

Pages

Preface	
Map	
Basic Data	
Highlights	(v - ix)
Summary	
<u>CHAPTER I: PROJECT BACKGROUND</u>	1
Social and Economic Setting	1
Educational Setting	1
Project Generation	3
<u>CHAPTER II: LOAN AGREEMENT AND PROJECT DESCRIPTION</u>	5
Appraisal Mission Proposals	5
Loan Agreement	5
Project Objective	5
Project Content	6
<u>CHAPTER III: PROJECT ADMINISTRATION AND MANAGEMENT</u>	9
Project Unit (in MOE)	9
Maintenance and Development Unit (in USM)	10
Project Management and Monitoring: Bank Involvement	13
<u>CHAPTER IV: PHYSICAL IMPLEMENTATION</u>	15
A. <u>Curriculum Development Centre (CDC)</u>	15
Site	15
Professional Services	15
Design	15
Construction	16
Furniture and Equipment	16
Educational Media Service	16
B. <u>Technical and Vocational Schools</u>	16
Sites	16
Professional Services	17
Design	17
Construction	17
Furniture and Equipment	18
C. <u>Universiti Sains Malaysia (USM)</u>	19
Site	19
Professional Services	19
Design	20
Construction	21
Furniture and Equipment	22

	<u>Pages</u>
<u>CHAPTER VIII: CONCLUSIONS</u>	55
A. Project Formulation	55
B. Project Implementation	56
C. Project Functioning	56
D. Evaluation	57
<u>ANNEXES (See separate list)</u>	59
<u>COMMENTS FROM THE BORROWER</u>	
<u>ATTACHMENT I: Comments from the Universiti Sains Malaysia</u>	
<u>ATTACHMENT II: Comments from the Federal Treasury</u>	

MALAYSIA

SECOND EDUCATION PROJECT (LOAN 810-MA)

PROJECT COMPLETION REPORT

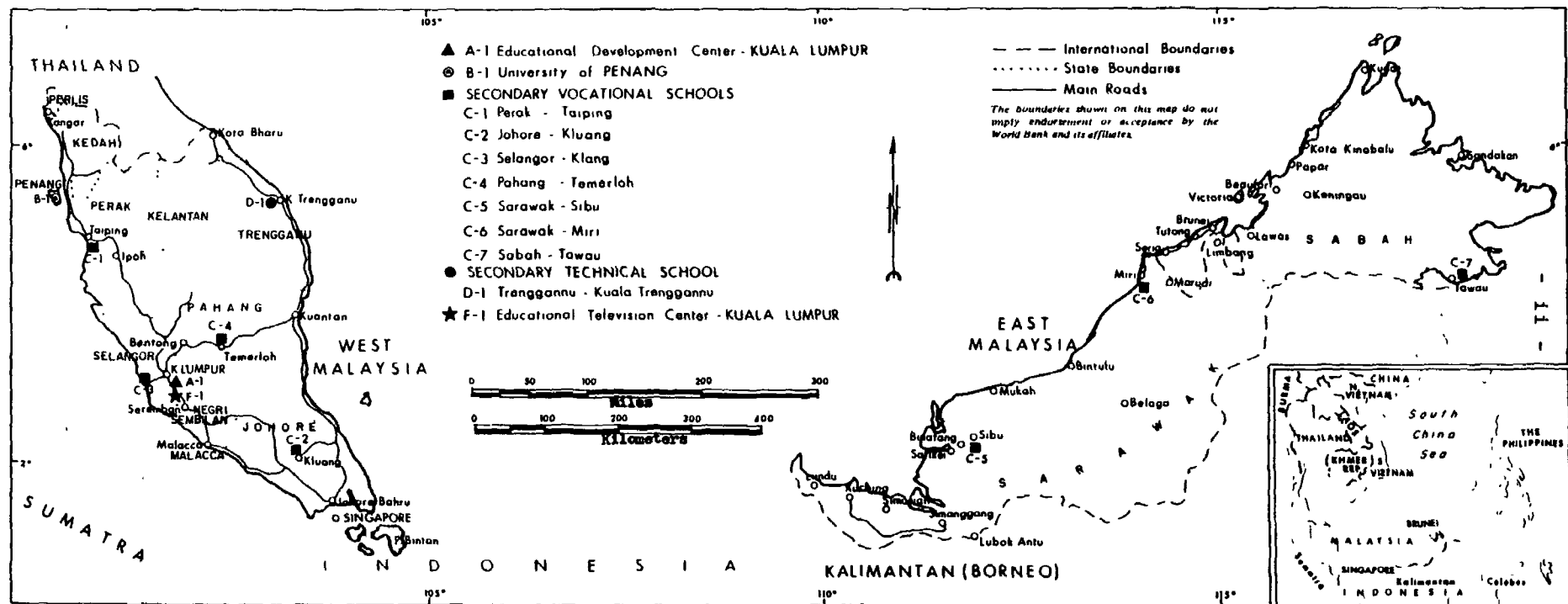
Preface

This is a Project Completion Report (PCR) for the Second Education Project, for which Loan 810-MA was approved on April 5, 1972, in the sum of US\$15.5 million. The Closing Date was December 31, 1980, and the final disbursement was made on March 25, 1981.

The PCR was prepared by a UNESCO team in October 1981 and was based on (a) a report prepared by a team of Malaysian consultants employed by the Borrower and (b) materials in the Bank's files including the Appraisal Report (PE-42a) dated March 9, 1972, the President's Report (P-1043) dated March 16, 1972, and the Loan Agreement dated April 7, 1972.

The PCR was later revised (March 1983) by the East Asia and Pacific Regional Office, incorporating comments from the Borrower. These comments are provided in Attachments I and II.

MALAYSIA SECOND EDUCATION PROJECT



MARCH 1972

IBRD 3717 RI

MALAYSIA

SECOND EDUCATION PROJECT (LOAN 810-MA)

PROJECT COMPLETION REPORT

Basic Data Sheet

Key Project Data

Item	Appraisal expectation	Actual
Total project cost (US\$ million)	28.4	27.6
- Underrun		0.8
Loan amount (US\$ million)	15.5	15.5
- Disbursed		15.5
Date physical components completed	6/20/82	12/31/80
Proportion completed by above date (%)	60	100
Proportion of time underrun or overrun (%)		62.5

Cumulative Estimates & Actual Disbursements
(US\$'000)

	CY 72	73	74	75	76	77	78	79	80	81
Appraisal Estimate	77.5	1,674	5,208	9,672	14,880	15.5	-	-	-	-
Actual	-	-	716	2,292	3,300	5,100	10,600	13,400	14,770	15,500
Actual as % of Appraisal Estimate	-	-	13.7	23.7	22.1	30.0				

Other Project Data

Item	Original plan	Revisions	Actual
First mention in files	-	-	6/22/70
Government application	-	-	8/27/71
Negotiations	-	-	2/22-25/72
Board approval	-	-	3/28/72
Loan agreement date	-	-	4/5/72
Effectiveness date	-	-	7/7/82
Closing date	12/31/77	12/31/78 12/31/79	12/31/80
Borrower			Government of Malaysia
Executing agency			Ministry of Education
Fiscal year of borrower			January 1-December 31
Follow-on project name			Third Education Project
Loan number			974-MA
Amount (US\$ million)			19.0
Loan agreement date			4/5/74

MALAYSIA

SECOND EDUCATION PROJECT (LOAN 810-MA)

PROJECT COMPLETION REPORT

Mission Data

Mission	Sent by	Month/year	No. of weeks	No. of persons	Man-weeks	Date of report
Reconnaissance	Bank	June 1970	0.3	2	0.6	08/15/70
Identification	UNESCO	Sep/Oct 1970	3.0	2	6.0	02/02/71
Reconnaissance	Bank	April 1971	0.3	2	0.6	04/27/71
Preparation	UNESCO	July 1971	3.0	6	18.0	07/26/71
Appraisal	Bank	Sep/Oct 1971	4.2	6	25.5	10/28/71
Supervision 1	Bank	May 1972	0.5	1	0.5	06/27/72
Supervision 2	Bank	Oct 1972	0.3	1	0.3	11/06/72
Supervision 3	Bank	Nov 1972	0.5	2	1.3	12/14/72
Supervision 4	Bank	May 1973	0.5	1	0.5	05/31/73
Supervision 5	Bank	Mar/Apr 1974	0.4	2	1.1	05/14/74
Supervision 6	Bank	Nov 1974	0.4	1	0.4	12/12/74
Supervision 7	Bank	June 1975	0.5	2	1.3	07/10/75
Supervision 8	Bank	Dec 1975	0.1	2	0.2	12/30/75
Supervision 9	Bank	June 1976	0.1	1	0.1	07/14/76
Supervision 10	Bank	May 1977	0.4	2	1.1	05/24/77
Supervision 11	Bank	Nov 1977	0.4	2	1.1	01/10/78
Supervision 12	Bank	Apr 1978	0.5	1	0.5	06/07/78
Supervision 13	Bank	June 1979	0.5	2	1.3	06/30/79
Supervision 14	Bank	Apr 1980	0.2	2	0.4	05/02/80
Completion	UNESCO	June 1981	<u>2.0</u>	<u>3</u>	<u>6.0</u>	10/81
			18.1	43	66.8	

Country Exchange Rates

Name of currency (abbreviation):	Malaysia dollar (M\$) or Ringgit	Exchange rate (M\$)
----------------------------------	----------------------------------	---------------------

Year:

Appraisal year average	US\$1.00 = M\$ 2.82
Intervening years average	US\$1.00 = M\$ 2.36
Completion year	US\$1.00 = M\$ 2.80

MALAYSIA

SECOND EDUCATION PROJECT (LOAN 810-MA)

PROJECT COMPLETION REPORT

Highlights

A loan of US\$15.5 million equivalent to help implement the Second Malaysia Plan's educational strategy was approved in April 1972 and signed in May 1972. The Plan's strategy called for: (a) strengthening national unity; (b) meeting manpower requirements; and (c) emphasizing science and technology. The project was to be completed by December 1977 and to cost US\$28.4 million. The project objectives were to: (a) improve curriculum development and in-service teacher training; (b) introduce educational television into Peninsula Malaysia; (c) expand technical and vocational education; and (d) increase the output and quality of graduate science teachers and the supply of high-level scientific manpower. These objectives were to be achieved by the construction, furnishing and equipping of: (a) (i) a curriculum development center; (ii) a new studio for education and television production and supply of TV receivers for schools (equipment only); (iii) one secondary technical school; (iv) four secondary vocational schools; and (v) science schools for the University of Sains Malaysia (USM); (b) one secondary school in Sabah; and (c) two secondary vocational schools in Sarawak.

The project content changed somewhat in that in 1974 the planned construction of the computer center for the USM was deleted from the project (an existing building was used instead). In 1976 the cost of installing an IBM computer was met from savings from the First Education Project (Loan 599-MA), and in 1977, owing to cost escalation during implementation delays, the project was reduced in respect of hostel accommodation in two of the vocational schools and in USM, while the financing of the ETV facilities was deleted as it was decided to relocate the ETV complex and finance it under the Fifth Education Project (Loan 1657-MA). As a result, there was, despite inflation, an underrun of some 3%, compared with the appraisal estimate (including contingencies) in project costs.

The PCR finds that overall the project was well conceived, satisfactorily implemented (apart from time overrun), and is contributing significantly to the development of skilled and technical manpower. The Curriculum Development Center (CDC) has been fully functional since 1977 and has a significant capacity for production, research, evaluation and training. In Peninsula Malaysia, 5,500 TV sets have been distributed to primary and secondary schools along with 2,500 generators. With the added supply by the Government of a further 2,100 sets and 1,500 generators, the project has enabled about 375,000 primary and secondary pupils (or 12-13% of the total) to benefit from ETV. In addition 33 video-tape recorders have been provided.

The ETV programs cover appropriate subjects and levels while the amount of broadcasting time is near appraisal targets. Full time state education mass-media officers have been appointed.

The project schools are, on the whole, satisfactory in their functioning, facilities, equipment, staffing and curricula. The vocational schools have had high examination failure rates and their role needs clarification. Employers, however, seem to approve of the attitudes to industrial work and the adaptability of those trained in these schools. Output from the technical school is of high quality with an examination rate of the order of 95%.

Project aid to USM's Science Schools has contributed to an output of science graduates and teachers satisfactory in both quantity and quality. USM's output of science teachers amounts to about one-third of the national total. Employers seem satisfied with the adequacy and relevance of their training. The Computer Center has ample hard and software and 80 science graduates majored in computer science during 1976-79.

The PCR concludes however that many of the problems encountered during implementation (with the consequent delays and cost escalation) could have been avoided by more foresight and attention to detail during the stages preceding signing of the Loan Agreement. Implementation problems could also have been lessened had there been more continuity of staff in supervision, more prompt dispatch of specialists, more data on educational aspects in PIU's quarterly reports and fuller consideration, before changes in project content were made, of the effects of these on the attainment of the project's objectives.

SUMMARY

Loan Agreement

1. The Loan Agreement for the World Bank's Second Education Project in Malaysia (Loan No.810-MA) was signed in April 1972. The loan was for US\$15.5 million out of a total estimated project cost of US\$28.4 million. The loan became effective on July 7, 1972, the closing date being December 31, 1977. Since by then disbursement had reached only 22 percent, the closing date was successively deferred until December 31, 1980

Project Objectives

2. The project's purpose was to facilitate execution of the Second Malaysia Plan's educational strategy of strengthening national unity, meeting manpower requirements and emphasizing science and technology. The project's objectives were to assist the country to:

- (a) improve curriculum development and in-service teacher training;
- (b) introduce educational television into Peninsular Malaysia;
- (c) expand technical and vocational education;
- (d) increase the output and quality of graduate science teachers and the supply of high-level scientific manpower.

Project Content

3. The project consisted of:

- (a) construction of an Educational Development Centre, with 120 boarding places, a resource centre-cum-library and an audio-visual aids unit;
- (b) assistance to the development of educational television by:
 - (i) constructing and equipping a programme production studio;
 - (ii) providing some 5,500 TV sets for primary and secondary schools;
 - (iii) supplying 18 video-tape recorders to teacher training colleges and State audio-visual aids centres;
- (c) Assistance to technical and vocational education by:
 - (i) constructing, furnishing and equipping one technical and seven industrial and commercial vocational schools;
 - (ii) providing about 120 places for short courses in navigation and marine engineering at Sibu vocational schools;
 - (iii) providing boarding facilities for about two-thirds of the students in the project schools and staff houses for the principals, some staff members and caretakers.

- (d) Assistance to the University Sains Malaysia (Penang) by:
- (i) constructing and equipping Schools of Natural, Applied and Pharmaceutical Sciences and communal academic facilities - a computer centre, a library and an auditorium;
 - (ii) constructing and equipping a residential hall for 500 students, housing units for the Warden and 15 fellows, and 120 places for a marine field station;
 - (iii) providing audio-visual equipment for the School of Educational Studies;
 - (iv) financing an architectural master plan.

Project Management

4. The Ministry of Education's Project Implementation Unit, established for the First Education Project, assumed responsibilities for the Second. For the first four years, the Director had insufficient authority and staff, and there were resultant delays and lack of coordination and control. The University (USM) in 1972 established a Maintenance and Development Unit (MDU) which assumed responsibility for the University project items. This unit was well staffed but administrative and technical constraints contributed to delays in implementation.

Professional Services

5. The Public Works Department in Kuala Lumpur, in coordination with the State offices, was responsible for design and site supervision for the Curriculum Development Centre - as the Educational Development Centre came to be renamed - and for the technical and vocational schools, and private consultant firms were responsible for the University items. None of these gave entire satisfaction: the shortage and high turnover of PWD staff resulted in lengthy delays during the planning stages, while the performance of the firms involved in the University ranged from satisfactory to below average. In general, preparation of the design documents took far too long, while in USM there was a conflict among consultants.

Design

6. The basic space standards and accommodation areas specified by the Bank and included in the worksheets attached to the loan agreement were increased by the Government and the University. The gross built area in the technical and vocational schools is about 19 percent, and in the University about 5 per cent, above the appraisal estimates.

Implementation

7. The project ran some three years behind schedule and the Government three times requested postponement of the closing date. Main reasons for delays were:

- (a) management difficulties (PIU) and lengthy administrative procedures;
- (b) slow operation by PWD and private consultants;
- (c) changes in the building programmes;
- (d) inadequate coordination among PIU, PWD, consultants and contractors;
- (e) shortages of skilled labour and of building materials.

The delays resulted in financial constraints due to cost escalation, and these were a factor in subsequent reductions in project content.

Changes in Project Content

8. In 1974, the construction of the USM computer centre was deleted from the project, an existing building being used instead, and in 1976 the cost of the IBM computer installed was met from savings from the First Education Project (599-MA). In 1977, owing to cost escalation during delays, the project was reduced in respect of hostel accommodation in two of the vocational schools and in USM, while the financing of the ETV facilities was deleted as it was decided to relocate the ETV complex and finance it under the Fifth Education Project.

Project Costs

9. Mainly as a result of the reductions above, but also because some project items had not yet been completed, at the final closing date there was, despite inflation, an under-run of some 3 percent compared with the appraisal estimate (including contingencies).

10. Educational Television: in Peninsular Malaysia 5,500 TV sets have been distributed to primary and secondary schools, along with 2,500 generators. With the supply by the Government of a further 2,100 sets and 1,500 generators, the project has enabled some 375,000 primary and secondary school pupils - or 12-13 percent of the total - to benefit from ETV. In addition 18 video-tape recorders have been provided. The ETV programmes cover appropriate subjects and levels, while the amount of broadcasting time is near appraisal targets. Full-time State education mass-media officers have been appointed.

Technical and vocational education

11. The project schools are on the whole satisfactory in their functioning, facilities, equipment, staffing and curricula. The vocational schools have had high examination failure rates. Employers, however, seem to approve of the attitudes to industrial work and the adaptability of those trained in these schools. Output from the technical school is of high quality, with an examination pass rate of the order of 95 percent.

CHAPTER I

PROJECT BACKGROUND

Social and Economic Setting

- 1.1 Malaysia has been experiencing a rapid population increase. From 10.8 million in 1970 the total rose to 14.3 million in 1980, while the economically active population rose from 3.7 to 5.4 million, the annual addition to the labour force in 1980 being 169,000. The population growth rate was put at 2.7 per cent per annum in 1976.
- 1.2 The South China Sea separates Western, or Peninsular, from Eastern Malaysia (Sabah and Sarawak), the distance between the coasts ranging from about 400 to 1,000 miles. Peninsular Malaysia, with some 40 per cent of the total land area of about 127,600 square miles, had in 1976 85 per cent of the total population. Of this total some 47 per cent were Malays and 34 per cent Chinese, the remainder being 8 per cent non-Malay indigenous (in Eastern Malaysia where they formed 53 per cent of the total), 9 per cent Indian and 2 per cent others.
- 1.3 Malaysia's per capita income (1977) of US\$ 900, and other comparative indicators, put the country in the intermediate mid-income group. Occupationally, Malays predominate in small agricultural holdings and, as do most of those of Indian origin, work on plantations, while the Chinese are found mostly in manufacturing, mining, construction and commerce. Data and estimates for 1975-80 show 93 per cent of the labour force as employed, 49 per cent being in agriculture, 10 per cent in manufacturing, 13 per cent each in wholesale and retail trade and in public administration, education and health, and 15 per cent in other occupations.
- 1.4 The country has had three national development plans: the First Malaysian Plan (FMP) from 1966 to 1970, the Second (SMP) from 1971 to 1975 and the Third (TMP) from 1976 to 1980. Objectives of the first plan included increasing agricultural and industrial efficiency, diversifying production and creating new employment opportunities. In the event, production and income grew but job creation did not match the labour-force increase, while at the same time the country faced serious skill shortages. Hence the second plan was directly geared to solving the problems of surplus of labour, shortage of skills and inequalities in employment and income, while the fundamental strategy of the third plan was to provide overall growth in incomes and employment by means of rapid growth in the private sector.

Educational Setting

- 1.5 Quantitatively, the educational system of Malaysia is one of the best in Asia. Under the First Malaysia Plan, 1966-1970, impressive strides were made in primary education, as reflected by improved survival rates and growth in enrolments. By 1970, over 90 per cent of the primary school age population was enrolled. Opportunities and facilities for

secondary education were greatly expanded, enrolments at this level grew by 70 per cent, and 68 per cent of students completing primary education proceeded to the secondary level. College level and university level education also expanded during the period. Not only did the University of Malaya more than double its enrolment, but two new universities, the Universiti Kebangsaan Malaysia and the University of Penang, now known as Universiti Sains Malaysia - USM - were also established. Besides expansion of formal education (see Annex I/1) facilities for training outside the formal system were also increased.

1.6 In spite of these developments, the educational system faced a number of problems. While the lower school curriculum was broadened to include practical subjects, other subjects in the curriculum needed revision and improvement. At the upper secondary level, almost 95 per cent of the students followed general education courses and only about 5 per cent followed technical and vocational courses, even though there was increasing unemployment among school leavers with general education and a shortage of skilled workers. Higher education reflected the pattern of secondary education, being biased towards arts and humanities courses. Training facilities at the college and post-secondary levels were gravely inadequate to meet the country's requirements for middle-level manpower. Further, there was a wide disparity of educational opportunities between urban and rural areas.

1.7 The long-term educational objectives of the Second and Third Malaysia Plans were selected as leading, among other things, to the remedying of such defects. These objectives may be summarised as being to:

- (a) Strengthen the educational system as a factor in promoting national integration and unity, by progressive implantation of Bahasa Malaysia as the medium of instruction at all levels, by narrowing the gap in educational opportunities between the rich and poor and by the eventual integration of the educational systems of Sabah and Sarawak into the national system.
- (b) Orient and expand the education and training system to meet national manpower needs, especially in science and technology, and
- (c) Improve and expand the education in order to reduce wastage and increase its effectiveness in nation-building.

1.8 The period 1971-1980 witnessed major advances in a number of important fields of education and training. The use of Bahasa Malaysia as the medium of instruction was progressively implemented. Efforts made to provide more educational opportunities for the lower income groups included the improvement and expansion of facilities at the residential science schools and MARA (Trust Council for Indigenous People) Junior Science Colleges to increase the intake of rural students, the introduction of a textbook loan scheme, and health and nutritional programmes.

1.9 To improve the quality of education in the schools, the supply of graduate arts and science teachers was increased, in-service training programmes for teachers were implemented, and new curricula introduced into the schools. Establishment of the Curriculum Development Centre (CDC) and the Educational Media Service (EMS) lent support to these activities. The progress made in restructuring the education system towards science, mathematics and technical courses, and the expansion of technical and vocational education at the secondary and college levels, as well as training programmes outside the formal system, led to increased supplies of skilled scientific manpower. Two more new universities were established - Universiti Pertanian in 1971 and Universiti Teknologi Malaysia in 1972 - and both total enrolment and the proportion of students in science, mathematics and technological courses increased substantially.

1.10 During 1971 to 1980, the evolution of the numbers of those in employment by the occupational categories of professional and technical workers (17 per cent) and of production workers (22 per cent) shows a rapid rate of growth in demand. Thus the pursuit of an active policy to promote technical and vocational education at all levels was fully justified.

1.11 Financial responsibility for education rests primarily with the Federal Government, which finances the whole capital and recurrent expenditure of all assisted schools. From 1970 to 1978, recurrent expenditure on education increased from 19 to 21 per cent of total recurrent expenditure. Development expenditure on education during the SMP (1971-1975) was about 9 per cent of total development expenditure, and decreased to 6.7 per cent of total development expenditure on education for the TMP (1975-1980).

Project Generation

1.12 The First World Bank Loan (Loan 599-MA) to Malaysia for education was made in 1969 for an amount of US\$ 8.8 million. As the result of a request from the Malaysian Government for Bank financing, proposals for a second education project were prepared with the assistance of Unesco in July 1971 and appraised in September-October 1971 by the Bank. Before the loan was signed, five missions were involved in generating the project : (a) Reconnaissance (Bank) June 1970; (b) Project Identification (Unesco) September/October 1970; (c) Reconnaissance (Bank) April 1971; (d) Project Preparation (Unesco) July 1971; and (d) Appraisal (Bank) September/October 1971.

CHAPTER II

LOAN AGREEMENT AND PROJECT DESCRIPTION

Appraisal Mission Proposals

2.1 The appraisal mission presented its findings in March 1972 in a report entitled:

"Appraisal of Second Education Project in Malaysia, March 9, 1972 (Report No. PE-42 a)"

with a supporting document:

"Malaysia, Appraisal of Education Project - Working Papers, March 1972".

The project agreed on appraisal was similar to that prepared except that it reduced the number of schools proposed in Peninsular Malaysia from 7 to 4 and dropped an item of US\$ 2.38 million for technical assistance. It also decreased space areas, by about 20 per cent for the Curriculum Development Centre and by from 7 per cent to 36 per cent (according to the School concerned) for the University in Penang. The mission recommended a loan of US\$ 15.5 million, to cover the foreign exchange component of the project (US\$ 14.6 million) and the local currency portion (US\$ 0.9 million) of the ex-factory cost of furniture and equipment likely to be procured locally.

Loan Agreement

2.2 Loan 810-MA, for US\$ 15.5 million - the second Bank loan to Malaysia for education - was signed in April 1972. Amounting to 54.5 per cent of the total project cost of US\$ 28,447,000 foreseen, the loan was to become effective on July 7, 1972, with its closing date to be December 31, 1977 (ultimately deferred to December 31, 1980).

Project Objective

2.3 The project's overall objective was to facilitate implementation of selected parts of the educational development strategy contained in the Second Malaysia Plan. The broad aims of this were to strengthen national unity, meet manpower requirements and give proper emphasis to science and technology. The project was designed to assist by:

- (a) Improving curriculum development and in-service teacher training;
- (b) Introducing educational television in Peninsular Malaysia;

- (a) Expanding technical and vocational education;
- (b) Increasing the output and the quality of graduate science teachers and the supply of high level scientific manpower.

Project Content

2.4 The project consisted of:

1. Construction of building and supply of furniture and equipment for an Educational Development Centre (later called the Curriculum Development Centre). This would include 120 boarding places for in-service teacher training purposes, a resource centre-cum-library and an audio-visual aids unit.

2. Assistance to Educational Television (ETV)

- (a) Construction and part of the equipping of a new studio for programme production;
- (b) Provision of about 5,500 TV sets for use in primary and secondary schools;
- (c) Supply of 18 video-tape recorders to teacher training colleges and the State Audio-Visual Aids Centres.

3. Technical and vocational education:

- (a) One technical and seven vocational (industrial and commercial trades) schools would be built. Furniture and equipment would be supplied. Four of these latter schools would be in Peninsular Malaysia (Taiping in Perak, Kluang on Johore, Klang in Selangor and Temerloh in Pahang) and three in Eastern Malaysia (Sibu and Miri in Sarawak and Tawau in Sabah).
- (b) Provision of about 120 places for short courses in Navigation and Marine Engineering at Sibu Vocational School;
- (c) Provision of boarding facilities for about two-thirds of the student population in the project schools and staff houses for school principals, for some staff members and for the caretakers.

4. Universiti Sains Malaysia (USM) Penang:

- (a) Construction and equipping of the Schools of Natural Sciences, Applied Sciences and Pharmaceutical Sciences, and of communal academic facilities (a computer centre, a library and an auditorium, including a lecture theatre complex).
- (b) Construction and equipping of a residential hall for 500 students in the main campus, including housing units for the Warden and 15 research fellows, and 120 places for a marine field station of the School of Biological Sciences;
- (c) Audio-visual equipment for the Centre for Educational Services, later known as the School of Educational Studies and responsible for the Educational Technology Unit (ETU); and
- (d) Financing of an architectural master plan.

2.5 The Malaysian negotiating team was a strong one and included representatives of relevant Ministry of Education divisions, of USM and of the Treasury. After negotiation Malaysian officials involved in the project, including the USM Vice-Chancellor and the Project Implementation Unit (PIU) Director, made several visits to Washington, one purpose being to re-negotiate the conditions for upgrading the USM computer capacity.

2.6 During negotiation, agreement was reached on the following main matters:

- (a) preparation of a five-year plan of operation for the CDC (then called EDC);
- (b) preparation of a maintenance plan for school TV sets and the appointment of full time educational mass media officers to the State Audio-visual Centres (presentation to the Bank of a satisfactory maintenance and repair plan for school TV sets would be a condition of disbursement for this project item);
- (c) inclusion of representatives of the employers on the boards of the vocational schools;
- (d) responsibilities and staffing of the project implementation unit and of the maintenance and development unit at the University of Penang, now called Universiti Sains Malaysia. Retroactive reimbursement was recommended for the services of consultant architects for the preparation of the campus master plan;
- (e) selection and acquisition of sites for all the project schools.

CHAPTER III

PROJECT ADMINISTRATION AND MANAGEMENT

3.1 As specified in the Loan Agreement, responsibility for the implementation of the project was divided between two different Units:

- (a) the Project Unit (renamed Project Implementation Unit - PIU) of the Ministry of Education, responsible for the implementation of the Curriculum Development Centre, of the Education Media Services (EMS) and of one technical and seven vocational schools; and
- (b) the Maintenance and Development Unit (MDU) at the Universiti Sains Malaysia responsible for the design of the campus development plan and for the implementation of the schools of Sciences, communal buildings and services - 56% of the total project.

3.2 The responsibilities of each unit, for the financial and administrative control of the Project and its proper execution, were specified in the Loan Agreement as follows:

Project Unit (MOE)

- (a) selection, briefing and coordination of consulting architects and engineers required under the Project, including the establishment of their terms of reference and administration of their agreements;
- (b) the design of buildings in accordance with the working papers and the preparation of construction drawings and contract documents;
- (c) the preparation of master lists of furniture and instructional equipment;
- (d) all necessary steps for international competitive bidding for construction and for furniture and instructional equipment and the subsequent evaluation of bids;
- (e) the overall supervision of construction and procurement and installation procedures for furniture and instructional equipment;
- (f) coordination with ministries and other government agencies concerned with the Project;
- (g) liaison with the Bank;

- (h) the maintenance of records and the furnishing of information during the carrying out of the Project;
- (i) the preparation of applications for withdrawals from the Loan Account;
- (j) the preparation of a comprehensive schedule for setting down the planned timetable of coordinated activities and responsibilities on which the carrying-out of the Project will be based; and
- (k) the evaluation of progress made in implementing the Project and preparation of progress reports to the Bank.

The Project Unit shall be staffed with: (i) a Project Director, on a full-time basis; (ii) an architect; and (iii) a procurement officer. The Bank shall be afforded an adequate opportunity to comment on the experience and qualifications of any new appointment to the post of Project Director before such appointment is effected. The Project Unit shall be also provided with all necessary technical and supporting personnel, including an accountant, to carry out the Project.

Maintenance and Development Unit

This Unit was responsible for the implementation of the project items under the control of the Universiti Sains Malaysia, including inter alia:

- (a) liaison and coordination with the campus planner;
- (b) briefing and coordination of architects and engineers appointed to develop the master plan;
- (c) the design of buildings in accordance with the master plan and the preparation of construction drawings and contract documents;
- (d) the preparation of master lists of furniture and instructional equipment;
- (e) the overall supervision of construction and installation procedures for furniture and instructional equipment;
- (f) liaison with the Bank through the Project Unit; and
- (g) the maintenance of records and the furnishing of information during the carrying-out of the Project.

The Maintenance and Development Unit was to include an architect or engineer and a procurement officer supported by the necessary technical and related personnel. The Bank was to be afforded an opportunity to comment on the experience and qualifications of any new appointment to the posts of architect or engineer and procurement officer prior to such appointment.

3.3 When the project became operational, the Ministry of Education already had the nucleus of the Project Implementation Unit (PIU) in the Unit which was still carrying out the implementation of the First Education Project. Seriously understaffed, the unit continued its task with the additional burden of the Second Education Project. As a result it was unable to carry out its responsibilities which, added to the numerous problems that the project was confronted with at this stage, led to further delays. The PIU Director did not have the authority to coordinate the work among the various agencies involved, as prescribed in the Loan Agreement. Coordination was particularly poor with the Division of Development and Supplies in respect of the preparation of contract documents and of directing the dispatch and delivery of instructional equipment to the technical and vocational schools.

3.4 Further, the Unit failed to organize a proper recording and evaluation system for the many aspects of the implementation progress until towards the end of project evaluation. For instance, information concerning implementation for civil works is incomplete. On occasions PIU failed to prepare quarterly progress reports and those sent to the Bank contained very limited information on the software side. It was not until the autumn of 1977 - or five years after the signature of the Loan Agreement - and at Bank insistence, that a proper supporting staff, including an architect and a procurement officer, were finally appointed. The Bank also established a frame for quarterly reports which proved most efficient and much easier for PIU to prepare.

3.5 The Maintenance and Development Unit (MDU), on the other hand, was established in USM in Penang soon after the signature of the Loan Agreement. It included a project coordinator (the USM Vice-Chancellor up until 1976, himself a town planner), a civil engineer, a procurement officer, a bursar and supporting staff. Unlike the Ministry of Education's PIU, the MDU soon showed a capacity to assume its responsibilities. This did not, unfortunately, enable them to avoid many problems of various kinds which arose during implementation and which should be considered the cause of the delay of almost three years before the project could be completed. A case study "Planning, Designing and Constructing (additional) Buildings with World Bank Loans and Consultant Services," requested by the Secretary General of the Ministry of Education, identifies and illustrates the nature of problems and difficulties encountered during the planning and implementation stages as they have been experienced by the USM authorities. This case study is reproduced in Annex K of the report by the National PCR team. Below is a summary of such problems as evaluated by the mission; they apply to both PIU and MDU.

3.6 The main problems were:

- (a) cumbersome procedures: any major implementation decisions by USM required approval by the Economic Planning Unit and the Implementation Coordination Unit of the Prime Minister's Department and by the Finance Division of the Ministry of Finance. For all elements of the project these and the Supplies Section of MOE's Division of Development and Supplies had to be consulted. Bank approval had to be sought for every step of the Project implementation and permission had to be obtained from the City Council before commencement of site works.

- (b) insufficient expertise in the preparation of the architect's brief: during the planning stages the authorities responsible for the different USM Science Schools were not yet appointed and a draft programme of the needs had been prepared by USM's administration department. The numerous revisions concerning space and basic needs made afterwards by the Deans of the Science schools, once they were appointed, were both a source of frustration for the consultants and a cause of further delays, since they entailed each time modification of the design documents;
- (c) quantity and quality of consultant services (USM): 16 consultant firms (4 architects, 4 civil engineers, 4 electrical engineers, 4 quantity surveyors) were contracted for the USM project items. Their performance shows that the amount could have been reduced, with resultant easier coordination and financial savings (professional fees for USM were 30 percent above the appraisal estimate);

coordination between the principal consultants and his colleagues rapidly deteriorated, adding difficulties to MDU in controlling implementation. The only demonstration of unity among consultants took place towards the end of the project when they requested additional fees on account of supplementary work occasioned by mistakes or faulty design on the part of some of the consultants, in respect of such items as: fume cupboards and service islands in the laboratories, the oxydation pond and sea water reticulation system in the Marine Science laboratory, and reinforced concrete gutters in the School of Biological Sciences.

The first two of these entailed reconsideration of the complete scheme, with consequent delays and cost overruns.

- (d) conflict between Government regulations and Bank procedures concerning procurements and payments: despite the agreement reached during negotiations between the Government and the Bank, it became evident in the course of implementation that some adjustments had to be made to procurement procedures in order to comply with local conditions.

For instance, for furniture the Government had a central procurement system by which it obtained yearly bids for items ordered in large quantities (international suppliers were invited to bid). In 1974, the Government requested that 10 percent of amounts for furniture and equipment should be spent locally and also proposed that the maximum amount per item should be M\$10,000. After lengthy argument, it was decided that local purchase would be by package to a maximum amount of US\$50,000. Government regulations concerning payments are based on a very short liability period (3 months) from the date of order, which favoured small packages, while Bank procedures are in favour of contracts extending over one or more years.

- (e) Supply of materials and labour for site works: the shortage of building materials was particularly severe in Sabah and Sarawak, as was the shortage of skilled workers and craftsmen, who were attracted to the many other important works being carried out in the country.
- (f) Contractors: the main problem with the contractors was the inability of many of them to exert proper coordination among, and supervision of, the sub-contractors appointed. This was a constant source of friction between main contractors and the project units, as well as a cause of further delays.

Project Management and Monitoring Bank Involvement

3.7 From the starting date of the project (7 July 1972), there were 14 Bank supervision missions: 6 were carried out by a single member (3 by an architect and 3 by an educator) and 8 by 2 members, mainly an architect and an educator (see Basic Data). A general educator went only once up until mid-1976 (i.e., for the first 4 years of the project implementation period). No technical educator went after 1975 nor did any TV specialist. The average lapse of time between missions was 6 months. However, the first 4 years were covered by 9 missions whereas the last 3 had only 5 missions. On three occasions nearly a year elapsed between missions. Progress made and problems encountered are recorded in the supervision reports.

3.8 Some factors which may be thought detrimental to this Bank involvement in project management and monitoring were:

- (a) The high level of turnover among mission members: during project implementation 5 different architects and 6 different educators (these latter divided among 3 different specialities, general and technical education and media services) participated in 11 supervision missions. Hence, with problems being at times perceived differently by different mission members, the Malaysian authorities could occasionally question the consistency of Bank policy regarding the project;

A similar lack of continuity, with consequent weakness of supervision, has been noted in previous World Bank completion reports on projects elsewhere. The explanation seems to lie in the long duration of projects (7-9 years) and in the Bank's limited estimates of the resources needed for this part of the project cycle.

- (b) Mission sequence and duration: repeated gaps of nearly a year between supervision missions (particularly in the case of a project experiencing difficulties) did not enable the Bank to keep in close touch with the project. Although supervision mission record forms are not always clear on the duration of missions, the average seems to have been about 3 days. However, this is not enough and prevents visits to sites where there may be awkward problems. The completion mission learned that some sites were, in fact, never visited.

(c) Supervision mission follow-up: on average, supervision mission follow-up was efficient and Bank confirmation of decisions taken during a mission was quickly despatched to the project units after the return of the mission to Headquarters. Occasionally, however, Bank approval took several months to arrive. From time to time a prompt decision was also requested by the Bank but this could not be made without careful on-the-spot checking. Here lies the problem of delegation of responsibilities.

Some back-to-office mission reports drew attention to specific matters with recommendations for investigation by the next supervision mission. However, at times there is no mention of any action taken in the next mission's back-to-office report.

CHAPTER IV

PHYSICAL IMPLEMENTATION

Changes in Project Content and Implementation Schedule

4.1 Various changes summarised in Annex IV/1 took place in the project content, the major ones being described below. Annex IV/2 compares the implementation schedule foreseen at the time of appraisal with the actual schedule, the closing date for the project being delayed by some three years.

A. CURRICULUM DEVELOPMENT CENTRE (CDC)

Site

4.2 A site for the CDC had already been acquired at the time of appraisal but was not considered satisfactory. A more convenient site was acquired in Jalan Duta, near the Government compound complex in Kuala Lumpur, in the northwest of the city and in a rather hilly area. The site is an elongated rectangle in shape with an average slope of about 8 percent. It is easily accessible from the adjacent municipal road, as well as from the city's service networks.

Professional Services

4.3 The design of the buildings and site supervision during construction were carried out by the Education Section of the Public Works Department in Kuala Lumpur. The cost of professional services was paid from Government funds and was not included in the project expenditure. Delays were experienced during the early phase of project implementation owing to the shortage and high turnover of the PWD staff.

Design

4.4 The design of the Centre is in general satisfactory. The hostel in particular is simple and functional, with ample space in trainees' quarters for storage and study. On the other hand there are some defects, such as the acoustics of the Conference Hall. This has been re-finished with sound-proof materials.

4.5 The most serious problem is the shortage of space due to a considerable increase of the CDC staff. All facilities available are overcrowded. The appraisal mission had cut by about 20 percent the area which, when the request was prepared, was calculated as necessary. Space available when the construction was completed amounted to a 28.5 percent increase over the appraisal estimates (see Annex IV/3). Still, however, the shortage of space has made it necessary to find inappropriate solutions such as using laboratories, corridors and even washrooms for workspace, or re-converting rooms (e.g., seminar rooms) essential to the programme. Another floor could be added to the building and development funds are being provided to start construction in the near future.

Construction

4.6 International competitive bidding procedures were followed for this project and the winners were local contractors who proved satisfactory. The buildings are sound, despite some cracks and leakages, but the quality of the finishes is below standard. The buildings were ready for occupancy in May 1977, or 2 years behind schedule. Annex IV/4 compares the appraisal estimates of areas with those actually built.

Furniture and Equipment

4.7 Tenders for furniture followed local competitive bidding procedures and extended beyond the appraisal date, owing to constant changes in the programme. Furniture quality is satisfactory. The list of equipment was prepared by the Planning Unit in the Ministry of Education. The shortage of staff in the PIU's procurement section considerably slowed up preparation of the procurement of equipment for this project, and this led to considerable delays in delivery. Twenty per cent of the equipment had been delivered by May 1977 when the CDC moved into its new premises.

Educational Media Service

4.8 A consultant firm was appointed and a contract signed for the design of the TV studios. A complete set of plans at the stage of sketch design was submitted to EMS at the end of 1974.

It was not until 1977, or 5 years after the signing of the agreement, that the Government decided to delete the construction of the ETV studios from the Project and to propose it as an item in the 5th Education Project. The main reasons were that the original site had been taken over by the Prime Minister's Office for other government purposes and that the construction programme - the architect's brief - had been changed several times, delaying the tending procedure each time.

B. TECHNICAL AND VOCATIONAL SCHOOLS

Sites

4.9 The aim of the technical and vocational schools part of the project was to extend enrolment to students from rural areas. Selected sites are located an average of 5 miles from the urban centres. There were no problems of access roads or of access to existing electrical networks. Where no water network was available, a school has its own well, pumping station and elevated water tank. All sites were acquired shortly before or after signature of the loan agreement. Although they are generally satisfactory, some problems are still pending in some of the schools. In particular:

- (a) In Klang the sports field is subject to rain water flooding during the rainy season and would need the construction of an expensive drainage system;
- (b) In Kluang, a landslide has recently been reported at the site of the school owing to the cutting away of a hill near one of the buildings;

- (c) In Tawau, the narrowness of the site forced reconsideration - extending until after site work had already started - of the distribution of the buildings shown in the site plan, causing delays during the early stage of construction;
- (d) The site in Miri is subject to rain water flooding. The ground floor of the administration and classroom block has already been damaged. Water supply is a problem since the capacity of the municipal elevated tank serving both the school and the community around is already inadequate.

Professional services

4.10 The design of the buildings was undertaken by the Public Works Department in Kuala Lumpur, while site supervision was carried out by the regional PWD officers in Peninsular Malaysia, Sabah and Sarawak. The shortage and extensive turnover of the staff of the various PWD offices resulted in serious delays, particularly in the preparation of drawings and specifications during the planning stage. This is one of the reasons for the delays affecting Tawau Vocational School in the state of Sabah, East Malaysia, where the construction phase was still not completed at the time of the mission's visit in June 1981, six months after the final revised closing date and four years after the original closing date.

Design

4.11 The design of the schools, including the lay-out and site distribution of the buildings, is generally satisfactory. The design is a standard construction module used by PWD for all secondary level educational facilities, with some variations from state to state. In Sarawak (Miri and Sibul) the main structure of the workshops is in steel with hollow block in-fill walling, and asbestos roof with no insulation underneath and consequent lack of comfort. The academic blocks in East Malaysia have three stories. The ceilings of the workshops in the Peninsular schools are too low, with consequent limits to the use of the facilities. The area of the metal shop is sub-divided into welding and sheet metal sections. The welding section is too small and the instructors complain about the difficulty of moving oxygen and acetylene containers to the welding booths. The three storey academic blocks in Sabah and Sarawak are not sufficiently protected from rain and large dark spots from fungus on the cement finishes have already appeared in different places. Corridors connecting the academic blocks should have expansion joints. The total actual built area is about 19 per cent above the appraisal estimate (see Annex IV/4).

Construction

4.12 In view of the limited amount of work which was contemplated at each site it was decided, with Bank concurrence, that local competitive bidding procedures would be followed after pre-selection of contractors. When submitting their bids, the main contractors presented a list of nominated sub-contractors for approval. The quality of the construction is generally satisfactory, as is the performance of the contractors. The building programme for the student hostels for the vocational schools in Sibul and Miri in the state of Sarawak was reduced. At the closing date civil works for Tawau Vocational School -electrical installations in the workshops

and drainage - had not been completed. Annex IV/4 compares the areas estimated at appraisal with those actually built.

4.13 Compared with the appraisal estimate, actual implementation (see Annex IV/2) averaged two years behind the original scheme. The main reasons for the delays, besides the fact that appraisal estimates for the preparation of contract documents were unrealistic, may be summarized as being:

- (a) the shortage and turnover already mentioned of FWD staff during the design phase;
- (b) long and cumbersome procedures for design and approval of contracts on the part of the services concerned;
- (c) poor coordination between PIU and the FWD offices in East Malaysia;
- (d) lengthy procedures for site investigation and soil tests before deciding on the type of footing in certain schools (Klang, Taiping, Tawau);
- (e) over-commitment on different projects by building contractors;
- (f) transportation problems with building materials (Tawau) and shortage of such materials;
- (g) installation of the 3-phase electricity network in Tawau school was not included in the main contract as it was with other schools and is at present under negotiation.

Furniture and Equipment

4.14 The standard design of furniture is not satisfactory, and the workmanship and quality of material is below standard in most cases. The percentage of damaged furniture is already increasing. Teachers were not involved in the preparation of master lists of equipment, this being done by the Division of Technical and Vocational Education in Kuala Lumpur for the Peninsula area and by the development sections in Sabah and Sarawak.

4.15 Experience of the implementation of Loan 599-MA (First Education Project) indicated that outside bidders could not successfully challenge local enterprises. The Government therefore suggested, and the Bank agreed, that invitations for tenders would be advertised locally with copies of advertisements to Embassies and High Commission, and that if no interest was expressed by foreign firms the Government would reduce the tender period for furniture to 4 weeks. International competitive bidding procedures were followed for the purchase of equipment. Each school principal received a complete list of equipment that was supposed to be shipped to the school.

4.16 Several problems occurred during procurement and delivery. Equipment procurement has been generally slow, particularly in East Malaysia. This was due mainly to the shortage of staff in PIU and the Division of Development and Supplies, and these units could not monitor the process adequately. Other problems concerned the installation of equipment: in some cases the supplier sent no instructions for installation and use, or else sent instructions in foreign languages. In most of the schools the point welding machines were not connected to the 3-phase network and none are at present operational. By closing date only 80 percent of the equipment for Tawau Vocational School and 85 percent of that for Sibul Vocational School had been procured.

C. UNIVERSITI SAINS MALAYSIA (USM)

Site

4.17 The site is located in the south east of Penang Island, on government land which had previously been used for an army cantonment. The university still uses a number of old buildings. Acquired by the Ministry of Education in 1972, the site has a total area of more than 210 acres. The Ministry has acquired also an adjacent 87 acres of land and is in the process of acquiring more to cover the needs of the future development of the university. The topography, owing to a succession of small hills and depressions, varying from 25 to 75 feet above sea level, created some drainage problems during the preparation of the Master Plan. Nevertheless, access to public roads and city networks was easy, but since construction of a highway is at present underway near to the site, linking the airport with the centre of the city, reconsideration of the road network within the campus will be needed to connect it directly with the highway.

4.18 The site of the USM Marine Field Station is located at Muka Head, the extreme north west cape of the island, between the sea and the Pantai Ached Forest Reserve, with the possibility of a natural terrestrial and marine ecosystem. The main problem with this site is that access must be by sea, since there is no other possibility for the moment. This necessitated the construction of a pier, which was covered by the project funds. The lack of expertise on the part of certain consultants concerning sanitation and water supply led to reconsideration and considerable delays in the completion of the Marine Station.

Professional Services

4.19 Master Site Plan: The design of an architectural Master Plan was included in the project. A firm of planners selected by the University and accepted by the Bank was officially appointed by the Prime Minister's Office in February 1972.

The Master Plan had to be prepared before the appointment of the deans and senior lecturers of various schools. This resulted in the numerous amendments before finalization and the 2-1/2 year delay before submission of the Master Plan for the Bank's approval. In 1974, in view of USM's urgent need for a large computer, it was decided to delete the construction of the computer centre in the central facilities building and to utilize instead an existing building which would be rehabilitated for the purpose. Also areas of the USM residential hall were reduced.

4.20 Buildings: In July 1972, the University Board of Management recommended to the economic planning unit in the Prime Minister's Office a consortium of four architectural firms to be appointed as consultants for the design and supervision of the work, which was divided as follows:

- (a) Library, Auditorium and Lecture Theatres;
- (b) School of Chemistry and Biological Sciences; and School of Physics and Mathematics;
- (c) School of Pharmacy and Applied Sciences;
- (d) Students Hostel.

The four firms would be coordinated by the Vice Chancellor. Other firms were appointed as consultants in the fields of engineering (4), electrical engineering (4) and quantity surveying (4). The planners appointed as principal consultants were supposed to exercise some control and coordination over the others.

4.21 The designation of the consultants, and preparation and approval of their contracts, was a first cause of difficulties and delays. Cumbersome procedures were one of the main causes - candidatures had to be submitted to the USM Board of Management, to the Prime Minister's Office's economic planning and implementation and coordination units, as well as to the World Bank. The quality of the services rendered by the architectural firms, as appraised by the University authorities, ranged from satisfactory to below average. Of the other consultants, some performed very adequately while others were unsatisfactory, their lack of expertise bringing about in some cases numerous problems which still remain unsolved. Another difficulty was the relationship between the principal consultant and the other consultant specialists: this was never good and the situation deteriorated to the point of constant disputes between them.

Design

4.22 The design stage was also a source of difficulties and delays. The list of needs and requirements for the different schools was not in its final stage at the time of the designation of consultants. The university authorities did not yet have the expertise available to advise on the educational requirements needed by the consultants as part of an architectural brief before work was started on design. This was a major reason for several amendments and revisions of the sketch plans (and later on of working drawings) before they could be approved by the decision-making authorities (the Economic Planning Unit, City Council and Bank) and caused an overall delay of about one and a half years in preparing the final Master Plan. Construction work did not start before June 1975, or 2-1/2 years behind the appraisal estimate.

4.23 This problem of initial delays during the design stage had serious consequences on the quality of the project. Most of the revisions requested - principally by the World Bank representatives and the Government Standards and Costs Committee - were dictated by the imperative need to reduce costs because of cost trends in Malaysia. But no one at that time seemed to have realised that any cost saving would be nullified by delays, and that the so-called savings have been obtained by lowering quality.

4.24 In general, the design of the buildings is satisfactory. This is especially true of the Assembly Hall and the Library. The main weaknesses concern details: in particular the built-in furniture such as the fume cupboards and the service islands in the laboratories. The fume cupboards have to be entirely re-designed. The service islands as they are at present installed could be dangerous for the students. Other defects were identified and corrected (as gas storage in the Chemical Science School). The space standards applied for the design are not those suggested by the Bank but rather those prepared by the Government Standards and Costs Committee, revised by the USM authorities as appropriate. The gross built area is about 15 per cent over the appraisal estimate (see Annex IV/5).

Construction

4.25 Annex IV/6 compares the areas estimated at appraisal with those actually built. After the planning stage the construction phase experienced further difficulties and its completion took about three years more than anticipated by the appraisal.

The main causes of delays were:

- (a) lengthy procedures for awarding contracts;
- (b) lack of proper coordination and cooperation between consultants and contractors;
- (c) shortage of construction workers;
- (d) shortage of building materials;
- (e) some main contractors sub-contracted the work to inexperienced contractors and failed to supervise their performance.

4.26 International competitive bidding procedures were followed and the tendering period was extended by 60 days. No foreign firms of building contractors applied. The contractor for the Library and the Main Hall basically sub-contracted the work. Site supervision was inadequate and the sub-contractors used low quality building materials. Other contractors gave satisfaction, with the exception of the firm chosen for the School of Chemistry and Biology. The quality of the finishes is below standard. The sub-contractor nominated for the lifts for the School of Sciences Auditorium and Library failed to honour his contract. The Minister of Education and the University decided on the exclusion of this work from the main contract and to invite tenders. This led to further delays even after the completion of the buildings.

Furniture and Equipment

4.27 Local competitive bidding procedures were followed for the procurement of furniture while ICB procedures were followed for the procurement of equipment for the project. At closing date some equipment for the Schools of Pharmaceutical Science and of Chemistry had still to be procured.

All furniture has now been delivered and is of acceptable quality. EPU requested the reduction of the tender period for equipment from 60 to 45 days and the Bank agreed. All the equipment tendered for has been delivered.

CHAPTER V

COMPLIANCE WITH LOAN COVENANTS

5.1 Overleaf is set out the status of implementation of the loan agreement covenants, most of which were due for compliance by January 1973. It was four years before the fundamental one concerning proper staffing of the Project Unit was implemented. One selected site (Miri) was not appropriate. The plans to be sent to the Bank concerning maintenance and repair of project television receivers and for the operation of CDC (including technical assistance requirements and sources of supply) reached the Bank on time. The covenant requiring the nomination by 1973 of an appropriate educational mass-media officer to each State was in the main fulfilled, although four States had to wait from 4 to 8 years more than contemplated. As in other countries where the Bank had a similar requirement, the endeavour to link the technical/vocational schooling system closely with industry did not succeed: school boards with representatives of local employers do not exist. However, there are industrial members on MOE syllabus committees.

5.2 While the majority of the obligations concerning educational aspects were carried out - though mostly with some delay - the situation has been less satisfactory as regards implementation of the obligations relating to PIU staffing and to site suitability.

SECOND EDUCATION PROJECT : LOAN 810-MA

STATUS OF COVENANTS

Date Due	Covenant	Ref. No. in Loan Agreement	Status
Throughout Implementation	<p>The Borrower shall carry out the Project through a Project Unit and shall provide all necessary technical and supporting personnel to carry out the project.</p> <p>A Maintenance and Development Unit acting in cooperation with the Project Unit shall be responsible for the overall supervision of the implementation of Penang University.</p>	<p>3.01</p> <p>Schedule 6</p>	<p>It took four years before the Project Unit could get the necessary technical and supporting personnel to carry out the project's implementation.</p> <p>Fulfilled: cooperation with the Project Unit has been adequate.</p>
April 1972	<p>The Borrower shall send to the Bank a plan regarding the maintenance and repair of project television receivers.</p>	<p>4.08</p>	<p>Fulfilled: a satisfactory plan was submitted.</p> <p>A local system of effecting repairs has been established. Furthermore, Government provides replacement units which, in 1981, have been budgeted to amount to 240 TV sets and 136 petrol generators, or about 3 per cent of the quantity of such equipment in the field.</p> <p>In some cases, however, maintenance provision could be improved.</p>
October 1972	<p>The Borrower shall: (i) select suitable sites for the schools at Kuala, Trengganu, Temerloh, Miri and Sibul; and (ii) inform the Bank of the sites selected.</p> <p align="right">, continued ...</p>	<p>3.06</p>	<p>Fulfilled: although the site at Miri was found later to be subject to water flooding.</p>

STATUS OF COVENANTS

Date Due	Covenant	Ref. No. in Loan Agreement	Status
October 1972	The Borrower shall send to the Bank, for its comments, the five-year plan for the operation of the Educational Development Centre included in the Project, including staff development proposals and details of technical assistance requirements and sources of supply.	4.03	A five-year plan of operation for the CDC, setting out its tasks, the development of its staff and technical assistance requirements, together with sources of supply, was sent to the Bank. The five-year plan of operation is contained in a report entitled: <u>The Education Development Centre Project, Ministry of Education, in collaboration with the International Bank for Reconstruction and Development and United Nations Development Programme: Plan of Operation 1972-1976.</u>
January 1973	The Borrower shall appoint a qualified and full-time educational mass-media officer to each State Audio-Visual Aids Centre.	4.04	<p>Nine E.M. officers were appointed in 1973: one more in 1977. By 1981, each state had an E.M. officer (total number 13).</p> <p>Their responsibility is, among other things, to promote the effective use of educational T.V. by teachers and schools, to supervise the system of repairs and maintenance and to liaise with schools and the Central EMS Unit.</p>
Undated	The Borrower shall, with respect to the Project, include or cause to be included in the membership of a board established to exercise functions specified in the Borrowers's Education Act of 1961 in relation to any vocational school, representatives of employers in the locality of such schools.	4.05	<p>The extent of organic integration of the Technical and Vocational School system with Industry has been rather limited.</p> <p>There are no Joint Boards^{1/} at the School level for local industry to involve itself with the training system that may be required in a particular area. The whole administration and policy-making system is rather centralized and all important decisions are taken at the Department's Headquarters level where a liaison system with industry has been established, dealing mainly with the design of the curricula and syllabi. There are industry members on MOE Syllabus Committees.</p>

^{1/} School Boards are no longer required for Government and Government-aided schools.

CHAPTER VI

PROJECT COSTS

Appraisal Estimates

6.1 At appraisal, the estimated total project cost was US\$ 28.45 million and the foreign exchange component US\$ 14.56 million or 51.1 per cent of the total cost. Tables below indicate:

- Table 1: Estimated project cost by project component,
- Table 2: Estimated project cost by category of expenditure,
- Table 3: Loan allocation by category of expenditure,
- Table 4: Appraisal estimates and actual costs.

Table 1

Estimated Project Cost by Project Component - Appraisal Estimates

Project Component	Malaysian \$ (millions)			US\$ (millions)			% of Total
	Local	Foreign	Total	Local	Foreign	Total	
1. Curriculum Development Centre (CDC)	1.44	0.95	2.39	0.51	0.34	0.85	3.0
2. Educational Television (EMS)	0.95	3.99	4.94	0.34	1.41	1.75	6.2
3. One Technical and 7 Vocational Schools	10.84	10.18	21.02	8.84	3.61	7.45	26.2
4. Science Schools of the University of Penang	18.23	17.74	35.97	6.46	6.30	12.76	44.8
5. Contingencies:							
Physical	3.01	3.25	6.26	1.07	1.15	2.22	7.8
Cost escalation	4.72	4.93	9.65	1.67	1.75	3.42	12.0
Total	39.19	41.04	80.23	13.89	14.56	28.45	100.0

Table 2

Project Cost by Category of Expenditure - Appraisal Estimates

Category	Malaysian \$ (millions)			US\$ (millions)			% of Total
	Local	Foreign	Total	Local	Foreign	Total	
1. Construction							
Academic & Communal Boarding	15.51	6.65	22.16	5.50	2.36	7.86	27.6
Staff Housing	4.92	2.11	7.03	1.75	0.75	2.50	8.8
Site Development	0.70	0.30	1.00	0.25	0.11	0.36	1.3
Professional Services	3.32	1.43	4.75	1.18	0.50	1.68	5.9
	2.02	0.86	2.88	0.71	0.31	1.02	3.6
Sub-Total	26.47	11.35	37.82	9.39	4.03	13.42	47.2
2. Furniture	2.67	0.67	3.34	0.94	0.24	1.18	4.1
3. Equipment	2.32	20.84	23.16	0.82	7.39	8.21	28.9
4. Contingencies							
Physical	3.01	3.25	6.26	1.07	1.15	2.22	7.8
Cost Escalation	4.72	4.93	9.65	1.67	1.75	3.42	12.0
Total	39.19	41.04	80.23	13.89	14.56	28.45	100.0

Table 3

Allocation of Loan - Appraisal Estimates (in US\$ Million)

Category	CDC	EMS	TVS	USM	Total		
					Loan Alloc.	Appraisal Estim.	
Civil Works	0.603	0.245	4.691	7.870	4.020	13.409	
Furniture	0.090	0.021	0.408	0.666		8.460	1.185
Equipment	0.153	1.486	2.357	4.218			8.214
Sub-Total	0.846	1.752	7.456	12.754	12.480	22.808	
Contingencies	0.206	0.436	1.842	3.155	3.020	5.639	
Project Total	1.052	2.188	9.298	15.909	15.500	28.447	

Table 4

Appraisal estimates and actual costs
(in US\$ million)

C a t e g o r y	Appraisal Estimates	Project Costs (30 June 1981) as reduced	Costs as % of appraisal estimates	Costs (30 June 1981) if Project fully completed	Final Costs as % of appraisal estimates
	1	2	3	4	5
Construction & Site Development, professional fees: without contingencies	13,409				
contingencies	3,352				
Total Civil Works	16,761	18,291	109	19,380	116
Furniture & Equipment: without contingencies	9,399				
contingencies	2,287				
Total Furniture & Equipment	11,686	9,299	80	11,260	100
Total Project costs excluding contingencies	22,808		121		134
including contingencies	28,447	27,590	97	30,640	108

Actual Costs

6.2 As shown in Table 4 above and in Annex VI/1, the actual project cost at the time of the revised closing date (31 December 1980) was US\$26.6 million, as against US\$28.5 million forecast with contingencies, or about 3.4 percent under the appraisal estimate. In reality, as shown in column 4 of Table 4, the real cost of the completed project will amount to about 34 percent above the original appraisal estimate without contingencies, the difference being paid by the Government.

6.3 The reasons for the slight under-run at the closing date were changes made in the project's content during implementation and items not completed by closing date. Main elements in the under-run were:

- (a) the decision in 1974 to delete the construction of the Computer Centre in USM's central facilities building and to rehabilitate instead an existing building for use as the Centre, and to the debiting in 1976 of the US\$700,000 cost of the computer to savings from the First Education Project;
- (b) the decision in 1977 to delete construction of CDC's ETV studios from the project and to propose it as an item in the Fifth Education Project, with the resultant expenditure of only US\$27,000 out of the US\$106,000 allocated at appraisal.
- (c) some equipment for USM's Schools of Pharmaceutical Science and of Chemistry, and for the vocational schools at Tawau and Siba had yet to be procured.

Construction Costs

6.4 The actual construction costs, including additional works which took place during the construction phase, amounted to 60 percent of the total cost of the project but, owing to the above-mentioned changes, exceeded the appraisal estimate by only 8 percent. All major price increases have been in the category of labour and building materials costs, which have a low foreign exchange content.

Professional Fees

6.5 Professional fees were minimal, since most of the design was carried out by Government PWD Services. The fees consisted mainly of consultants' fees for the design of the ETV studio, and for the design and site supervision of the USM Science Schools and Conference Halls, the breakdown being:

	<u>US\$ ('000s)</u>
ETV Studio	27
Development Master Plan, USM	63
Science Schools, USM, Conference Halls, etc.	<u>4,162</u>
Total	<u>4,252</u>

This amount equals 5.4 percent of the overall cost.

Furniture and Equipment

6.6 Furniture and equipment accounted for 33 per cent of the overall cost, compared with the 41 per cent estimated at appraisal, including contingencies. Total expenditure for furniture and equipment was US\$ 9.3 million or 22 per cent under appraisal estimates, owing to modification of the programme as mentioned earlier and to savings coming from furniture and equipment still to be procured at the time of the final closing date.

Cost per square foot and per student place

6.7 A comparative analysis of planned and built areas and of consequent costs per square foot and per student place is given in Annex VI/2. Actual costs compare well with estimated unit capital costs in institutions in other Bank-group financed education projects in the region. The actual cost per student place in the vocational schools is about US\$ 2,000 compared to the US\$ 1,892 average estimate for similar institutions built in the region during 1977. The cost per student place in the USM Science School (at full capacity) is US\$ 2,710 in chemical and US\$ 4,135 in biological science compared to the US\$ 7,170 median figure in University buildings built in the region during 1977.

Implementation Schedule and disbursements

6.8 Annex VI/3 presents a comparative analysis of the implementation and disbursement schedule between appraisal estimates and actual implementation. At the time of the original closing date (31 December 1977) only 26 per cent of the loan allocation had been disbursed. By a cable dated April 7, 1981, the Bank confirmed that the loan amount had been fully disbursed. At that time payments to various contractors and suppliers were far from being finalised: for instance, during the mission's visit to Tawau, the PWD local office still owed the building contractors more than M\$ 360,000 retained for defects and retention fund: (Us\$ 127,600).

Recurrent Costs

6.9 The mission was able to obtain information concerning recurrent costs for the vocational schools and the technical school included in the project, which have been operational for more than two years. Figures shown in Annex VI/4 vary from M\$ 940 up to M\$ 1,140 while the average cost per student place at the country level is MS\$ 1,200. It is too early to obtain reliable information for the USM Science Schools.

CHAPTER VII

PROJECT OPERATIONAL OUTCOMES

Overall Outcome

- 7.1 The project has on the whole achieved its objectives of assisting the Government of Malaysia in the four areas below:
- (a) Curriculum development: this is now a continuous process, concentrated mainly within one responsible institution with trained staff and specialized facilities.
 - (b) Educational television: this has made a good start in Peninsular Malaysia. The project provided receiving sets for a large part of the primary and secondary schools, stimulated the production of relevant materials and contributed to establishing at the receiving end a maintenance system and an administrative and professional structure at state level.
 - (c) The technical and vocational schools continued the efforts assisted by the First Education Project to expand these types of education and training and, consequently, contributed to the production of technical manpower and craftsmen.
 - (d) The investment made in the USM consolidated this young but innovative University and is undoubtedly assisting the Government to reach its targets with an increased output of graduates in sciences, including the applied sciences, and in Science with Education (the much needed science and mathematics teachers).

A. CURRICULUM DEVELOPMENT CENTRE (CDC)

Objectives

- 7.2 As an important step to improve the quality of education, a major objective of the second Malaysian Plan, the CDC was set up in 1973 and acquired the status of a Division of the Ministry of Education in 1974 (see Annexes VII/1 and VII/2). Its major responsibility is in curriculum development and research, and in the associated re-training of teachers. Its major objectives are to:
- (a) Identify and translate national needs and aspirations into curriculum specifications.
 - (b) Plan and develop curriculum programmes for continuous, systematic and qualitative development.
 - (c) Develop and produce curriculum materials such as syllabi, teacher guidelines, learning materials, evaluation instruments, audio-visual aids, and prototype teaching and learning equipment.

- (d) Disseminate information on curriculum innovations and practices to teachers in schools and to others in the community.
- (e) Organize in-service teacher education courses to ensure the proper implementation of curricular innovations, changes and revisions.
- (f) Conduct surveys and analyses of significant world-wide trends and developments in curriculum specifications and teaching practices.

Its major activities involve development, research, evaluation, testing, training and, to some extent, extension services. CDC is assuming the responsibility of acting as the Central Curriculum Committee's Secretariat.

7.3 At the project generation stage, it was foreseen that the Centre would extend its activities to cover, eventually, all fields of study below the university level and to play a major role in the improvement of teacher education. At the project preparation stage, it was suggested that, when dealing with research into areas of curriculum needs and of the teaching/learning process in schools, the Centre could perhaps concern itself also with the non-formal learning context.

Equipment and Use of Facilities

7.4 On the whole, it appears that the equipment received within the project is adequate in quantity (there is in fact an excess of printing and collating machines) and in quality: and forms the main part of the equipment now available in CDC (some equipment did exist before the new construction, partly funded by Unesco/UNDP 1/). With the limitations imposed by conversion of space initially allotted for domestic and experimental sciences, the use of equipment appears, on the whole, adequate. The situation is expected to be redressed in the future, as the Fourth Malaysian Plan foresees an extension of the CDC premises.

Research and Development Activities

7.5 CDC's research and development activities are very varied. It produces teaching guides in various subjects and prepares syllabi, graded reading materials, cassettes and resource kits. It performs formative evaluation of written materials, evaluation of textbooks, production of charts, construction of diagnostic tests, pilot-testing, comparison of teaching methods, etc. Moreover, the CDC's responsibilities cover the design, development and testing of prototype equipment and furniture; all these activities are under-way or are at the planning stage, e.g. evaluation of a specific in-service course and determining more effective methods of teaching. The fields covered are science, mathematics, languages, social sciences, and population education (in the form of integrated projects), including several special projects such as compensation education 2/, the Pahang Tenggara Project 3/, and the multi-media self-instruction teacher education project.

1/ Unesco/UNDP input for equipment and books, including curriculum packages for the Resource Centre, was respectively US\$ 95,000 and US\$ 25,000 for the interim period between commencement of operation as a curriculum unit and full implementation in new premises.

2/ With the goal of remedying learning problems especially in rural primary schools.

3/ Southeast Pahang region in West Malaysia with a large new land development project included in the SMP (1971-1975): MOE is in charge of formulating an appropriate curriculum for the school population in that region.

7.6 The list of CDC projects/programmes for the period 1973-79 is impressive. About half (34) of the 70 projects involve the reformulation or revision of subject syllabi. In 1979 about 40 per cent of the projects were at the initial stages, partially under way or on-going and the remaining 60 per cent were in the final stages or practically completed. For projects involving formulation or revision of subject syllabi a fair balance exists among the primary, lower secondary and secondary levels, languages and sciences having received the greatest emphasis. As regards the production of teaching-learning materials and publications, very large amounts are now available. Thus, the quantitative achievements of CDC have been impressive in research and development and are undoubtedly of great significance during 1970-1980 in which the Government set some key objectives and educational innovations were started within the framework of the various development plans. The increased emphasis placed by CDC on evaluation may fill in some past gaps and allow for a subsequent overall impact evaluation of the various curriculum projects and of the quality of the new syllabi produced.

Staff Development and Structure

7.7 Although staff development and technical assistance requirements (with sources of supply) were considered at the appraisal stage as being important and are included among the covenants of the Loan Agreement, quantitative anticipation was low, estimates being for a professional staff of only 73 (including about 30 seconded from schools). The request document presented earlier to the World Bank called for a staff of 100 professionals, 60 of whom would be permanent, 40 being teachers seconded on their own salaries. In fact, by 1974 the appraisal permanent staff strength target was already reached by CDC and nearly trebled by 1979, with 122 total national professionals and sub-professional staff in permanent positions. By 1981, this staff has risen to 151 persons 1/ (of whom 92 are university degree holders, one possessing a technical diploma), and consequently feels squeezed into limited space allocations.

7.8 Staff on secondment are present only for ad hoc work and for short periods of time. To some extent staff shortages exist for sciences and mathematics and for evaluation work as well as at the technical diploma level, while some turnover in the graphic arts is noticeable. Foreign consultants were reduced to 4 by 1979, but staffing of the hardware component of the World Bank project has been supplemented since the first phase (1972-1976) of CDC's operation by considerable expert services (of excellent quality it appears) provided by several bilateral and multilateral sources (including the UNDP/Unesco team for Phases I and II, covering the period 1972-1979) 2/.

1/ The appraisal report cut out about 20 per cent of the space allocations proposed in the project prepared.

2/ Between 1973 and 1976 an estimated 30 man-years of expert services were received; among the specialists funded by Unesco/UNDP three-quarters were from the USA.

7.9 CDC's staff development programme has been very generous, amounting to the large total of about 105 man-years of fellowships abroad. The wastage rate has been high: 32 out of 72 officers trained abroad for various levels of specialization have so far left. The training schemes were of different types (post-graduate level and short-term fellowships) and for those funded by Unesco/UNDP - i.e. the great majority - included very few regional fellowships, about 90 per cent being in the USA. A large variety of relevant areas were covered such as curriculum development, testing and measurement, curriculum evaluation, educational technology, prototype/AVA production and overall curriculum development planning. Furthermore, internal staff training by foreign specialists was occasionally organized.

7.10 Discontinuity of management and senior staff (principal assistant directors and assistant directors) has not been dramatic as about half are still in charge since the early days of CDC, and the Director is still the same (see Annex VII/2 showing organizational chart of the Centre 1/). It might be suggested that leadership be strengthened and that a serious review of staff promotion policy within CDC be undertaken in order to retain more permanently its better professional elements. Furthermore, in order to allow CDC to develop its full potential and increase its capabilities it would be desirable to study the structural, staffing and coordination implications of (i) its evolving functions and the additional subject fields and levels it has to tackle (such as pre-school education and upper secondary, technical/vocational and teacher training curricula) and (ii) of the full implementation of new strategies and orientations such as those embodied in TMP and FMP.

In-Service Teacher Training and Key Persons

7.11 In-service teacher training activities were always given considerable importance in Malaysia 2/, in particular upgrading the knowledge and teaching methodology of teachers in various subjects such as science, mathematics, Bahasa Malaysia and English. Except for vocational and technical teachers, CDC is specifically responsible for training in-service teachers in order to bring CDC curriculum innovations to the classroom. It has so far performed this function for 52,917 primary and 33,354 secondary teachers, a total of 86,271 teachers 3/, in Peninsular Malaysia, an estimated 80 per cent of the teacher population.

1/ Not shown in the Annex is the high level policy and decision-making body (of which CDC is the Secretariat), namely the Central Curriculum Committee, chaired by the Director-General of the Ministry of Education.

2/ The overall responsibility for in-service teacher training within the Ministry of Education lies with the Div'sion of Teacher Training.

3/ Excluding UGAMA (religious) teachers.

7.12 The way CDC reaches such large numbers is to train key persons (KPs) for the various curriculum projects, at the Centre's premises. To obtain a multiplier effect these KPs organize and conduct in-service training courses for teachers at the State level. Annex VII/3 gives an idea of such a scheme for 1979 and shows the numbers of participants involved. Another result of the scheme is the building up of a local cadre of staff with special training in curricula and methods. These key personnel have moved into school, district and State administrative positions, resulting in an administrative staff much more concerned with instructional quality than is usual in educational administration. Other activities for various curriculum projects include the orientation of teachers in the field for the testing of project materials in clusters of schools in given areas. Moreover, orientation workshops and sessions are held at CDC for other education personnel from the central or local levels, such as supervisors and education officers.

7.13 In terms of quality, it appears that the impact of these courses both at the central and State levels has not yet been sufficiently studied but evaluation is intended to be stressed increasingly in the future. It seems, however, that some doubts exist because of the shortness of briefing sessions, as to the KPs' effectiveness for conducting in-service courses. Furthermore, it also appears doubtful whether the KPs, who are nominated and selected by the State Education Offices, have necessarily the required leadership qualities and the proper means at the local level for organizing, conducting and following up their courses in the field. From a questionnaire survey organized by the national PCR team, the impression was gained in interviews with KPs that the training they received could be improved and that they felt they had insufficient support and/or incentives in the field 1/. CDC is aware of the shortcomings and is trying to improve the situation in the future, although the remedies are not all within its jurisdiction. The analysis of the returns to the questionnaires addressed to the KPs revealed a more than satisfactory state of affairs as regards all the parameters of both CDC and State organized sessions, but the responses to the open-ended part of the forms showed some revealing comments and lacunae. Only one-third of the respondents indicated that some evaluation of the courses was conducted.

Conclusions

7.14 To summarize the operation and impact of CDC at present, it appears that the most positive aspects are to be found in the central activities, whereas the more difficult ones are at the receiving end, in the diffusion and dissemination of curriculum ideas and materials and their implementation on a nationwide basis. This is why at the generation stage, with due regard taken of the extreme complexity of the task, it might have been appropriate to consider a feasibility study to identify the pre-requisites. In this mechanisms, structures and other requirements for disseminating curriculum renovations and generalizing them in the classroom, as well as the modalities of mass production of newly developed materials, whether textbooks or equipment, would be defined.

1/ It is fair to recognize that strong performances of classroom teachers were observed at several levels in several subjects (Ref.: WB staff on review/supervision mission, June 1979).

7.15 It appears that more streamlining and coordination of the multiplicity of CDC's activities, programmes and projects and more emphasis on in-depth evaluation of the results obtained would be beneficial especially if carried out with the cooperation of all agencies and divisions concerned, and in particular of the examination syndicate. Moreover, more consideration could be given to the involvement of pre-service teachers in training in the curriculum development process and to incorporating in teacher-training curricula the major findings of the CDC projects. Finally, the status and recruitment of the KPs should be revised if possible and they should have full support from CDC and from State and district education offices, besides training for leadership, in which MESTI ^{1/}, Ministry of Education Staff Training Institute, could most likely play an important role. An in-depth study should be carried out analysing post-training activities and career changes of a sample of those who received training at CDC. Great care also should be taken to place CDC adequately within the future developments of the regional "educational resources centres" foreseen in the Fourth World Bank Education Project, taking into consideration its leadership potential and professional competence.

B. EDUCATIONAL TELEVISION

Objectives

7.16 The general objective of this project component is, within the overall Malaysian educational strategy, to infuse into the general education system an adequate component of science and technology by improved visual presentation of science and mathematics through the Educational TV Service. The more specific objectives were to:

- (a) Appropriately equip a TV studio for the production of education material on video-tapes for broadcasting, and to provide related material.
- (b) Supplement classroom instruction by transmitting for about 40 hours per week over the national TV network an appropriate series of programmes for mathematics, science, languages, etc., and by providing about 5,500 TV receivers to mainly rural primary and secondary schools, as well as by providing schools in remote rural areas with about 2,500 small petrol generators to operate their TV sets.
- (c) Distribute about 18 video-tape recorders to teacher-training institutions and to the State audio-visual aids centres in order to help improve the ability of teachers in the use of ETV through pre-service and in-service courses.

^{1/} The purpose of MESTI is to improve the overall performance of the education system through training in managerial and administrative skills, and stimulating communication and exchange of ideas between personnel at the various administrative levels of the education system (Fifth WB Education Project).

Central Unit

7.17 The educational TV unit in Educational Media Services is now fully manned and operational, with adequate technical and professional facilities. Its task is to interpret the general policy determined by the National Advisory Committee under the Ministry of Education and to produce its own software in the required variety of subjects. Most of its productions are in the form of 19-lesson series broadcast over a full academic year of 40 weeks' duration. Each lesson is repeated four times over a fortnightly period in order to accommodate a variety of time-tables in the receiving schools. There are now 29 different packaged series which cover material of interest to the primary schools (50 per cent of the broadcasts), to the lower and upper secondary general schools (40 per cent) and to the teachers and the general public (10 per cent).

7.18 The subjects covered deal in a systematic way with the teaching of mathematics, science, biology, Malay language, English, history and commerce. They also deal with topics for an out-of-school target population (teachers and parents) under the series of "Current Scientific Affairs" and "World of Education". The broadcasts are transmitted over the National Broadcasting System and beamed through the telecommunications network. All school programmes are broadcast from 7.30 am to 5.00 pm. The programmes for the general public are broadcast in the early evening. The Unit now beams its programmes for 37 hours per week to Peninsular Malaysia, having started its regular broadcasts in 1972, but for only 24-26 hours per week to Sarawak and Sabah, having started its regular broadcasts in 1976. This lower figure is stated to be the result of limitations imposed by the National Broadcasting Service (The Third Education Project includes assistance to the spread of ETV to Sabah and Sarawak).

Output, Content and Quality

7.19 One of the major objectives of ETV is to offer support material in the teaching of a number of basic school subjects. It is in this light that the content and quality of the programmes produced (and, for that matter, the viewing and the contact hours by the pupils) should be mainly assessed. The objectives of ETV broadcasts are, naturally, much wider than providing support material, but those additional benefits would be by-products of the services and even taken all together, might not justify the investment and the running expenses involved in such a project.

7.20 The ETV Unit has produced complete series on most of the basic subject areas. The major policy lines regarding subject areas are determined by the National Advisory Committee, chaired by the Director-General of the Ministry of Education. The ETV team, with assistance from CDC and panels of inspectors and other specialists in the subjects selected, prepare the content and the technical team produces the tapes. With each series and for each lesson there are leaflets for the guidance of teachers so that the maximum benefit may be obtained from class viewing. Most of the programmes, however, were prepared some eight years ago when the Service was still in its early development stages and would need re-editing and,

possibly, redrafting. From information obtained, the Unit is now in the process of engaging in such revision work. An Evaluation and Utilization Section has been set up which is using feed-back from pupils and teachers to effect the necessary improvements. On the whole, the impression gained is that the ETV unit is operating in a professional manner and is aiming at high standards. It is relevant to mention that a Ministry of Finance survey committee has recently authorized extended assistance to the ETV Unit.

Reception

7.21 The distribution of 5,500 TV sets has been carried out to nearly all schools, mostly in areas where the local authorities or the voluntary school organizations could not provide them. To enable schools in remote areas where there is no electricity network to operate their TV sets, a total of 2,500 petrol generators of 0.5 KW power each were distributed. As the needs proved to be higher than anticipated under the Loan Agreement, the Government supplemented the original purchases with further allocations (through the Third Education Loan) so that, eventually, 7,600 TV sets and 4,000 generators have been distributed. A localized system of repairs has been set up. Furthermore, the Government provides replacement units which, in 1981, have been budgeted to amount to 240 sets and 136 generators, or about 3 percent of the amount of such equipment in the field.

Video-Tape Recorders

7.22 Eighteen video-tape recorders have been purchased out of loan money. These, plus a few more purchased from local funds, have been distributed mostly to teacher training colleges and to state media services to promote the use of TV programmes and to improve teacher-training methods.

Field Officers

7.23 Full-time Educational Mass-media Officers have now been appointed to each State Audio-Visual Aids Centre in compliance with a special covenant included in the Loan Agreement. Their responsibility is, among other things, to promote the effective use of educational TV by teachers and schools, to supervise the system of repairs and maintenance, and to liase with schools and the Central EMS Unit.

Teacher, Schools: Use Factors

7.24 The difficulty of assessing the benefits from an educational TV service is inherently similar to that of assessing the benefits from an educational and training system. The task, in this case, is made even more difficult given the fact that the main role of ETV, as assigned to it by the authorities, has been that of a supplementary medium, and that its subsidiary ones are educational and developmental. Thus, the analysis would be limited, to some extent, to deductions drawn from statistical information. From the statistical reports prepared and published by the

Evaluation and Utilization Section of the Educational Media Services, it is learned that 62 per cent of the primary schools and 42 per cent of the secondary schools which own a TV set switch on to view the programmes. Of those schools which use TV as a teaching support medium, the average viewing per series of programmes is 45 per cent in the primary schools and 27 per cent in the secondary schools. For each topic, beamed four times over a fortnight, the class contact hours are about 40 per cent for the primary schools and 25 per cent for the secondary schools.

7.25 If one bears in mind that educational TV has not been made compulsory by the school authorities, and consider too the various external adverse factors such as the time-tabling difficulties and the awkwardness in wheeling the TV set from class to class, the scores above are not disheartening. In fact, the comment of primary and secondary teachers during field interviews were favourable on the usefulness and the quality of the programmes broadcast. Secondary school teachers would be inclined to improve more on their utilization factors if the strain of having to prepare their students for the State examinations was alleviated by a more liberal allocation of TV viewing time in the school time-table and by a greater number of TV set available.

7.26 A country with as widely dispersed a population as that of Malaysia appreciates the benefits derived from the widening of the educational horizons of its youth and from the contribution to the promotion of social development and unity obtained through TV. The role of the State Education Mass-Media Officer could be made more productive if he were given as a high priority, the task of visiting the schools as often as possible to promote ETV utilization and to help deal with practical problems such as maintenance and power supply which, in some schools, appear to be the main obstacles for not switching on as often as desired. Further detailed analysis might be desirable concerning pupils' impressions about the value of the programmes. More data on the effects of TV on pupils' achievements would be useful, as would information of the impact of programmes on non-pupil viewers.

C. VOCATIONAL AND TECHNICAL SCHOOLS

Objectives

7.27 The general objective of this project component was to assist in implementing the Malaysian educational strategy aiming, among other things, to meet manpower requirements through the expansion, improvement and rationalization of technical and vocational education. As specific objectives, the project contributed to establishing 7 secondary vocational schools and 1 secondary technical school in strategically selected areas of the Malaysia Federation (with a geographical distribution and a student capacity as shown in Annex VII/4) and to equipping these schools with appropriate facilities.

7.28 Vocational Schools: the purpose of the Vocational Schools is to provide practical and theoretical training geared towards the development of employable basic skills that could be readily adapted to changing industrial requirements. They will provide training in the following trades:

- (a) Industrial trades: machine shop and bench fitting; sheet metal and welding; motor mechanics; electricity (electrical installations); electronics (radio and TV repairs); building construction; refrigeration and air-conditioning (installation and repairs).
- (b) Commercial trades: copy-typing; shorthand-typing.

7.29 Technical School: the purpose of the Technical School is to provide basic scientific and technological education to qualify those successfully completing courses to enter industrial employment or to further their higher education ^{1/}. The School will provide training in the following trades: mechanical engineering; electrical engineering; building construction and commerce.

School Capacity and Enrolments

7.30 On the whole, the capacity of each school has been of the order specified in the Loan Agreement both in terms of student and of hostel places, as can be seen by comparing the tables in Annex VII/5. Staff accommodation has also been provided as planned. The total numbers, however, of students enrolled and of students accommodated in the hostels is about 90 per cent of the planned figures, for two main reasons:

- (a) The scheduled class size has been reduced from 40 to 36 students per class.
- (b) The hostel accommodation capacity has been slightly reduced in order to allow more space for common services, including prayer rooms.

Courses

7.31 Schools have been equipped to offer training in the skills specified by the Project Agreement. All vocational schools continue, with some variations to meet local needs, to offer courses in the fields listed above. All courses are of 2-years' full-time duration. The following modifications, however, have been noted and show flexibility in meeting the needs of employment. The vocational school at Miri has recently been devoting all its activities to serving the Bintulu Project. This is an industrial development project, under the auspices of the Ministry of Labour and Manpower, which provides short 6-months courses to train manpower for industry. The school has been equipped with supplementary facilities to offer training in plumbing, pipe-fitting and bar-bending. It runs separate courses for brick-laying and masonry and for carpentry and joinery, but has suspended its training in motor-mechanics, in radio and TV and in refrigeration and air-conditioning.

^{1/} Para. 2.11 (a) of First Education Project Completion Report, December 1978.

7.32 The vocational school at Klang participates in the scheme for in-service training courses by accommodating such classes during afternoons and evenings in parallel with its normal day courses. The vocational school at Sibul offers only six, instead of the usual seven, industrial trade courses offered by most other schools, having suspended training in welding and sheet-metal, which apparently is covered sufficiently by the training activities of the vocational schools at Miri and at Kuching. The vocational school at Tawu is being equipped to offer separate courses in both motor-mechanics and in heavy plant-machinery, but has left out of its program courses in refrigeration and air-conditioning.

7.33 The training curricula and syllabi adopted by the Vocational Schools appear appropriate for the objectives set for these institutions, as described above, although they are probably less flexible than the Industrial Training Centres run by the Ministry of Labour. The percentage allocation of weekly time between general education subjects (24 percent) and trade training (76 percent), as well as the 50 percent of time allocated for actual skill training (as shown in the table in Annex VII/6) is considered to be conducive to achieving the objectives set and it conforms to internationally accepted patterns for such schools. Such a system operating for 50 periods of 40 minutes a week for 40 weeks a year, in an environment which is largely residential, affords very good opportunities for effective training.

7.34 However the 2-year programme of studies is barely adequate to impart sufficient skill-training in the required variety of skills for craftsman training and to develop confidence in the appropriate industrial processes /1. The Department of Technical and Vocational Education expresses its appreciation of this limitation and contemplates providing one year special courses for those who do not wish to pursue further education after qualifying SPVM examination. The thinking, however, regarding the curricula of such a third year of training does not appear to have been, as yet, finalized and it may be worth giving some more consideration to the suggestion for integrating this third year with industrial training as some sort of a "sandwich" system, rather than to use it as a year of narrow specialization training spent totally on the school premises.

7.35 This latter option would, among other things, require investment in expensive machines for processes which not all the staff may, as yet, be able to teach fully and effectively. The first option, on the other hand would be less expensive to implement, would strengthen the confidence of the students in handling real-life jobs, would introduce them to current practices and processes in industry, and would provide opportunities for the teaching staff to keep themselves up-dated with industrial processes and practices. It is vital for teachers instructing others in industrial skills, themselves to possess these skills. Finally it would help integrate the schools with industry and would facilitate the placement of school graduates. In any future appraisal of the system, occupational requirements, the training programmes and achievement testing would be more closely related to one another and to the abilities of the students.

/1. Alternatives were discussed in "Malaysia, Proposals for Educational Development," Unesco, April 1975 and "Malaysia, Reinforcement of Education and Manpower Development," Unesco, November 1977.

7.36 The Technical School at Kuala Trengganu has been designed and equipped to offer training at the junior technician level in building construction, in mechanical and electrical engineering, and in commerce. All courses are of 2-years' full-time duration. The school also operates two pre-university classes (lower and upper 6th) for those who have completed courses and who wish to improve their standing with institutions of higher studies. The curriculum of the technical schools does not provide for the option of electrical engineering, mainly it is understood because most of what would be taught in this course is covered by the traditional physics syllabus. The electrical workshop wing has as a result, been closed. The school now offers three, instead of the intended two classes in building construction and in mechanical engineering, and two classes in commerce.

7.37 The final set-up in the operations of the various schools, as described above, is in conformity with the general policy of adapting activities to the needs of the area and of the country. Efforts should be made, however, to use the resulting redundant machinery by re-allocating it to other schools that are in a position to make good use of it. The curriculum and syllabus adopted by the technical schools as analysed in Annex VII/6, is more appropriate for furthering the students' opportunities for higher studies in science and technology than for providing them with terminal qualifications to work as junior technicians.

Training facilities

7.38 A systematic procedure has been attempted to provide each of the project schools with the necessary supply of appropriate equipment for workshop and laboratory training and with the other basic necessities such as benches, cabinet spaces, etc. A Specifications Drafting Unit for equipment has been set up with the Department of Technical and Vocational Education and a Tenders Evaluation Team has been set up within the PIU. The designing of benches and other furniture has been assigned to the Public Works Department. Major items of equipment have been supplied through international bidding. Most of the small tools and all of the furniture and other items of woodwork have been supplied through local tendering.

7.39 In practically all cases, the quality and construction of the furniture and the other woodwork items has been sub-standard and much of it is already in need of extensive repair work. It has been difficult to allocate responsibility but it appears that this situation is the outcome of inexperience, of bad design, and of ineffective control procedures when accepting deliveries. The equipment purchased from abroad is, on the whole, of appropriate design and specification. However, here too are examples of equipment having had a surprisingly high rate of failure, not being accurate enough to be useful for the purpose for which it was intended, or being unusable because it had been delivered without all necessary accessories or without instruction manuals, or being made in a dimensional system for which there are no tools or spares available in the local market.

7.40 Most of these weaknesses and problems could have been avoided or minimized by measures such as establishing closer cooperation between the unit which draws up the specifications and the team which evaluates the tenders, drawing up detailed documents when awarding the tenders so that the supplier is tied down to conform to all necessary conditions, and briefing the recipients (the school Principals) in detail on what is expected to be delivered to them. International bidding has both advantages and weaknesses. A necessary pre-requisite, however, for effective equipment utilization is a reliable after-sales service, to which appropriate consideration should be given when evaluating and awarding the tenders. An active feed-back system between the end-users and the procurement staff would help to improve future situations.

7.41 Apart from ineffective use of some of the machinery and equipment for the reasons mentioned above, two further factors tend to limit the scope of the training facilities. One is lack of confidence on the part of the teachers themselves in demonstrating processes which require the operation of some sophisticated equipment, and the other is the apparent freedom to leave out items of training in particular processes either because the syllabus is not specific enough about them or because the examiners do not consider the items as amenable to "good" examination questions.

7.42 Special short up-grading courses in Navigation and Marine Engineering have been held in the Sibv vocational school, to enable in-service persons to sit for professional examinations and to further their sea-competency qualifications. There is capacity for up to 120 student places, though the normal student population at any one time is about 90 persons. It has not been necessary for the school to supply any special equipment for instruction in these topics.

7.43 The training facilities of the vocational schools are, on the whole, appropriate for technical training with the exception, perhaps, of a certain make of lathe and of some electronic meters and power supply units which are sub-standard for the purpose they have been selected to serve. However, what may be adversely affecting training opportunities is the high incidence of breakdowns of machinery and equipment, which limit the number of available training stations. In each workshop and in each school there is likely to be a certain proportion of out-of-order machinery and equipment and in some workshops and schools this may be as high as 60 per cent.

7.44 The problem may be analysed as follows: an apparent absence of a comprehensive maintenance and repairs system: some "too-sensitive-to-handle" equipment, the unavailability in the local market of spares for relevant makes; and deficiencies in attitudes towards maintenance and in resource-fulness in effecting repairs. It is strongly recommended that determined and concerted action be taken to solve this problem. A system, either centralized or localized depending on which form would be more appropriate for the country, should be adopted and made fully operative. Headmasters should be encouraged to give the matter top priority. Instructors should be further trained, through special courses organized possibly by the Technical Teachers Training Colleges with outside expert assistance, and assigned to involve themselves in repairs.

7.45 As for the training facilities of the technical school, the curriculum adopted provides for workshop time which is less than 7 per cent of the total and this hardly justifies the capital expenditure on workshop facilities. The general education is intensive and of high standard. Both staff and students take pride in the high grades (95 per cent passes) achieved in the national examinations (see Annex VII/7), which enable the great majority of those passing out to enrol for higher studies in colleges and universities.

7.46 Information gathered from the Department of Technical and Vocational Education indicates that Government aims at eventually integrating the secondary technical schools into the general education system of the country. This policy may be correct given the objectives set for these schools and in view of the fact that real technician-training is offered at the Polytechnics and Colleges and is open to more than just the entrants from secondary technical schools. Within this long-term objective of these schools the situation calls for a review of the laboratory and workshop training facilities. It may be more appropriate to devise a "comprehensive" workshop space with a wide variety of "one-off" items of machinery and equipment that can demonstrate and offer limited hands-on experience in technological processes and tests.

Teaching Staff

7.47 The professional competency of the teachers and instructors is, on the whole, of a reasonable standard. Teaching is active and the students appear well-behaved and participating. The teacher/student ratio, now at 1:14, is considered correct. The technical schools have a predominance of university graduates (that at Kuala Trengganu has 70 per cent of its staff university graduates, half of them with a B.Sc. degree). The vocational schools rely heavily on graduates from the Technical Teachers Training College. Of the schools visited only the vocational school at Sibu in Sarawak seemed to be understaffed in terms of qualified teachers. One of the explanations given was the unavailability of enough local teachers trained at TTTC.

7.48 Though training at the TTTC is well designed, the teachers' effectiveness and confidence would be further increased if they were given the opportunity to acquire more industrial training. Consideration could be given to the suggestion for the adoption of a policy by which students at the Teachers Training Colleges could construct items which could be sold and/or engage in school and contractual repair work, as well as undergo some further pre-service or in-service industrial training which would supply them with more substantial opportunities than hitherto for real-life work, would strengthen their confidence in giving technical skill-training, and encourage them to engage, with their students, in school repair and construction work.

Output and Follow-up

7.49 The success rate at the technical schools is impressively high.

In 1980, the final year students of the Kuala Trengganu Technical School had a success rate at the Malaysia Certificate of Education State examinations of 97 per cent, with three-quarters of them passing with grades 1 or 2. Drop-outs are very few and those passing out easily secured places in universities. The success rate of the vocational schools, however, is regrettably low. The average passes in the Malaysia Vocational Certificate Examinations State examinations vary from 54 to 30 per cent, as can be seen from Annex VII/7. One explanation given was the low qualifications of the students at entry due to the comparatively low popularity of the vocational schools. The Government confidently expects that the situation will gradually improve and that as a result of anticipated higher future demands for those who complete vocational school the ensuing competition to secure enrolment will enable the schools to be more selective, and thus improve on their showing in the State Examinations.

7.50 The solution to this problem, however, depends on the answer to a key question: are the vocational schools designed primarily to supply industry with a well-trained and versatile stock of craftsmen? If so, they should aim at providing terminal qualifications. Or are they progressively to cater more and more for the future technician? If so, high scores at the SPVM would be meaningful only in as much as they would further the students' prospects for higher education at the Polytechnics and Colleges. If training for terminal qualifications constitutes the long-term objective, the high failure rate deserves the serious concern of the appropriate Government authorities.

7.51 The solution may lie not so much in up-grading the students' standards at entry, as in re-appraising the objectives of the SPVM examinations. In a country where paper qualifications mean so much to a person's career, the basic principles of the trades examinations may merit review. If, however, the future skilled workers and the craftsmen will come, predominantly, from the Industrial Training Centres and from the Apprenticeship Scheme, then perhaps the present situation may be tolerable. The vocational school curriculum seems to have broadened over the years and thus tended to become pre-vocational rather than job specific. In any case, how far those trained in the vocational schools are strengthening the skilled cadres required by industry is difficult to assess. Comments made by the industrial sector speak favourably of the attitudes to work of those trained and of their ability to adapt themselves. The "tracing" system, however, has not been working effectively, with most of those trained neglecting to fill in and return the forms issued to them by the schools.

D. UNIVERSITI SAINS MALAYSIA (USM)

Facilities

7.52 The provision of facilities for the USM Science Schools and of some common ones for the whole university would, according to the appraisal report, assist in carrying out the university level, SMP development plans which were later continued in both TMP and FMP. More specifically, this component, by far the largest of the four project components, was to provide a great deal of the total facilities and equipment of USM, especially in the sciences - in particular science with education and the applied sciences - in order to contribute significantly to reducing the shortage of graduate science teachers and of other personnel requiring training in science.

Operational outcomes

7.53 Background information on USM objectives in general and its structure and courses are given in Annex VII/8. This describes also the modes of operation of this comparatively new and innovative University, and some of its main characteristics and policies: school system, off-campus programme, matriculation classes, residential system, and academic year structure, as well as the characteristics of the Bachelor of Science and the Bachelor of Science with Education Degrees.

Enrolments and graduate output

7.54 The table below summarizes the present situation (B) compared with the appraisal estimates (A), as regards USM's enrolments and graduate outputs:

	At Appraisal Stage 1971	Enrolments			Graduate output	
		A, for 1980	1978	1979	A (1970-1980)	B 1st Degree (1972-1979)
Science	400	2,650 ^{1/}	n.a.	1,847 ^{2/}	2,200	1,444 ^{3/}
Arts			n.a.	1,703		2,094
Total		5,000	3,299	3,550 ^{4/}		3,538
Post-Graduate Students				100		

1/ This corresponds to P.4.15 of Appraisal report, Par. 4.13 of same report indicates 3000.

2/ Or about 1/3 of total enrolments of Malaysian Universities in what is called "other Sciences", including Natural Sciences, Pharmacy, Applied Sciences, Environmental Sciences, Food Technology and Science with Education.

3/ Including education students and applied science graduates (398).

4/ Or around 18 per cent of total enrolments in Malaysian Universities.

The total output of first degree science graduates was 1,444 from 1972-1979. Adding the 1980 output of 315 gives, for a 9-year period, 1,759 graduates, or 83 percent of the appraisal estimates for a decade. Annexes VII/10 to VII/12 give student admissions and outputs over the years for the various schools as well as enrolments and outputs of higher degree students.

7.55 The total enrolment in June 1979 of science students amounted to 70 percent of the enrolment expected at appraisal /1. The reasons given for this shortfall are (a) the delay in the construction of adequate facilities under Loan 810-MA; (b) the difficulty experienced in obtaining sufficient Bumiputra /2 candidates for admission to the science stream; (c) the difficulties in obtaining student ethnic balance in the science stream; (d) the consequent restriction of the Humanities and Social Sciences intake so as to maintain a 60:40 ratio between the Science and Arts enrolments, reflecting employment opportunities; and (e) the need to maintain a viable staff:student ratio in view of the difficulties faced in the recruitment of suitable staff, especially in some fields of science and technology. The University aimed at an overall ratio of 1:10.

7.56 The contribution of USM in making good the shortages of scientific personnel is substantial. As the ratio of science-based to arts-based high level manpower (excluding teachers and unclassified manpower) is foreseen /3 as increasing slightly by the end of 1990 from the 60:40 ratio in 1973 to a 63:37 ratio, the role of USM in this respect should be even greater in the future.

7.57 The total output /4 of B-Science with Education /5 graduates from 1974 to 1979 was 535, or 21 percent of the total number of science graduate teachers in Peninsular Malaysia. According to the "Mid-Term Review of the Third Malaysia Plan" estimates, 3,893 graduate teachers were produced by the universities, of whom 1,313 or one third were science teachers. The B.Science with Education output from USM, from 1975 to 1978 being 436, the contribution of USM to the national science graduate teacher output is about one third. The FMP (1981-1985) will call for a strengthening of the

/1. According to the Fourth Malaysian Plan, USM is estimated by 1985 to reach a total enrolment of over 5,600 students or nearly 20 percent of all enrolments in Malaysian universities.

/2. "Sons of the Soil," constituted ethnically by Malays.

/3. Ref.: Unesco Sector Updating Report entitled "The Reinforcement of Education and Manpower Development" Malaysia, Paris, November 1977.

/4. Average enrolments over the years 1976-1977 to 1979-1980 being estimated at 526.

/5. In view of the great shortage of science teachers for the country's secondary schools, the University introduced as early as 1972 an integrated and concurrent Bachelor of Science with Education course. This differed from the more traditional pattern of awarding a Diploma in Education only to students who already possessed a first degree. Another feature of this programme was to require students to read two science subjects besides doing service mathematics so that they would be able to teach more than just one subject when they graduated.

supply of graduate teachers, particularly in the sciences and related subjects where provincial estimates foresee for the decade 1981-1990 an annual additional need of 1,000 science and mathematics teachers /1.

7.58 As will be seen in the next section, and as it is to some extent confirmed by the follow-up studies of graduates (the last section of this project component), USM's flexible and imaginative course offerings appear, on the qualitative side, to evidence the adequacy of the education and training offered.

Curricula

7.59 In general the studies were modified from an initial three-year "examination paper" system (10 papers per year) to a more flexible "credit-unit" /2 system in 1974/75, refined in 1977 with a length of study for graduation of eight semesters (4 years). All the new programmes in operation offer 2 or 3 alternatives, one of which is a "general studies" to strengthen inter-disciplinary studies. Some characteristics of the Science and Education and of the Science degree programmes, of particular relevance to the outcome of the project, are indicated in Annex VII/8, while Annex VII/9 gives the specific requirements for the Bachelor's degree in Science and in Science with Education. USM also offers central advisory and consultancy services on the application of educational technology to teaching methods and on the preparation and production of learning materials.

Staff Development

7.60 The evolution of total USM academic staff and of the proportion of foreign staff is given below:

	1970	1975	1979
Total No.	34	285	378 <u>/3</u>
Percentage of Foreign Staff	21%	38%	26%

/1. This would be double the figure estimated in the Unesco Sector Updating report, Unesco, Paris 1977 above mentioned. The explanation is to be found in the assumption, in FMP, of a much larger expansion of upper-secondary enrolments and of a lowering of the student/teacher ratios during the period 1981-90.

/2. One unit is 14 hours of class contact (or 28 laboratory/workshop hours). Between 120 and 140 units are required for a degree.

/3. Out of which 87 (academic staff and ASTS fellows) obtained their academic qualifications from USM by 1980 (not counting the 31 administrative staff who also graduated from USM).

7.61 Annex VII/13 in Table I compares the appraisal estimates for staff and student numbers (excluding social sciences), broken down by schools, with the existing situation in 1979. It also shows in Table II the evolution of full-time teaching staff by national and external personnel. These data indicate that there is a significant trend towards an increased proportion of national staff. Furthermore there is apparently a reduced number of staff in the Science, Education and Applied Sciences schools, in particular there are fewer full-time staff in the Schools of Physics, Mathematics and Chemical Sciences and in Education Studies, but except for the latter the staff:student ratio is much higher than the appraisal estimates for about 1:10.

7.62 USM is active in staff training, carried out in three programmes. The ASTS (Academic Staff Training Scheme) programme is an attempt by the University to identify and train suitable Bumiputra candidates to assume teaching positions in the University. There is a limited number of such staff available, especially in the fields of science and technology. Under this scheme, first degree holders are sent abroad for higher degrees after a short internship at the University. A second scheme ASHES (Academic Staff Higher Education Scheme) caters for academic staff already employed by the University who require further study to improve their qualifications in their chosen fields. The ratio of fellows studying under the ASTS and ASHES programmes is so far about 9 to 5 respectively the total number sent from 1970 to 1979 being 270, of whom 144 have so far returned. Since in the last two years more than 100 were sent, of whom a number have not finished their training, the numbers who have returned are rather satisfactory.

7.63 A third scheme is purely internal, staff being assisted by the teacher-learning advisory unit (TLAU) in conjunction with the Educational Technology Unit, which is part of the School of Educational Studies. TLAU was established only in 1980 and is aimed at assisting academic staff to improve their teaching efficiency. There are also teaching/training programmes for users of the Computer Centre these are followed by academic staff from USM's various schools.

7.64 It appears that the staff of the various schools is at present adequate on the whole although the workload of teachers in the Educational Studies Schools is very heavy and is out of balance with that in the rest of the Schools. The Computer Centre has a small nucleus of qualified academic staff, assisted by 5 systems analysts and 2 programmers, and is expecting later 3 additional academic staff who are at present overseas for further studies. There is a recognised need for more staff with industrial experience and expertise in computer applications. As for the other services, it seems that the library and ETU have an appropriate number of competent professional and technical staff ^{/1}. The rather good overall continuity in senior USM staff has contributed to facilitating harmonious development and to its retaining its initial principles through the process of academic reorganization.

^{/1}. A policy of fringe benefits is trying to keep turnover in technician and maintenance staff to a minimum; in 1981, these numbered 28 compared with a total staff of 48, including 9 academic staff.

Adequacy and use of facilities and equipment

7.65 There have been a few unfortunate problems, related to the design of systems, in the equipping of some of USM's facilities: these are mentioned 1/ elsewhere as examples of some of the difficulties faced by MDU. In the School of Physics the use of the undergraduate laboratories could be increased, whereas the general laboratories for staff and student research are heavily utilized. The former underutilization is common to all schools although, in, for example, Pharmacy in the School of Applied Sciences, undergraduate laboratories utilization seems reasonable.

7.66 On the whole the equipment provided under the project, whether for communal academic facilities, for research and teaching in the Schools of Natural, Applied and Pharmaceutical Sciences, or for the audio-visual aspects of the School of Educational Studies and of ETU, is adequate in quality and quantity, is used properly and to a reasonable extent, and is well serviced and maintained. Several maintenance workshops were visited; they were staffed with technicians who are training further maintenance staff on the job. Visits to the vast library for which the project provided 230,000 books and about 4,500 periodicals (in the process of offering computerized services to its users) and to the ETU impressed the mission by the dynamism and quality of the staff and the layout of equipment and apparatus. It is worth examining in more detail the utilization of the Computer Centre, by far the single most expensive item of equipment of the entire project 2/. As will be seen below, extensive and varied utilization of the Centre makes the latter an excellent project: the USM computer system (as completed 3/ at present with additional local funding) is one of the largest and best-equipped among all Malaysian Universities. The Computer Centre is used for teaching and training and assists in research and performs administrative functions for other parts of the University. A detailed description of these three major types of activities is given in Annex VII/15.

7.67 As for ETU, a rather small investment of about 777,000 M\$ appears to have given very interesting returns. The courses provided by ETU comprise (a) educational technology courses for the education programme, (b) certificate course in educational broadcasting 4/ and (c) certificate course in educational technology (from 1978 onwards). Services rendered include a large variety of functions such as advice and consultations, projection and television viewing, equipment loan and materials supply, equipment maintenance, photography and graphics media library, television production, outdoor recording, sound production and recording, reprographics and micro-teaching.

1/ Oxidation pond system for sewage treatment in the Marine Field Station; Seawater reticulation system in MFS; fume extraction system installed for the Schools of Biological and Chemical Sciences.

2/ Although the first computer bought in 1975 had been financed from surplus funds available for the First Education Project (Loan 599-MA).

3/ Its characteristics are explained in Annex VII/14.

4/ This was a 12-month in-service course offered to candidates by the Ministry of Education from 1975 to 1977, with about 12 teachers per year.

External productivity: employment surveys

7.68 Science graduates: a survey was conducted by the University of Malaysia (UM) Faculty of Education team 1/ to ascertain the opinions of employers regarding the employment of USM science graduates 2/ and the views of the graduates themselves regarding the relevance of USM education and training to their present employment. Information was also obtained concerning the nature of employment and the kinds of employers. In-depth interviews were also conducted. The main aim of the survey was to elicit from the employers and employees their perceptions of the adequacy of their academic and professional preparation and the relevance of USM education and training to present employment. The findings are based on the 45 per cent of questionnaires returned, and on 37 interviews and concern a relatively small sample of employed science graduates: they should therefore be regarded as suggestive and tentative rather than definitive.

7.69 The general impression is that the training is both adequate and relevant to the needs of employment. This is borne out, according to the UM team, in some degree by the range of salaries received by the 134 graduates who provided the relevant information. It is furthermore interesting to note that an analysis of employment shows that the majority of 134 science graduates are employed in areas of work closely related to their university education and training.

7.70 Science graduate teachers: a survey 3/ was also conducted by the local PCR team to ascertain the views of principals of secondary schools, senior science teachers and USM science graduate teachers themselves concerning various aspects of teaching and professional preparation. The survey consisted of three different questionnaires USM 1, USM 2 and USM 3, addressed respectively to principals, senior science teachers and USM science graduate teachers. The questionnaires were posted to 196 secondary schools throughout Peninsular Malaysia 4/. In addition to the questionnaire survey, about 31 secondary schools were visited and interviews were held with the principals and teachers concerned.

1/ USM itself has conducted surveys on those who graduated in 1976, 1977 and 1978.

2/ Excluding B. Sc. graduates in Building, Housing and Planning.

3/ A survey approach was adopted rather than a teacher-effectiveness study or a case study approach because it was felt that time available for the study was a limiting factor and, more importantly, that the ultimate effects of the teachers upon the pupils depend upon many factors besides teacher training.

4/ About 86 per cent of the 196 USM 1 questionnaires were returned, but only 58 per cent of the USM 2 questionnaires for Senior Science Teachers were returned. About 67 per cent of the 305 teachers returned the USM 3 questionnaires. Possible reasons for the low rate of return from the science teachers are that many of them have been transferred, and there were many others whose posting in particular schools were not anticipated.

7.71 The results of both the survey and the interviews are encouraging.

The majority of the principals and senior science teachers had favourable impressions of the science teachers who had graduated from USM: while they exhibited the usual uncertainties and inadequacies at the start of their teaching career, they had a sense of responsibility and tried to conform to the educational needs of the system. Although 32 per cent felt that the courses could be improved the science teachers themselves were generally satisfied with their education and training and made several suggestions for improvement which have relevance not only for USM but also for other tertiary training institutions in the country.

CHAPTER VIII

C O N C L U S I O N S

8.1 The overall conclusion which emerges from this report is that, taken by and large, the World Bank's Second Education Project was well-conceived, satisfactorily implemented (apart from the delays) and is contributing significantly, with good prospects of a substantial multiplier effect, to the education and training of Malaysia's skilled human resources.

8.2 This is not to say that, with hindsight, some things might not have been done better - in fact, the lessons learnt from several shortcomings have led to great improvements in the implementation of subsequent education projects - or that no complementary or remedial action is desirable in the future. In this respect the main items to note or consider are:

A. Project Formulation

1. The Project Implementation Unit: for the first four years after the Loan became effective the PIU - formed for the First Project and still engaged with this - consisted only of a director with very limited authority and only a small supporting staff, and was therefore unable to function efficiently. This was a major factor in the three years' delay in project completion. Much of this delay, and of the substantially increased costs resulting, could have been avoided had the Units' minimum staffing, and the extent of its director's authority, been agreed at the latest during the loan negotiations, in the light of the workload expected from both First and Second Projects.

2. Architect's brief: misunderstandings with consultant architects evidence the need for architects' briefs to be more comprehensive than those for the Project, which were limited to schedules and accommodation areas. Problems could have been avoided had the briefs been more detailed and included a full description of relevant climatic conditions and of the characteristics and types of equipment of each facility to be provided.

3. Space standards: reluctance of the non-government professional services to comply with the basic space standards and accommodation areas specified by the Bank and included in the worksheets attached to the Loan Agreement could have been avoided had agreement been reached between both parties, before appraisal, on the minimum space standards consistent with the desired quality of design.

4. Curriculum Development Centre: many problems could have been avoided had a pre-appraisal feasibility study been made to identify structural, procedural and methodological requisites for disseminating curriculum innovations throughout the schools.

B. Project Implementation

5. Supervision: delays and problems could have been reduced, and integration with preceding and subsequent projects improved, had there been more continuity of staff in supervision and had specialists been sent promptly when needed.

6. Project changes: gains and savings resulting from some project changes - including cuts to avoid cost overruns - might have been increased had the Bank and Government together more fully weighed the changes' potential effects on the attainment of project objectives.

7. Educational aspects: fuller information on educational aspects of the project in PIU's quarterly reports would at times have been helpful in identifying and speeding action desirable.

C. Project Functioning

8. Curriculum Development Centre: the Centre's courses, projects and other activities could benefit from some streamlining and coordination. Given the Centre's professional competence and its potential for leadership its contribution could be increased by fuller integration into the system of local education resource centres, as it could also by giving greater follow-up backing in cooperation with local authorities, to the KPs it trains and by greater involvement in pre-service teacher training curricula.

9. Educational Television: ETV's contribution to national development could appropriately be increased by:

- (a) supplying TV sets to more schools, and more sets to selected individual schools;
- (b) extending viewing time in the schools;
- (c) improving maintenance and power supply;
- (d) more active assistance by State education mass-media officers to increasing school TV viewing.

As a basis for expansion and improvement, fuller data are needed on pupils' views as to the value of ETV programmes, on their potential educational impact on other viewers, and on the effects of ETV on pupils' performance, while an assessment would be valuable of the educational impact of video-tape recorders in schools and teacher training colleges.

10. Vocational schools: the role of the vocational schools in Malaysia's education and training system is not entirely clear (but will undoubtedly be clarified in the course of the 5th Education Project) and they have shown poor results in the Malaysia Vocational Certificate Examination (SPVM). Merely lengthening the courses may not improve results and some form of sandwich course, although difficult to arrange, may be more effective. The teachers undoubtedly need more and better industrial experience, while occupational requirements, training courses and achievement testing need to be more closely related to one another and to the abilities of the students.

11. Vocational and technical schools: the technical schools' workshop equipment merits re-appraisal in view of the small amount of time given to practical training. In the vocational schools present maintenance and repair levels need raising: measures could include relevant staff-training and promotion of right attitudes among the students.

For both technical and vocational schools there is room for improving procurement procedures for machinery and equipment: these should include feedback from users. The more stringent terms for international tendering desirable should include ability to provide dependable after-sales service.

D. Evaluation

12. More emphasis on evaluation is desirable, especially on that of CDC's in-service teacher-training activities and in the form of tracer studies of the subsequent performance of past students who have successfully completed studies in USM and the vocational schools. An in-depth study of KPs would also be valuable. At a later stage an impact evaluation of the project should be made, to assess its contribution to development of the country's education system and of its skilled human resources.

A N N E X E S

ANNEXES

- Annex I/1 Developments in the Educational system, 1970-1980
- Annex IV/1 Comparative analysis of initial and altered project
- Annex IV/2 Comparative analysis of implementation schedule
- Annex IV/3 CDC - Curriculum Development Centre
Comparative analysis of estimated and actually built areas
- Annex IV/4 Technical and vocational schools
Comparative analysis of estimated and actually built areas
- Annex IV/5 University Sains Malaysia - Schools of Sciences and common
facilities: Comparative analysis of estimated and actually
built areas
- Annex VI/1 Summary of estimated and actual capital expenditure
- Annex VI/2 Comparative analysis of planned and built areas
Cost per square foot and cost per student place
- Annex VI/3 Schedule of disbursements
- Annex VI/4 Recurrent expenditure for technical and vocational schools
- Annex VII/1 Organization of administration - Ministry of Education
- Annex VII/2 Organizational Chart of CDC (1981)
- Annex VII/3 Participants in in-service courses 1979
- Annex VII/4 Technical and vocational studies
Capacity-enrolments-teaching staff: comparison between
appraisal targets and numbers in 1981
- Annex VII/5 Vocational and technical schools - The curriculum structure
- Annex VII/6 Vocational and technical schools - Enrolments and numbers
of teachers by qualification
- Annex VII/7 Vocational and technical schools - Success and failure
rates in national examinations
- Annex VII/8 The Universiti Sains Malaysia (USM) - Objectives,
characteristics and structure (6 p.)
- Annex VII/9 USM - Bachelor of Science Course Requirements (2 p.)
- Annex VII/10 USM - First degree output, 1972-1979
- Annex VII/11 USM - Student admission, 1969/70 to 1979/80
- Annex VII/12 USM - Enrolment and output of higher degree students
- Annex VII/13 USM - Capacity, Enrolment and Teaching Staff
- Annex VII/14 Characteristics of the computer system in the USM computer
Centre
- Annex VII/15 USM - Computer Centre: functions

MALAYSIA: DEVELOPMENTS IN THE EDUCATIONAL SYSTEM, 1970-1980

Level	Enrolment			Increase (%)	
	1970	1975	1980 (Revised Target)	1971-75	1976-80
Primary	1,682,187	1,890,974	2,037,734	12.4	7.8
Lower Secondary	420,644	643,073	848,225	52.9	31.9
Upper Secondary	97,827	178,313	314,684	82.3	76.4
Arts and Science	92,928	166,409	286,512	79.1	72.2
Vocational/Technical	4,899	11,904	28,172	143.0	136.7
Post Secondary	11,532	20,895	42,606	81.2	103.9
Teacher Training	3,887	7,940	14,964	104.3	88.5
Preliminary and Preparatory Courses ^{1/}	-	1,195	3,176	-	165.8
Certificate Level	-	1,221	3,280	-	168.6
Diploma Level	4,993 ^{2/}	11,835	16,314	137.0	37.8
Degree Level ^{3/}	8,331 ^{4/}	15,008	21,480	80.1	43.1

Source: Malaysia, Third Malaysia Plan, 1976-1980, pp. 385-6;
Malaysia, Mid-Term Review of the Third Malaysian Plan 1976-80,
pp. 194-5.

- Notes:
- 1/ Preparatory courses conducted at the Institute Teknologi MARA and all the universities except Universiti Teknologi Malaysia.
 - 2/ Includes enrolment in pre-university, preliminary and introductory courses at the respective colleges.
 - 3/ Includes enrolment in post-graduate courses at the respective universities.
 - 4/ Includes enrolment in pre-university, preliminary and introductory courses at the respective universities.

COMPARATIVE ANALYSIS OF INITIAL AND ALTERED PROJECT

Annex IV/2 (p.13)

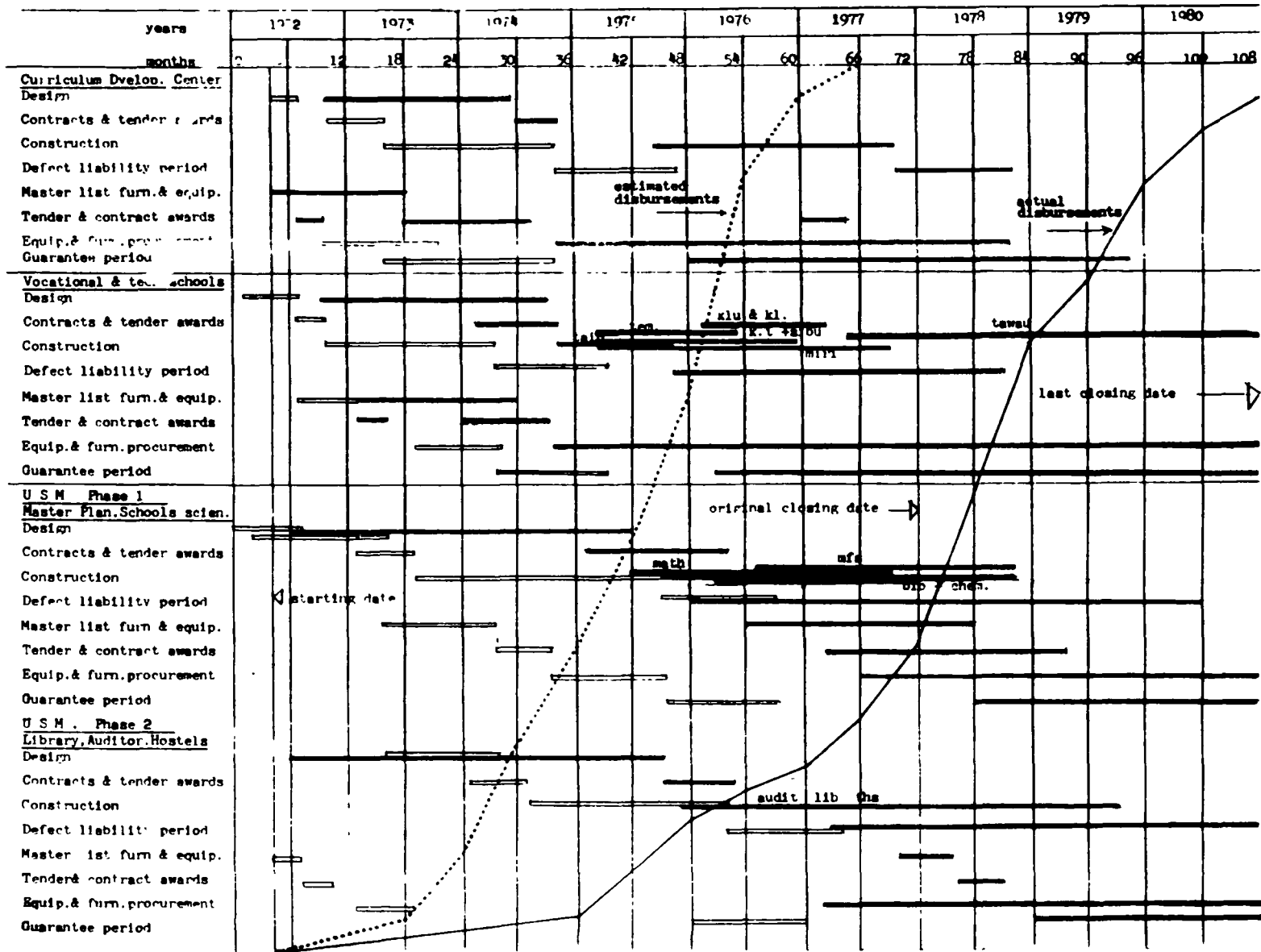
Project Items	Project Description at Starting Date: 7 July 1972	Change in Project Content	Status of Completion at Closing Date: 31 Dec. 1980		
			Construction %	Furniture %	Equipment %
CDC	Construction, furnishing and equipment of a centre for in-service courses for 160 teachers and offices for 73 research staff + hostel accommodation for 120 teachers.	No change. (The Centre today accommodates more than 150 professionals and sub-professionals).	100%	100%	100%
EMS	(a) Construction and partial equipment of a new studio for TV programme production;	(a) In late 1977, the Government decided to relocate the ETV complex, delete it from this project and include it in the 5th Education Project;	(a) deleted	(a) deleted	(a) deleted
	(b) Provision of 5,500 TV sets for use in Primary and Secondary Schools.	(b) No change.	(b) -	(b) -	(b) 100%
VTS and TS	Construction, furnishing and equipping of 7 vocational schools:				
	1. Taiping	1. No Change	1. 100%	1. 100%	1. 100%
	2. Klang	2. " "	2. 100%	2. 100%	2. 100%
	3. Kluang	3. " "	3. 100%	3. 100%	3. 100%
	4. Temerloh	4. " "	4. 100%	4. 100%	4. 100%
	5. Miri	5. Additional workshop facilities.	5. 100%	5. 100%	5. 100%
	6. Sibul	6. Hostel block used by secondary school.	6. 100%	6. 100%	6. 100%
	7. Tawau + 1 Technical school in Kuala Trengganu	7. Heavy plant: additional area No Change	7. 90% 100%	7. 90% 100%	7. 70% 100%

COMPARATIVE ANALYSIS OF INITIAL AND ALTERED PROJECT (Continued)

Project Items	Project Description at Starting Date: 7 July 1972	Change in Project Content	Status of Completion at Closing Date: 31 Dec. 1980		
			Construction %	Furniture %	Equipment %
U S M	Construction, furnishing and equipping of: (a) <u>5 science schools:</u> 1. School of Physics & Maths. 2. " " Chemical Sciences 3. " " Biological Sciences 4. " " Applied Sciences 5. " " Pharmaceutical Sciences	(a): 1. 2 separate wings (3 st.) 2. No Change 3. No Change 4. } 5. } 5% increase of teaching areas	(a) 1. 100% 2. 100% 3. 100% 4. 100% 5. 100%	(a) Partly funded by USM	(a) 1. 100% 2. 100% 3. 100% 4. 100% 5. 100%
	(b) <u>Lecture theatres</u>	(b) No change	(b) 100%	(c) 100%	(b) 100%
	(c) <u>Computer Centre and Central Facilities</u>	(c) Central facilities built as part of School of Physics and Maths. Computer Centre transferred to rehabilitated buildg.	(c) 100% for CF. computer deleted	(c) 100%	(c) 100% CF. CC paid via 1st Ed. Proj.
	(d) <u>Auditorium</u>	(d) Addit'l facilities accepted	100%	(d) 100%	(d) 100%
	(e) <u>Residential Hall</u>	(e) Limited to 1st Phase only	(e) 100%	(e) 100%	(e) 100%
	(f) <u>Master Plan and Site Development</u>	(f) No Change	-	-	-
	(g) <u>Centre for Educational Services</u>	(g) No Change	-	-	(g) 100%

COMPARATIVE ANALYSIS OF IMPLEMENTATION SCHEDULE

==== Appraisal estimate
 ===== Actual implementation



CDC - CURRICULUM DEVELOPMENT CENTRE
Comparative Analysis of Estimated and Actually Built Areas

Accommodation Units	Apprais. Estim.		Actual Built		Remarks
	No.	Area in Sq. Ft.	No.	Area in Sq. Ft.	
<u>Administrative/Advisory Unit</u>					
Director's Office	1	360	1	} 630	
Deputy Director's Office	1	240	1		
Assist. Director's Office	-	-	1		
Consultants/Advisors	6	1,080	2		
<u>Curriculum Development Unit</u>					
Chief Curriculum Officer	1	240	1	} 10,370	Several sections added since population education unit, social science, etc.
Curriculum Officers	11	1,880	?		
Assist. Curriculum Officers	30	3,000	?		
<u>Evaluation & Research Unit</u>					
Head of Unit Office	1	240	1	} 2,665	
Measurement & Testing Office	4	1,200	8		
Textbook Officer	1	240	2		
Assistant Officers	10	1,000	15		
<u>Instructional Materials & Special Services Unit</u>					
Chief AV Office	1	240	1	-	
Production Officers	6	780	-	-	
Conference Room (150)	1	1,500	1	3,520	
Common Area	1	2,400	1	see cir.	Deambulatory.
<u>In-Service Courses</u>					
Seminar Rooms (25)	4	1,800	5	1,980	
Research & Textbook Library with reading area		5,000		7,020	Now a resource centre, Mezzanine used as conference/seminar room.
Sciences Laboratories with preparation room	3	} 4,500	1	} 4,530	1 lab. used as offices, 1 as seminar room.
Language laboratories	2		1,200		1
Domestic Sciences Room	1	750	1	530	Used as office space.
<u>Prototype Section</u>					
Workshop (combined wood-work, metal work) with office space (3)	1	} 1,500		} 6,250	Includes offices and stores.
Audio-visual Aids	1		300		
Audition room	1	320	1	320	
Printing & Collating rooms	-	-	-	1,950	Collating in corridor.
Stores	-	-	-	1,260	
Film Library	1	600	1	325	
Photo labs (3)	2	240	2	208	
Recording Room	-	-	-	-	
Film Viewing Room	1	750	1	450	
Experimental Lab.	-	-	1	1,900	
Graphic Art Room	1	700	1	325	
Administrative Area:					
General Office (15 typists)	1	1,450		} 1,925	
Clerks & Store Keepers	-	2,000			
A.C. Plant rooms	-	-	3	2,425	
Toilets	?	?	4	1,055	
Total net area		35,550		50,488	
Walls & Circ. + 30%		10,665		10,110	
Total Gross Area		46,215		60,598	+ 31%
<u>Hostel Facilities</u>					
120 Single Bedrooms	120	16,500	124	16,120	Including toilets/showers.
Dining Room	1	1,000	1	} 2,640	
Kitchen	1	1,000	1		
Ancillary Areas		1,000		2,340	
Lavatories		1,000			
Total net area		22,500		21,100	
Walls & Circ. + 25%		5,750		13,415	
Total Gross Area		27,750		34,515	+ 24.3%
Grand Total		73.55		95,115	+ 28.5%

SECOND EDUCATION PROJECT : LOAN 810-MA

UNIVERSITY SAINS MALAYSIA
SCHOOLS OF SCIENCES AND COMMON FACILITIES

COMPARATIVE ANALYSIS OF ESTIMATED AND ACTUALLY BUILT AREAS

PROJECT ITEMS	OFFICES						TEACHING LABORATORIES				Research Labs. & Rooms	Stores	Special Facilities	LECTURE THEATRES AND ROOMS				LIBRARY			GROSS AREA (including circulation and walls) in sq.ft.		Diff. in %	REMARKS																	
	Dean Set	Professors	Lecturers	Senior Technicians	Research Students	Reading Rooms	All years Prelim & 1st year	2nd & 3rd years	M.Sc. Students	Specialised Rooms				Auditorium	Lecture Theatres 250 students	Lecture Rooms 20 students	Tutorial Rooms	Seating	Books	Staff Offices	A	B																			
																									A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
4A. School of Physics and Maths.	1	1	5	12	55	59	1	-	1	-	2	-	8	4	8	4	1	6	15	16	8	4	1	4	6	4	-	-	-	-	-	-	103,500	116,890	+13	Includes central facilities Academic and comm. Outdoor buildings, Marine field station					
4B. School of Chemical Sciences	1	1	3	6	46	54	3	3	-	2	2	6	6	16	12	4	4	39	39	20	33	7	8	4	4	-	-	-	-	-	-	120,570	125,810	+4							
4C. School of Biological Sciences	1	1	2	2	33	51	3	2	-	2	2	3	6	12	9	2	4	19	22	14	11	21	21	8	4	-	-	-	-	-	-) 96,715) 11,800) 20,000	102,990 9,504 23,326	+5							
4D. School of Pharmaceutical and Applied Sciences	na	2	na	-	na	55	na	-	na	2	na	6	na	-	na	18	na	8	na	13	-	-	-	-	-	-	-	-	-	-	-) 48,000) 18,270	-	-	+53						
4F. Lecture Theatre and Lecture Rooms	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50,250	50,525	-						
4G. Computer Centre and Central Facilities	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-) 13,188) 13,320 26,508	-	-		-				
4H. Library	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,800 1,100	2,100 85,000	137		140	125,385	125,350	-	
4I. Auditorium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,500 10,000	25,000 27,500		-	-	37,500	37,500	-
Total																				658,498	693,135	+5.2																			

Note: A - Appraisal Estimate
B - Built Area

SUMMARY OF ESTIMATED AND ACTUAL CAPITAL EXPENDITURE
(in Malaysian \$ 000s)

	Construction & Site Development				Furniture & Equipment				Professional Services				Total Costs				% of Total
	Appraisal Estimate		Actual Costs	% diff. 2/3	Appraisal Estimate		Actual Costs	% diff. 6/7	Appraisal Estimate		Actual Costs	% diff. 10/11	Appraisal Estimate		Actual Costs	% diff. 15-14	
	Exclud. Conting.	Includ. Conting.			Exclud. Conting.	Includ. Conting.			Exclud. Conting.	Includ. Conting.			Exclud. Conting.	Includ. Conting.			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1. Educational Development Centre	1,701	2,126	3,172	+49	625	844	804	- 5	-	-	-	-	2,386	2,970	3,976	+34	5
2. Educational Television EMS	605	756	-	-	4,250	5,961	3,991	-33	85	106	27	-74	4,940	6,823	4,018	-41	5
3. Secondary Vocational Schools																	
A. Taiping (Perak)	1,706	2,133	2,632	+23	1,025	1,349	1,611	+19	-	-	-	-	2,791	3,482	4,243	+22	32
B. Klang (Johore)	1,794	2,242	1,681	-25	1,096	1,362	1,598	+17	-	-	-	-	2,890	3,604	3,279	- 9	
C. Klang (Selangor)	1,618	2,023	2,648	+31	1,076	1,338	1,603	+20	-	-	-	-	2,694	3,361	4,251	+26	
D. Temerloh (Pahang)	1,884	2,355	2,263	- 4	1,107	1,375	1,577	+15	-	-	-	-	2,991	3,730	3,840	+ 3	
E. Sibul (Sarawak)	1,341	1,676	913	-45	808	1,004	729	-27	-	-	-	-	2,149	2,680	1,642	-39	
F. Miri (Sarawak)	1,355	1,694	1,570	- 7	784	976	822	-16	-	-	-	-	2,139	2,670	2,392	-10	
G. Tawau (Sabah)	2,124	2,655	1,964	-26	1,102	1,369	424	-69	-	-	-	-	3,226	4,024	2,388	-40	
Secondary Technical Schools																	
H. Trengganu (K. Trengganu)	1,406	1,762	2,585	+47	739	917	346	-62	-	-	-	-	2,145	2,679	2,931	+ 9	
4. University of Penang																	
A. School of Physics & Maths School of Applied Sciences School of Pharm. Sciences Central Facilities	4,809	6,014	6,899	+15	5,100	6,351	4,101	-35	673	841	1,108	+32	10,582	13,206	12,108	- 8	58
B. School of Chemical Sc. School of Biological Sc.	5,985	7,482	10,408	+39	3,224	4,751	3,584	-32	838	1,048	1,432	+36	10,647	13,281	15,424	+16	
C. Computer Centre			32				See A				See A				32		
D. Library Auditorium Lecture Theatres	5,466	6,832	7,980	+17	4,045	5,029	4,256	-15	766	958	1,234	+29	10,277	12,819	13,470	+ 5	
E. Residential Hall	2,740	3,425	2,583	-21	424	516	See D		384	480	388	-19	3,548	4,421	2,971	-33	
P. Master Plan & Site Develop.	405	506	-	-	-	-	-		130	163	63	-61	535	669	63	-90	
G. Centre for Ed. Services	-	-	-	-	380	475	778	+64	-	-	-	-	380	475	778	+64	
Total	34,939	43,678	47,330	+ 8	26,505	33,617	26,224	-22	3,076	3,596	4,252	+18	64,320	80,894	77,806	-4	100

COMPARATIVE ANALYSIS OF PLANNED AND BUILT AREAS
COST PER SQUARE FOOT AND COST PER STUDENT PLACE^{1/}

	Gross Area in sq.ft.		Cost per sq.ft. in US\$		Cost Per Student Place ^{1/} (US\$)					
					Civil Works		Furniture and equipment		Total	
	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual
<u>CDC</u>	73,965	95,115		11.8						
<u>Vocational Schools</u>										
Peninsula	522,740	599,180	6.0	5.5	1,078	1,136	668	786	1,746	1,922
East Malaysia	226,380	256,000	9.4	6.1	1,810	1,336	1,006	593	2,816	1,929
<u>University Sains, Malaysia</u>										
School of Physics) and Maths.)										
School of Applied) Science)	134,990	218,120	15.8	11.2	1,480	1,699	1,564	1,010	3,044	2,709
School of Pharm.) Science,) Central Faci-) lities)										
School of) Chemical Science)	255,445	252,136	10.4	14.6	2,211	3,075	1,404	1,059	3,615	4,134
School of Bio-) logical Science)										

^{1/} Contingencies included and professional fees not included.

SCHEDULE OF DISBURSEMENTS

LOAN 810-MA
(In US\$ millions)

IBRD/IDA Fiscal Year & Semester	Actual Total Disbursements	Appraisal Estimate	Actual disbursement as a % of appraisal esti- mate
<u>1973</u>			
1st		0.1	
2nd		0.6	
<u>1974</u>			
1st		1.7	
2nd		3.6	
<u>1975</u>			
1st	0.6	5.2	12.0
2nd	1.4	7.2	19.0
<u>1976</u>			
1st	2.3	9.7	24.0
2nd	2.8	13.5	21.0
<u>1977</u>			
1st	3.3	14.9	22.0
2nd	4.1	15.5	26.0
<u>1978</u>			
1st	5.4	15.5	35.0
2nd	8.0	15.5	52.0
<u>1979</u>			
1st	10.6	15.5	68.0
2nd	11.7		79.0
<u>1980</u>			
1st	13.4		86.0
2nd	14.3		92.0
<u>1981</u>			
1st	14.9		96.0
2nd	15.5		100.0

RECURRENT EXPENDITURE FOR TECHNICAL AND VOCATIONAL SCHOOLS

(in M\$)

School	Number of Students	Number of Classes	Number of Teaching Staff	Number of Office Staff	Recurrent Expenditure (Excluding Hostel Expenses)			Training Cost per Student M\$
					Salaries	Other	Total	
1. Vocational School, Klang	632	18	57	27	517,580	75,840	593,420	939
2. Vocational School, Kluang	622	18	50	29	620,300	74,800	695,100	1,117
3. Vocational School, Temerloh	574	18	47	27	548,950	87,156	636,106	1,108
4. Technical School, Kuala Trenggan	667	20	40	31	690,870	179,000	760,170	1,140

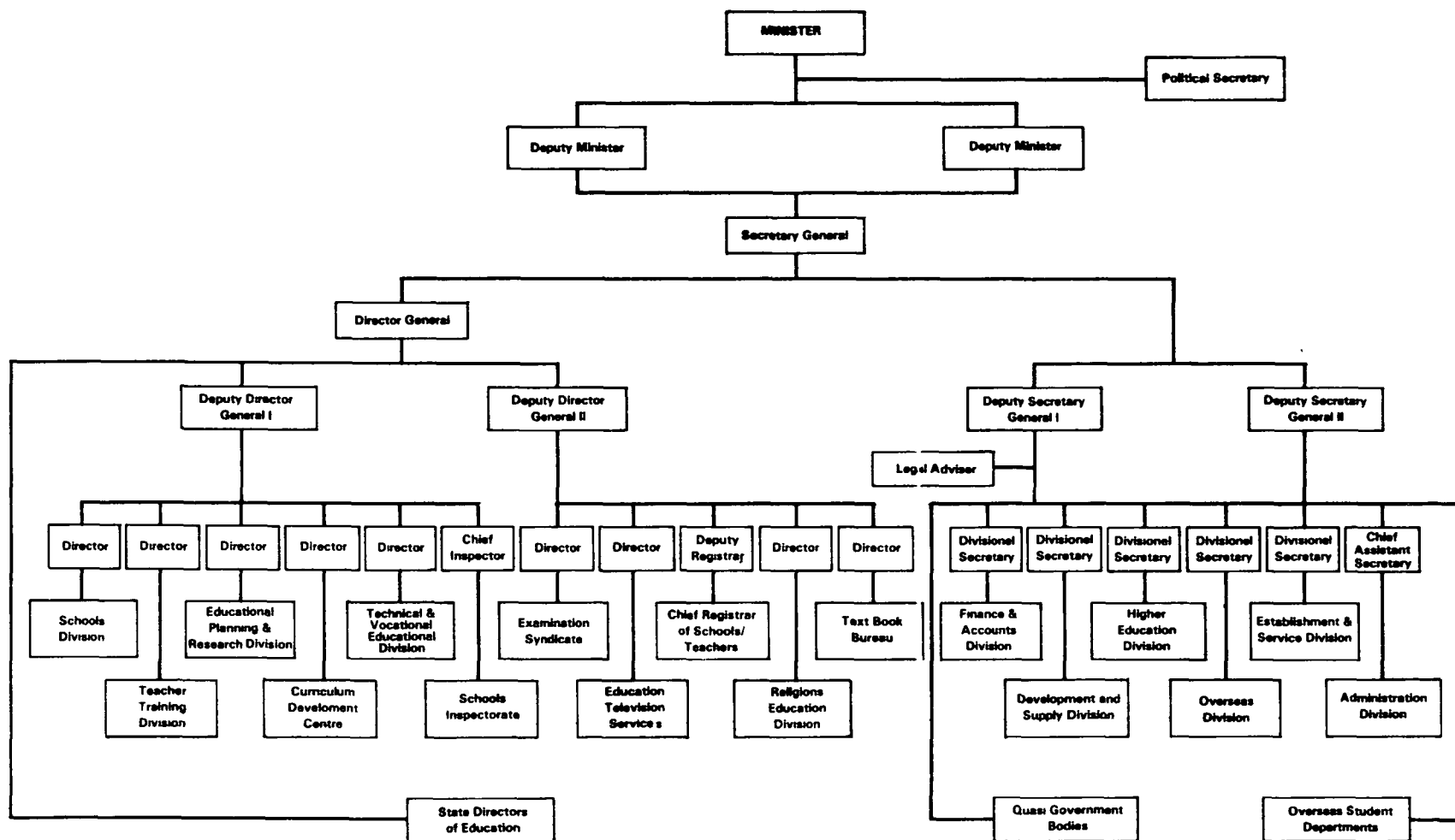
Source: School Records for 1981.

Note: The total recurrent expenses in 1980 of the Department of Technical and Vocational Education for all schools under its control were:

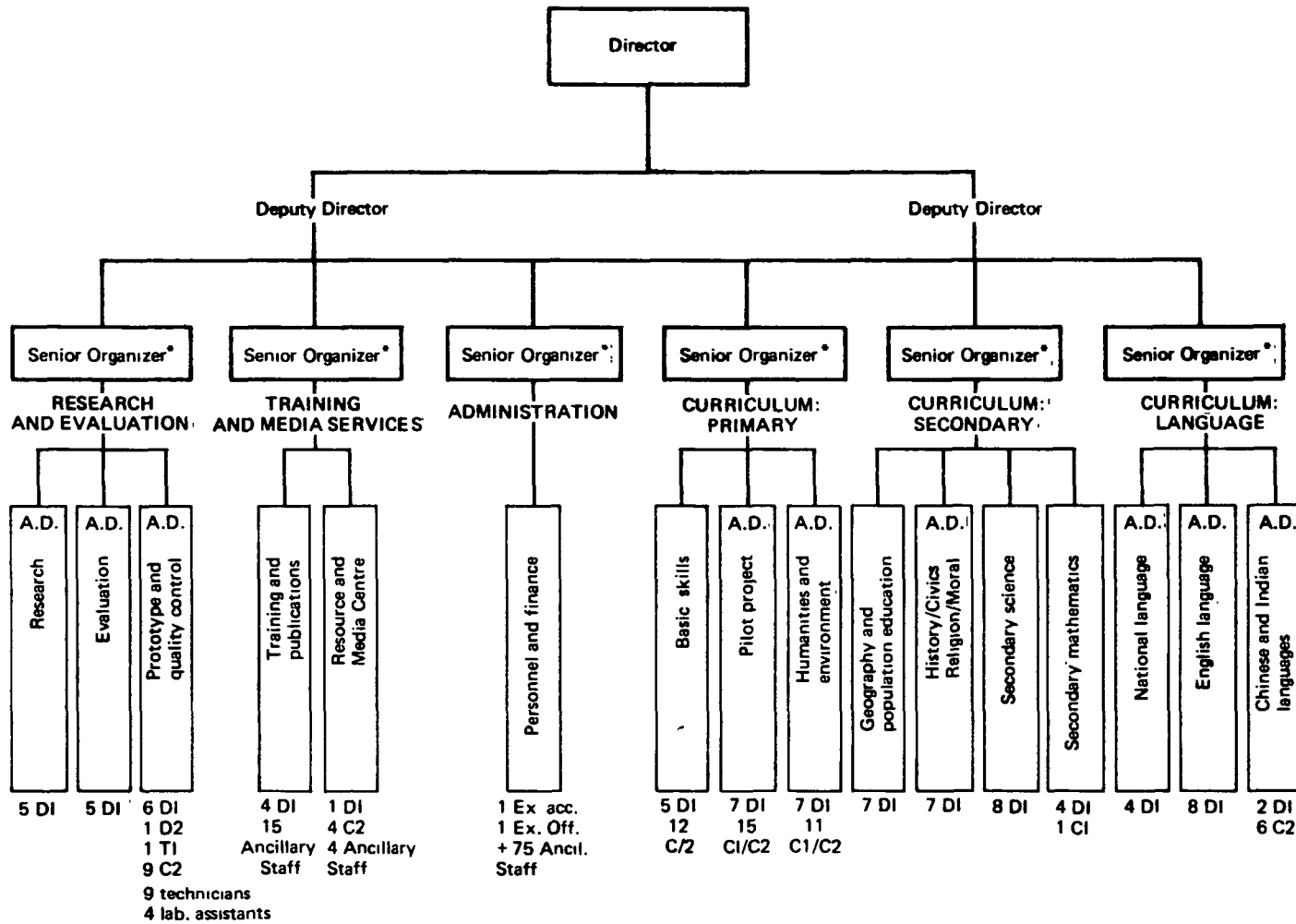
(a) Technical Schools: M\$ 7,434,207 for 6,196 students - Av. Cost/student = M\$ 1,200

(b) Vocational Schools: M\$ 13,008,331 for 11,204 students - Av. Cost/student = M\$ 1,161

**ORGANIZATION OF ADMINISTRATION
MINISTRY OF EDUCATION**



ORGANIZATIONAL CHART OF CDC (1981)



* Principal Assistant Director
AD: Assistant Director

Key: DI - Education Officer (Division I - Time Scale Officer) honours grad.)
 D2 - Education Officer (Division II - Time Scale Officer) pass degree } Professional
 T1 - Education Officer (Technical - Diploma level)
 C1 - Education Officer (Division 2 - HSC)
 C2 - Education Officer (Division 3 - MCE)

PARTICIPANTS IN IN-SERVICE COURSES 1979

	CDC In-Service Courses for Key Personnel			State In-Service Training Courses
	Primary	Secondary	Total	
Primary Mathematics and Science	98	-	98	2,205
Secondary Mathematics	-	28	28	259
Secondary Science	-	29	29	-
Bahasa Malaysia	82	127	209	3,183
English	52	115	167	2,450
History	146	44	190	7,495
TOTAL	378	343	721	15,592 <u>1/</u>

Note: - At CDC the training of KP is organized in groups usually of 30-40 persons, and there may be several groups at a time.

- Organized during week-ends and vacations.

1/ Covers both primary and secondary levels.

TECHNICAL AND VOCATIONAL STUDIES

CAPACITY-ENROLMENTS-TEACHING STAFF: COMPARISON BETWEEN APPRAISAL TARGETS AND NUMBERS IN 1981

School	Student Places				Hostel		Teaching Staff
	Industrial Trades		Commerce		Capacity	Resi-dents	
	Capa-city	Enrol-ments	Capa-city	Enrol-ments			
1. Vocational School, Klang	480 (560)	479	160 (160)	153	504 (540)	450	57 (42)
2. Vocational School, Kluang	480 (560)	472	160 (160)	150	504 (540)	483	50 (42)
3. Vocational School, Taiping 1/	480 (560)	474	150 (160)	150	504 (540)	484	45 (42)
4. Vocational School, Temerloh	480 (560)	430	160 (150)	144	504 (540)	454	47 (42)
5. Vocational School, Miri	250 (240)	123 ^{2/}	60 (60)	50	164 (180)	150	22 (25)
6. Vocational School, Sibul 3/	408 (300)	192	100 (60)	84	100 (180)	72	32 (31)
7. Vocational School, Tawau 4/	420 (360)	?	40 (40)	?	304 (300)	?	? (28)
8. Technical School, Kuala Trengganu	480 (480)	484	160 (160)	183	528 (280)	471	40 (23)
Total Student Places (Appraisal)				: (4,580) and (3,100) Hostel			
Total Student Places, 1981 (excluding Tawau)				: 4,018 and 3,112 Hostel			
Total Enrolment, 1981 (excluding Tawau)				: 3,568 and 2,564 Boarders			
Student Place/Staff Ratio (1981)				: $\frac{4,018}{293} = 14:1$			
Students Enrolled/Staff Ratio				: $\frac{3,568}{293} = 12:1$			

Source: Information supplied by School Principals.
 Figures in (-) obtained from Project Appraisal Report.

- Notes:
- 1/ Obtained from Preliminary Project Completion Report, Kuala Lumpur, 1980.
 - 2/ Students attending 6-month courses under Bintulu Project.
 - 3/ The school can also accept up to 120 students for Navigation and Marine Engineering up-grading courses.
 - 4/ The school of Tawau enrolled its first few students in April 1981. (It will take two more years to reach full capacity).

VOCATIONAL AND TECHNICAL SCHOOLS

THE CURRICULUM STRUCTURE

Subjects	Time Allocation in periods per week	Vocational Schools		Technical Schools	
		Commercial Classes	Ind. Trades Classes	Commercial Classes	Technical Classes
A. Academic Subjects					
1. Malay Language		5	2	5	5
2. English Language		5	2	5	5
3. Islamic Studies and/or Social Studies		2	2	8	5
4. Mathematics		3	3	5	9
5. Science		3	3	5	9
		(39%)	(24%)	(57%)	(79%)
B. Professional Subjects					
6. Commercial English		4	-	-	-
7. Commercial Mathematics		2	-	4	-
8. Commercial Practices		4	-	5	-
9. Typing	(22%)--10		-	-	-
10. Book-keeping or Shorthand		8	-	-	-
11. Principles of Accounts		-	-	5	-
12. Technical Drawing		-	4	-	4
13. Related Technology		-	9	-	2
14. Related Workshop Practice		-	25--(50%)	-	3--(7%)
		(61%)	(76%)	(33%)	(21%)
Totals		46	50	42	42

Source: Principals of the schools visited.

Note: 1 period = 40 minutes.
Duration of School Year = 40 weeks.

VOCATIONAL AND TECHNICAL SCHOOLS
ENROLMENTS AND NUMBERS OF TEACHERS BY QUALIFICATION

School	No. of students	Teachers by qualifications				TOTAL
		University Graduates	College Diploma or Polytechnic Graduates	Teachers Training College Graduates	Others (below the acceptable standard for permanent Ap.	
1. Vocational School at Klang	632	-	13	42	2	57
2. Vocational School at Kluang	622	1	3	46	-	50
3. Vocational School at Temerlon	574	2	16	29	-	47
4. Vocational School at Miri	163 *	-	-	22	-	22
5. Vocational School at Sibul	276	-	-	22	7	29
6. Technical School at Kuala Trengganu	667	27	9	4	-	40

Source: School Records for 1981.

(*) Trainees are following the 6-month accelerated training courses under the Bintulu Project.

VOCATIONAL AND TECHNICAL SCHOOLS
SUCCESS AND FAILURE RATES IN NATIONAL EXAMINATIONS

S c h o o l s	Performance Rates			Examinations
	<u>Grades</u> 1-3 1/ %	<u>Grade</u> 4 2/ %	<u>Grade</u> x 3/ %	
1. Vocational School, Klang	45	7	48	"Malaysia Vocational Certificate" Examinations (SPVM)
2. Vocational School, Temerloh 4/	41	10	49	
3. Vocational School, Sibu	30			
4. Vocational School, Kluang	54	15	31	
5. Technical School, Kuala Trengganu	97	-	3	"Malaysia Certificate of Education" Examinations (SPM)

Source: School Records for 1980.

Notes: 1/ Grades 1-3 : Pass in all subjects.

2/ Grade 4 : Pass in Trade Subjects.

3/ Grade x : Failed.

4/ Analysis of passes in Industrial Trades Courses
(viz. excluding Commerce)

Grade 1 : 1/185 = 0.5%

Grade 2 : 30/185 = 16.0%

Grade 3 : 34/185 = 18.0%

Grade 4 : 23/185 = 12.0%

THE UNIVERSITI SAINS MALAYSIA (USM)
OBJECTIVES, CHARACTERISTICS AND STRUCTURE

The Universiti Sains Malaysia (formerly known as the University of Penang) was established in 1969, being provisionally accommodated in the Malayan Teachers' Training College, Gelugor, Penang. In 1971, USM acquired its permanent campus at Miden Barracks, Gelugor, a former military facility.

By 1970, USM had established the following six schools:

- (i) School of Biological Sciences
- (ii) School of Chemical Sciences
- (iii) School of Physics and Mathematics (now two separate Schools)
- (iv) School of Humanities (formerly known as School of Cultural and Community Studies)
- (v) School of Comparative Social Sciences
- (vi) Centre for Educational Services (now known as School of Educational Studies).

In 1972-74, the following additional Schools and a Centre were established:

School of Pharmaceutical Sciences
School of Applied Sciences (Electronic Science and Technology, Food Science and Technology, Mineral Science and Technology, Polymer Science and Technology
School of Housing, Building and Planning
Centre for Policy Research

A School for Medical Sciences will be established, the first intake of students being in 1981.

USM's overall educational objectives may be inferred from the following paragraph taken from Chapter C of the Registrar's Report for the Fourth Malaysia Plan:

"At the time of its establishment the University, while respecting the past and yet remaining alive to the higher educational needs at that time, aimed at supplementing and complementing higher education facilities available in the country and to concern itself with the development of

1/ Source: The materials in this annex are extracted from:

- a) the locally produced PCR Second Education Project, Malaysian World Bank Loan 810-MA, Final Report. Kuala Lumpur, November 1980;
- b) Universiti Sains Malaysia, The First Ten Years 1969-1979. Edited by Professor Sharom Ahmat, USM, Pulau Pinang, 1979.

teaching, research and service programmes which would directly contribute to producing graduates who could readily assist the Government in its development objectives. It also aimed at developing a personality and an identity of its own that is compatible with and suited to the region in which it is located. The University from the onset was conscious of the need to provide a balance in its courses and account had to be taken of fields of study already available, and, since funds for higher education are not limitless, the University would not duplicate courses without very convincing reasons. Stress would however be placed on courses in science and technology, with vocational and practical training playing an important part in its curriculum."

Among the development strategies adopted to achieve USM's overall educational objectives were:

"(a) to accommodate its fundamental academic objectives through the establishment of a School System within which the horizontal and vertical integration of the traditional academic disciplines and inter-disciplinary and other innovative approaches to teaching could be accommodated...;

(b) to increase student enrolment, including post-graduate students, to reach a total student population of 5,000 students by 1980, and to maintain a science:arts ratio of 60:40 per cent in its student population;

(c) to offer part-time degree courses to mature men and women through the Off-Campus Study Programme in an attempt to enhance the development of potential manpower resources available in the working public...;

(d) to develop Bahasa Malaysia as the main medium of instruction in the University with English as an effective second language, in conformance with the national language policy;

(e) to create a campus with an environment and facilities to enhance the operational and academic objectives of the University while at the same time providing the maximum social interaction between all sectors of the University community."

This young University has a number of innovative features, such as the School System, the Off-Campus Programme, the matriculation classes, the Residential system, the academic year structure, the B.Sc. with Education and the B.Sc. degree programmes.

The School System

In the area of teaching-learning effectiveness, the University decided from the outset that it should seek alternatives to the traditional organization based on the faculty with its multi-departmental set-up. Since the organization of courses at the University is based on the concept that knowledge is indivisible, it became the first national institution to operate Schools of Study as the chief academic units.

Although the operation of a School system in Malaysia is still very new, the experience of this University suggests that such a structure is flexible and positive. The system allows for the teaching of related subjects under a single administration with more judicious use of equipment and funds and, with related subjects grouped into Schools of Study, students are able to follow integrated and balanced courses. Furthermore, the system allows for a certain degree of specialization in a chosen field of study while at the same time encouraging and enabling interdisciplinary studies in related fields. Likewise in research the School system enables greater cooperation among staff of different disciplines and the sharing of common facilities and equipment.

As an example, the School of Pharmaceutical Studies and the School of Applied Sciences are the only ones of their kind in the country, and both of these include vocational and practical training in their curriculum. "During the long vacation at the end of Year 2 and again at the end of Year 3, every student attends, as an integral part of the B.App.Sc. programme, an Industrial Training Course which is a seven-week period of carefully planned and supervised attachment in some local industry or establishment relevant to his chosen specialization." Similarly, Pharmacy Practice and Clinical Pharmacy reflect vocational and practical training aspects of the B.Pharm. programme.

Off-Campus Programme

The University, being conscious of its social obligations and its responsibility for the intellectual development of society, has introduced an innovative programme of off-campus education. The objective of the programme is to provide adults above the age of twenty-three and in full-time employment with the opportunity to pursue a university education. This programme lasts for a period of a minimum of four years off-campus and one year on-campus. During these years off-campus students are brought in for two or three weeks a year to undergo intensive tutorials, lectures and instruction on-campus. During the rest of the year, they follow courses by correspondence and attend practical courses at the various regional centres established in the country.

One of the objectives of this programme is to provide opportunities to members of the society who come from disadvantaged backgrounds, so as to eliminate some of the imbalances which now exist. It has the impact of upgrading the skills and knowledge of working adults; in particular, one advantage of this programme is that most of the candidates are school teachers. This will result in an increase of science graduate teachers, who are badly needed in the country. This programme also has implications for on-campus teaching as the staff members who are involved in teaching off-campus students are the same as those who are giving on-campus courses. They gain experience in distance teaching and of the various materials which are made available for those students who require closer attention. Another advantage is that several university facilities, particularly the teaching laboratories, as well as the various hostels, can be more fully utilised by being made available for the intensive courses for off-campus students.

The enrolment and graduate output of the Off-Campus Programme are shown below.

<u>Enrolment</u>										
	<u>71/72</u>	<u>72/73</u>	<u>73/74</u>	<u>74/75</u>	<u>75/76</u>	<u>76/77</u>	<u>77/78</u>	<u>78/79</u>	<u>79/80</u>	<u>Total</u>
Foundation Sciences	-	-	-	-	-	-	-	38	-	38
Science	-	-	27	40	81	88	68	55	80	439
Humanities	48	66	69	71	83	74	71	61	57	600
Social Sciences	41	65	85	81	86	70	67	52	59	606
Total	89	131	181	192	250	232	206	206	196	1683

<u>Graduate Output</u>					
	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Total</u>
B.Sc.	-	14	17	19	50
B.A.(Hum.)	56	64	59	61	240
B.Soc.Sc.	48	67	51	60	226
Total	104	145	127	140	516

Source: (a) USM - The First Ten Years 1969-1979, page 38.
(b) Registrar, USM.

Matriculation classes

Another important development has been the introduction of the matriculation programme. This was originally started as the Preliminary Science programme which took in students who did not have the necessary qualifications to enter the first year. It was to be regarded as a remedial course particularly for Bumiputra students so that they would be prepared for first-year instruction. This programme has been started in order to give a better opportunity to disadvantaged students to succeed in getting admission to the University, and also to try to ensure that they get an even chance to graduate. The programme has now evolved into the matriculation programme which is run over a period of two years. Students with five science subjects at the MCE level and a sufficient credit average are taken into selected science schools in Northern Peninsular Malaysia. After their training for one year in these schools with some supervision from the University they then enter into their second year of matriculation in the University where courses are conducted by lecturers of the University.

The enrolment and output figures are:

	<u>70/71</u> ^{1/}	<u>71/72</u>	<u>72/73</u>	<u>73/74</u>	<u>74/75</u>	<u>75/76</u>	<u>76/77</u>	<u>77/78</u>	<u>78/79</u>	<u>79/80</u>	<u>Total</u>
Enrolment	23	25	19	24	64	92	137	172	216	223	995
Number Successful	19	22	17	20	58	85	120	148	181	218	888

Source: Registrar, USM.

1/ Known as pre-science classes in 1970/71.

The Residential system

The design for student accommodation in the USM campus is based on a system of student residential villages or desasiswa where rooms are rented at nominal rates to the students by the University on a tenant-landlord basis. Meals and laundry services, though available in the campus, are not provided as an integral part of the accommodation system. Instead, the system is designed to encourage the students to budget their own finances. The University has set itself a target to provide accommodation on campus for 75 per cent of its full-time student population at any one time. Current residential capacity is estimated to be about 71 per cent.

The Academic Year Structure

The academic year structure was revised in 1975 and the former three-term arrangement was discarded. In 1976, a new two-term unit system was introduced, the academic year being divided into two terms of 18 weeks each. Under this new system, courses are offered on a term-to-term basis with examinations at the end of each term. Students are not therefore classified as belonging to any year of study but read courses in a progressive manner, from level 100 courses to level 400 courses. In 1978, a further modification was made to the undergraduate degree programme. The existing three-year courses in the natural sciences, humanities and social sciences were extended to four years. The term was renamed a semester and students were given year-equivalence classifications in accordance with the credit units earned. In 1979, a Board of Studies was set up by the University Senate to study and make recommendations on the establishment of a General Studies Programme for the session of 1980/81.

Bachelor of Science with Education and Science degree courses

The concurrent course of Bachelor of Science with Education is a departure from the more traditional pattern of providing a diploma in education for science graduates with a first degree in science. It involves all the four Natural Science Schools, the School of Education and the Language Unit. A similar concurrent course leading to the degree of Bachelor of Arts with Education draws on the School of Humanities in place of the natural science schools. There are important

Annex VII/8
p. 6

differences between these concurrent courses and the more traditional ones. The concurrent Bachelor of Science with Education course lasts for four years and throughout this period an education component is introduced, while two science subjects and mathematics are being studied. Thus, the graduates from this course are normally versed in two science subjects as well as in mathematics. During the long vacation, the students are given practical training and they have three such training courses during their undergraduate period. Thus they are exposed to and are trained in practical teaching over a much longer period of time. Further, with the university policy of requiring all graduates to attain a certain level of proficiency in Bahasa Malaysia, these graduates are not only versed in their science disciplines and mathematics, but are also able to teach in Bahasa Malaysia.

An innovation in the science degree programme is the introduction of the double major in science, which enables students to read two of the four science disciplines (biology, chemistry, physics and mathematics) throughout the undergraduate course, giving equal emphasis to both subjects. The traditional single subject course, similar to that in other universities, is available but with a difference, in that the students have the opportunity to read some courses in the humanities and social sciences, such as management problems and processes, economics, accounting, etc. This arrangement is very much facilitated by the School system. The graduates from the double major programme, while broad-based in science, are better prepared in the areas of production, quality control, marketing and sales in industry, as well as in research and development and in service activities of the private and public sectors, where a multi-disciplinary approach to problems is essential.

MALAYSIA

SECOND EDUCATION PROJECT (LOAN 810-MA)

USM

BACHELOR OF SCIENCE COURSE

REQUIREMENTS

Alternative A: 1 Major

Science I	80 units*
Science II/III or IV	16 "
Service Mathematics/Elective/Option	12 "
Bahasa Malaysia IV	0-8 "
English Language	2-10 "
Option	<hr/>
Minimum	142 units

Alternative B: Double Major

Science I	48 units
Science II/III or IV	48 "
Service Mathematics/Elective/Option	12 "
Bahasa Malaysia IV	2 "
English Language	0-8 "
Option	2-10 " <hr/>
Minimum	120 units

Alternative C: General Studies Program

Science I	62 units
Science II/III or IV	16 "
Service Mathematics/Elective/Option	12 "
Minor (chosen from 14 minors available from the entire university)	20-24 "
Bahasa Malaysia IV	2 "
English Language/Option	8-8 " <hr/>
Minimum	120 units

* 1 unit = 14 hours of contact (or 28 for laboratory/workshop).

USM

BACHELOR OF SCIENCE COURSE

REQUIREMENTS (Honors)

Alternative A: 2 Majors

Science I	40 units
Science II	40 "
Service Mathematics/Elective/Option	12 "
Education /1	48
Bahasa Malaysia IV	2 "
English Language	2-8 "

Minimum 142 units

Alternative B: 1 Major

Science I	60-62 units
Science II (as minor)	20-24 "
Service Mathematics/Elective/Option	12 "
Bahasa Malaysia IV	2-8 "
English Language	0-8 "
Education /1	48 "

Minimum 142 units

Alternative C: General Studies

Science I	60-62 units
Minor (one to select one field in the offerings of General Studies)	20-24 "
Service Mathematics or Science II/III or IV	12 "
Bahasa Malaysia IV	2 "
English Language	0-8 "
Education /1	48 "

Minimum 142 units

/1 Including practice teaching for a total of 16 weeks.

U.S.M.
FIRST DEGREE OUTPUT, 1972-1979

Degree \ Year	1972	1973	1974	1975	1976	1977	1978	1979	Total
B. Sc. ^{1/}	39	39	55	43	74 (15)	110 (25)	74 (20)	77 (20)	511 (80)
B. Sc. with Ed.	-	-	20	84	74	141	137	79	535
B. Pharm.	-	-	-	17	31	36	39	36	159
B. App. Sc.	-	-	-	-	31	38	39	11	119
B. Sc. (HEP)	-	-	-	-	22	24	33	41	120
Sub-Total (1)	39	39	75	144	232	349	322	244	1,444
B.A.	-	40	96	128	117	172	167	158	878
B.A. with Ed.	-	-	-	-	-	52	42	47	141
B. Soc. Sc.	-	75	127	122	164	202	203	182	1,075
Sub-Total (2)	-	115	233	250	281	426	412	387	2,094
Total (1) + (2)	39	154	298	394	513	775	734	631	3,538
(1) as % of Total	100%	25%	25%	37%	45%	45%	44%	39%	41%
Off Campus (included in Total)					(104)	(145)	(127)	(140)	

Source: 1972-1975: Universiti Sains Malaysia - The First Ten Years, 1969-1979.
1976-1979: Registrar Universiti Sains Malaysia.

Note: ^{1/} Output of Sc. graduates majoring in computer science is indicated parenthesis.

U.S.M.
STUDENT ADMISSION, 1969/70 TO 1979/80

Annex VII/11

	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	Total
Matriculation	-	23	25	19	24	68	91	134	174	203	244	985
Science	57	69	174 ^{1/}	226 ^{1/}	303 ^{1/}	338 ^{1/}	81	128	136	154	150	1,816
Science (Education)	-	-	-	2/	-	-	72	95	122	153	156	598
Applied Sciences	-	-	-	-	2/	-	-	37	30	44	49	160
Pharm. Sciences	-	-	-	2/	-	-	-	52	52	51	50	205
Housing, Building & Planning	-	-	-	-	31	55	20	50	50	42	48	296
Sub-Total (1)	57	69	174	226	334	393	173	362	390	444	453	3,075
Humanities	-	45	101	120	136	93	87	86	80	83	86	917
Humanities (Education)	-	-	-	-	-	57	54	53	59	60	59	342
Social Sciences	-	79	132	124	135	148	137	149	116	129	101	1,250
Sub-Total (2)	-	124	233	244	271	298	278	288	255	272	246	2,509
Total (1) + (2)	57	193	407	470	605	691	451	650	645	716	699	5,584
(1) as % of Total	100%	36%	43%	48%	55%	57%	38%	56%	61%	62%	65%	55%
Off Campus (Science, Humanities, Social Sciences)	-	-	89	131	181	192	250	232	206	206	196	1,683

Source: 1969-1975: Universiti Sains Malaysia - The First Ten Years, 1969-1979.
 1976-1979: Registrar, Universiti Sains Malaysia.

Notes: 1/ Including of Education students.
 2/ Starting year of course.

U.S.M.
ENROLMENT AND OUTPUT OF HIGHER DEGREE STUDENTS

	Masters Degree											Ph. D.										
	1975/76		1976/77		1977/78		1978/79		1979/80		Total	1975/76		1976/77		1977/78		1978/79		1979/80		Total
	R	G	R	G	R	G	R	G	R	G	G	R	G	R	G	R	G	R	G	R	G	G
Pharmacy	1	-	-	-	-	-	-	-	2	1	1	-	-	1	-	-	-	-	-	-	-	-
Physics	-	1	-	1	1	1	1	1	2	-	4	-	-	-	-	-	1	-	-	1	-	1
Applied Sciences	-	1	5	-	1	-	6	1	1	-	2	-	-	1	-	-	-	1	-	-	-	-
Biology †	6	2	2	6	2	1	2	-	4	2	11	3	-	-	1	3	-	1	-	1	2	3
Chemistry	4	1	5	7	-	1	3	2	-	-	11	3	-	1	-	1	2	-	-	1	1	3
Mathematics	-	-	5	-	2	1	-	1	1	-	2	-	-	-	-	-	-	-	-	-	-	-
Housing, Building and Planning	8	7	11	5	8	11	8	9	6	5	37	-	-	-	-	-	-	-	-	-	-	-
Sub-Total	19	12	28	19	14	15	20	14	16	8	68	6	-	3	1	4	3	2	-	3	3	7
Humanities	11	3	6	-	4	3	2	2	6	3	11	1	-	-	-	-	-	-	-	-	-	-
Social Science	13	2	11	3	6	4	6	7	5	1	17	-	-	1	-	3	-	-	-	-	-	-
Education	16	-	12	-	-	1	-	1	2	2	4	-	-	-	-	-	-	-	-	-	-	-
Sub-Total	40	5	29	3	10	8	8	10	13	6	32	1	-	1	-	3	-	-	-	-	-	-
Total	59	17	57	22	24	23	28	24	29	14	100	7	-	4	1	7	3	2	-	3	3	7

Source: Registrar, Universiti Sains Malaysia

R = Number registered (Annual Intake)
G = Number graduated

	1972/73	1973/74	1974/75
M. Sc.	1	2	3
M.A.	-	-	1
M. Soc. Sc.	-	1	3
M. Sc.(HBP)	-	-	5

USM: CAPACITY, ENROLMENT & TEACHING STAFF

Table I

Comparison between appraisal estimates (A) and situation by 1979 (B)

U S M	Student Places (A)	Enrolments (B) ^{1/}	Teaching Staff	
			(A) ^{2/}	(B)
School of Physics/Mathematics	1,100	568	100	59
School of Chemistry	800		75	40
School of Biology	400		40	43
School of Applied Sciences	250		160	20
School of Pharmacy	90	205	9	15
Computer Centre and Central Facilities	-	-	-	3
Centre for Educat. Services ^{3/}	500	526	40	25

Notes: 1/ Data are estimates based on enrolments over the years 1976/77 to 1979/80.

2/ Annex 7 of Appraisal Report, March, 1972.

3/ Now School of Educational Studies.

Table 2

Full-time Teaching Staff - Malaysian and External

	1973		1976		1977		1978		1979	
	M	E	M	E	M	E	M	E	M	E
Physios	14	15	18	14	18	16	18	12	21	8
Mathematics	6	1	18	7	18	7	18	8	21	9
(Computer Centre)	-	-	-	-	-	-	2	-	2	1
Chemistry	16	13	25	16	26	13	30	11	31	9
Biology	14	3	35	10	37	9	30	9	38	5
Applied Science			9	10	11	11	13	9	13	9
Pharmacy			9	3	11	1	11	2	12	3
Education	13	3	22	3	22	2	26	0	25	0
Housing, Building and Planning	-	6	5	20	6	18	7	17	9	18
Total	63	41	141	83	149	77	161	68	172	62
Percentage	61%	39%	63%	37%	66%	34%	70%	30%	74%	26%

Source: Registrar, Universiti Sains Malaysia.

M = Malaysian

E = External

CHARACTERISTICS OF THE COMPUTER SYSTEM IN THE
USM COMPUTER CENTRE *

System 370/135 was installed in 1975 and in 1978, using local funds. The University purchased IBM system 370/148 to enhance the configuration. In 1979 the system 370/148 was upgraded to 2 megabytes of real storage. The present computer system is supported by the following types of hardware:

- 1 Model 3203 fast printer (1100 lpm)
- 1 Card Punch
- 2 Card Readers
- 30 Model 3270 Video Display units (terminals)
- 6 Tape Drives
- 12 Disk storage devices with a total capacity of about 3000 megabytes
- 5 Diskettes (floppy disks) data entry stations
- 1 Optical Mark Reader
- 7 Card Punch Machines
- 1 Plotter/Digitizer

System operation consists of operating systems OS/VSI and VM/370 POS; the following compilers are available: FORTRAN, ASSEMBLER, PL/1, COBOL and BASIC; the following software packages are also available: SPSS, GPSS, SAS, MARK IV and IMS. The USM computer system has the capability for multi-programming, time-sharing, demand and batch processing. Since 1981 the system operates a 24-hour service.

* Other small systems exist in the School of Mathematics.

USM COMPUTER CENTRE: FUNCTIONS

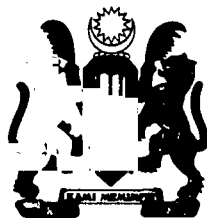
1. Teaching and Training

Teaching programmes include a variety of short-term courses for USM staff, government auditors, outside librarians, etc., as well as the B.Sc. programmes (Mathematics with specialization in Computer Science)^{1/}. The B.Sc. course from 1974/75 to 1977/78 was a three-year one; from 1978/79 it is a four-year course. To obtain a B.Sc., a student must pass in at least 120 units including 80 units for a single-subject major or 48 units for a double-subject major, a unit being 14 hours of lectures/tutorials or their equivalent. In addition, the students are required to spend about 8 weeks of the long vacation in the second year of study carrying out a practical exercise in government and private organisations. The School of Mathematical Sciences has 3 Ph.D. and 2 M.Sc. lecturers with varied fields of specialization in computer science. The School provides the majority of courses for the computer science programme. It is estimated that this academic year 1980/81 about 700 students use the computer, of whom around 100 specialize in Computer Science.

2. Research covers mainly two categories:

- (i) research done by individual academic staff;
- (ii) mostly application-oriented research, in the form of large-scale projects, often in conjunction with other university staff and outside agencies, including for example:
 - (a) the development of a National Integrated Data System for Malaysia (Project NIDAS);
 - (b) the development of Computerized Land Information System for the State of Penang;
 - (c) the Drug Abuse Project (a WHO-sponsored project);
 - (d) Land Ownership in the Muda Irrigation Area (Project MADA);
 - (e) a study on the Long-term Computer Requirements of the Port Authorities (Port Kelang Project);
 - (f) a study on the feasibility of creating a System of Cooperative Processing using the MARC tapes (Project MALMARC sponsored by Unesco).

^{1/} In addition to the B.Sc. (Mathematics with major subject in Computer Science) programme, a similar B.Sc. programme (Applied Sciences with major subject in Computer Science and Technology) began in 1979.



Bil. Tuan

Bil. Kami

15 January 1983

Mr. Shiv S. Kapur
Director
Operations Evaluation Department
The World Bank
1818 H Street,
N.W., Washington
D.C. 20433
U.S.A.

Dear Mr. Kapur,

REPORT PERFORMANCE REPORT ON MALAYSIA SECOND EDUCATION PROJECT
(LOAN 810-MA)

Re. your letter to our Vice-Chancellor of 15 November 1982, with regards to the above Report, the University had in fact sent its comments to the Ministry of Education on 2 October 1981. Nonetheless, I shall be most grateful if you will take into account the following observations, and modify the Report accordingly.

1. p.ii item 4 Project Management

Please note that the MDU established at USM was only empowered to oversee the implementation of the Project. It had no executive authority whatsoever. Indeed even details of the Project had to be referred to the Ministry of Education. As such, any delay was not the responsibility of the MDU.

2. p 9 item 3.1(b)

This statement is incorrect. The MDU was not responsible for the design of the campus plan nor the implementation of the Project. The consultants were the responsible parties.

3. p 12 item 3.6(c)

- (a) 4 mechanical engineers should read 4 electrical engineers.
- (b) Reference to "reinforced concrete gutters" should be in the School of Biological Sciences, not in the Residential Halls.

4. p 13 item 3.6(e)

Please delete reference to the construction of the airport-city highway. This project did not exist then. Perhaps, this is meant to refer to the Airport project.

...2/-

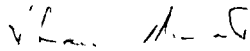
Mr. Shiv. S. Kapur

15 January 1983

5. p 19 item 4.17
83 acres should read 87 acres.
6. pp 19-20 item 4.19, 4.22
 - (a) Master Side Plan should be Master Site Plan.
 - (b) The attribution of the 2 1/2 year delay to "the insufficient expertise of the USM authorities in determining their real educational needs, and the numerous amendments made ..." is an extremely unfair statement.
In fact the major cause of delay was the devaluation of the American dollar, and the requirements for changes in design and scope asked for by the Bank Architects.
7. p 20 item 4.20
4 mechanical engineers should be 4 electrical engineers.
8. p 49 item 7.55(c)
Please rephrase this section to read:-
"the difficulties in obtaining student ethnic balance in the Science stream".
9. p 50 item 7.59
It is incorrect, to say the least, that the "general studies" program was meant for the "benefit of the weaker students". This program was introduced to provide an all round education, and to enhance the flexibility of the USM academic system.
10. p 51 item 7.63
Please change the word "trained" (line 1) to "assisted".
- 11. Please replace Annex VIII/9 pp 1-2 with the enclosed.

I trust the above will help in the re-writing of the Report. May I also take this opportunity to thank the World Bank for its assistance to USM during the early years of our development.

Yours sincerely,



PROFESSOR SHAROM AHMAT
Deputy Vice-Chancellor
(Research & Development)

c.c. Y.B. En. Musa Mohamad
Vice-Chancellor

SA/kbc

ATTACHMENT I

(Page 3 of 4)

Annex VIII/9

p.1

U S M

BACHELOR OF SCIENCE PROGRAMME
REQUIREMENTS

Alternative A: Single Major

Science I	80 units*
Science II/III/ or IV	16 units
Service Mathematics/Elective/Option	12 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
Option	<u>2-10 units</u>
	minimum 120 units

Alternative B: Double Major

Science I	48 units
Science II/III/ or IV	48 units
Service Mathematics/Elective/Option	12 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
Option	<u>2-10 units</u>
	minimum 120 units

Alternative C: General Studies Programme

Science I	62 units
Science II/III/ or IV	16 units
Service Mathematics/Elective/Option	12 units
Minor (chosen from 14 minors available from the entire University)	20-24 units
Bahasa Malaysia IV	2 units
English Language/Option	<u>4- 8 units</u>
	minimum 120 units

* 1 unit = 14 hours of contact (or 28 for laboratory/workshop)

U S M

BACHELOR OF SCIENCE WITH EDUCATION PROGRAMME
REQUIREMENTS (Honours)

Alternative A: 2 Major

Science I	40 units
Science II	40 units
Service Mathematics/Elective/Option	12 units
Education ^{1/}	48 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
	<hr/>
	minimum 142 units

Alternative B: 1 Major

Science I	60-62 units
Science II (as minor)	20-24 units
Service Mathematics/Elective/Option	12 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
Education ^{1/}	48 units
	<hr/>
	minimum 142 units

Alternative C: General Studies Programme

Science I	60-62 units
Minor (to select one field in the offerings of General Studies)	20-24 units
Service Mathematics or Science II/III/ or IV	12 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
Education ^{1/}	48 units
	<hr/>
	minimum 142 units

^{1/} Including practice teaching for a total of 16 weeks



KEMENTERIAN KEWANGAN,
KHAZANAH MALAYSIA,
JALAN DUTA,
KUALA LUMPUR

ATTACHMENT II

(Page 1 of 9)

Telefon: 946066, 940011, 948111

Telegram: TREASURY

Telex FEDTRY MA 30242

Ruj Kami: 0.4392/200/Jd.3

Ruj Tuan

Tankh 19th January, 1983.

Mr. Shiv S. Kapur,
Director, Operation Evaluation Department,
The World Bank,
1818H Street N.W.,
Washington D.C. 20433,
U.S.A.

Dear Mr. Kapur,

Project Completion Report -
Second Education Project Loan - 810 MA

Thank you for your letter of 15th November, 1982. As requested, I am sending a copy of comments on ' Project Completion Report, Second Education Project Loan 810 MA, which I hope you will find of interest and use to you. I hope the above comments would be considered and incorporated in your final report.

Thank you.

Your sincerely,

(Nik Najib b. Husain)
Finance Division,
for Secretary General to the Treasury.

COMMENTS ON THE PROJECT COMPLETION REPORT
SECOND EDUCATION PROJECT - 810 MA

UNIVERSITY SAINS MALAYSIA COMPONENT

1. Page 12 : Lengthy red-tape procedure - Para 3.6 (c)

Reference to mistakes or faulty design should be for reinforced concrete gutters in the School of Biological Sciences, and not in the Residential Halls.

2. Page 19-20 : Professional Services

(a) Master Site Plan - Para 4.19

It is not a fair statement. The Master Planner put up a theoretical sort of Plan, a structure which was something which could not be met within the funds that were allocated under the World Bank and because of this, we had to tell him it was not feasible; thus the reason for the delay.

It is not true to say that the U.S.I. lacks expertise in determining their real educational needs. What happened was that the U.S.I. was asked to submit their proposal for the project within 3 weeks which was insufficient to prepare their requirements. Moreover at that time the various schools of Pharmaceutical and Applied Sciences, Biological, Chemical Sciences, The Marine Field Station etc had not been established and as such there was no one at the time to advise and help determine their actual educational requirements. However a proposal was submitted which later on had to be substantially changed when the Deans and Senior Lecturers were appointed.

3. Page 20 : Design - Para 4.22

Problem caused by the devaluation of the American Dollar must be stated. It should be added in this paragraph, the problem caused by the devaluation of the American Dollar, where the space originally envisaged had to be reviewed. The delay in the finalizing of the design was also partly due to the time taken for amendments to meet the requirements of the Bank (Architect).

4. Page 30 : Actual Costs - Para 6.3

It is not true that most of the furniture component for the U.S.I. project was paid by the University.

5. Page 50 : Curricula

Para 7.59 (second sentence).

ATTACHMENT II

(Page 3 of 9)

'..... one of which is a "general studies" programme, mainly for the benefit of the weaker students'.

This is not the objective of the 'general studies' programme, which is to strengthen the inter-disciplinary studies, and to bring about closer collaboration between the Arts and Sciences.

6. Annex VII/9 : Pages 1 and 2

Changes made on the pages

Annex VII/9

p. 1

U S M

BACHELOR OF SCIENCE PROGRAMME
REQUIREMENT

Alternative A : Single Major

Science I	90 units*
Science II/III/or IV	16 units
Service Mathematics/Elective/Option	12 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
Option	2-10 units
<hr/>	
minimum	120 units

Alternative B : Double Major

Science I	48 units
Science II/III/or IV	48 units
Service Mathematics/Elective/Option	12 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
Option	2-10 units
<hr/>	
minimum	120 units

Alternative C : General Studies Programme

Science I	62 units
Science II/III/or IV	16 units
Service Mathematics/Elective/Option	12 units
Minor (chosen from 14 minors available from the entire University)	20-24 units
Bahasa Malaysia IV	2 units
English Language/Option	8-8 units
<hr/>	
minimum	120 units

* 1 unit = 14 hours of contract (or 28 for laboratory/workshop)

U S M

BACHELOR OF SCIENCE WITH EDUCATION
PROGRAMME REQUIREMENTS (Honours)

Alternative A : 2 Major

Science I	40 units
Science II	40 units
Service Mathematics/Elective/Option	12 units
Education ^{1/}	48 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units

minimum 142 units

Alternative B : 1 Major

Science I	60-62 units
Science II (as minor)	20-24 units
Service Mathematics/Elective/Option	12 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
Education ^{1/}	48 units

minimum 142 units

Alternative G : General Studies Programme

Science I	60-62 units
Minor (to select one field in the offerings of General Studies)	20-24 units
Service Mathematics or Science II/III/or IV	12 units
Bahasa Malaysia IV	2 units
English Language	0- 8 units
Education ^{1/}	48 units

minimum 142 units

1/ Including practice teaching for a total of 16 weeks

VOCATIONAL AND TECHNICAL COMPONENT

1. On page (iii) para 12 the report states that the role of the Vocational Schools needs clarification. Here we like to point out that the role of the Secondary Vocational Schools in the Malaysian Education System has been clearly defined. The present objectives and aims are :
 - i. to provide the industrial and commercial sector with trained manpower equipped with basic knowledge and skills.
 - ii. to provide a curriculum that is both flexible and broad-based to cater not only for present needs but also for future industrial changes and development.
 - iii. to provide knowledge and skills that can be utilised where necessary for further studies and training.
2. On page 43 para 7.34 in the report it is stated that "The Department of Technical and Vocational Education expresses its appreciation of its limitation and contemplates the extension of the programme into 3 years". Here we like to respond that what the Division proposes is to have an additional special courses for the good students who after qualifying SPVM examination do not wish to pursue their education further. The objective of the courses should be to equip these students with some sort of additional training in specified areas of specialization as required by the industries.

EDUCATIONAL MEDIA SERVICES COMPONENT

1. Page (iii) paragraph 11

Under the Second Education Project Loan 810 MA only 18 video cassette recorders (VCR) were purchased and supplied to State Educational Media Service Centres the selected Teacher Training Colleges and the Educational Media Service Division, Ministry of Education. The additional video cassette recorders that are referred to were purchased from a donation given by a private foundation and were meant specifically to assist in the 6th Form ETV Science Project. The combination of these two purchases could lead to a certain amount of confusion as is evident in the Report.

2. Page (i) 3(b)(iii) and page 6 para 2.4 2 (c)

As explained in (1) above, under the provision of the 2nd Bank Loan 18 Video Cassette recorders were supplied and not 25.

3. Page 40 - para 7.21

- (a) TV sets were supplied to nearly all Schools and not to 'a selected number' as reported.
- (b) The additional TV sets and generators referred to were the sets supplied to Sabah and Sarawak under the 3rd Education Project, as TV had not been introduced to Sabah and Sarawak when the request for the 2nd Education Project was made.

4. Annex VII/I

In the organisational chart of the Ministry of Education, Malaysia, the Educational Media Service is referred to as the 'Educational Television Services'.

CURRICULUM DEVELOPMENT CENTRE COMPONENT

1. Design : Page 15 - para 4.4 and 4.5

- (a) Acoustics in the Conference Hall was not satisfactory. JKR has just completed renovations to improve the acoustics at a cost of M\$105,000. This included the installation of wood strip panelling, fibre glass and acoustic tiling.
- (b) Under the Fourth Malaysia Plan, an additional floor to the right wing of the existing building has been provided for.

2. Construction : Page 16 para 4.6

Though the construction of the building in general is satisfactory several cracks and leakages have occurred e.g :

- large cracks in the aircondition plant rooms have yet to be repaired.
- roof leakages in the general office, hostel rooms and elsewhere are occurring daily.

The fire alarm system has not been working since its installation. Letters to JKR to rectify this have not brought any positive response. Another major fault was the sinking of the floor of the Director's room. JKR had to carry out repair work to the floor towards the end of 1980, causing considerable inconvenience to the general office.

3. Activities : Page 34 para 7.3

The report suggested that the Centre when dealing with research into areas of curriculum needs and the teaching/learning process in schools, should also concern itself with non formal learning context.

Though this has not been one of our major objectives, action research on the role of the community in the learning of children was undertaken by the Comparative Education Project.

4. Staff Development : Page 36 para 7.9, 7.10 and page 37 para 7.12 and 7.13

- (a) Comment that there has been a 'high wastage rate' because 32 out of 72 officers trained abroad for various levels of specialisation have left CDC. The 32 officers who left CDC were either transferred, seconded or promoted to other Ministry agencies/universities. Those promoted included :
- 5 - to Universities, Reccsam, Innotech
 - 17 - to other divisions, schools, Dewan Bahasa dan Pustaka
- (b) Report suggests that 'leadership be strengthened and that a serious review of staff promotion policy within CDC be undertaken to retain more permanently its better professional elements'. The CDC has made this plea to the Ministry at every budget session but the response from the Treasury and PSD has been most disappointing. Unless serious consideration is given to this matter, the movement of better qualified staff to other divisions of the Ministry will continue.
- (c) Key Personnel and their role in the dissemination of curriculum changes to teachers has been questioned. As indicated in the report the effectiveness of the Key Personnel in the In-Service courses organised at the state levels has not been sufficiently studied. However, it is pertinent to state that lack of proper incentives for the extra load they have to carry is a major problem which is currently being reviewed

PROJECT IMPLEMENTATION UNIT (PIU)

1. Page 11 - para 3.4

The first statement is not a fair statement. It is a fact that prior to 1979 the PIU was grossly understaffed. As such, operating with only a skeletal staff during the initial stages of the project implementation, the PIU did not have a systematic recording and evaluation system. Moreover the PIU at that time was busily involved in implementing the First World Bank Loan. But during the later stage of the project implementation, the PIU was able to remedy the situation and organise a proper recording, monitoring and evaluation system. In-fact a substantial amount of the information and data especially on physical implementation, finance and reimbursement for the preparation of the Project Completion Report (PCR) were obtained from the records kept in the PIU.

It is also reported in the same paragraph that the PIU failed to establish quarterly progress reports and those sent to the Bank contained very limited information on the software side. We consider the above statement as not true. As stated in the loan Agreement the PIU regularly dispatched the Quarterly Progress Reports to the Bank. But sometimes we admit that the reports were sent after some element of delay. As such it is not true to say that the PIU failed to establish Quarterly Progress Reports. The reporting was done using the format prepared by the Bank and the format used was such that it does not demand much information on software side.

2. Page 13 - para 3.7 and 3.8

/is

It is also appropriate to point out here that some of the initial delays in finalizing the design plans and implement the projects were due to the numerous revisions in the design plans as requested by the different architects of the Bank who came here under different Missions. Different architects tend to perceive things differently and there was lack of consistency. The Bank architects at times tend to impose/force certain conditions which may be suitable for other Third World Countries but not to Malaysia. Such matters led to dispute between the Government and the World Bank and delayed further the implementation of the Project.