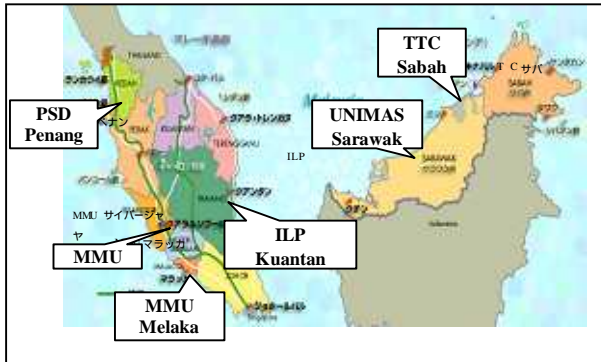


**Ex-Post Evaluation of Japanese Technical Cooperation Project
“The Project on Networked Multimedia Education System (NMES)”**

Mimi Sheikh, International Development Center of Japan

1. Project Description



Project Locations



Satellite Receiver at MMU Cyberjaya

1.1 Background

The Government of Malaysia has been forging ahead with the Multimedia Super Corridor (MSC) program since it launched the Seventh Malaysia Plan 1996-2000 (7MP) as part of its efforts to promote Information Communication Technology (ICT) at the national level. The goal of the program is to join the club of developed countries by 2020 with this huge infrastructure for an advanced information society. To achieve this goal, the Malaysian government established Multimedia University, Malaysia (MMU) in 1999 to train engineers in the IT and multimedia fields.

In 2001, it was estimated that there would be a shortage of 30,000 ICT related engineers by 2005 and furthermore, the demand for reducing the disparity in accessibility to higher education by providing educational opportunities to the people in remote areas away from the capital city, Kuala Lumpur, such as Sabah and Sarawak had been increasing.

Consequently, the Malaysian government requested Project-type Technical Cooperation (now “a technical cooperation project) from Japan with the aim of establishing the Networked Multimedia Education System (NMES) that would build on MMU as the hub site and five regional educational institutions as remote sites.

In response, Japan International Cooperation (JICA) dispatched assessment missions in March 2000, in May, in October, and then the fourth mission in March 2001 to study and discuss with the Malaysian government about implementation of a distant education project using satellite communication technology linking MMU to 5 remote sites. The record of discussions (R/D) was signed and exchanged in April 2001, and then the project was started from 1st July 2001 and was scheduled to end 30th June 2005.

1.2 Project Outline

Overall Goal	To expand the NMES and involve more institutions at home and abroad in the fields of engineering, IT and multimedia.
Project Objective	To establish the NMES at MMU and the remote sites.
Outputs	Output 1: A system will be in place for satellite-based tele-education at MMU and the remote sites.
	Output 2: Tele-education courses will be provided according to the curricula of MMU and the remote sites.

	Output 3: Effective multimedia teaching/learning materials will be used in tele-education courses.
Inputs	<p>【Japanese side】</p> <ol style="list-style-type: none"> 1. Experts: 32 experts(8 Long-term Experts, 24 Short-term Experts) 2. Trainees received:15 persons 3. Equipment: 468,800,000 yen 4. Local cost: 16,560,000 yen <p>【Malaysian side】</p> <ol style="list-style-type: none"> 1. Counterparts: 35 persons 2. Local Cost: 1,070,000 ringgit¹
Total Cost	1,023 million yen
Period of Cooperation	July 2001 - June 2005
Executing Agencies	Ministry of Energy, Water and Communications (MEWC) (Ministry of Information Communication and Culture (MICC) at present) / Multimedia University (MMU)
Cooperation Agency in Japan	Ministry of Internal Affairs and Communications (MIC)
Related Projects	None

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

At the time of terminal evaluation, the overall goal (To expand Networked Multimedia Education System (NMES) and involve more institutions at home and abroad in the fields of engineering, IT and multimedia) had not been achieved and the concrete plans for the emergence of the new organization had not been formulated. The terminal evaluation recommended that the securing of the foundation in both policy and budget aspects was essential to increase the number of institutions participating in NMES in order to achieve the project goal.

1.3.2 Achievement of Project Objective

As the result of the series of construction and operation performance (outputs) of the distance education system using the satellite communication, in April 2005, students in Diploma in Information Technology (DIT) graduated first time with equal academic performance as the students who attended the face-to-face classes. In the DIT course, instructors had no need to travel from MMU Cyberjaya to remote sites. From the above mentioned, it is concluded that the objectives of the project “establishment of NMES” had been achieved.

1.3.3 Recommendations

To sustain and further enhance the positive results of the project, the followings are suggested:

- 1) to monitor the progress and outcomes of NMES classes with the newly-introduced MPEG4² (Moving Picture Experts Group 4) starting in June 2005;
- 2) to continue and further strengthen efforts to rise the level of satisfaction of students with NMES classes, particularly in Master's course;
- 3) to continue and further strengthen efforts to increase number of beneficiaries of NMES

¹ The cost is as of the terminal evaluation. It is 28,812,714 yen based on the exchange rate as of 27 January 2011 (1JPY=0.03714MYR).

² High-performance video compression technology

- tele-education (i.e., more intakes of students in existing courses and introduction of NMES tele-education into other courses);
- 4) to consider measures to avoid the loss of system operation and maintenance expertise due to turnovers of counterpart personnel;
 - 5) to improve teaching methods specifically for tele-education such as courseware, lecture delivery, etc. ; and
 - 6) to ensure policy and budgetary ground so that NMES is expanded to more remote institutions.

NMES introduced by this project was continued by the executing agency after the project completion. However, as explained below, none of the recommendations above were realized since the project was virtually ended in 2007 and the project effects did not continue.

2 . Outline of the Evaluation Study

2.1 External Evaluator

Mimi Sheikh, International Development Center of Japan

2.2 Duration of Evaluation Study

Duration of the Study: April, 2010 – February 2011

Duration of the Field Study: July 25, 2010–July 31, 2010 and September 26, 2010 –September 30, 2010

2.3 Constraints during the Evaluation Study

Questionnaires were sent, followed up by a telephone call to the DIT graduates, the final beneficiaries of the project, in order to verify the impact of the project. However, it was difficult to get in contact with the graduates as five years had passed since the completion of the project and a number of the graduates have changed their email address and telephone numbers. As a result the return rate of the questionnaires was a low 19% (14 out of 73) at MMU in Cyberjaya, and 25.9% (15 out of 58) from the remote sites.

NMES introduced by this project was continued by the executing agency after the project completion; however, the project was virtually abandoned in 2007. Therefore, it was difficult to find personnel related to the project in particularly the analysis related to the schools at remote sites. The evaluation analysis was undertaken with very limited information especially the information about remote sites was obtained only from MMU Melaka and TTC Sabah³ which MMU Cyberjaya, the executing agency, had networks.

3 . Results of the Evaluation (Overall Rating: D)

3.1 Relevance (Rating: b)

3.1.1 Relevance with the Development Plan of Malaysia

This project was consistent with the development policy of Malaysia. At the time when the project was planned and implemented, the development of high skilled knowledge workers was raised as a priority issue for the 7th five-year national development plan (1996-2000) and the 8th five-year national development year plan (2001-2005). In the Multimedia Super Corridor (MSC) plan, which was formulated in order to promote information technology at the national level, the target was set to join developed countries by constructing the main hub for a high level information society by 2020. In order to achieve this, it was emphasized that human resource development in ICT sector was essential.

³ TTC Sabah separated from Telecom Malaysia Training Center in 2009 and came under the umbrella of MMU. Consequently, the Name of the institution was changed to Multimedia College (MMC).

Based on this situation, the government of Malaysia had maintained Putrajaya as a new governmental district and established a multimedia industry, research and development center, and MMU in the nearby area of Cyberjaya. It had planned to develop the manufacturing and trade industries worldwide applying all of the skills to multimedia.

3.1.2 Relevance with the Development Needs of Malaysia

It was consistent with the development needs as there was a shortage of ICT engineers and engineering assistants in Malaysia around the time the project was initiated. Needs of remote sites for participating in the NMES were confirmed by PCM workshop at the time of project planning. On the other hand, there has been no communication with two schools (UNIMAS Sarawak and PSDC Penang) at the time of the project completion, although five institutions (1. Multimedia University, Melaka (MMU Melaka), 2. University Malaysia Sarawak (UNIMAS Sarawak), 3. Institute Latihan Perindustrian, (ILP Kuantan, 4. Penang Skills Development Centre (PSDC Penang), 5. Telekom Training College (TTC Sabah)) were appointed as remote sites at the point the project was planned. It remains unclear whether that needs of remote sites were thoroughly considered.

When the third short-term study team was dispatched in January 2001, it was pointed out that further discussions were needed with ILP Kuantan and TTC Sabah with regards to which courses to apply to tele-education, timing of the starting of the courses, public interest in the courses, and maintenance costs; and with UNIMAS Sarawak about the possibility of selecting it as a hub center. From the situation at the time of the project completion and the results of the field study, it would be considered that the project had been started with some of those issues being unresolved.

3.1.3 Relevance with Japan's ODA Policy

The assistance was consistent with Japanese policy. Japan agreed the cooperation with the government of Malaysia over the utilization of ICT for MSC's human resource development and education in 1997, when the Minister of Posts and Telecommunications of Japan at that time visited Malaysia, as well as at the G8 Kyushu-Okinawa Summit in 2000. In addition, in the chair's summary of the G8 Education Minister's Meeting in 2000, the importance of "lifelong study and distance education" and "educational innovation and ICT" were highlighted, and it was promised to promote the cooperation between universities including cooperation with the developing countries. Under these circumstances, Japan has set human resource development and ICT development as priority areas for the country assistance programs for Malaysia by the Ministry of Foreign Affairs, and the country assistance implementation plan by JICA, and had been tackling the assistance to Malaysia.

3.1.4 Appropriateness of Assistance Measure

The project aimed to assist with the provision of ICT education to as many students as possible through tele-education, in order to address the issues of shortfall of human resource in ICT field in Malaysia. However, it is difficult to conclude that the project sufficiently responded to their needs based on the level of effectiveness. The assistance measure should have been decided by thoroughly reviewing and comparing different options to the distant education using communication technology (such as providing teacher training for teachers in remote sites); especially, when the technology itself that had not been well established in Japan was transferred to other countries⁴.

In summary, this project was partially irrelevant to the remote sites' development needs and

⁴ The report prepared by the study mission dispatched in May 2000 stated that "Applying distant education as an education method is a global trendhowever distant education is not a fully established education method. Even in Japan it is used at 60% establishment....". The report pointed out the difficulty in applying distant education but in depth review was not undertaken.

assistance measure, therefore its relevance was fair.

3.2 Effectiveness (Rating: c)⁵

3.2.1 Project Outputs

3.2.1.1 Output 1

Output 1 "A system will be in place for satellite-based tele-education at MMU and the remote sites" was achieved. During the first half of the project, there were some issues with unstable communications and the failure of software and equipments. However, it was resolved by the expansion of the satellite band, upgrading the computers for the students, installing MCU modules and ISDN lines. In addition, MPEG4 was installed just before the completion of the project, and this contributed to the improvement of the transmission quality of the sound and image. There was no disruption of the communication between June, 2004 and the end of the project. In addition, 13 different kinds of operation and maintenance manuals was produced and revised based on the fault recovery records. By the end of the project, the counterpart was able to not only check and operate the system as normal working practice, but also able to install and set up the system.

The NMES lecture room had been fully used as well. The usage hours of the NMES lecture room at MMU Cyberjaya had gradually increased from 190 hours in 2002, 751 hours in 2003, 1,359 hours in 2004, and 2,344 hours in 2005.

3.2.1.2 Output 2

Output 2 "Tele-education courses will be provided according to the curricula of MMU and the remote sites" was far lower than the planned target. At the time the project was planned, six qualification and degree courses were planned to be provided by the remote classes within one to two years after the project was started. These qualifications and degree courses were: 1) Diploma in Telecommunication: DTE, 2) Diploma in Information Technology: DIT, 3) Bachelor of Information Technology: BIT, 4) Master in Information Technology: MIT, 5) Master of Engineering in Telecommunications: MET, and 6) Masters of Engineering in Microelectronics: MEM. However, only three courses; DIT, BIT and MEM were offered at the remote classes by the project. That was only half of the initial plan. Moreover, the BIT course was discontinued in August, 2004, due to such reasons as low level of satisfaction and mismatches in the school scheduling system.

3.2.1.3 Output 3

Output 3 "Effective multimedia teaching materials will be used in tele-education courses" was mostly achieved. Originally, software for multimedia teaching materials specially designed for NMES was planned to be created. However, from past experience and examples, the class materials, mainly text and slides, which are similar to the materials used in the face-to-face classes were created instead. Class materials are uploaded onto the web and can be downloaded freely by the students at the remote sites.

There were no differences in DIT course, for the "comparison of the academic results between the students who had distance education and face-to-face classes", which is one of the indicators to measure the Output 3. In the terminal evaluation, it was found that the degree of satisfaction was high among the DIT students as well as the instructors, and this was also confirmed by the questionnaire survey from the graduates and the interview survey from the instructors in this evaluation study. On the other hand, in MEM and BIT courses, students preferred the face-to-face classes and the degree of satisfaction was not high. For this reason, NMES was not utilized fully.

⁵ Sub-rating in "Effectiveness" includes evaluation result of "Impact".

3.2.2 Achievement of Project Objectives

3.2.2.1 Indicator 1

As it mentioned in Output 1, MMU and remote classes were technically, implemented smoothly. For this reason, Indicator 1 “A network system is constructed within MMU and remote sites” was achieved.

3.2.2.2 Indicator 2

The list below is planned number of enrolled student in 2001 and the actual number of enrolled student in 2005 for tele-education courses using NMES.

**Table 1 Planned and Actual Number of Enrolled Students
in Tele-education Courses Using NMES**

Course	Project Planned in 2001		Project Ended in 2005		
	Conducted Sites	Annual Enrollment	Conducted Sites	Conducted Period	Total Enrollment
DIT	CJ, ILP, TTC	220	CJ, ILP, TTC	May 2003 - June 2005	106
DTE	CJ, ILP, TTC	220	Not Implemented	***	***
BIT	CJ,MC, UNIMAS	1200	CJ,MC, UNIMAS	Sep. 2002 - Aug. 2004	700
MEM	CJ, MC, PSDC	180	PSDC	Sep. 2002 - June 2005	50
MET	CJ, MC, PSDC	180	Not Implemented	***	***
MIT	CJ,MC,UNIMAS, PSDC	240	Not Implemented	***	***
Total		2240			856

Source : Project Document in May 2001 and Terminal Evaluation Report in June 2005

Remark: CJ is MMU Cyberjaya and MC is MMU Melaka.

The achievement for the indicator 2 "Number of Students who have completed tele-education courses" was largely lower than planned because 1) the actual enrolled student numbers was considerably lower than expectations and 2) NMES was not used in the planned courses as has been mentioned in the output 2. Specifically, in MMU Melaka, classes using NMES were no longer needed August in 2004 because of the employment of new instructors and was discontinued. In UNIMAS Sarawak, classes using NMES were discontinued after holding five remote classes and a few TV meetings due to the issues on class scheduling and maintenance of the equipments. In PSDC Penang, the level of satisfaction among the students did not reach a high enough so the classes were discontinued after some trials in the master courses. Table 2 is the number of graduates who finished the courses, adopting tele-education classes by the end of the project.

Table 2 Number of Graduates who Finished the Courses Adopting Tele-education Classes by the end of the project

Remote Sites	DIT	DTE	BIT*	MIT	MET	MEM*
ILP Kuantan	7	Not Implemented	Excluded	Excluded	Excluded	Excluded
TTC Sabah	6	Not Implemented	Excluded	Excluded	Excluded	Excluded
UNIMAS Sarawak	Excluded	Excluded	0	Not Implemented	Excluded	Excluded
PSDC Penang	Excluded	Not Implemented	Excluded	Not Implemented	Not Implemented	0
MMU Melaka	Excluded	Excluded	0	Not Implemented	Not Implemented	Excluded
Total	13	****	0	****	****	0

Source: Created by Study team based on the documents submitted by MMU Cyberjaya

* The definition of course graduate of NMES does not apply to BIT and MEM courses because the percentage of NMES course in BIT and MEM was about 10% of total hours of a course credits.

As it is shown, only the DIT course has produced the graduates although only numbering 13 and very limited, by the end of the project. In ILP Kuantan and TTC Sabah, only 10 to 15 students were enrolled in each school annually while a maximum of 30 students were expected annually at each school. The necessity to make an effort to increase the number of courses and students was stated as a recommendation to the government of Malaysia in the Effectiveness Analysis Survey conducted in 2005, there was no improvement subsequently.

There were some factors for the low achievement. First, a number of schools which could provide DIT courses at remote sites had increased. The establishment of private universities had been achieved by the revision of the various laws since 1996, and 18 private universities, 15 colleges and 4 foreign university branch campuses were established in 2007, after MMU, the first private university in Malaysia, was established. Since then, competition between higher education organizations has intensified. The revision of law was undertaken before the project was started, thus this situation could have been expected at the time the project was planned.



NMES class room in TTC Sabah

Second, there were no exchanges of agreements or discussions on a curriculum between MMU Cyberjaya and remote sites. There is a possibility that some of the courses or subjects provided by MMU Cyberjaya were no longer needed for some of the remote sites during the project implementation. However, there are no records of discussions on a future response corresponding to changes in circumstances. Third, according to the interviews in the field survey, advertisements on tele-education courses and needs assessment for students and their parents, as well as creating marketing strategies to increase the student numbers were not sufficiently undertaken by neither MMU Cyberjaya nor remote sites.

3.2.2.3 Indicator 3

About indicator 3 “ratio of students who have completed tele-education course taken”, the completion rate of DIT was 46% in TTC Sabah, and 70% in ILP Kuantan and ratio of courses for the students who had tele-education at the remote sites were higher than the students in MMU Cyberjaya (18%) who had face-to-face classes.

3.2.2.4 Indicator 4

As mentioned in Output 3, the indicator 4 “academic results for the students who had distant education (comparison with the face-to-face classes)” was mostly achieved because there was no difference in academic results between the students from face-to-face classes and those who had distance education.

3.2.2.5 Indicator 5

Indicator 5 “number of site visits to remote sites from MMU” has decreased and was mostly achieved. For the instructors on the DIT course it is no longer necessary to travel from MMU Cyberjaya to the remote sites.

In summary, this project has somewhat achieved its objectives in offering DIT course. However, the students who received distance education was less than planned. Thus, this project achieved its objectives but at a limited level, therefore its effectiveness is low.

3.3 Impact

3.3.1 Achievement of Overall Goal

The overall goal “to expand NMES and involve more institutions at home and abroad in the fields of engineering, IT and multimedia” has not been achieved but some activities have been confirmed. The activities include creating a project proposal named “NMES for ASEAN Countries” by one of the counterparts based on this project, and submitted to the government of Japan through ASEAN Secretariat. In the proposal, it is suggested that MMU be set as a hub and provide ICT related lectures to universities in ASEAN countries. A feasibility study has already been implemented and is awaiting a response from the government of Japan.

One of the reasons for NMES not disseminating nationally nor internationally was that there was no need for NMES utilizing satellites due to the provision of high speed broadband at a low cost against the expectations, and the project plan had to be substantially-modified. Meanwhile, if the needs of NMES at the remote sites had been maintained, NMES could have been continued connecting each of the remote sites with broadband, after the usage of satellites was discontinued. In fact, there is a broadband connection between MMU Cyberjaya and MMU Melaka, and NMES has been utilizing this for meetings and seminars. However, there were no such activities at other remote sites. One of the reasons for failure of continuation and dissemination of NMES in other remote sites was that MMU Cyberjaya could not secure enough budget for leased line broadband connection for every remote site to replace the satellite system. However, more importantly, review of tele-education courses, curriculum and content of the classes, marketing to the remote sites, and implementation of a needs study for the expansion of NMES were not sufficiently undertaken during the project period.

Consequently the super goal, “knowledge workers in the fields of engineering, IT and multimedia are developed within and outside of Malaysia” has not been achieved. The number of the graduates from DIT is 58 by the time the ex-post evaluation study was undertaken in September, 2010, thus the rate of achievement is very limited. The career questionnaire survey was implemented for the DIT graduates, the immediate beneficiaries of the project, and it was found that 67% (10 out of 15 respondents) found work at ICT related companies. On the other hand, for the DIT graduates who had face-to-face classes at MMU Cyberjaya, only 14% (2 out of 14 respondents) found a career at ICT related companies. For these reasons, NMES graduates have higher contribution to the goal and although the beneficiaries are limited, contribution to the goal is recognized in some there are some degrees.

It is considered there is a large logical gap between project purpose and overall goal.

Although the network system is technically constructed, the network will not be expanded automatically. For this reason, if the system was likely to contribute to the expansion of the network such as operating activities, and publication systems for the dissemination of NMES by MMU Cyberjaya, it is thought that the network would be likely to be expanded regardless of the change of the communication method.

3.3.2 Other Impacts

It was confirmed that the technologies and knowledge learnt from JICA experts were utilized in the lectures by the counterparts who had the technical transfer related to the satellite.

3.4 Efficiency (Rating: c)

3.4.1 Inputs

Table 3 Comparison between Plan and Actual Performance

Inputs	Plan	Actual Performance
(1) Experts	<ul style="list-style-type: none"> • for Long-Terms: 5 persons • for Short-Terms: 30 persons 	<ul style="list-style-type: none"> • for Long-Terms: 8 persons • for Short-Terms: 24 persons
(2) Trainees received	Fields of Training: 16 persons in such as Satellite and Wireless System, Network System and Technology Management, Multimedia Courseware Development, Cyberlaw	Fields of Training: 15 persons in such as Satellite and Wireless System, Network System and Technology Management, Multimedia Courseware Development, Cyberlaw
(3) Equipment	Satellite receivers, AV equipments, TV room equipments, and others (Approx. 380 million yen)	Satellite receivers, AV equipments, TV room equipments, and others (468, 800,000 yen)
Total Project Cost	860 million yen	1,023,000,000 yen
Total Local Cost	Unknown	1,070,000 ringgit ⁶

Source: Evaluation Team

3.4.1.1 Elements of Inputs

Dispatching experts, acceptance of trainees and provision of equipment were implemented mostly as planned and completed within the time frame. From the results of the interview and questionnaire survey to the counterpart, the quality of the experts and equipment were rated as very high, and it was confirmed that the quality of the input was adequate.

Meanwhile, the majority of the experts were used for the installation of the satellite receiver and management. 4 out of 8 long-term experts and 17 out of 24 short-term experts were engineers for radio and satellite, or network systems. In the terminal evaluation, it was pointed out that the long-term experts repaired the equipments although it was not their task. So in reality, more experts are thought to have spent time for the satellite related maintenance.

There were some similar features in the input from Malaysia. In MMU Cyberjaya, the hub site, 17 experts out of 21 assigned in total were engineers, (12 engineering or IT department instructors, 3 laboratory engineers, and 2 laboratory operators), and 2 to 3 experts were assigned to each remote sites, and at each site, one expert was processing personnel and the rest were engineers. Some of the project counterpart at the hub site and remote sites

⁶ The cost is as of the terminal evaluation. It is 28,812,714 yen based on the exchange rate as of 27 January 2011 (1JPY=0.03714MYR).

misunderstood the project objective as an implementation of experimental project for distance learning by satellite. This misunderstanding was thought to be created by the structure of the project input. It is thought that a better outcome could have been achieved if non-engineering experts, such as management and publication experts had been dispatched, in addition to the dispatch of the experts specializing in multimedia teaching materials and software development.

In addition, tele-education by using satellite had been practiced in Japan; however a single system was commonly used. Tele-education using three system such as satellite and wireless communications equipment, audiovisual equipment (hereinafter, AV equipment), IT related equipment in a single complex was a pioneering effort⁷. The question remains on using such techniques with few practice, but risks were not thoroughly studied at the planning stage.

3.4.1.2 Project Cost

[Appropriateness compared between the plan and actual performance]

The value of the input was mostly as planned after an additional installation of MPEG4 and the technical transfer related to the system maintenance, such as isolating the problem when there is a breakdown of the equipment in order to solve system issues. Therefore the actual project cost of 1.023 billion JPY was slightly higher than the planned 860 million yen (118% of planned cost). It is considered that the increase in input from the initial plan was needed to deal with those unexpected technical problems in establishing NMES.

[Appropriateness of input against outcome]

Output of the total of 1.023 billion JPY funding was establishment of NMES by the end of the project. However, as has been discussed in the effectiveness of the project already, the number of tele-education courses using NMES was significantly lower than planned. Therefore, it could hardly be said that project costs were appropriate against outcome level.

3.4.1.3 Cooperation period

The project was completed within the planned period and the cooperation period was appropriate. The planned cooperation period was from 1 July, 2001 to 30 June, 2005, and actual cooperation period was from 1 July, 2001 to 30 June, 2005 (compared to forecast: 100%).

In summary, the inputs are not appropriate for producing outputs and achieving the project objective, therefore efficiency of the project is low.

3.5 Sustainability (Rating: c)

3.5.1 Related Policy towards the Project

There is still demand for NMES from the country. In the interview survey implemented for the Ministry of Information, Communication and Culture (MICC), and Multimedia Development Corporation (MDeC)⁸, the policy for the ICT human resource development has mostly been sustained, although the priority of the MSC plan is not as high as during the project implementing period. In addition, in the MSC Malaysia Supply-Demand Study of the ICT Industry, 2009, implemented by MDeC, although demand is outstripping supply, there is a mismatch of human resource in demand and supply and this causes the lack of human

⁷ "Effectiveness Analysis Survey on Networked Multimedia Education System" JICA, 2005. P7.

⁸ MDeC, a government funded institution, was established to develop and advertise MSC and to provide one-stop service to companies moving into MSC. Companies with MSC Malaysia status are eligible for an exemption of foreign currency regulation, unrestricted employment of foreign knowledge workers, income tax exemption of 100% of the statutory income for a period of 10 years and others.

resource supply in ICT.

According to MICC and MDeC, cooperation from universities and technical schools in the whole of Malaysia is necessary, in order to develop ICT engineering human resources. MMU Cyberjaya, the executing agency for the project has been evaluated as the highest university of the country's ICT universities, and is expected to contribute to the ICT human resource development.

On the other hand, demand for the NMES at the remote sites is not able to be evaluated. Since the termination of the satellite utilization in 2007, NMES has only been used for the meetings and seminars to MMU Melaka and the relation to the other remote sites has been lost. According to the MMU Cyberjaya counterpart, the number of universities and technical schools has increased and the demand for NMES has decreased compared to the time the project was in progress. However, according to the interview survey for TTC Sabah, it was confirmed that there is still some demand on NMES on degree courses. Details of the demand at the remote sites are unknown, as the needs survey has never been implemented since the termination of the satellite utilization.

3.5.2 Institutional and Operational Aspects of the Executing Agency

The framework for the counterpart has mostly not been sustained at the end of the project, as was originally planned. MMU Cyberjaya was planning to establish the counterpart continuously and persisted with Multimedia Cooperation Center (MMCC), the head office of the project. However, MMCC was reorganized in 2007 and was relegated to a Research Management Center, and in January 2010, it was relegated to Multimedia Support Units and its scale has been reduced.

Two key people, (Director General and Vice-Director General of MMC at the time), who were involved from the beginning of the project have left for other schools. For this reason, the information such as objectives and future planning, which were created at the beginning of the project, has not been taken over by anyone at the moment. In addition, the counterpart's retention rates were 46% (7 out of 15) at MMU Cyberjaya, and 33% (1 out of 3) at MMU Melaka. At other remote sites, rates are low as a whole, as the framework of the project has been disappearing.

3.5.3 Technical Aspects of the Executing Agency

It is unable to be evaluated. According to the interview with the engineers at MMU Cyberjaya, operation and maintenance techniques acquired by the project remain to this day. However, in reality, this is uncertain because the usage of the satellite has being discontinued. At the remote sites, it is not possible to evaluate the current status personnel, who had technical transfer during the project, due to difficulty in tracing them.

3.5.4 Financial Aspects of the Executing Agency

As mentioned in table 4, the budget of NMES is fairly constant apart from 270,000RM, which is the satellite connection cost, this has been deducted since 2007.

Table 4 Budget of NMES (2005 - 2010)

Year	2005	2006	2007	2008	2009	2010
Satellite Leasing Fee (RM)	270,000	270,000	270,000	0	0	0
Lab Technician (RM)	2,000	2,100	2,205	2,315	2,431	2,552
Lab Engineer (RM)	3,000	3,150	3,307	3,472	3,646	3,828
Travelling (RM)	2,000	2,000	2,000	2,000	2,000	2,000
Equipment Repair & Upgrade (RM)	8,000	8,000	8,000	8,000	8,000	8,000
Miscellaneous (RM)	1,000	1,000	1,000	1,000	1,000	1,000
TOTAL (RM)	286,000	286,250	286,512	16,787	17,077	17,380

Source: MMU Cyberjaya

3.5.5 Continuity of Effectiveness / Impact

The project effect is evaluated to have not been sustained. MMU Cyberjaya stopped using satellite system in 2007 and consequently MMU Cyberjaya discontinued the usage of NMES with four remote sites, except for MMU Melaka, so that the satellite receiver has been left unused. The main reason for the discontinuation of the satellite system was the improvement of the terrestrial communication both in quality and cost. In addition to this, the deterioration of the satellite MEASAT 2 contributed to another major cause. After discontinuing usage of MEASAT 2, the direction of the satellite receiver had to be altered to the MEASAT 3, which was approximately the opposite of MEASAT 2.

Based on the current usage of the NMES, the utilization ratio of the NMES lecture room is extremely low compared with the time the project was implemented, it is occasionally used for meetings and seminars with special terrestrial communication between MMU Cyberjaya and MMU Melaka.

It was confirmed that TTC Sabah stopped recruiting the students in 2005, the year project was completed, as it had been preparing for the closure of the course. This is because the project was thought to be an experiment of NMES using satellite, and thought to cooperate only during JICA's cooperation period. The project has no possibility of continuation unless the remote sites were prepared to do so, even though there was a change of the communication method.

There were opportunities for remote sites candidates to review the background and needs of the project through PCM workshop before initiating the project. However, based on the interview results to executing agencies and current situation, it is difficult to conclude whether the project purpose and objective had been well shared among stakeholders.



Unused Audio-Visual equipments at TTC Sabah

In light of the above, major problems have been observed in the structural aspects of the executing agency and tele-education using satellite has been discontinued at the present, therefore, sustainability of the project effects is low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The relevance of the project is fair; however, the effectiveness, impact, efficiency and sustainability are evaluated to be low as the initial goal has not been achieved, as a result of the project setback caused by the discontinuation of the satellite utilization. In light of the above, this project is evaluated to be (D) unsatisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

It was a reasonable decision to end the utilization of the satellite system as a result of technological innovation, such as the dissemination of inexpensive and high quality terrestrial communications. On the other hand, there are strong doubts about losing the network to the remote sites completely as a result of the discontinuation of the satellite system.

The objectives of the project were not the installation of a satellite system, but to provide ICT education to students living at remotes sites as many as possible through tele-education using satellite system. If MMU Cyberjaya and MICC were to strive to achieve this objectives,

the expansion and management of the future network between the remote areas had to be discussed when the utilization of the satellite system was discontinued. However, it could not be found a record of discussion or a study implemented with the remote areas. The satellite made up the majority of this project and with the discontinuation of the satellite, the project itself was stopped and this lead to the main cause for the low evaluation result of this project as a whole.

As mentioned in 'Impact', implementation of "NMES for ASEAN" has been proposed. This is commendable as a positive impact caused by the project. On the other hand, given the fact that supply of ICT human resource in Malaysia is still lower than demand, MMU Cyberjaya has to review the possibility of NMES expansion, such as implementing a needs survey to the remote sites, within the country, as well as writing a report including pros and cons, limitations and opportunities of NMES and based upon this study, discuss the way it should be handled in the future. It should be note that the review has to be not to focus on the network system technology. MICC should monitor the future activities of MMU Cyberjaya and review the financial and physical support when necessary.

Furthermore, it is recommended that MICC and MMU Cyberjaya prepare a report on the current status of unused equipments including satellite dishes provided by the project and a proposal for the future action plan, and then submit those reports to JICA Malaysia office.

4.2.2 Recommendations to JICA

Based on the above mentioned, activities of the executing agency will be monitored. It is recommended to take necessary actions taken upon receipt of above mentioned reports from executing agency.

4.3 Lessons Learned

[Selecting appropriate measures for needs]

This project emphasized the technical transfer of the satellite system, rather than the formulation of the network. Communication technology is just a tool. The emphasis should have being what to do with it. Prior to the discussion on choosing the right communication technology for the implementation of the distance education, the appropriateness of introducing the communication technology should have being studied in order to align it with the purpose, which was to provide ICT education to students living in remote areas. It is essential to discuss and cooperate institutionally in both education and communication technology aspects.

[Selection of appropriate equipments according to purpose]

On a project aiming at the technical transfer of ICT, it is essential to introduce the latest equipment. However, for a technical cooperation project whose aim is to disseminate ICT education, it is not appropriate to introduce expensive and highly technical equipment, which takes a sizable portion of the project inputs. The equipment should be small and less technical without reducing the effectiveness of the outcome of the project or building the satellite network should have been implemented by a grant aid.

[Clarification of roles and responsibilities at the project planning phase]

Based on the position of MMU Cyberjaya as a government agency, it was concluded that the dissemination of this project, placing MMU Cyberjaya as a hub, was difficult even if the satellite had functioned. Although MMU is under the umbrella of Telecom Malaysia, a government linked company (GLC), they are in a position which it is hard to receive financial supports from the government. Also the government has no authority to interfere in the management of the university. If private universities were chosen to be an executing agency of the project, it is essential to exchange a written contract about roles and division of responsibilities between the university and the government from a public aspect and the dissemination affect after the completion of the project. In addition, it is also essential to create

a structure which involves the Ministry of Higher Education in the project. The Ministry of Higher Education, responsible for managing national universities, was showing their stance by largely no to being involved with this project from the time of project planning stage.

Furthermore, there was not enough project ownership within the executing agency and at the remote sites in this project. This is because some of the remote sites acknowledged that the project would be ended when the cooperation from JICA completed. One of the methods to enhance the ownership is to exchange the written contract between MMU Cyberjaya and the remote sites on roles and the division of responsibility.

**COMMENTS ON REPORT ON EX-POST EVALUATION
“THE PROJECT ON NETWORKED MULTIMEDIA EDUCATION SYSTEM (NMES)
IN MALAYSIA”**

Assessor: Tan Sri Dato' Dr Lin See-Yan
(Independent Strategic and Financial Consultant*)

The report is clear and concise. I agree with the overall evaluation conclusion that the project, as implemented, is unsatisfactory. Superior goal of the project was not met. Very few knowledge ICT workers had been trained. Overall goal was also not met since NMES's spread-effects weren't there. It is also clear, on technical grounds, setting up the satellite for this purpose was implemented smoothly. However, main purposes for which the satellite was set up were not understood or taken seriously and certainly, not sold-to or bought-in by MMU and its off-sites. In the circumstance, MMU operators were not committed to the project and hence, failure in meeting its goals. Since then, satellite technology become outmoded and what's left of the project ceased. I agree setting up a similar project in ASEAN should not be considered as yet until the lessons learnt from this NMES project have been thoroughly reviewed.

As I see it, best way for JICA to implement such a project is to ask public and private universities to bid for it. This ensures commitment. Government to government grant should incorporate appointing successful bidder as responsible for implementing the project. Malaysian government should only monitor. The lesson is clear: unless the project implementer buys-into the project and is wholly committed to its goals, the project will not succeed. Also, since technology develops rapidly, due consideration must be given to ensuring right technology is used. Furthermore, in this case, distance learning is not popular (& people not ready) in Malaysia and I suspect, in ASEAN. Students prefer face-to-face interactive learning, especially in ICT. Be that as it may, demand for ICT workers remains strong and their supply still lacks behind demand.

* He is currently a member of: the Prime Minister's Economic Council Working Group; Pro-Chancellor of Universiti Sains Malaysia and Governor of the Asian Institute of Management in Manila as well as Trustee, Monash University Sunway Campus Malaysia. He sits on the Boards of a number of publicly listed and private companies in Malaysia, Singapore, Indonesia and Hong Kong, and is also Chairman Emeritus of Harvard University's Graduate School Alumni Association Council in Cambridge (USA) and Regional Director for Asia, Harvard Alumni Association. He is President of the Harvard Club of Malaysia, and Professor of Economics (Adjunct) at Universiti Utara Malaysia and Professor (Adjunct) of Business & International Finance at Universiti Malaysia Sabah.