



Completion Report

Project Number: 29331
Loan Number: 1596
June 2007

Malaysia: Technical Education Project

Asian Development Bank

CURRENCY EQUIVALENTS

Currency Unit – ringgit (RM)

		At Appraisal	At Project Completion
		18 November 1997	21 October 2005
RM1.00	=	\$0.3002	\$0.2651
\$1.00	=	RM3.3315	RM3.7718

ABBREVIATIONS

ADB	–	Asian Development Bank
BME	–	benefit monitoring and evaluation
CAGILPU	–	Career Guidance, Industrial Liaison and Placement Unit
CORD	–	Center for Occupational Research and Development
DPD	–	Development and Procurement Division (formerly DPSD)
DPSD	–	Development, Privatization and Supply Division
EA	–	executing agency
EMIS	–	Education Management Information System
EPU	–	Economic Planning Unit
MCE	–	Malaysian Certificate of Education
MOE	–	Ministry of Education
MOHE	–	Ministry of Higher Education
PCC	–	Project Coordinating Committee
PCR	–	project completion report
PIU	–	project implementation unit
R&D	–	research and development
RRP	–	report and recommendation of the President
SAC	–	school advisory committee
STS	–	secondary technical school
SVS	–	secondary vocational school
TA	–	technical assistance
TED	–	Technical Education Department
TEST	–	technical education and skills training
TVE	–	technical and vocational education
TEP	–	Technical Education Project (Loan 1596-MAL)
TVEP	–	Technical and Vocational Education Project (Loan 1355-MAL)
7MP	–	Seventh Malaysia Plan 1996–2000
8MP	–	Eighth Malaysia Plan 2001–2005
9MP	–	Ninth Malaysia Plan 2006–2010

NOTES

- (i) The fiscal year (FY) of the Government of Malaysia ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

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BASIC DATA

A. Loan Identification

1.	Country	Malaysia
2.	Loan Number	1596
3.	Project Title	Technical Education Project
4.	Borrower	The Government of Malaysia
5.	Executing Agency	Ministry of Education
6.	Amount of Loan	\$40.0 million
7.	Project Completion Report Number	29331

B. Loan Data

1.	Appraisal	
	– Date Started	25 August 1997
	– Date Completed	12 September 1997
2.	Loan Negotiations	
	– Date Started	17 November 1997
	– Date Completed	18 November 1997
3.	Date of Board Approval	17 December 1997
4.	Date of Loan Agreement	28 August 1998
5.	Date of Loan Effectiveness	
	– In Loan Agreement	26 November 1998
	– Actual	6 November 1998
	– Number of Extensions	0
6.	Closing Date	
	– In Loan Agreement	30 June 2003
	– Actual	21 October 2005
	– Number of Extensions	2
7.	Terms of Loan	
	– Interest Rate	variable
	– Maturity (number of years)	20
	– Grace Period (number of years)	5

9. Disbursements

a. Dates

Initial Disbursement	Final Disbursement	Time Interval
16 December 1999	21 October 2005	70 months
Effective Date	Original Closing Date	Time Interval
6 November 1998	30 June 2003	56 months
Effective Date	Actual Closing Date	Time Interval
6 November 1998	21 October 2005	84 months

b. Amount (\$)

Category or Subloan	Original Allocation	Last Revised Allocation	Amount Canceled	Net Amount Available	Amount Disbursed	Undisbursed Balance
01 Civil Works	29,716,000	24,520,155	5,195,845	0	24,520,155	0
02 Equipment	7,196,000	6,128,926	1,067,074	0	6,128,926	0
03 Training and Fellowships	1,755,000	792,697	962,303	0	792,697	0
04 Consulting Services	1,297,000	1,429,762	(132,762)	0	1,429,762	0
05 Research and Development	36,000	5,319	30,682	0	5,319	0
Total	40,000,000	32,876,858	7,123,142	0	32,876,858	0

10. Local Costs (Financed)

- Amount (\$)	0.0
- Percent of Local Costs	0
- Percent of Total Cost	0

C. Project Data

1. Project Cost (\$ million)

Cost	Appraisal Estimate	Actual
Foreign Exchange Cost	54.2	32.9
Local Currency Cost	72.8	69.5
Total	127.0	102.3

2. Financing Plan (\$ million)

Cost	Appraisal Estimate	Actual
Implementation Costs		
Borrower Financed	87.0	64.5
ADB Financed	40.0	32.9
Other External Financing	0.0	0.0
Total	127.0	97.3
IDC Costs	9.2	5.0
Total	136.2	102.3

ADB = Asian Development Bank, IDC = interest during construction.

3. Cost Breakdown by Project Component (\$ million)

Component	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
A. Base Costs						
1. Physical Facilities						
a. Construction – New STSs	16.6	27.0	43.6	14.4	22.2	36.6
b. Construction – Upgrading	13.2	21.5	34.6	10.1	18.9	29.0
Subtotal (A1)	29.7	48.5	78.2	24.5	41.1	65.6
2. Furniture and Equipment						
a. Furniture	0.8	1.8	2.6	1.7	2.7	4.4
b. Equipment	5.9	0.6	6.5	3.3	1.5	4.9
c. Vehicles	0.4	0.0	0.4	0.9	0.0	0.9
c. Books and Instructional Materials	0.2	0.0	0.2	0.2	2.5	2.7
Subtotal (A2)	7.2	2.4	9.6	6.1	6.7	12.8
3. Staff Development						
a. In-country Fellowships	0.0	1.9	1.9	0.0	0.8	0.8
b. Overseas Fellowships	1.8	0.0	1.8	0.8	0.0	0.8
Subtotal (A3)	1.8	1.9	3.6	0.8	0.8	1.6
4. Consulting Services						
a. Domestic Consultants						
i. Civil Works Design and Supervision	0.0	2.6	2.6	0.0	5.2	5.2
ii. Academic	0.0	0.6	0.6	0.0	0.3	0.3
b. International Consultants	1.3	0.3	1.6	1.4	0.0	1.4
Subtotal (A4)	1.3	3.5	4.8	1.4	5.6	7.0
5. Research and Development	0.0	0.1	0.2	0.0*	0.2*	0.2
6. Taxes and Duties	0.0	7.8	7.8	0.0	4.1	4.1
Subtotal (A)	40.0	64.2	104.2	32.9	58.4	91.3
B. Contingencies						
1. Physical Contingencies	2.7	4.0	6.7	0.0	4.5	4.5
2. Price Contingencies	2.3	4.6	6.9	0.0	1.6	1.6
Subtotal (B)	5.0	8.6	13.6	0.0	6.1	6.1
C. Interest and Other Charges	9.2	0.0	9.2	0.0	5.0	5.0
Total	54.2	72.8	127.0	32.9	69.5	102.3

STS = secondary technical school.

* Actual Research and Development costs equal \$5,000 (foreign) and \$175,000 (local).

4. Project Schedule

Item	Appraisal Estimate	Actual
Date of Contract with Consultants	September 2000	June 2001
Detailed Engineering Design Completion	December 1999	
Civil Works Contract		
Date of Award	June 2000	September 1998
Completion of Work	September 2002	December 2004
Furniture and Equipment		
Date of Award	June 2000	March 2005
Completion of Work	December 2002	September 2005

Training	June 2002	May 2002
Studies and Research		
Implementation of Studies	December 2002	November 2000
Monitoring and Evaluation		
Implementation of BME system	December 2003	September 2005
Project Review		
Midterm	August 2001	September 2001
Completion	June 2003	June 2005

5. Project Performance Report Ratings

Implementation Period	Ratings	
	Impact-Outcome	Implementation Progress
From 1 December 1997 to 30 November 1998	AAA	AAA
From 1 December 1998 to 31 December 2000	Satisfactory	Satisfactory
From 1 January 2001 to 28 February 2001	Satisfactory	Highly Satisfactory
From 1 March 2001 to 28 February 2002	Satisfactory	Satisfactory
From 1 March 2002 to 30 September 2002	Satisfactory	Highly Satisfactory
From 1 October 2002 to 31 December 2005	Satisfactory	Satisfactory

AAA = satisfactory.

D. Data on Asian Development Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members ^b
Loan Inception Mission	30 March–1 April 1998	1	5	A
Special Administration Mission	25 November–4 December 1999	1	10	B
Loan Review Mission	21 February–3 March 2000	2	24	b, c
Loan Review Mission	2–6 April 2001	1	5	A
Midterm Review Mission	2–12 October 2001	3	33	a, c, d
Loan Review Mission	23 July–2 August 2002	1	11	E
Loan Review Mission	18–28 March 2003	1	11	E
Loan Review Mission	7–11 March 2005	2	10	C
Final Loan Review Mission	6–10 June 2005	2	10	a, c

a - project economist; b - project specialist; c -assistant project analyst; d - consultant; e - senior project specialist.



I. PROJECT DESCRIPTION

1. Since 1980, the Asian Development Bank (ADB) has been supporting the Government of Malaysia (the Government) to improve the provision and relevance of its technical and vocational education programs.¹ The first three projects² upgraded a number of secondary vocational schools (SVSs) across Peninsular Malaysia to raise both the quality and quantity of skills training offerings. The fourth project—the Technical and Vocational Education Project (TVEP)³—was designed to introduce advanced technical skills through, new secondary technical schools (STSS) and, the upgrading of SVSs to STSS in Peninsular Malaysia and the states of Sabah and Sarawak.

2. While TVEP helped meet some of the demand for skilled and semi-skilled workers, the economy continued to operate at virtually full employment, and that situation was expected to persist during the Seventh Malaysia Plan (7MP) period (1996–2000). Given the country's relatively small labor force, an ADB study in 1995⁴ noted that shortages of high-level technical skills constituted the single largest threat to the sustainability of Malaysia's exports. Increasing the number of science and technology graduates at the secondary school level capable of, either entering the labor market directly or, proceeding to higher education⁵ became a principal objective for ADB's education sector strategy. To support 7MP objectives, the Government requested that a new Technical Education Project (TEP) be prepared to help meet the demand for higher-level technicians, technologists and engineers. Development of an indigenous and skilled labor force would reduce the need for foreign labor and help transform the assembly-based manufacturing sector into a higher value-added sector, with greater capital intensity and increased production efficiency.

3. TEP's development objective was to improve the quality and expand the capacity of technical education, so as to support capital intensity and production efficiency through (i) improvements in technical education quality; (ii) strengthening of staff development and teacher training; and (iii) expanded and/or upgraded facilities and equipment, in particular to support the use of information technology (IT) in the learning process.

4. To address these objectives TEP was designed with three major outputs. Component 1: Strengthening Technical Education, Organization, Management and Delivery had three subcomponents: (i) introduction and development of contextual learning and piloting of "smart"

¹ The formal education system in Malaysia features a 6-3-2 pattern that includes 6 years of primary, 3 years of lower secondary and 2 years of upper secondary schooling. Upper secondary schools include the academic stream leading to the Malaysian Certificate of Education (MCE), as well as the technical and vocational stream, leading to the Malaysian skill certificate. Secondary technical and vocational school graduates can attend polytechnic institutions or continue further to tertiary education and obtain a diploma and/or a technical degree.

² ADB. 1980. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Malaysia for Vocational Education Project*. Manila (Loan No. 476-MAL for \$20.0 million approved in October); ADB. 1983. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Malaysia for the Second Vocational Education Project*. Manila (Loan No. 673-MAL for \$58.0 million approved in December); and ADB. 1987. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Malaysia for the Third Vocational Education Project*. Manila (Loan No. 840-MAL for \$68.0 million approved in September).

³ ADB. 1995. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Malaysia for the Technical and Vocational Education Project*. Manila (Loan No. 1355-MAL for \$72 million, approved in May).

⁴ ADB. 1995. *Malaysia's Export Performance and Its Sustainability. Phase II. Competitiveness*. Manila.

⁵ The original SVSs offered both basic skills and vocational training and graduates were initially expected to enter the labor force. STS graduates were expected to enter polytechnic institutions and universities. In 1996, the country's 69 SVSs were redesignated as STSS and began a process of upgrading, so as to offer both vocational and technical education.

schools” i.e., STSs that maximized the use of IT; (ii) development of relevant curriculum and learning materials through support to the Technical Education Department (TED) of the Ministry of Education (MOE); and (iii) improved policy and management of STS programs, through better use of the education management information system (EMIS) and the benefit monitoring and evaluation (BME) system. Component 2: Strengthening Staff Development had two subcomponents: (i) preparation of teacher trainers, pedagogical upgrading, curriculum development and English language training for teachers; and (ii) strengthening management training for principals and support staff. Component 3: Establishing and Upgrading STS Facilities and Equipment included two subcomponents: (i) construction of four new STSs, and (ii) upgrading of 17 newly designated SVSs to STSs. The detailed design and monitoring framework for TEP is shown in Appendix 1.

II. EVALUATION OF DESIGN AND IMPLEMENTATION

A. Relevance of Design and Formulation

5. The TEP design was relevant to the objectives of the 7MP, which sought to develop Malaysia’s economy through a focus on advanced technology-based industries. It also assisted MOE and the Ministry of Higher Education (MOHE) attain their targets and priorities with respect to improvements in technical and vocational education (TVE), and helped increase budgetary resources allocated to TVE (See Appendix 2 on education expenditure). The design supported ADB’s operational strategy of supporting the Government in meeting the projected demand for professional and technical human resources (see Appendix 3 for actual and projected employment demand by major occupational group and sector for 2000–2010).

6. The project design contained important features to improve the quality of TVE, such as support for contextual learning and the piloting of “smart” schools. Although contextual learning approaches had been introduced earlier in the TVE system, the project design enhanced this through development of four smart schools, incorporating a full range of modern educational technology and equipment to facilitate technical teaching. The design also included training programs for teachers in technical and pedagogical aspects of contextual learning and assessment.

7. Other important objectives of the Government that were supported by the project design included, measures to improve the participation of students from remote and rural areas, in particular female students. Although targets were never set in the project’s design and monitoring framework, an important design feature was the construction of additional boarding facilities to improve access for students from lower-income families especially females. In 1996, female enrollment averaged 25% of total enrollment in the 17 project SVSs, but this had increased to an average of 41% of total enrollment by 2005 (see Appendix 4). Female enrollment in the four new STSs rose to 53% of total enrollment in 2005, reflecting the investment in relevant programs and improved dormitory accommodation (Appendix 4).

8. One weakness of the project design was the lack of identification of certain risks and assumptions that could affect project implementation and the attainment of project objectives. For instance, targets for each new and upgraded STS were set at a maximum capacity of 1,200 students, but this target was not reached by the end of the project in 2005. This was due in part to slower-than-anticipated construction of project STSs as a result of the Asian financial crisis, which affected government counterpart funding and material supplies. The new STSs eventually began operating in 2004, but average enrollment had only reached 640 students by 2005. Although average enrollment in the new STSs rose to approximately 850 students in 2006, this was still 29% below the original projected target of 1,200 students for each STS. Similarly, 17

upgraded STSs and SVSs recorded a total enrollment for both technical and vocational courses of 14,898 students in 2005, for an average of 876 students per institution, which was 27% below the target of 1200 (Appendix 4). Late completion of physical infrastructure cannot entirely account for enrollment falling below targets, particularly in the upgraded STSs and SVSs that were completed over 4 years before the end of the project. Other factors, unforeseen at the time of the project design (e.g. new alternative pathways to higher education and employment, through community colleges) appear to have attracted students and therefore lowered potential enrollment in project STSs (Appendix 4). It also appears that more students are proceeding to tertiary education through the academic stream in upper secondary grades (Appendix 5). In 1998, students were enrolled in post secondary education, accounting for 10% of all students in upper secondary and post secondary education. In 2003, this proportion had increased to 15%.

9. Objectively verifiable indicators for assessing project progress, identifying changes in areas such as enrollment, or gauging success of certain components such as policy support and capacity building, were not identified in the project's design and monitoring framework. This makes it difficult to assess efficiency and effectiveness, particularly when components were substantially changed or amalgamated.

B. Project Outputs

1. Strengthening Technical Education, Organization, Management and Delivery

10. **Development of Contextual Learning and Smart School Programs.**⁶ This component was designed to help TED review the implementation of contextual learning prior to its broader introduction in STSs, especially the STSs designated as smart schools. Although the project design contained important elements (e.g. promoting contextual learning), which were subsequently extended nationwide, the technical and vocational education curriculum remains highly centralized and relatively inflexible in classroom situations. Interviews conducted during field visits also indicate that there are still some teachers who require further training in new pedagogical approaches. While reforms in methodology and curriculum have proved successful and have been accepted as part of TED policy, further effectiveness of the learning process could be achieved if greater efforts were made to allow more student-led, flexible approaches to learning, using IT and other equipment provided under the project.

11. **Curriculum and Learning Materials Development.** The project included support to TED for curriculum and learning materials development, combined with staff training in curriculum design. This subcomponent was successful. The project's international consultants delivered contextual learning modules incorporating smart school concepts for a range of STS curriculum subjects, including mathematics, science, engineering and electronics. In addition, 44 TED staff and teachers were developed as master trainers capable of designing, training, and delivering contextual learning programs and materials. A report on the status of various educational streams in STSs was also prepared, which recommended that basic skills training components be phased out of STSs in favor of a more professional approach to technical education; this was adopted by TED. A proposal for the integration of industry standards into STS curriculum was developed by the international consultants in conjunction with TED's Curriculum Development Division; this has remained as the basis for subsequent curriculum revision. Cancellation of the envisaged consultancy on enhancing relationships between STSs

⁶ This constituted part of a broader shift by MOE from "teacher centered to student centered learning supported by a flexible curriculum and advanced technology." Source: ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Malaysia for the Technical Education Project*. Manila (Loan No. 1596-MAL, page 8).

and local industry meant that the industry advisory committees (IAC), set up in each STS, failed to receive specific directions and impetus in support of the curriculum process as originally planned. However, many IACs have made potentially useful contacts with local enterprises, and in some cases local factories have supplemented STSs equipment and offered factory visits as an integral part of the curriculum.

12. **Management Information Systems Development.** A major feature of the project's design was strengthening the capability of MOE and TED management and staff to (i) formulate evidence-based technical education policies by undertaking BME studies and (ii) better manage STS programs through improved use of the education management and information system (EMIS). In addition, provision was made for external training in human resource planning, and project management for staff of the Development, Privatization and Supply Division and Public Works Department, and in-country training of 160 planners in tracer studies and BME, as well as research and development (R&D) activities.

13. With ADB agreement, the remit of the national consultant recruited through the earlier TVEP to prepare recommendations for EMIS and BME was extended to cover aspects originally proposed for TEP, and the 3 person-months of international expertise and 5 person-months of national expertise allocated for BME under TEP were cancelled. Under TVEP, a functioning system and methodology for EMIS and BME was developed, but EMIS remained applicable to TED alone. An interface with the wider MOE EMIS was not developed as there were insufficient resources to acquire the appropriate technical expertise. The planned workshop on BME application was also delayed until 2006. Because the BME subcomponent was restructured, potential applications of BME to national policy and planning were not fully explored or implemented as envisaged at appraisal. TED's EMIS remains separate from that of MOE.

14. In addition to supporting BME, the project allocated \$144,000 for R&D, but only \$39,000 (27%) was expended. While national workshops on research methodology did take place, other activities originally foreseen in the project design—applied research studies on new educational services, dissemination of current research findings, distance education courses, and identification of new areas of potential demand for technical education—were cancelled.

2. Strengthening Staff Development

15. The primary thrust of this component was to support teacher training and management training of principals and administration officials by strengthening the capability of TED's Staff Development Division to deliver in-service staff development and teacher training. External fellowships were used to train a cadre of teacher trainers in technical and pedagogical aspects of contextual learning, and testing and examination techniques. Internal and external management training for both principals and senior staff was also provided. International and (mostly) national consultants assisted in planning, developing and delivering short-term in-service programs for teachers, principals and other education staff.

16. In April 2001, TED proposed combining the management information systems development (BME and R&D) component with the staff development component and asked for international tenders to supply both consultants and local training. No international tenders for the combined services were received (possibly because of the effects of the Asian financial crisis and the fluctuating value of the Ringgit), and ADB agreed to cancel the international consultants for staff development in October 2001. TED proceeded with the recruitment of national consultants for staff development and the domestic fellowship program was implemented between 2001 and 2002. The international fellowship program also took place and a total of 65 overseas fellowships, in support of components 1 and 2, were

organized in Australia, Canada, Germany and the United Kingdom. Details of the overseas and local staff development program are shown in Appendix 7.

17. The projected target for in-country staff development envisaged the training of 1,800 teachers and 1,520 other staff. Records maintained by TED's Staff Development Division and replicated in the MOE's project completion report (PCR) show that 4,141 staff received short-term training in a variety of areas (e.g., technical and pedagogical training for teachers, English language, and management training for STS principals and hostel wardens), thus exceeding project targets by 821 staff (25%). While reports submitted to ADB did not cover the qualitative aspects of what was achieved in each of the staff development activities, and it is not always clear to what extent targets were met from project resources as opposed to training undertaken through TED's regular budget funding, the target for local staff development programs were nevertheless exceeded.

18. Limited, but more specific staff development, was also undertaken by the international academic consultants from component 1 in aspects of contextual learning and related curriculum development, catering for a total of 12 curriculum writers from TED's Curriculum Division, plus 15 teacher trainers and 75 teachers. Consultancies designed to address content, organization and long-term planning of staff development training did not take place and it is possible that this may adversely affect TED's capacity to sustain staff development programs effectively over the longer term.

19. The project made considerable investments in both new learning techniques and associated equipment. Based on interviews with teachers and TED staff it is clear that teachers are currently more involved in the process of curriculum revision and understand its relevance to industry standards. The benefits of training for school wardens and support staff are also evident from improved standards of dormitory management, improved social ambiance of school accommodation, and greater female enrollment. Although programs for principals and their support staff lacked detailed reports, the recent award of ISO 9000⁷ to at least one STS is laudable, and establishes a good precedence for management of other STSs.

3. Establishing and Upgrading STS Facilities and Equipment

20. Four new smart STSs were constructed in strategic locations throughout Peninsular Malaysia; in addition to upgrading 17 SVSs to STSs to match the requirements of the STS curriculum. This included the construction of additional laboratories, learning resource areas, classrooms and the provision of additional equipment and learning materials. Additional dormitory space was also included to increase accommodation capacity and to encourage female enrollment. Expenditures for constructing and equipping the four new STSs constituted approximately 36% of the total project funds.

21. The new STSs were successfully completed, although construction delays were encountered due to cash flow and labor problems experienced by contractors during the 1997–1998 Asian financial crisis. Consequently the four new STSs were not completed until the third quarter of 2004, 2.5 years behind schedule, leaving insufficient time to accomplish a full 2-year program of technical education instruction before the completion of the project. However, construction was completed to satisfactory standards, and all four STSs are well designed, with greatly improved dormitory and recreational facilities. All classrooms and laboratories were

⁷ ISO 9000 is a family of standards for quality management systems. ISO 9000 is maintained by International Organization for Standardization (ISO) and is administered by accreditation and certification bodies.

provided with computer-assisted learning facilities and computer-linked projection systems. A few items of equipment, however, appear too sophisticated for basic teaching requirements of the schools, such as a complex hydraulic excavator in the agro-technology department of one STS, but elsewhere most equipment appears suitable.

22. The upgrading of 17 SVSs was completed satisfactorily but was similarly delayed, with design work and documentation extended by almost 3 years. While physical construction at most sites was completed by the end of 2001, some upgrades were not completed until the end of 2004. Although some SVS campus sites remain short of ground space, developments maximized the use of available land by increasing the number of stories in the buildings to accommodate more laboratories and classrooms.

23. While both new STSs and upgraded SVSs have broadband Internet connections, only the four new STSs have been able to maximize this advantage by giving students and teachers wider access to educational websites, as these smart schools have a greater number of computers in more locations (including classrooms, laboratories and learning resource centers). In terms of equipment procurement, a review of TED priorities resulted in equipment for agro-technology, home economics (apparel and food technology) and commerce being included in procurement by replacing expenditure on equipment for vital subjects (such as chemistry). While it is possible that cutting back on some equipment, such as chemistry glassware, may have an adverse effect on the application of more student-centered learning processes, changes in equipment were largely in response to emerging demands for new or more relevant subjects, as recommended by the polytechnic institutes. Introduction of home economics and commerce was partly an incentive to attract more female entrants into STSs. The introduction of subjects such as apparel design is reported to have made an important contribution to the continued rise in female enrollment in project STSs, from 25% at project commencement to 41% at project completion (Appendix 4).

C. Project Costs

24. At appraisal the project cost was estimated at \$127 million. ADB's share was estimated at \$40 million (31.5%) and the Government's share at \$87 million (68.5%). The actual project cost was \$102.3 million, of which ADB financed \$32.9 million (32.1%) and the Government \$69.5 million (67.9%). The total project cost decreased by 19.4%, mainly because the Government wished to reduce expenditure during the Asian financial crisis. Equipment costs decreased by 24%, in part because equipment priorities changed during the project. Furniture costs increased by 72%, due to rising material costs and altered specifications. The cost for books and instructional materials increased substantially and these were purchased mainly from domestic sources, reflecting both the increased availability and quality of relevant textbooks. Similarly, there was a significant increase in the cost for civil works design and supervision. Due to the Government's restrictions on overseas travel, actual expenditures for overseas fellowship was 45% of that budgeted at appraisal. Detailed cost estimates of the project at appraisal and the actual costs incurred are shown in Appendix 8.

D. Disbursements

25. No imprest account was opened under the project. At loan closing on 21 October 2005, disbursements totaled \$32.9 million, or 82% of the original loan amount of \$40 million. Of the total disbursements, \$24.5 million was for civil works, \$6.1 million for furniture and equipment, \$793,000 for overseas fellowships, \$1.4 million for consulting services, and \$5,000 for research and development.

E. Project Schedule

26. The project was approved on 17 December 1997 and the loan was declared effective on 6 November 1998. The project was originally intended for implementation over 5 years, but at the Government's request was extended twice (in June 2003 and June 2004), and closed on 21 October 2005. The extensions reflect the ADB's constructive assistance in re-scheduling key activities to help alleviate the effects of the Asian financial crisis. Civil works activities and procurement slowed almost from the outset (see paras 21-22). Staff development and consulting services were also delayed, mainly due to changes in the implementation of components 1 and 2 (see paras 16-18). As a result, some subcomponents were cancelled and others amalgamated, while the subcomponent for BME and EMIS was combined with TVEP. Appendix 9 compares the actual project implementation schedule with the estimates made during the inception mission in March-April 1998.

F. Implementation Arrangements

27. MOE adequately fulfilled its role as the Executing Agency (EA) as envisaged during appraisal, making use of experience from four previous ADB projects. Project implementation was supervised by a project director, who was the principal assistant secretary of the Development and Procurement Division (DPD)⁸. Day-to-day activities were handled by a project manager in DPD, supported by staff from the Project Implementation Unit (PIU), DPD Technical Unit (which was responsible for new construction), Public Works Department (which was responsible for upgrading STSs), and other divisions of TED. Staffing constraints in the PIU continued throughout project implementation. Submission of reports, accounts and financial statements to ADB was often behind schedule, with frequent reminders required. There were also delays in processing contracts and appointing consultants and contractors; international consultants from the Center for Occupational Research and Development (CORD) were fielded in the third quarter of 2001, approximately 1 year behind schedule, and the scheduled completion of this contract was extended from May 2002 to January 2003. It is worth noting that a fully functioning EMIS could have helped track implementation delays, while its database could have been used to provide needed information for project reports, thus avoiding delays. Full staffing of the PIU would also have helped to maintain a more efficient reporting schedule.

G. Conditions and Covenants

28. Twenty of the 26 loan covenants were complied with satisfactorily while six loan covenants were partly complied with. The latter relate to (i) the functioning of the project coordinating committee, (ii) timely allocation of counterpart funding, (iii) fielding of consultants, (iv) submission of progress reports, (v) BME, and (vi) composition of the project coordinating committee. While the PIU was able to use a wide number of staff, it did not have a dedicated 15-member team exclusively to manage the project, as agreed at appraisal. This contributed to delays in submission of reports and accounts, as the PIU staff was not always conversant with project conditions or requirements. The Project Coordinating Committee (PCC) met only as required, and did not become the major policy-setting and planning body envisaged at appraisal, depriving the project of potential advice and direction. The BME Committee functioned only in conjunction with TVEP, so the outcomes of its surveys and evaluations were mainly associated with that earlier project. The resultant lack of data specific to TEP hampered detailed evaluation of project achievements. The failure to interface the TED EMIS with that of MOE created an unnecessary break in the flow of information. Full details regarding compliance with loan covenants are in Appendix 10.

⁸ At the time of Project appraisal DPD was known as the Development, Privatization, and Supply Division (DPSD).

H. Related Technical Assistance

29. A technical assistance (TA) grant⁹ of \$500,000 was provided as an integral part of the project to assist the Economic Planning Unit (EPU) of the Prime Minister's Office and to undertake a strategic review of Technical Education and Skills Training (TEST) as a basis for subsequent policy and planning. This required careful examination of the overall provision of TEST prior to finalization of the 8th Malaysia Plan (8MP), covering the period 2001–2005, and the Third Outline Perspective Plan, covering the period 2001–2020.

30. The TA was provided between March 1998 and February 1999, and made practical recommendations for rationalizing the TEST system, provided practical examples of the implications of unit costs and outlined requirements for investment planning that integrated incremental recurrent costs. Comprehensive consultations with private TEST providers also took place and a database on their activities was prepared. Consultation and national workshops funded by the TA grant provided useful opportunities to stimulate discussions on inter-ministerial and private-public sector roles in TEST. The findings of the TA project were well received by the Government at the time and ADB rated the TA “generally successful”. Some key findings and recommendations were incorporated into the preparation of the 8MP, with labor market indicators generally replacing a previous emphasis on precise numerical predictions. However, other key recommendations relating to improved coordination for the overall TEST sector and regular processes required to sustain investment planning for technical and vocational education, and training in general, were not addressed by the 8MP. Further consideration of these issues appears to have been set aside, possibly during subsequent staff changes and EPU restructuring.

I. Consultant Recruitment and Procurement

31. At appraisal, consulting services were estimated at 332 person-months, comprising 17 international consultants for a total of 96 person-months, and 34 national consultants for a total of 236 person-months. Following restructuring of components 1 and 2, ADB approved the reduction of international consultants, and only three international consultants were recruited for an approximate total of 54 person-months. All three consultants came from CORD, and were primarily involved with curriculum development (component 1). The international consultant intended for BME was cancelled and the task assumed by the national consultant for BME under TVEP. All other international consultant posts envisaged for staff development (component 2) were cancelled, with national consultants utilized in the delivery of all staff development programs.

32. A total of 20 civil works contracts were awarded through national competitive bidding for the construction of four new STSs and the upgrading of 17 SVSs, in accordance with ADB's *Procurement Guidelines*. All but two contracts for SVS upgrading were halted during 1997–1998, with tender validity periods extended following approval from ADB. During the construction stage ADB agreed to a further loan extension due to continuing adverse economic conditions, which resulted in increased materials costs, supply shortages, defaulting by some suppliers, and an eventual decline in the value of the Ringgit. Two contracts were terminated and had to be re-tendered. Appendix 11 gives a detailed breakdown of civil works, equipment procurement, and consulting services.

⁹ ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Technical Assistance to Malaysia for Strategic Review of Technical Education and Skills Training*. Manila (2949-MAL).

J. Performance of Consultants, Contractors, and Suppliers

33. Consultants recruited under components 1 and 2 performed satisfactorily. International consultants from CORD contributed to the introduction of contextual learning and strengthened the introduction of smart school technology. However, changes in scheduling for individual CORD consultants made it difficult to obtain maximum benefits for appointed counterpart staff, and TED reported that there was insufficient time allocated for policy dialogue and implementation. National consultants were invaluable in delivering the necessary in-service upgrading of technical teachers for both STS and SVS streams, and for improving the management capacity of principals and the technical abilities of support staff. However, some of the areas in which consultancy services were cancelled, suffered from an absence of clear technical guidance. The performance of consultants for civil works design and supervision was satisfactory and, in the prevailing economic circumstances, the performance of civil works contractors and suppliers was also satisfactory. The performance of equipment and materials suppliers was satisfactory, with most suppliers meeting the revised delivery schedules necessitated by construction delays.

K. Performance of the Borrower and the Executing Agency

34. The performance of the borrower and executing agency was satisfactory. The PCC did not play a very prominent or proactive role in the determination of policy changes envisaged in the project. In the absence of a fully functioning BME, the PCC could have played a leading role in requesting a detailed analysis of project impact to inform the development of future government plans and projects under successive Malaysia Plans. The performance of MOE and DPD was mostly satisfactory as the late construction of new STSs and upgraded SVSs was caused by fiscal constraints. However, DPD could have done more to ensure that key elements of BME and R&D were preserved in the reorganization of the consultancy program for components 1 and 2. The absence of these inputs weakened overall project achievements and reduced opportunities for both sustainability and successful replication in areas such as investment planning and future delivery methodologies. The PIU itself experienced considerable difficulty in gathering information from different units, in particular financial information, and this led to consistently late preparation of audited financial statements. Overall the performance of PIU, DPD and the Public Works Department in managing the construction and upgrading of STSs and SVSs was satisfactory given the difficult economic circumstances, and showed the benefit of experience gained in previous ADB projects.

L. Performance of the ADB

35. The Government considered ADB's performance satisfactory. ADB fielded nine review missions (119 staff-days) to monitor implementation throughout the project period. ADB extended the loan twice, in June 2003 and June 2004, due to lengthy implementation delays. The Government and the EA were appreciative of the fact that ADB missions recognized such problems and maintained close relationships with DPD throughout implementation. However, ADB did not revise the project design and monitoring framework to reflect changes to the project content and timing.

36. Project preparation missions and the project preparatory TA provided opportunities for policy dialogue with the Government so as to jointly identify requirements of the TVE subsector. It is possible that the greater participation of key stakeholders such as parents, especially at project locations, could have introduced another perspective on enrollment in all categories of STSs and SVSs, including guidance on the incentives needed to increase female enrollment.

Data from the tracer study should have been helpful in assessing internal and external efficiency. However, the absence of a specific consultancy to design BME parameters, and the lack of verifiable indicators in the project's design and monitoring framework by which to guide the tracer study's outcomes has limited the detail, coverage and applicability of the data, which was in any case delivered too late to impact project policy or direction.

37. ADB's performance in project supervision was generally satisfactory. The number and frequency of review missions during the project implementation period were considered adequate. But as the EA has noted in its PCR, missions focused more on administrative aspects and quantitative progress of project implementation rather than addressing the more difficult but equally important aspect of qualitative analysis and policy advice. However, this to some extent was impeded by the cancellation of work related to BME. Key consultancies, designed to provide long-term guidance and thereby sustainability to BME and staff development program, were lost in the restructuring of components 1 and 2, and critical R&D studies did not take place. However, the EA expressed appreciation for ADB's procurement procedures, which were considered transparent and fair. By providing clear guidelines to procurement committees, it was possible to shorten the normal procurement process; on average, it took 1 year to procure equipment under ADB's procedures, compared with 2–3 years under government procedures.

III. EVALUATION OF PERFORMANCE

A. Relevance

38. The Project is assessed "highly relevant" with respect to its development objective. Through construction of four new STSs and upgrading of 17 existing SVSs, the project has added significant capacity and made substantial increases to overall enrollment within the technical education system. In this respect the project has fulfilled its task of supporting the priorities of 7MP, by assisting in the development of additional technical, engineering and professional workers needed by increasingly sophisticated Malaysian industries. It also met MOE's obligations to the wider national educational system by delivering additional suitably qualified school graduates to MOHE's polytechnics, as a first step into tertiary education.

39. The project was expected to have relevant BME data to further justify its achievements and to guide TED in further developments of the TVET system. The absence of a dedicated consultant and the merger of the BME subcomponent with TVEP meant that the quantity, quality and scope of relevant data were insufficient to support a more detailed review of the project's relevance. A fully operational BME system dedicated to serving TEP objectives would have provided data on the relevancy of curriculum content and standards, the cost effectiveness of STSs and SVSs, and the efficiency of the overall system.

B. Effectiveness in Achieving Outcome

40. The project is assessed as "less effective" overall, in achieving its three major outcomes: (i) it had partial success in improving the quality of technical education, including management, curriculum and delivery methodologies, as evidenced by (a) the increased standards of management in both TED and STSs, (b) the updated curriculum developed in conjunction with industry representatives, and (c) the introduction of new contextual learning approaches backed by appropriate applications of IT; (ii) it partly achieved its objective of strengthening staff development with respect to both teacher and management training, as shown by (a) the number of staff who underwent training, (b) the increased use of new teaching methods, and (c) the successful application of management skills that have earned at least one STS, an ISO

9000 award; and (iii) it successfully completed the program of expanding and upgrading facilities and equipment for technical education in general and IT education in particular, despite fiscal and supply constraints during project implementation..

41. At appraisal, enrollment capacity of the four new STSs was set at 1,200 students each while enrollment capacity at the 17 upgraded schools was expected to increase from 11,616 to 24,260 at project completion. Total physical capacity for the two year programs offered by STSs and SVSs under the project was therefore expected to increase by 17,444 places (4,800 for new STSs and 12,644 for upgraded SVSs). Actual enrollment at project completion in 2005 for the four new STSs totaled only 2,240 (46.6% of anticipated enrollment), while enrollment in upgraded SVSs increased from 11,616 in 1996 to 14,898 in 2005, an increase of only 3,282, and representing a shortfall of 38.6% below the anticipated figure. Together the new STSs and upgraded SVSs increased enrollment during TEP by 5,842, approximately 40% less than the projected increase. Late completion of both new and upgraded STSs and SVSs in part explains the lower than anticipated enrollment. Recent projections from the EPU contained in 9MP (2006–2010) forecast employment growth averaging 1.9% per annum, with major increases still expected to occur in jobs requiring tertiary education. Nevertheless 9MP scales back predictions of growth in employment for professional categories from 4.8% in 8MP to 2.7% in 9MP, and for technicians and associate professionals from 5.1% in 8MP to 2.0% in 9MP (see Appendix 3 for details). If these scaled-down estimates for relevant employment are combined with slow signs of growth in STS enrollment during 2006 it appears that the gap between supply and demand for technically qualified workers may be narrowing, although not as anticipated at project inception.

42. An important outcome, although not quantified in the project design and monitoring framework, was that female enrollment in all project STSs increased from 2,954 to 7,095 during the project period (Appendix 4). Increases occurred mostly in technical education and are due in part to (i) an increase in the provision of female dormitory accommodation, combined with greatly improved dormitory design and conditions; (ii) introduction of more female-orientated technical subjects, including food technology, fashion design, and commerce; and (iii) the employment of more female teachers, who now total 600 (60%) out of a total of 996 technical teachers. In the 17 upgraded SVSs, female enrollment in traditional engineering subjects remained low at 20% of total female enrollment, but female enrollment in engineering was 40% of the total female enrollment in the four new STSs, with civil engineering proving the most popular for females followed by electrical and mechanical engineering.

43. Under the project, the four new STSs were designated as smart schools capable of serving as models for future nationwide replication of their facilities and teaching methodology. In this context it should be expected that investments made under the project in infrastructure, equipment, curriculum, learning materials, delivery methodologies and school management would be assessed with respect to their impact on improved student learning and problem-solving skills, and whether they had contributed to the increased quality of technical education. However, lack of specific performance indicators in the project design and a lack of data on student assessment that could be accessed by the PCR mission made it difficult to assess the cost efficiency and effectiveness of these smart schools.

44. However, evidence of improved quality of inputs to the TVE system is found in the deliverables of the international consultants who improved the relevance of: (i) academic subjects (math, additional math, physics, chemistry and biology), and (ii) engineering technical elective subjects (mechanical engineering, civil engineering, electrical and electronics engineering) through the development of learning materials, the provision of interactive

software, and some limited teacher training. Most STS students in 2005 were enrolled in these elective technical subjects and have therefore benefited from curriculum improvements. There is evidence that interactive software is being used by teachers and by students for academic subjects as well as for civil engineering. However, despite the specific pedagogical inputs (as opposed to other aspects of teacher education) provided by the in-country fellowship program that reached 597 teachers, including 90 in contextual orientation, official approaches to student teaching remain, for the most, part traditional. There is little evidence of widespread student-centered, student-led learning.¹⁰ Students do not appear to have access to the Internet for conducting individual research assignments and typically use computers for running software programs during specified hours. Overall the project gave short-term in-service training, including in curriculum development and the English language, to a total of 2,147 teachers, including 996 that apparently came from project schools.

C. Efficiency in Achieving Outcome and Outputs

45. On balance, the project is assessed “less efficient”. At appraisal, no economic analysis of project schools was undertaken, as was done earlier under the TVEP project. Instead the RRP dealt with overall project costs and benefits. The two major benefits were: (i) improved quality of technical education in the STSs and upgraded SVSs; and (ii) an increased number of graduates from the STS system who would progress through to higher education. Improvements to the quality of technical education were achieved, as seen from (i) the presence of new industry-relevant curriculum, (ii) the number of teachers retrained, and (iii) more effective school management; all were achieved with fewer consultants and at a lower cost than foreseen at appraisal. However, the project did not deliver the planned number of graduates to higher education and hence its efficiency fell below expectations, for reasons outlined in para. 41.

46. **Internal Efficiency.** Little effort was made by MOE to institutionalize a system of data collection based on indicators identified in the studies under either TVEP or TEP. It has therefore proven difficult to assess the internal efficiency of project schools in the absence of detailed input data (expenditure, enrollment, facilities, staff) and output data (student achievement and employability) available at appraisal and project completion. However, the costs of project schools were assessed by looking at proxy indicators (e.g., were schools operating at capacity and were staff, facilities and equipment being used optimally). At present, each project school has an enrollment capacity of 1200 students. In 2005 the new STSs were operating at an average of 72% of capacity, while the 17 upgraded STSs were operating at an average of approximately 73% of capacity. This indicates low efficiency, given the recent investments made in facilities and equipment. Although explained in part by delays in construction, this shortfall in enrollment is likely to have caused an increase in the per-graduate cost of providing technical/vocational education.

47. **External Efficiency:** A tracer study¹¹ was undertaken by MOE in 2002 of 3,846 students (2,516 graduates of technical and 1,330 graduates of vocational education). The studies also covered a sample of 1,709 workers who had graduated from vocational and technical schools

¹⁰ In 2007, TED informed the Project Completion Review Mission that modules were being prepared for use in STSs that would introduce a more student-centered approach to learning, with additional scope for individual classroom, laboratory and workshop assessments, that might ultimately, be incorporated into the Malaysian Certificate of Education.

¹¹ Institute of Strategic and International Studies. 2002. *Benefit Monitoring and Evaluation Report for Internal Efficiency, External Efficiency and Benefit, Monitoring and Evaluation System of Technical and Vocational Education in Malaysia*. Kuala Lumpur. Technical Education Department, Ministry of Education.

before 2000. Although undertaken too early to include TEP schools, the study's responses are considered applicable to external efficiency across the TVE sector. Results of the tracer study indicate that 90% of technical graduates move on to polytechnic institutions, while the remaining 10% (mostly SVS graduates) proceed to specialized vocational institutes. As might be expected, indicators also suggest that technical graduates have higher earning potential than vocational graduates, although the earning potential of STS and SVS graduates and those from non-STS backgrounds was not compared. The time span from graduation until the graduates' first jobs averaged about 8 months, with the average time span for technical graduates being approximately 3 months longer than for vocational students. The study showed that 82% of employers, from a sample of 216, were satisfied with the graduates' skill mix and performance; no information was available on the relevance of STS and SVS training in the graduates' first job (universities and polytechnic institutes do not record the secondary educational background of their entrants). Another tracer study was undertaken by TEP in 2006 and some results shared with the Project Completion Review Mission indicate that 96% of STS and SVS graduates proceeded to post secondary education, with over 89% enrolling in polytechnics. A telephone survey conducted in 2006 by the Malaysian Employers Federation¹² indicated that while satisfied with the graduate's technical knowledge, employers wished to see more emphasis placed on soft skills (e.g., problem solving, communication, and work ethics), lamenting in particular the tendency of new graduates to "job hop" because of the overall greater supply of jobs available in the market. Many of these concerns could be addressed if MOE and MOHE, together with public and private sector employers, considered the alternative training options referred to in the recommendations (para. 55).

48. In general the rate of returns for technical and vocational education is not comparable with the returns to general education, as students of lower ability sort themselves into the technical and vocational education streams. It is not possible to quantify the efficiency of investment in project schools based on the available evidence from the BME study undertaken for TVEP, and MOE's own tracer studies in 2002 and 2006. It can be concluded, however, that the project achieved partial low internal efficiency by not operating at an optimal level, because enrollment was lower than capacity. The project achieved high external efficiency (i) by enabling more students to enter higher education and polytechnic institutions and (ii) because there is evidence that employers perceived the technical content of curricula to be relevant to market needs.

D. Preliminary Assessment of Sustainability

49. There are significant indications that investments made under the TEP are relevant to both government policy and the economy and the project is therefore most likely to be sustainable. The 9MP clearly outlines the government's vision of becoming a knowledge-based economy by improving the quality of tertiary education and training. The 9MP expects further strengthening of core academic subjects such as math and science, as well as increased use of the English language in technical education, improvements to the relevancy of curriculum and teacher training, and investments in upgrading the school system, particularly in the rural areas of Sabah and Sarawak. Further evidence of sustainability comes from the significant contribution by the government in support of TVE. The allocation of RM629.2 million to government and government-aided technical and vocational schools during the 9MP is a 64% increase in nominal terms over the RM383.3 expenditures that was incurred over the term of the 8MP. The government has also made explicit recognition of the soft skills needed to enhance

¹² The Malaysia Employers Federation has a membership of 4,000 small to large-sized firms which collectively employed 1.5 million workers.

the “progressive attitude” of its workforce. BME studies, if efficiently structured, could assess the impact of such investment and further demonstrate the project’s long term sustainability.

E. Impact

50. The project has met its intended impact in that it has succeeded in expanding the physical capacity of the TVET system, although not in terms of increasing the number of enrollments nor graduates from the project schools as intended. The quality of the TVET system as assessed by the available information on the academic performance of students seems to indicate an improvement in quality; however there is a need to also focus on the soft skills needed by the labour market, which the government should consider introducing earlier on in the upper secondary classes. The Project has certainly contributed to the wider acceptance of the contextual learning approach, though its adoption and practice in the classrooms and in terms of student learning and teaching behaviors still has some way to go before it meets its full potential.

IV. OVERALL ASSESSMENT AND RECOMMENDATIONS

A. Overall Assessment

51. According to ADB’s criteria for overall assessment of a project (Appendix 12), the project is rated “successful”. It was well conceived and designed and its overall scope and components remained relevant throughout implementation. It was successful in enhancing the physical capacity of the TVE system, improving technical education quality, strengthening staff development, and constructing or upgrading the specified STSs. Overall it succeeded in raising the standard of TVE-system management, improved the relevancy of both curriculum and pedagogical methodologies, trained more than the original quota of teachers and managers, and managed the delivery of equipment, all against a constrained economic environment. However, several project components were revised, which had implications for the quality of the outputs delivered. Thirty-six percent of project financing was directed towards the construction of the four new STSs that were to pilot the smart school concept. While these facilities are impressive, greater attention now needs to be paid to ensuring adequate usage of learning materials and equipment by actively encouraging and further promoting teaching and learning practices that focus on student-centered learning. Curricula in project schools are still very academic; consideration should be given to providing a greater range of technical and vocational subjects to enable students to develop different skills, from which they may eventually choose a specialization. Research into this and other alternative approaches to TVE, such as the use of distance education and the application of individual competency testing, was to have featured in the R&D program but the program was dropped during subcomponent restructuring.

52. Regional and national financial problems that commenced during 1997–1998 delayed initial civil works and the subsequent completion of new and upgraded STSs and SVSs. Most schools were not completed until 2000 or 2001, which contributed to lower-than-projected enrollment in project schools. Initial fiscal constraints also slowed delivery of the planned overseas fellowship, training and study programs. The Government canceled some subcomponents entirely, and reduced consultancies, research, and other activities mainly because of financial constraints.

B. Lessons

53. Major lessons drawn from the project include:

- (i) **Estimates of labor supply and demand should be treated as indicators of trends rather than as concrete targets.** Using data available at the time from EPU and the 7MP, the RRP makes some detailed assumptions about the number of professionals, assistant engineers and technicians that would be required by the end of the project. Given the potential volatility of labor markets—as seen in the late 1990s that had a major influence on project implementation—it would have been better if the project had used available labor market data to produce indicators and from that propose trends, rather than making detailed predictions that were no longer valid by project's end.
- (ii) **Original estimates for project enrollments should be reviewed and adjusted at the time of the midterm review, so as to reflect actual rather than forecasted socioeconomic conditions.** At the time of the project's midterm review, when the full effects of the delays in construction and implementation became clear, enrollment predictions should have been adjusted to reflect the existing situation.
- (iii) **Risks and assumptions with regards to project implementation should be clearly outlined.** Although the need for institutionalizing a BME system, tracer studies and analysis of efficiencies has been raised continuously by ADB since the 1980s [including in the PCR for the Third Vocational Education Project (1994) and the Technical and Vocational Education Project (2004)], TEP's design did not raise the successful implementation of BME as a major assumption, given previous experience.

C. Recommendations

1. Project-related

54. The following project-related recommendations are made.

- (i) **Future monitoring.** MOE, with the assistance of the EPU, should agree on a BME system for the overall TVET system, and institutionalize the regular collection of data using the TED's EMIS, as well as any additional special surveys that may be required (e.g. tracer studies conducted at 3–5 year intervals). In addition, industry associations should be encouraged to survey their members, perhaps with grant funding from the Human Resource Development Fund, and share the findings with TED.
- (ii) **TEST policy development.** There are five government agencies involved in delivering aspects of TEST in Malaysia (MOE, MOHE, Ministry of Human Resource (MOHR), Ministry of Youth and Sports (MOYS) and Majlis Amanah Rakyat (MARA). The National Vocational Training Council under the chairmanship of MOHR and with representation from MOE, MOYS, MARA, employers and employees organizations, addresses skills-training policies and is responsible for the National Qualifications Council. However, there is no overarching national body encompassing both technical and vocational skills training that can provide policy direction or coordinate TEST planning and implementation. It is recommended that the Government establish a wider-ranging TEST council, which should re-examine and re-consider TA 2949-MAL findings with respect to the TEST's future policies and direction.

- (iii) **Timing of the project performance evaluation report.** If a project-specific project performance evaluation report (PPER) is to take place, it is proposed that this occur after TED has completed a more thorough review of its policies and produced a follow-up to the BME study undertaken in 2002. This should be accompanied by a more detailed tracer study than that undertaken in 2006. There are some indications that this might take place after the midterm review of the 9MP has been completed in late 2008. This would enable employment data from 9MP to be reassessed for relevancy to actual labor market conditions.

2. General

55. The Mission discussed the following general recommendations with the Government:

- (i) **A monitoring and evaluation system should be deployed as a proactive and continuous process** to identify ways of maximizing the additional enrollment capacity that the project created, to improve the cost-effectiveness of the government's investment. It should also be made an integral part of TED's EMIS, and should interface with the MOE EMIS database.
- (ii) **TED should review upper-secondary education.** There appear to be hidden inefficiencies in the Malaysian education system, with students who are not performing well at one level not necessarily dropping out, nor repeating. The MCE grades appear to be very high and failure rates very low. This masks traditional indicators of system inefficiencies, as students have ample opportunities to continue in the education system, moving up "pathways" to higher education or training at any age (see Appendix 6). While the system may appear to be inefficient, it is undoubtedly generously equitable, and appears to cater to the country's broader social development and equity goals, although at some expense in terms of the responsiveness to the skills required by the job market. The shortage of skilled Malaysian workers in certain sectors and a limited supply of expatriate workers means that while a "skills mismatch" may occur in the labor market, local labor supply may not be responsive to filling this gap when other jobs, with lower salaries but better working conditions, are available. Thus while full employment levels are maintained (i.e., all those willing to work have work), labor shortages are masked in key skill areas. This skills mismatch has become a major policy concern for the present government and can only be overcome by changes to the current academic route to technical education and training. In addition to the recent alternative entry points to higher education, such as community colleges, MOE also needs to investigate its role in developing or participating in alternative routes to employment other than higher education, such as modern apprenticeships or dual training to meet the challenges envisaged in the 9MP.
- (iii) **TED should strengthen student-centered learning.** A solid start to the introduction of contextual learning has been made. It is clearly a government priority, backed by investments in training and facilities. This should be further extended towards a more student-centered learning environment, with individual classroom/laboratory/workshop and coursework becoming part of the overall MCE assessment. Such initiatives should be actively monitored; progress in pedagogy and associated changes in student learning behaviors should be assessed in all STSs and SVSs.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Targets/Outputs	Means of Verification	Important Assumptions
1. Development Objective Improve the quality and expand the capacity of the TE system in support of increasing the capital intensity of production	1.1. Improved placement of graduates in further TE and the labor market 1.2. Improved employer satisfaction with performance of TE-system graduates 1.3. Expanded enrollment capacity of TE system	MOE and TED reports; tracer studies	- Employment and demand for skilled labor remain high. - EMIS is further developed
2. Immediate Objectives 2.1. Improve the quality of TE, including management, curriculum, and delivery methodologies 2.2. Strengthen staff development and teacher training 2.3. Expand and upgrade facilities and equipment for TE in general and IT education in particular	2.1.1. Modified TE curriculum introduced in STSs 2.1.2. TE management systems strengthened 2.2.1. Management training for STS principals strengthened 2.2.2. Teacher training strengthened, and 1,800 key teachers and 1,520 other staff trained 2.3.1. Four new STSs built and equipped 2.3.2. 17 SVSs upgraded into STSs and equipped 2.3.3. Four new STSs provided with advanced IT equipment as pilot "smart" schools	PIU, MOE, and TED reports	- MOE continues to implement curriculum and teaching methodology reform. - Policies for retention and training of TE system staff and teachers are maintained. - EMIS is further developed.
3. Project Components 3.1. Strengthening TE management, organization and delivery 3.2. Strengthening staff development	3.1.1. Studies prepared, reviewed, and used as inputs in revising TE curriculum and teaching methodology 3.1.2. Learning materials for "smart" STSs developed 3.1.3. Information systems for BME further developed 3.2.1. Teacher training programs for contextual learning and "smart" schools developed 3.2.2. Training programs for headmasters and administrative staff developed 3.2.3. 1,800 teachers and 1,520	PIU, MOE, TED, and principals' reports	- MOE continues to implement curriculum and teaching methodology reform. - Institutional responsibilities for teacher training are clarified.

Design Summary	Targets/Outputs	Means of Verification	Important Assumptions
	other staff trained in in-country training programs 3.2.4. 70 planners and teachers trained on external training programs		
3.3. Establishing and upgrading STS facilities and equipment	3.3.1. Four new STSs established and fully operational 3.3.2. 17 existing SVSs upgraded to STSs and fully operational 3.3.3. Four STSs provided with "smart" school IT equipment		
4. Project Components			
4.1. Strengthening TE management, organization, and delivery	4.1.1. International consultants 4.1.2. National consultants 4.1.3. Learning materials developed 4.1.4. Research studies conducted	PIU, MOE, and TED reports	- Appropriate consultants are identified, in particular for learning materials development
4.2 Strengthening staff development	4.2.1. Training programs developed 4.2.2. In-country training programs 4.2.3. External training programs		- Policies for retention and training of TE system staff and teachers are maintained. - PIU uses established designs for facilities and applies established Government and ADB procedures.
4.3 Establishing and upgrading STS facilities and equipment	4.3.1. Civil works for 4 new STSs and upgrading of 17 SVSs 4.3.2. Equipment procured		-

ADB = Asian Development Bank, BME = benefit monitoring and evaluation, EMIS = education management information system, IT = information technology, MOE = Ministry of Education, PIU = project implementation unit, STS = secondary technical school, SVS = secondary vocational school, TE = technical education, TED = Technical Education Department.

EDUCATION EXPENDITURE IN MALAYSIA (1997-2005)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
GNP and Expenditure (RM million)									
1. GNP at Market Prices	262,193	269,137	280,932	295,843	326,071	327,713	353,134	382,529	436,157
2. Total Federal Government Expenditure	59,982	64,124	65,095	78,025	91,047	100,519	109,802	112,490	117,445
3. Total Educational Expenditure	12,031	12,510	13,462	14,080	18,602	20,719	26,195	23,938	16,719
4. Technical Education Total Expenditure	234	512	439	488	515	616	679	55	540
4a. TVE Recurrent Expenditure	—	290	305	344	440	514	387	—	480
4b. TVE Development Expenditure	—	222	134	145	75	102	292	—	60
Annual Growth (percent)									
1. GNP at Market Prices	—	2.6	4.4	5.3	10.2	0.5	7.8	8.3	14.0
2. Total Federal Government Expenditure	—	6.9	1.5	19.9	16.7	10.4	9.2	2.4	4.4
3. Total Educational Expenditure	—	4.0	7.6	4.6	32.1	11.4	26.4	(8.6)	(30.2)
4. Technical Education Total Expenditure	—	119.1	(14.3)	11.3	5.4	19.8	10.2	(92.0)	889.0
4a. TVE Recurrent Expenditure	—	—	5.1	12.8	27.8	17.0	(24.7)	—	—
4b. TVE Development Expenditure	—	—	(39.6)	7.9	(48.1)	36.0	186.3	—	—

TVE = technical and vocational education.

Source: Malaysian Educational Statistics, 2005, 2003, 2000, 1998.

EMPLOYMENT BY MAJOR OCCUPATION GROUP AND SECTORS^a 2000-2010
 ('000) persons

Occupational Group	'000			% to Total			Average Annual Growth Rate (%)	
	Actual 2000	Actual 2005	Projected 2010	2000	2005	2010	8MP	9MP
Senior Officials & Managers ^b	640	872	1,018	6.9	8.0	8.5	6.4	3.2
Professional ^c	538	681	778	5.8	6.2	6.5	4.8	2.7
Technicians & Associate Professionals ^d	1,113	1,431	1,581	12.0	13.1	13.2	5.1	2.0
Clerical Workers ^e	890	991	1,018	9.6	9.1	8.5	2.2	0.5
Service Workers & Shop & Market Sales Workers ^f	1,206	1,558	1,892	13.0	14.3	15.8	5.3	4.0
Skilled Agricultural & Fishery Workers ^g	1,391	1,376	1,345	15.0	12.6	11.2	(0.2)	(0.5)
Craft & Related Trade Workers ^h	844	1,264	1,605	9.1	11.6	13.4	8.4	4.9
Plant & Machine Operators & Assemblers ⁱ	1,493	1,569	1,629	16.1	14.5	13.6	1.0	0.8
Elementary Occupations ^j	1,160	1,154	1,110	12.5	10.6	9.3	(0.1)	(0.8)
Total	9,275	10,895	11,976	100.0	100.0	100.0	3.3	1.9

Source: Ninth Malaysia Plan (2006-2010).

Notes:

^a This classification is based on Malaysia Standard Classification of Occupations 1998.

^b Includes general managers, department managers and senior government officials.

^c Includes graduate teaching professionals, accountants and auditors and computer system designers and analysts.

^d Includes non-graduate teachers, supervisors and engineering and computer support technicians.

^e Includes administrative clerks, accounting and finance clerks and telephone operators.

^f Includes cooks, travel guides and waiters.

^g Includes farm workers, plantation workers and forestry workers.

^h Includes mechanics and fitters, carpenters and tailors.

ⁱ Includes equipment assemblers, drivers and machine operators.

^j Includes street vendors, domestic helpers and cleaners and construction and maintenance laborers.

EMPLOYMENT BY SECTORS, 1996-2010
(‘000 persons and percent)

Sector	1996	%	2000	%	2005	%	2010	%	Average Annual Growth Rate (%)	
									8MP	9MP
Agriculture, Forestry, Livestock & Fishing	1,375.9	16.8	1,423.0	15.3	1,405.7	12.9	1,323.8	11.1	(0.2)	(1.2)
Mining & Quarrying	41.8	0.5	41.7	0.4	42.7	0.4	44.7	0.4	0.5	0.9
Manufacturing	2,209.0	27.0	2,565.8	27.7	3,132.1	28.7	3,594.7	30.0	4.1	2.8
Construction	705.1	8.6	752.2	8.1	759.6	7.0	764.7	6.4	0.2	0.1
Finance, Insurance, Real Estate & Business Services	394.5	4.8	500.2	5.4	732.3	6.7	826.8	6.9	7.9	2.5
Transport, Storage & Communications	420.4	5.1	461.6	5.0	631.2	5.8	701.5	5.9	6.5	2.1
Government Services	876.6	10.7	981.0	10.6	1,052.8	9.7	1,109.8	9.3	1.4	1.1
Other Services ^a	2,157.5	26.4	2,549.1	27.5	3,138.4	28.8	3,610.0	30.1		
Total	8,180.8	100.0	9,274.6	100.0	10,894.8	100.0	11,976.0	100.0	3.3	1.9
Labour Force	8398.2		9,571.6		11,290.5		12,406.8		3.4	1.9
Local Labour	—		8,820.6		9,512.9		10,864.3		1.5	2.7
Foreign Labour	—		751.0		1,777.6		1,542.5		18.8	(2.8)
Unemployment	217.4		297.0		395.7		430.8		—	—
(percent)	2.6		3.1		3.5		3.5		—	—

Source: Ninth Malaysia Plan (2006-2010).

^a Includes electricity, gas, and water; wholesale and retail trade; hotels, restaurants, and other services.

ENROLMENT IN SVS AND STS COURSES (PROJECT SCHOOLS), 1996 and 2005

	1996								2005							
	By Gender				By Stream				By Gender				By Stream			
	Male	%	Female	%	Total	Voc.	Tech.	Total	Male	%	Female	%	Total	Voc.	Tech.	Total
List of Old STSs																
1. Kluang	581	6.7	254	8.6	835	661	174	835	650	7.1	286	5.0	936	424	512	936
2. Muar	727	8.4	304	10.3	1,031	804	227	1,031	702	7.7	486	8.5	1,188	601	587	1,188
3. (Trade) Johor Bahru	640	7.4	8	0.3	648	471	177	648	516	5.6	153	2.7	669	359	310	669
4. Langkawi	379	4.4	189	6.4	568	496	72	568	419	4.6	350	6.1	769	359	410	769
5. Sungai Petani 2	627	7.2	209	7.1	836	587	249	836	277	3.0	740	12.9	1,017	454	563	1,017
6. Pengkalan Chepa	597	6.9	99	3.4	696	460	236	696	735	8.0	253	4.4	988	388	600	988
7. Tanah Merah	704	8.1	298	10.1	1,002	762	240	1,002	708	7.7	507	8.8	1,215	685	530	1,215
8. (Agriculture) Rembau	80	0.9	82	2.8	162	162	0	162	318	3.5	278	4.9	596	189	407	596
9. (Agriculture) Chenor	94	1.1	61	2.1	155	155	0	155	280	3.1	270	4.7	550	149	401	550
10. (Trade) Temerloh	517	6.0	200	6.8	717	584	133	717	522	5.7	242	4.2	764	409	355	764
11. Taiping	645	7.4	234	7.9	879	682	197	879	688	7.5	352	6.1	1,040	485	555	1,040
12. (Agriculture) Teluk Intan	100	1.2	112	3.8	212	193	19	212	405	4.4	283	4.9	688	263	425	688
13. Kangar	639	7.4	260	8.8	899	703	196	899	616	6.7	450	7.9	1,066	525	541	1,066
14. Butterworth	543	6.3	130	4.4	673	482	191	673	479	5.2	263	4.6	742	359	383	742
15. Batu Lintang	469	5.4	17	0.6	486	392	94	486	362	3.9	137	2.4	499	211	288	499
16. Kelang	719	8.3	275	9.3	994	746	248	994	884	9.6	423	7.4	1,307	510	797	1,307
17. Kuala Terengganu	601	6.9	222	7.5	823	689	134	823	608	6.6	256	4.5	864	416	448	864
Subtotal	8,662	100.0	2,954	100.0	11,616	9,029	2,587	11,616	9,169	100.0	5,729	100.0	14,898	6,786	8,112	14,898
List of New STSs																
1. Pontian	—	—	—	—	—	—	—	—	362	30.3	388	28.4	750	0	750	750
2. Pendang	—	—	—	—	—	—	—	—	278	23.3	428	31.3	706	0	706	706
3. Jengka	—	—	—	—	—	—	—	—	386	32.3	365	26.7	751	0	751	751
4. Sepang	—	—	—	—	—	—	—	—	168	14.1	185	13.5	353	0	353	353
Subtotal	—	—	—	—	—	—	—	—	1,194	100.0	1,366	100.0	2,560	0	2,560	2,560
Grand Total	8,662	74.6	2,954	25.4	11,616	9,029	2,587	11,616	10,363	59.4	7,095	40.6	17,458	6,786	10,672	17,458

STS = secondary technical school; SVS = secondary vocational school; Tech. = technical; Voc. vocation.

Source: Ministry of Education.

ENROLMENT IN SVS AND STS (NATIONAL)

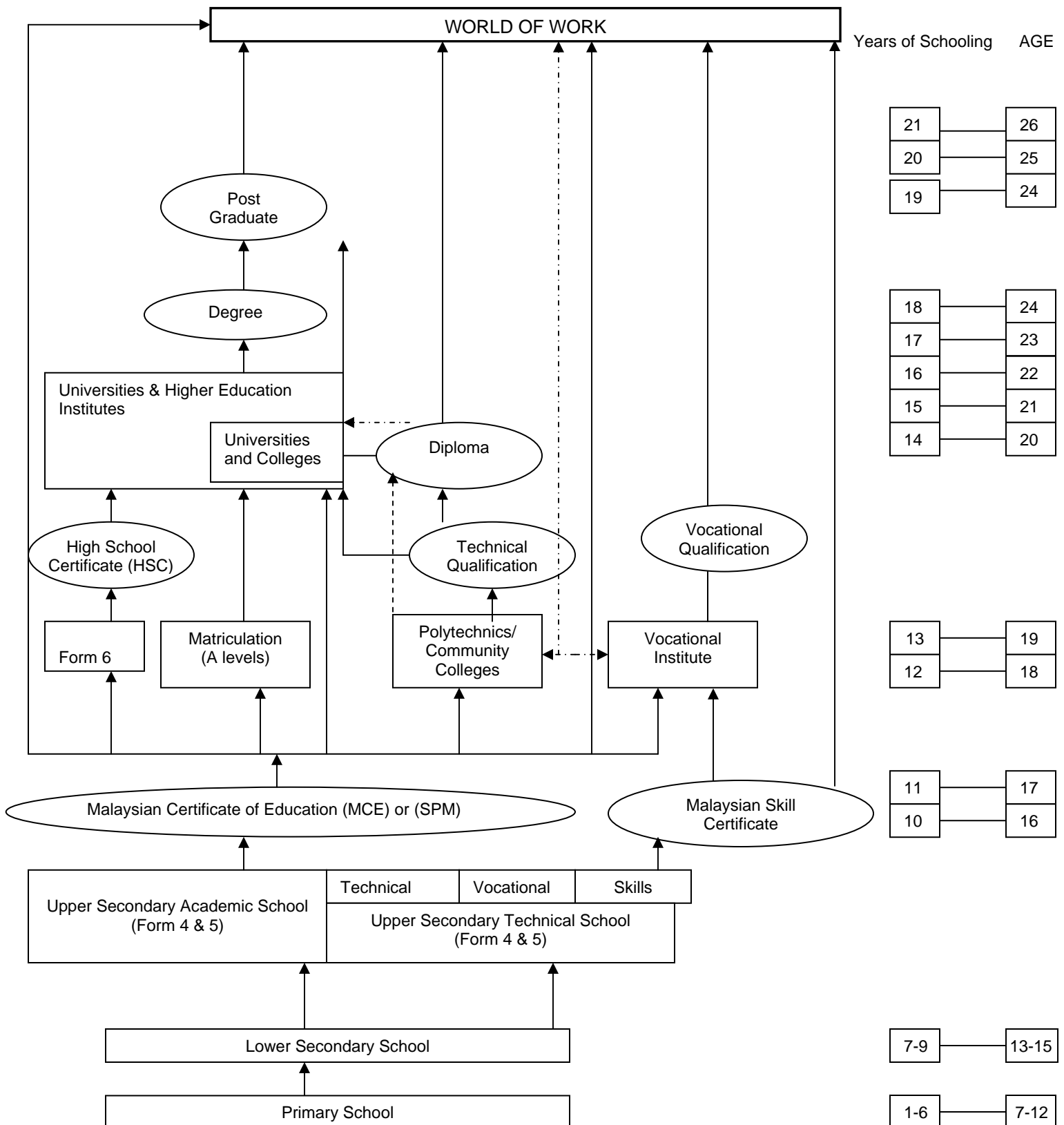
	1998						2000						2003					
	M	%	F	%	Total	% ^a	M	%	F	%	Total	% ^a	M	%	F	%	Total	% ^a
Upper Secondary																		
Form 4																		
Academic	140,724	46.74	160,356	53.26	301,080	5.94	147,844	46.54	169,830	53.46	317,674	6.05	161,194	47.19	180,416	52.81	341,610	6.12
Technical and Skills	14,048	66.62	7,039	33.38	21,087	0.42	21,326	66.96	10,521	33.04	31,847	0.61	19,819	64.61	10,856	35.39	30,675	0.55
Form 5																		
Academic	122,716	45.28	148,322	54.72	271,038	5.34	142,979	44.73	176,639	55.27	319,618	6.09	150,041	45.99	176,220	54.01	326,261	5.84
Technical and Skills	14,398	68.93	6,490	31.07	20,888	0.41	20,172	70.59	8,406	29.41	28,578	0.54	22,128	64.64	12,103	35.36	34,231	0.61
Subtotal	291,886	47.53	322,207	52.47	614,093	12.11	332,321	47.63	365,396	52.37	697,717	13.29	353,182	48.20	379,595	51.80	732,777	13.12
Post Secondary																		
Form 6	15,808	32.97	32,140	67.03	47,948	0.95	15,334	31.95	32,664	68.05	47,998	0.91	34,646	32.50	71,973	67.50	106,619	1.91
A Levels	7,523	36.82	12,908	63.18	20,431	0.4	7,425	37.40	12,407	62.56	19,832	0.38	8,511	35.81	15,259	64.19	23,770	0.43
Subtotal	23,331	34.12	45,048	65.88	68,379	1.35	22,759	33.55	45,071	66.45	67,830	1.29	43,157	33.10	87,232	66.90	130,389	2.33
Grand Total	315,217	46.19	367,255	53.812	682,472	13.46	355,080	46.383	410,467	53.617	765,547	14.58	396,339	45.92	466,827	54.08	863,166	15.45

F = female; M = male; % = percentage

a Percent of total enrollment in primary, lower secondary and upper secondary education.

Source: Malaysian Education Statistics, 1998, 2000, 2003, 2005.

TECHNICAL AND VOCATIONAL EDUCATION SYSTEM IN MALAYSIA



OVERSEAS AND LOCAL STAFF DEVELOPMENT PROGRAM

Table A7.1 – Distribution of Overseas Fellowships

No	Name of Course	Duration (weeks)	Date	Venue	No. of Candidates from Each Division																Appraisal Total	Actual Total	
					EPU	PWD	CDC	ETD	TD	SD	ES	EPRD	IAB	DPSD	TVCD	PRD	STD	MD	BPP	BPKK			SMT
1	Further development of Contextual Learning	4	May-02	ACCC Canada					1						2				1		4	8	8
2	"Smart" School experiences	3	May-02	ACCC Canada			1					1		1	1		1	1		1	3	10	10
3	"Smart" school testing/evaluation	8	Apl/May-02	IDP Australia							1										5	6	6
4	"Smart" school Curriculum/instructional/learning materials	8	May/June-02	ACCC Canada			1	1	1						2						7	12	12
5	Multimedia learning materials development	12	May/June-02	Crown Agent - UK				1	1						2						4	8	8
6	Management training for STS Principals	8	May/June-02	ACCC Canada					1	3			1					1			6	12	12
7	Curriculum Development policy/planning	10+2	Mar/June-02	CDC Germany											1	1						2	2
8	Skill upgrading and curriculum development for Apparel, Catering, Entrepreneurship	6	Feb/Apl-02	IDP Australia			1		2						2				1		6	12	12
9	Policies for future vocational programs	4	Feb/Mar-02	CDC Germany								1		1		1				1		4	4
10	Civil Works Project Management	4	Apl/May-02	Crown Agent - UK		1									5							6	6
11	HR Planning and Development	4	Apl/May-02	Crown Agent - UK								1					2					3	3
Total					0	1	3	2	6	3	1	3	1	2	15	2	3	2	2	2	35	83	83

BPKK = Community College Management Division, BPP = Polytechnics Management Division, CDC = Curriculum Development Centre, DPSD = Development, Privatisation & Supply Division, EPRD = Education Planning Research Division, EPU = Economic Planning Unit, ETD = Education Technology Division, ES = Examination Syndicate, IAB = Institut Aminudin Baka, MD = TVE Management Division, PRD = Planning & Research Division, PWD = Public Works Department, SD = School Division, SMT = Secondary Technical School, STD = Staff Training Division, TD = Teacher Education Division, TVCD = Technical & Vocational Division.

Source: Government of Malaysia: Technical Education Project – Project Completion Report 2006.

Table A7.2 - Local Fellowships

No in PAM	Name of Course	Duration (Days)	Cost/Head (RM)	Target Group	Total Fellows (Appraisal)	Total Fellows (Actual)	Total Cost	2001		2002	
								No Fellows	Cost - RM	No Fellows	Cost - RM
1 & 8	Training of Teachers Trainers and Teachers (Curriculum)	6 x 5 days	800	STS/SVS Teachers	825	470	376,000	470	376,000	0	0
2 & 7	Training of Teacher Trainers and Teachers (Pedagogy)	8 x 5 days + 2days	800	STS/SVS Teachers	825	597	434,400	0	0	597	434,400
6	Training of Teachers (Technical English)	5 days	800	STS/SVS Teachers	180	90	72,000	90	72,000	0	0
9	Upgrading Teachers in MCE Studies	5 days	800	STS/SVS Teachers	120	90	72,000	90	72,000	0	0
10	Up-date on Contextual Learning/"Smart" School	3 days	480	STS/SVS Teachers	150	900	432,000	450	216,000	450	216,000
3	Training of Trainers (Support Staff & Wardens)	2 x 4 days	500 350	Chief Warden Administrative Assit	170	180	76,500	0	0	180	76,500
4	Training of STS Principals & Senior Assistants in School Management	3 x 4 days	600	Principals & Senior Admin. Assists	180	270	135,000	90	45,000	180	90,000
11	"Smart" school management for STS Principals	4 days	600	STS Principals & Senior Assistants	150	200	120,000	0	0	200	120,000
12	Upgrading Support Staff and Wardens	6 x 4 days	300-500	STS/SVS Wardens, Lab Assists, Clerks etc	560	1184	431,500	682	249,000	502	182,500
5	Training TED staff in Advanced data analysis	14 days	3,500	TED Staff	10	10	35,000	10	35,000	0	0
13	Conducting Tracer Studies	3 days	500	TED, Polytechnic, STS	150	150	75,000	75	37,500	75	37,500
Grand Total					3,320	4,141	2,259,400	1,957	1,102,500	2,184	1,156,900

PAM = Project Administration Memorandum, STS = secondary technical school, SVS = secondary vocational school, TED = Technical Education Department.

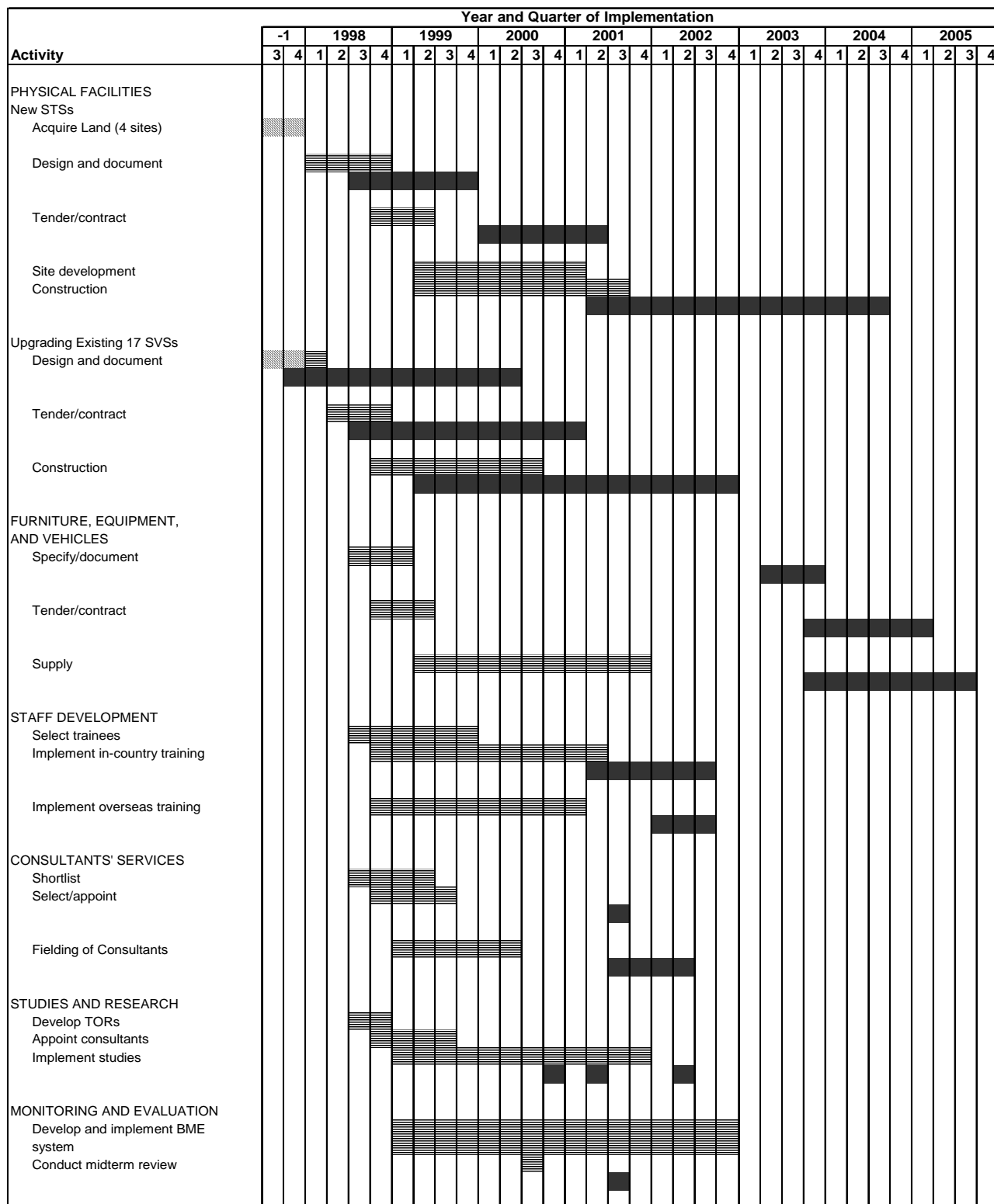
Source: Government of Malaysia Technical Education Project – Project Completion Report 2006




Project Costs **('000)**

Cost Component	APPRAISAL									ACTUAL								
	Total Cost			Bank Financing			Government Financing			Total Cost			Bank Financing			Government Financing		
	FX	LC	Total Cost	FX	LC	Total Cost	FX	LC	Total Cost	FX	LC	Total Cost	FX	LC	Total Cost	FX	LC	Total Cost
A. Base Cost																		
1. Physical Facilities																		
a. Construction - New STSs	16,558	27,016	43,575	16,558	-	16,558	-	27,016	27,016	14,444	22,169	36,613	14,444	-	14,444	-	22,169	22,169
b. Construction - Upgrading	13,157	21,467	13,157	13,157	-	13,157	-	21,467	21,467	10,076	18,887	28,963	10,076	-	10,076	-	18,887	18,887
Subtotal (1)	29,716	48,483	78,199	29,716	-	29,716	-	48,483	48,483	24,520	41,056	65,576	24,520	-	24,520	-	41,056	41,056
2. Furniture & Equipment																		
a. Furniture	774	1,806	2,581	774	-	774	-	1,806	1,806	1,730	2,714	4,444	1,730	-	1,730	-	2,714	2,714
b. Equipment	5,875	581	6,457	5,875	-	5,875	-	581	581	3,334	1,528	4,862	3,334	-	3,334	-	1,528	1,528
c. Vehicles	384	-	384	384	-	384	-	-	-	860	-	860	860	-	860	-	-	-
d. Books and Instructional Materials	163	41	204	163	-	163	-	41	41	206	2,452	2,658	206	-	206	-	2,452	2,452
Subtotal (2)	7,196	2,428	9,625	7,196	-	7,196	-	2,428	2,428	6,130	6,694	12,824	6,130	-	6,130	-	6,694	6,694
3. Staff Development																		
a. In-country Fellowships	-	1,851	1,851	-	-	-	-	1,851	1,851	-	824	824	-	-	-	-	824	824
b. Overseas Fellowships	1,755	-	1,755	1,755	-	1,755	-	-	-	793	-	793	793	-	793	-	-	-
Subtotal (3)	1,755	1,851	3,606	1,755	-	1,755	-	1,851	1,851	793	824	1,617	793	-	793	-	824	824
4. Consultants' Services																		
a. Domestic Consultants																		
i) Civil Works Design and Supervision	-	2,581	2,581	-	-	-	-	2,581	2,581	-	5,244	5,244	-	-	-	-	5,244	5,244
ii) Academic	-	590	590	-	-	-	-	590	590	-	316	316	-	-	-	-	316	316
b. International	1,297	324	1,621	1,297	-	1,297	-	324	324	1,430	-	1,430	1,430	-	1,430	-	-	-
Subtotal (4)	1,297	3,495	4,792	1,297	-	1,297	-	3,495	3,495	1,430	5,560	6,990	1,430	-	1,430	-	5,560	5,560
5. Research and Development	36	144	180	36	-	36	-	144	144	5	175	180	5	-	5	-	175	175
6. Taxes and Duties	-	7,820	7,820	-	-	-	-	7,820	7,820	-	4,098	4,098	-	-	-	-	4,098	4,098
Total Base Cost	40,000	64,221	104,220	40,000	-	40,000	-	64,221	64,221	32,878	58,407	91,285	32,878	-	32,878	-	58,407	58,407
B. Contingencies																		
1. Physical Contingencies	2,690	3,967	6,657	-	-	-	-	3,967	6,657	-	4,522	4,522	-	-	-	-	4,522	4,522
2. Price Contingencies	2,286	4,632	6,918	-	-	-	-	4,632	6,918	-	1,569	1,569	-	-	-	-	1,569	1,569
Total Contingencies	4,977	8,599	13,575	-	-	-	-	8,599	13,575	-	6,091	6,091	-	-	-	-	6,091	6,091
C. Interest and Other Charges	9,195	-	9,195	-	-	-	-	-	9,195	-	4,962	4,962	-	-	-	-	4,962	4,962
Grand Total	54,171	72,820	126,990	40,000	-	40,000	14,171	78,820	86,991	32,878	69,460	102,338	32,878	-	32,878	-	69,460	69,460

FX = foreign exchange, LC = local currency, STS = secondary technical school.
Source: ADB Loan Financial Information System (2007).

PROJECT IMPLEMENTATION SCHEDULE (APPRAISAL AND ACTUAL)



-  - project preparation
-  - appraisal
-  - actual

Covenants	Reference in The Loan Agreement	Status of Covenants
<p>8. The Borrower shall cause the Project to be carried out in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to the Borrower and the Bank. The Borrower shall furnish, or cause to be furnished, to the Bank, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein.</p>	Article IV, Section 4.03(b)	Complied with
Social		
<p>9. The Borrower shall continue to promote female participation in technical and vocational programs (i) by provision of appropriate hostel facilities, (ii) by strengthening the dissemination of information on technical and vocational education directed at female students, and (iii) through promotion of gender-neutral training and learning materials.</p>	Schedule 6, para.7	Complied with
<p>10. Borrower shall ensure timely and regular release of adequate budgetary allocations for all counterpart funds required for Project implementation, including provision for such amounts of foreign exchange as may be required for payment of interest and other charges during construction of Project facilities, contingency allowances and related expenditures.</p>	Schedule 6, para. 11	Partly complied with
<p>11. The Borrower shall make available, promptly as needed, the funds, facilities, services, land and other resources which are required, in addition to the proceeds of the loan, for the carrying out of the Project and for the operation and maintenance of the Project facilities.</p>	Article IV, Section 4.02	Complied with

Covenants	Reference in The Loan Agreement	Status of Covenants
Financial		
12. The Borrower shall make arrangements satisfactory to the Bank for insurance of the Project facilities to such extent and against such risks and in such amounts as shall be consistent with sound practice.	Article IV, Section 4.05	Complied with
13. The Borrower shall maintain, or cause to be maintained, records and accounts adequate to identify the goods and services and other items of expenditure financed out of the proceeds of the loan, to disclose the use thereof in the Project, to record the progress of the project and to reflect, in accordance with consistently maintained sound accounting principles, the operations and financial condition of the agencies of the Borrower responsible for the carrying out of the Project and operation of the Project facilities, or any part thereof.	Article IV, Section 4.06	Complied with
Environmental		
14. The Borrower shall ensure that all land and rights in land including (easements) required for the sites selected for the New Project Schools shall be promptly acquired to ensure timely project implementation.	Schedule 6, para. 8	Complied with
Others		
15. Established, Staffed, and Operating PMU/PIU.	Schedule 6, para. 1	Complied with
16. Fielding of Consultants.	Schedule 6, para. 1	Partly complied with
17. Submission of Progress report every four months.	Article IV, Section 4.07(b)	Partly complied with
18. After the first six months of the third year of project implementation, the Borrower and the Bank shall carry out a midterm review of all aspects of the Project, including an assessment of progress achieved in relation to targets set under the Project and a review of problems encountered in connection with upgrading the secondary vocational schools to STS.	Schedule 6, para. 10	Complied with

Covenants	Reference in The Loan Agreement	Status of Covenants
<p>19. Within six months of the Effective Date, the PIU shall submit to the Bank (i) the proposed criteria for selection of recipients of external fellowships under the Project; and (ii) details of proposed types and timing of such external fellowships.</p>	Schedule 6, para. 9	Complied with
<p>20. Operate and maintain the Project facilities in accordance with sound administrative practices and with due regard to considerations of economy and efficiency; (ii) provide all necessary staff, funds, facilities and services for adequate maintenance of the Project facilities; and (iii) cause all necessary repairs and renewals to be carried out in a timely fashion to keep the Project facilities operational.</p>	Schedule 6, para. 12	Complied with
<p>21. Within three months after physical completion, prepare project completion report.</p>	Article IV, Section 4.07, c	Complied with
<p>22. To strengthen institution-industry linkages, MOE shall establish fully operational School Advisory Committees (SACs) and Career Guidance, Industrial Liaison and Placement Units (CAGILPUs) (i) in the Project Schools in which such SACs and CAGILPUs do not exist within one year of the effective date; and (ii) in the New Project Schools within one year of commencement of classes. The respective composition and functions of the CAGILPUs and SACs shall be as described in paragraph of Schedule 6 to the TVEP Loan Agreement.</p>	Schedule 6, para. 5	Complied with
<p>23. The Borrower shall ensure that the Benefit Monitoring and Evaluation (BME) Committee established pursuant to paragraph of Schedule 6 of the TVEP Loan Agreement continues to develop BME activities and continues to integrate BME activities into EMIS. The Borrower shall ensure that MOE continues to develop EMIS as a framework for BME as established under TVEP. BME activities under the Project shall include, inter alia, developing the ability of end-users to analyze and use BME data for management purposes through staff training programs, conducting reverse tracer studies, and improving the interface of BME activities and EMIS.</p>	Schedule 6, para.6	Partly complied with

Covenants	Reference in The Loan Agreement	Status of Covenants
<p>24. The Development, Privatisation and Supply Division (DPSD) within MOE shall have responsibility for Project Implementation. A Principal Assistant Secretary within DPSD shall be designated as Project Director and head of the PIU under the overall guidance of the Secretary of DPSD.</p>	Schedule 6, para. 2	Complied with
<p>25. The Project Coordinating Committee (PCC) shall provide policy guidance and coordinate Project implementation. The PCC shall be chaired by the Secretary General of MOE, or his representative, and shall also include as members of the Secretary of DPSD, the Project Director (as Secretary), the Project Manager, representatives from the Technical Education Department (TED), the Federal Treasury, Economic Planning Unit (EPU), Education Planning and Research Division (EPRD), and such other agencies, departments or ministries as may be required for effective Project coordination and implementation.</p>	Schedule 6, para. 3	Partly complied with
<p>26. The Public Works Department (PWD) shall be responsible for preparation of designs, site plans, specifications, cost estimates, tender documents, evaluation of bids, award of contracts and contract supervision relating to civil works for the Project schools. DPSD shall be responsible for the design and supervision of the civil works and for the recruiting of local architectural and engineering consulting firms in accordance with the Borrower's standard procedures who shall be approved by, and registered with, the Borrower to carry out the works for the New Project Schools.</p>	Schedule 6, para. 4	Complied with

LIST AND MODES OF PROCUREMENT FOR CIVIL WORKS, EQUIPMENT, AND CONSULTING SERVICES

Table A11.1: List and Modes of Procurement for Civil Works

		Cost (at Appraisal) (\$ million)	Mode of Procurement	Actual Cost (\$ million)
State	Location			
A. New STSs				
1. Johor	Pontian	12.0	ICB	8.5
2. Kedah	Pendang	12.0	ICB	8.5
3. Pahang	Jengka	12.0	ICB	9.8
4. Selangor	Sepang	12.0	ICB	9.8
B. Upgrading Existing SVSs				
1. Johor	Kluang	1.3	LCB	0.8
2. Johor	Muar	2.3	LCB	1.3
3. Johor	(Trade) Johor Bahru	2.7	LCB	1.8
4. Kedah	Langkawi	2.8	LCB	2.3
5. Kedah	Sungai Petani 2	1.8	LCB	1.4
6. Kelantan	Pengkalan Chepa	1.9	LCB	1.0
7. Kelantan	Tanak Merah	2.5	LCB	1.3
8. Negeri Sembilan	(Agriculture) Rembau	2.8	LCB	2.1
9. Pahang	(Agriculture) Chenor	3.5	LCB	2.6
10. Pahang	(Trade) Temerloh	2.0	LCB	0.9
11. Perak	Taiping	2.2	LCB	1.3
	(Agriculture) Teluk			
12. Perak	Intan	2.5	LCB	2.1
13. Perlis	Kangar	2.4	LCB	1.5
14. Pulau Pinang	Butterworth	1.5	LCB	1.0
15. Pulau Pinang	Batu Lanchang	1.7	LCB	1.1
16. Selangor	Klang	1.7	LCB	1.3
17. Terangganu	Kuala Terrangganu	2.4	LCB	1.6
Total		86.0		62.1

ICB = international competitive bidding, LCB = local competitive bidding, STS = secondary technical school, SVS = secondary vocational school.

Source: Government of Malaysia: L1596 Technical Education Project – Project Completion Report.

Table A11.2: List and Modes of Procurement for Equipment

Specifications	Cost at Appraisal (\$ million)	Mode of Procurement	Actual Cost (\$ million)
1. Electrical/Electronics Engineering Studies	0.34	IS	3.6
2. Mechanical Engineering Studies	0.29	IS	0.3
3. Civil Engineering Studies	0.85	ICB/IS	0.3
4. Engineering Drawing	0.57	IS	0.2
5. Physics Laboratory	1.27	ICB/IS	0.3
6. Chemistry Laboratory	1.32	ICB/IS	0.2
7. Mathematics Laboratory	0.54	IS	0.1
8. Library Materials	0.20	IS/DP	-
9. Administration, Canteen, Hostels, and Multipurpose Hall	1.17	LCB/DP	0.4
10. Sports Equipment	0.13	LCB/DP	0.2
Total	6.68		5.63

DP = direct purchase, ICB = international competitive bidding, LCB = local competitive bidding, STS = secondary technical school, SVS = secondary vocational school.

Source: Government of Malaysia: L1596 Technical Education Project – Project Completion Report.

Table A11.3: List and Modes of Procurement for Consulting Services

Subcomponent/Specialization	Appraisal					Actual				
	International		Domestic		Total	International		Domestic		Total
	No. of Persons	Person-Months	No. of Persons	Person-Months		No. of Persons	Person-Months	No. of Persons	Person-Months	
A. Development of Contextual Learning and "Smart" School Programs	6	24	5	30	54	6	27	6	37	64
B. Curriculum and Learning Materials Development	6	49	7	52	101	5	31	5	37	67
C. Management Development	1	3	4	18	21	1	3	-	-	3
D. Staff Development	4	20	18	136	156	3	16	4	38	54
Total	17	96	34	236	332	15	77	15	112	188

Source: Consulting Services Contract.

PCR RATING CRITERIA

Criterion	Weight (%)	Definition	Rating Description and Value	PCR Rating	PCR Rating Weighted
Relevance (20%)	0.2	The consistency of the Project's goal, purpose, and outputs with the Government's development strategy, ADB's lending strategy for the country, and ADB's strategic objectives at the time of approval and evaluation.	Highly Relevant (3) Relevant (2) Partly Relevant (1) Irrelevant (0)	3	0.6
Effectiveness (30%)	0.3	The achievement of purpose as specified in the policy goals and the physical, financial and institutional objectives adopted at project approval, or as formally modified during implementation.	Highly Effective (3) Effective (2) Less Effective (1) Ineffective (0)	1	0.3
Efficiency (30%)	0.3	Comparison of the achievement of project purpose with use of inputs, based on implementation performance with consideration of the EIRR or cost-effectiveness of the investment.	Highly Efficient (3) Efficient (2) Less Efficient (1) Inefficient (0)	1	0.3
Sustainability (20%)	0.2	Likelihood that human, institutional, and financial resources are sufficient to support achievement of results and benefits over the economic life of the project.	Most Likely (3) Likely (2) Less Likely (1) Unlikely (0)	3	0.6
Overall Assessment (weighted average of above criteria)	1.0	The overall weighted average of the four criteria. If one of the criteria has a score of 0, the rating to be downgraded to Partly Successful.	Highly Successful (OWA > 2.7) Successful (1.6 < OWA < 2.7) Partly Successful (0.8 < OWA < 1.6) Unsuccessful (OWA is < 0.8)		1.8

ADB = Asian Development Bank, EIRR = economic internal rate of return, OWA = overall weighted average, PCR = project completion report.
Source: ADB. 2006. *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*. Manila.