

**The Project on Strengthening the Capacity of
ITSS Education at
Hanoi University of Technology**

**Project Final Report
(Phase 1)**

**September 2008
(FY 2008)**

**Japan International Cooperation Agency
Ritsumeikan University
Keio Gijuku University**

1. Overview of Implementation Work

1. 1 Goal of Implementation Work

The work in Phase 1 is intended to create systems, information environment, syllabus and educational materials to implement the HUT Project in an orthodox manner. Once this has been ascertained, the work will enter Phase 2. In other words, this work is a pilot period for orthodox project implementation that has as its goal the promotion of the framework for the HUT School and equivalent organizations.

In concrete terms, the work for Phase 1 contains the following items, and has as its goals investigation, development, technology transfers, and assistance.

- (1) Establish the functionality and organization required to run the Program.
- (2) Improve the educational skills required of instructors and the clerical skills required of administrative staff.
- (3) In line with ITSS, prepare the curriculum (including basic courses in math and physical sciences), syllabus, educational materials and IT machinery for the 1st – 3rd years of the Regular Course and Intensive Course.
- (4) Implement the classes in the 1st and 2nd years of the Regular Course and part of the intensive course.
- (5) Establish the collaborative system with industry and other educational institutions.
- (6) Collect information on IT and IT-related matters from the market.
- (7) Disseminate information on the proposed project inside and outside of HUT.
- (8) Implement preparatory activities for the transition to the School.
- (9) Create the Phase 2 Technology Transfer Activities Detailed Plan.
- (10) Plan and implement Counterpart training.

In respect to the above TOR, it was the goal in phase one to place emphasis on the assistance aspect of deciding on the international standard/ITSS-based curriculum contents, teaching and leadership methods. In concrete terms, personal technology transfers to HUT counterparts, planning overall project adjustments including work relating to yen loans, and in regards to the syllabus and educational materials (which have need for urgency), the creation of a Development Manual containing set rules for the development process. HUT Counterparts were paired with Japanese experts, and steps to improve the efficiency of the technology transfers and other project work was planned.

1. 2 Desired outcomes and indicators

In the end, what can be gained from the work being performed now is the construction of an International Standard/ITSS-Based IT Education Pilot Model. In concrete terms, the following four items are mentioned. 1) international standard curriculum development, 2) establishment of teaching and leadership methods for instructors 3) the work readiness training of instructors and members of society through the intensive course

4) the establishment of efficiency methods for administration and operations in the university.

Through the course of this work, of the 4 items listed above, special attention will be given to the improvement of ICT education quality at HUT, the improvement of the skills of HUT instructors, and the establishment of an efficient university operations model.

These will be defined and implemented as follows.

1. 2. 1 Improvement of ICT Education Quality at HUT

At HUT a model ICT program will be developed, the developed syllabus and educational materials will be utilized in education, and a system of producing high level ICT human resources that answer the needs of ICT industry in Vietnam and Japan will be realized. Within this process, HUT instructors will receive technology transfers from Japanese experts, and will learn practical ICT education methods separated from the theoretical education methods they have learned up until now.

The ICT curriculum developed in this work will be applicable to the departments and graduate schools of other Vietnamese ICT universities without revision, and will become the Vietnamese model of an international standard ICT curriculum.

Through the intensive course, engineers in the private sector and instructors from other universities will through lectures and exercises be able to learn the newest ITSS-based technologies, and gain the work training that will make them high-level ICT human resources. Furthermore, participants will become human resources able to support the future of Vietnamese IT industries, and can become future lecturer candidates as ITSS education develops.

In addition, through the acceptance of a limited number of HUT instructors and staff as ITSS education short term training participants in Japan, technology transfers of ICT experiments and exercise know-how and ITSS-based technology transfers will progress more smoothly. Furthermore, in doing this it ensures a fixed number of instructors that will form the core of ICT education in Vietnam, and ensures the continual sustainability of the curriculum after the program has ended.

From the above, in the near future, it can be expected that HUT and a number of other universities will become the Centers of Excellence for ICT in Vietnam. Furthermore, ICT engineers and Bridge SE's for offshore development for the Japanese market will be able to be produced in quantity, adding to the development of both Japan and Vietnam's IT industries.

1. 2. 2 Improvement of HUT university instructors' skills, and the establishment of a model for efficient university operation

Given the difficult circumstances that today's universities are faced with, the importance of good management is often raised. The original mission of universities educate and train has been made more varied and advanced by the further requirements of society to contribute to both domestic society as well as international society.

Ritsumeikan University and Keio University plans university management and operation in coordination with instructors and staff, and office staff works at developing the universities. The theories resulting from knowledge, skills, and know-how are collected as “university administration”, and through the course of work are practically applied as human resources are fostered. Staff capable of more than processing paperwork, but also able to develop the work system, and by extension develop the university are needed. For this, steps to improve the work skills and management capabilities of staff are being drafted, in order to place staff as university administrators that can pass their knowledge to the next generation of administrators.

In this, the efficient operation of the office organization in this project is being planned, and through the contribution to HUT instructors’ increased skills, indicators as to how to improve the skills of all HUT instructors through training sessions will be given and will serve as an efficient management model for the entire university.

1. 3 Results of Expert Dispatches

The work contents and results of expert dispatches during Phase 1 are explained in Detached Document 015 Phase 1: Expert Dispatch Results and Work Overview.

1. 4 Changed items from the planning stage to implementation

There were several items that required alteration from the original plan as a result of the June 2007 Operation Leadership Investigation. These are as follows:

1. 4. 1 Syllabus/Educational Materials administration and operation

The Japanese-side experts and office staff have strengthened (target achievement) the administration and operation regime in accordance with the Project Implementation Plan. As they did this, in order to standardize program development, they also developed a manual which describes in detail the processes, products, progress management method; and responsibility system; and following agreement with the HUT side developed the syllabus and educational materials based on the manual.

However, on the HUT side, the provision of information and guidance to the Counterpart instructors via this method was not completely successful, and program development was not implemented with this method at first. In addition to this, twice the progress management method was broadly altered from the HUT side, and the total amount of work to be done was increased.

From this, entering into the second year, and after consultations with the HUT-side Progress Manager, the separation of opinions between the two sides was erased, and a result of this a concrete management system was made routine and problems were solved.

1. 4. 2 Counterparts involved in program development

Through the above-mentioned standardization of processes, Japanese experts and subject development instructors have enthusiastically made contact with counterparts, but the HUT response has been poor. Regardless of requests made at HUT's PIU meetings, no improvements have been made. According to subject in some cases no contact has been made. As a result, on many occasions the local activities schedule has been made to be altered from the original plan.

Even in cases where contact has been achieved, there have been problems. Japanese experts provide models to HUT instructors to arrange in a manner which best suits the course, but instead of using the advice of the experts and creating their own viable product, in many cases the models are used almost unchanged. A situation has arisen where the development of HUT as a whole is not being carried out.

From December 2007 the PIU organization has been changed, and in the end are operating as the PIU organization confirmed at the June 6, 2008 Phase One End Evaluation. From the latter half of Phase 2, the work carried out by HUT side instructors has been based in contract, and as a result of

this morale among Counterparts has been improved, as has communication with Japanese experts and work collaboration. Furthermore, the work involved with scheduling, Counterpart enumeration, etc. at the PIU office has been made routine and stable.

1. 4. 3 Stagnation of local work resulting from classroom equipment installation delays

The procurement of information machinery through the Package 1 international yen loan has been greatly delayed, and due to the fact that machinery scheduled to be installed in March 2007 was delayed after changing the plan, work scheduled for the 2nd year involving network and classroom equipment, such as determining whether the machinery is appropriate for each subject, as well as adjusting the machinery to fit the operations of classes, did not advance. As a result, experts in charge of these issues did not visit Vietnam, and the associated technology transfer did not take place.

However, the activities for procuring information machinery under Package 1 commenced at the end of 2007. Furthermore, though the work of the experts the operations were made possible, and from January 21, 2008 1st year students and from February 25th, 2008 2nd year students began to use the equipment in their classes.

Meanwhile, the situation for introducing information equipment for exercise/experiment and specialist courses has become worse, and machinery slated to be introduced in the summer of 2008 were not. Due to this, the setting and adjustment of machines for classroom operation was not carried out in year 3. As an alternative work process, a counter-measure plan was decided on between Japanese and Vietnamese instructors and the yen loan consultant in order to introduce the required environment for the 5th and 6th semesters.

1. 4. 4 Yen Loan Work Difficulties

The most troublesome part of advancing the work was the fact that required JBIC paperwork has been late in all areas.

This work is not carried out exclusively by JICA, and so if the JBIC side work does not proceed the JICA work does not either. The difficulty in progress management can be attributed to three things; 1) Inadequacy of HUT project organization, instructor organization, and funds, 2) the fact that Vietnamese processes in Vietnam are more complicated and time-consuming than expected, and 3) the differences between conventions. These things have influenced the work in complicated ways and have caused the work to run considerably late.

There has been a large change in the work of JICA experts since the M/M exchanged at the June 8, 2007 Operations Leadership Investigation. As the consultant which would normally be employed under the yen loan has been greatly delayed, the JICA-side Chief Advisor has been made to collect

information, as well as manage the yen loan work, and including the Work Adjuster has become a considerable work load.

1 . 4 . 5 The alteration of activities for experts who are also instructors

The team of experts in this project is made up of primarily university instructors, and in the case of Ritsumeikan University professors, local activities have been constrained in the 2nd year greater than what was in the original plan.

The reason for this is in the implementation of classes at Ritsumeikan University. In July of 2007 MEXT, in accordance with its investigation into all classes implemented at Ritsumeikan University, the university was moved toward a complete implementation regimen of 1 semester of 15 weeks. This strengthened the limiting conditions on the instructors in charge.

Due to this, aside from periods when class is not in session, foreign work trips in excess of 7 days have been made impossible, limiting local activities. However, in order to further this work, local work is being carried out to the greatest extent possible. Also, from the second year, Japanese experts are in charge of multiple classes to the greatest extent possible, and steps taken to conduct local activities efficiently.

1 . 4 . 6 Development of the Intensive Course

At the beginning of the 2nd year, a plan was introduced at a PIU meeting to implement in November 2007 the Linux and Project Management Basic Intensive Courses, and the HUT side began preparations. However, the work of the HUT Counterparts was greatly delayed. The reason for this is the effects of low level of motivation towards this project, lack of skill, and poor understanding of copyright. Furthermore, one of two HUT Counterparts, citing health and other reasons, requested more time than was anticipated for receiving instruction and consultation, resulting in a greater workload in Vietnam and Japan for the Japanese expert in charge of the Intensive Course.

In addition, counterparts were changed and retired midway, resulting in the deferment of the partial implementation plan. From this, development work for the intensive course was confirmed and organized with the PIU side in the following manner. Also, the following topics were made clear in regards to the technical transfer for the intensive course.

1. Problems and situations involving leadership and other related areas in the accepting country and cooperating area.
 - a. In regards to the intensive course targeting the private sector, it can be seen that the HUT side too is having difficulties. Even with an excellent teaching staff few instructors have

experience in IT industry, and are perplexed at the task of teaching leading edge .IT technology with only a few years experience.

b. Furthermore, knowledge of copyright is low. Even though they appear to be taking steps toward dealing with the issue at the UN, awareness of copyright is low.

2. Securing instructors

a. Problems have arisen in securing Counterparts that can coordinate with the Japanese experts.

b. The main reason for this is the difference in incomes for Vietnamese private sector workers and university instructors, making it a daily challenge to find instructors who excel in IT areas.

In the end, in regards to intensive course development, the course for the private sector has been deferred, and from the third year developing the ITSS syllabus and educational materials for the Regular Course Summer Intensive Course will be given priority.

1 . 4 . 7 IT Japanese

IT Japanese has been in the curriculum from the start of the program, and IT Japanese education has been important for foreign students and Bridge SEs. From this, JICA, through short-term experts, conducted an IT Japanese investigation, and from this IT Japanese was included in the Year 3 TOR. JICA experts then proceeded to create the syllabus. Detailed information on this will be explained later.

1 . 5 Activities Implementation Schedule

The Phase 1 Activities Implementation Schedule is included in Detached Document 001: Operation Plan. Furthermore, work circumstances are detailed in Detached Document 002.

1 . 6 Local Work Expenses Achievements

Phase 1 Local Work Expenses Achievements are detailed in Detached Document 003.

2. Work Implementation Method

2. 1 Line of thinking used in work implementation

The basic thinking behind the work in Phase 1 begins with the Plan Alteration Items (Chapter 1, 1.4) and was set and implemented in the following manner.

- (1) In order to be definitively successful in project management and operations, organization and function strengthening was planned. This is from the adjustment of the first year project problems and analysis of management and operations. From the second year, organization and function strengthening planning included experts (1 Keio university professor, areas managed: network, class and exercise environment adjustment, information machine settings, program development assistance), Japanese university assistance strengthening (6 assistance instructors outside of the experts were placed), the organizational strengthening of the HUT Project Office at HUT (a Work Adjuster was placed), and others.
- (2) In order to improve the results of Program management and operations, the responsibility system for those course leaders will be clarified.
Much effort was made between the HUT PIU members and necessary Japanese personnel to achieve parity in understanding in areas such as project achievement goals and advancement method, as well as adjust the manual in regards to PIU and the Japanese personnel's work.
- (3) Settings and development of the intensive course will be made while keeping in mind the needs of the marketplace. In regards to implementation, it had been decided to proceed after having made a thorough examination with the HUT side.
- (4) The necessary Japanese personnel that will reside in Vietnam shall be the Chief Advisor and Work Adjuster, and plans were made to adjust the contact system with PIU members, other related individuals in Vietnam, and associated organizations. Other necessary personnel will conduct their business primarily via e-mail, and work in Vietnam will be concentrated and short. In this way the length of time needed for local work is reduced to the shortest length possible.
- (4) Technology transfers for the HEDSPI 1st through 6th semester syllabi and educational materials creation, as well as the technology transfers for the current semester's classes will be given top priority.
- (5) In regards to the IT marketplace, investigations were carried out in the 1st year, but adequate information was not achieved. In order to get information definitively, investigations will be carried out by visiting enterprises directly.

- (6) In order to improve the efficiency of training programs, it has been planned that HUT will implement training on-campus for other instructors, in addition HUT will coordinate with its own training programs planned independently.
- (7) In order to plan the improvement of instructors' skills, classroom observation and achievement tests will be conducted to objectively measure the success of the technology transfers.
- (8) In order to improve the skills of staff and the administrative organization, the placement and responsibilities of the HUT administrative organization will be clarified.

Furthermore, the fundamental policy of the technology transfers, the central theme of the work at hand, shall be as follows:

- (1) The method for advancing classes and experiments at HUT will be examined.
- (2) Ritsumeikan University and Keio University will introduce the advancement method for each class and exercise, including concrete problems and their solution methods.
- (3) Japanese experts will present as frames the advancement method for each class and exercise. HUT instructors will then fill out these frames. This will form the model for the instruction method for each subject.
- (4) Based on the above mentioned model, the method of advancing classes and experiments that reflect the special nature of Japanese IT education will be debated and set, keeping in mind what is easy to implement at HUT.
- (5) Periodically Japanese experts will visit HUT and determine whether the standardized level of classes required by the Japanese side are being implemented and operated.

While these things may seem natural, in a place like Vietnam which has a differing cultural background and history, in order to realize the Japanese IT education which reflects its special nature, it is necessary to first instill a teaching method to train bridge engineers. This will result in technology transfers better suited to the conditions and logical in its nature.

2. 2 Implementation System

The plan for placement of necessary personnel for local and Japan-side work shall be as follows.

2. 2. 1 Placement of necessary personnel

The final system for implementing the project in Phase 1 shall be as follows.

① Chief Advisor/Industry collaboration	Kiyohito Gouba
② Curriculum advisor, OS, math physical sciences, electric engineering, chemistry	Eiji Okubo
③ Curriculum Advisor, network, math, physical science, electric engineering, chemistry	Tatsuya Hagino
④ ITSS/IT Specialist, network	Yasuo Tsuchimoto
⑤ Curriculum advisor/computer science/programming languages/IT Japanese Hiromitsu Shimakawa	
⑥ Computer science	Shigeru Koyanagi
⑦ OS/programming languages/computer science	Yoshitoshi Kunieda
⑧ Database/programming languages/computer science/IT Japanese	Hideshi Takada
⑨ Database/Computer science/Math/IT Japanese	Hideto Ikeda
⑩ Programming languages	Yuuya Itoga
⑪ Programming languages, OS, computer science	Kouichi Mori
⑫ ITSS/IT Specialist, Seminar instructor	Eisaku Oshima
⑬ ITSS/application specialist/seminar instructor	Yuuji Shinogi
⑭ Network, seminar instructor	Mitsuhiro Sakuma
⑮ ETSS/RTOS & programming, seminar instructor	Kazuo Nakamura
⑯ ETSS/RTOS & programming, seminar instructor	Kyoichi Oka
⑰ ETSS/RTOS & programming, seminar instructor	Hirohiko Tanaka
⑱ ETSS/RTOS & programming, seminar instructor	Ryo Okubo
⑲ Network	Ryousei Toyama
⑳ Work Management Operations/Training Course Planning	Minako Ishida
㉑ Work Management Operations/Training Course Planning	Mihoko Katsumata

2. 2. 2 Work Implementation Structure

Using the above system as a base, and paying special attention to the below points, project implementation was carried out aiming for improvements in the project's advancement and products, at the side time adding improvements. With special emphasis on points changed from the original plan, the special characteristics of system strengthening as it occurred in Phase 1 are as follows.

(1) Strengthening of the experts system

- ① 2nd year addition of network expert Keio University Dr. Ryokusei Toyama
→ Area of charge: assist in the settings of procured machinery for classroom

use, network environment investigation analysis, syllabus/educational materials development support

② Decentralization of Ritsumeikan University/Keio University Expert (Instructor) visits to Vietnam

→ Expert (Instructor) visits to Vietnam are decentralized, also, by lengthening the stay periods of experts (instructors), opportunities for discussions with HUT instructors become more numerous.

③ Strengthening of the support system for experts (instructors)

→ Financed by private companies, 6 instructors outside the experts (Ritsumeikan) were placed, and provided technical assistance in educational materials construction.

④ Expansion of experts' duties

In order to efficiently conduct the technology transfers, it was necessary to expand experts' activities in Vietnam. However, due to the restrictions on Japanese universities, the amount of local work one expert can perform is limited. Therefore, the following professors shall take multiple duties.

- Expert Shimakawa (2nd Year) Program coordinator/computer science
(3rd Year) Curriculum advisor/computer science/programming language/IT Japanese
- Expert Kunieda (2nd Year) OS/Programming language
(3rd Year) OS/Programming language/computer science
- Expert Takada (2nd Year) Database/programming languages
(3rd Year) Database/programming language/computer science/IT Japanese
- Expert Ikeda (2nd Year) Database
(3rd Year) Database/computer science/math/IT Japanese

⑤ IT Japanese System

From the 3rd year, as a new TOR, syllabus development for the IT Japanese course began. The IT Japanese course is not yet systematized, and proper preparations will take time, including some necessary periods of trial and error during actual implementation. Furthermore, in order for IT Japanese to reach the entirety of IT topics curriculum and syllabus development was carried out using multiple systems as shown below.

Main responsible persons	Expert Ikeda
	Expert Shimakawa
	Expert Takada

⑥ Placement of Experiment/Exercise Course Curriculum Advisor

The development of the exercise and experiment class syllabus and educational materials

became the most important work for year 3. This is a first experience for HUT, and in the 3rd year, technology transfers including Japan-side training was planned. In the 5th and 6th semesters, there is exercise and experiment course number 4 (Experiment in ICT; 1-4), the technology transfer of which required advice be given regarding all aspects of the exercise and experiment course to succeed. From this, in the 3rd year, Expert Shimakawa was installed as the experiment and exercise course curriculum adviser.

⑦ Specialist alternation

• Replacement of Expert Itoga

Expert Mori was installed to relieve Expert Itoga. Expert Mori will be in charge of programming languages, OS, and computer science.

• Replacement of Embedded System Expert

In the 3rd year, Matsushita Electronic Manufacturing K.K. added 2 two new experts. They investigated human resources education in the field of embedded system education.

• Replacement of Work Adjuster

Due to circumstances, the Work Adjuster was changed at the beginning of the 3rd year.

(2) Japan-side (Ritsumeikan University) Project Office Strengthening

① Japan-side office skill strengthening

② Using funds from private companies, hire foreign experts on a contract basis.

3. Accomplishments of Technology Transfers

3. 1 Overview of accomplishments achieved

The main items that must be achieved in Phase 1 are listed below. Overviews of individual results are discussed thereafter.

Main Phase 1 Work Items (September 2006-September 2008)

- a. Embark on establishing functionality and organization for Program operations.
- b. Embark to raise educational skills in instructors and administrative skills in staff.
- c. Prepare to begin the curriculum (including fundamental classes such as math and physical sciences) and educational materials (student and instructor) for ITSS-based 1st-3rd year course and intensive course. Also prepare IT machinery for class use.
- d. Classes for the 1st year of the Regular Course and part of the intensive course is implemented.
- e. Collaboration plans for industry and other educational institutions are made and collaboration is started.
- f. Information from the market into IT and IT related areas is collected to be reflected in the curriculum.
- g. Plans to advertise inside and outside of HUT are made and activities begin.
- h. Preparatory activities for the transition to the School are begun.
- i. Plans for Counterpart training are developed and training is carried out according to plan.

3. 1. 1 Embark on establishing functionality and organization for Program operations.

(1) PIU System

The establishment of the PIU organization is an important part of achieving the necessary organization and functionality required for Project operation. During Phase 1 there were many changes made. During the course of those changes, major documents confirmed include the Operation Leadership Investigation M/M of June 8, 2007; the M/M confirmed on January 31, 2008; and the June 6, 2008 End Period Evaluation M/M.

Heading into the 3rd year, the PIU organization (see Detached Document 004) stabilized, but some unresolved problems remain. These include that as PIU members are not in a specialized structure, they must bear the brunt of the work while operating the Project, meaning the management of the areas they are in charge of as well as the adjustments to the entire work structure do not proceed smoothly. Also, there is the fact that the Chief Advisor's work load and responsibilities are not clear.

(2) PIU Meetings

The PIU meetings played an important part in the everyday operation of the Project. In the first year PIU meetings were almost never held, but since the Operation Leadership Investigation of June 8, 2007 the PIU has met regularly on almost every Thursday.

However, among attendees on the HUT side, the Director and Deputy Director were from the beginning central, and the Team Leader is almost always absent. Furthermore, the system does not require PIU Office Staff to attend meetings, and from this it can be seen that the usual organization and functionality required has not been realized. Hereafter, these issues must be resolved as investigations continue toward the establishment of the School.

(3) JCC

In the course of promoting this Project, many organizations from Vietnam and Japan are involved. Among these, the importance of the JCC meeting organization's broad view of Project management and operations is recognized. The first JCC was held on October 24, 2007 (see Detached Document—005, 006), but has not been held since. Also, the Open PIU Meeting indicated by the Operation Leadership Investigation of June 8, 2007 was held on July 31, 2008 (Detached Document—007).

These meeting organizations are not permanently established, but in order to increase the awareness of MOET must be held regularly beginning in Phase 2.

(4) Instructor System

In regards to the Instructor System put in place at the beginning of the Project (1st-2nd semesters), following the Operation Leadership Investigation of June 8, 2007, the Instructor System for the 3rd and 4th semesters was settled upon. Furthermore, on December 6, 2007, the instructors through the 5th and 6th semesters were appointed. Until the 3rd year, class operation and syllabus/educational materials creation was largely able to advance with the appointed Instructor System, but some replacement occurred with one part of the intensive course.

The procurement of Japanese professors through yen loan did not occur in time for the start of the Project, and in the end commenced at the end of December 2006. Furthermore, problems arose, such as the fact that in both the 2nd and 3rd years the main instructor quit. Furthermore, it is becoming more difficult to secure Japanese professors in a stable way. Especially, the procurement of Vietnamese professors is a problem, and while this can technically be called an IT class, the recruitment of university professors will likely to be a problem for Vietnam in the future.

(5) PIU Administrative System

The office is important for Project management and operations. In the 3rd year, the PIU office system consisted on 13 people (see Detached Document—008). Compared to the beginning of the project, this is many more individuals, and much of the work has been made routine.

3. 1. 2 Embark to raise educational skills in instructors and administrative skills in staff.

(1) Needed educational skill improvement in instructors

Within university education and research, the most direct contributors are the instructors. However, at HUT, the evaluation of professors was not systematically performed, and at the beginning of the Project it was difficult to import directly the evaluation system for professors in use in Japan. Also, in order to confirm the teaching method from the point of view of the students, student questionnaires were suggested, but were not realized due to reasons such as it not being acceptable to Vietnamese university traditions.

The syllabus and educational materials are most important to JICA's work, and so technology transfers were planned to standardize technology transfers and adjust the manual, so that Counterparts can in the future use the manual to develop syllabus and educational materials independently.

Because of this, in Phase 1 technology transfers for skill improvements in instructors did not occur, opting instead to devote all efforts to syllabus and educational materials development.

On the one hand, Japanese experts did visit and inspect classes, and furthermore exchanged opinions with counterparts. Also, on the occasion of educational materials reform debated the teaching method and suggested the excellent Japanese educational method.

The improvement of instructor's skills in the teaching method requires a system of daily checks and consultations. In Phase 2 the Japanese side local work system must be reconsidered in order to debate, improve, and strengthen on a regular basis the teaching skills of HEDSPI instructors, student evaluations, the curriculum and the syllabus.

(2) Needed educational skill improvement in staff

The function of staff in the Project is to determine policy on management decisions, plan, implement, create value, and establish. It is therefore not an exaggeration to say that university development is affected by the skill level and capacity of staff. The staff allotment and employment plan, the budgeting plan, and the facility operation plan meant to be created in Year 1 have not yet been shown to JICA, with the Vietnamese side citing strict confidentiality concerns. As a result, efforts to commence the technology transfer to achieve this functionality have not begun. In Phase 2, looking to establish the School, there is a need to commence this technology transfer (including the PIU office) in order to conduct necessary future work in management and operations areas.

3. 1. 3 Preparations for the curriculum for the ITSS-based 1st-3rd year Regular Course and Intensive Course (including basic courses like math and physical science), syllabus, educational materials (student and instructor) are to be started, and the IT machines set for class use.

Below are detailed explanations for the syllabus and educational materials. The Phase 1 curriculum was in the end set as Detached Document—013. A view of the final products made based on this can be seen in Detached Document—009 (1st-4th semesters) and Detached Document—010 (5th and 6th semesters).

(1) Adjusting the Syllabus/Educational Materials Manual

In order to establish the work of Syllabus and Educational Materials development, the manual was amended and the standardization of technology transfers was advanced. Also, using the manual as a base, future technology transfers were planned so that Counterparts may be able to carry out development on their own in the future.

However, during the course of advancing the work, at the time of the progress check for each subject by the Japanese and Vietnamese it was discovered by both sides that the development of educational materials like the syllabus, scenario, and student notes for each subject was a great burden for all. From this, the development method for Educational Materials was amended.

Concretely speaking, in a cultivation or IT area subject the text used is written by a respected individual, it was decided after consultations between Japanese experts and C/Ps to not create the Lecture Scenario, Lecture Notes, or Student Notes. In those cases, an action chart was created for the subject and development advanced.

(2) Regular Course Classes: excluding the intensive course

The first round of classes in the Project began in September 2006. Year 1 JICA local activities did not begin until the end of October 2006, and so was not able to technically assist the development of the Syllabus and Educational Materials in the 1st semester. Furthermore, at the time there were counterparts who mistakenly thought that JICA specialists were going to develop the Syllabus and Educational Materials in their entirety. The Japanese experts were not able to sufficiently explain the development contents and process, and combined with the counterpart payment problem led to development not proceeding as was expected.

In Year 2, in order to establish the work of Syllabus and Educational Materials development, the manual was amended and the standardization of technology transfers was advanced. Furthermore the payment problem was resolved in the latter half of the year, and the desire of the C/Ps began to appear. From this it was made a goal to develop the Regular Course Syllabus and Educational Materials in the 2nd Year for the 1st-5th semesters. The products for the 2nd Year are that the 1st through 4th semester Syllabus and Educational Materials were developed, and the products confirmed at the March 5, 2008 Japan/Vietnam Joint Meeting.

In Year 3, the 5th and 6th semester development was advanced. The 5th and 6th semester products were confirmed by both sides at the August 28, 2008 Product Confirmation Ceremony.

(3) Regular Course ITSS Summer Intensive Course

In Year 1 local investigations were central, based on the SAPROF investigation carried out by JBIC before the start of the Project and the Intensive Course Request Report submitted by HUT. At the beginning of Year 2, preparations for the implementation of a Linux and ITSS Software Development Basic Course for the private sector were carried out, in response to the strong demand from Counterparts.

However, due to C/Ps low skills, copyright problems, and changes in leadership personnel, the development of Syllabus and Educational Materials was not completed on time, and adding to this was the fact that the information machinery (package 1) was late, leading to the abandonment of the implementation. In the end, the course for professionals only added to the total amount of work to be done.

As the Regular Course ITSS Class is essential to ITSS skill acquisition, it was decided to place emphasis on the development of 3 Regular Course classes from the end of the 2nd year. The development system was in the end decided to be as follows:

- ① Software Development Course (Regular Course)
 - Responsible party for Educational Materials development is Dr.Thang, Syllabus • Educational Materials development responsibility and instructors are Dr. Cao Tuan Dung, Dr. Ngo Hong Son, and Msc. Nguyen Dieu Huong.
- ② Linux System and Network Management Course
 - Responsible party for Educational Materials development is Dr.Thang. Syllabus & Educational Materials development responsibility and instructor is Dr.Trung.
- ③ Java Programming Course
 - Responsible party for Educational Materials development is Dr.Thang. Educational Materials development responsibility and instructors are Dr. Cao Tuan Dung, Dr. Ngo Hong Son and Msc. Nguyen Dieu Huong.

As products, in these classes the Syllabus is almost completed, and was confirmed at the confirmation ceremony of August 28, 2008. Japanese experts presented drafts for the remaining work for these classes, the Educational Materials (Student Notes, Lecture Scenario) , and including the Exercise Educational Materials should be completed by June 2009.

(4) Introduction of IT Machinery

The introduction of IT machinery was meant to be included in Package 1, through international yen loan during 2006. In the end, 3 classrooms (40 seats in each room) began to be equipped with PCs in October 2007. Because of this, the JICA technology transfer regarding IT machinery being set for classroom use did not go according to plan.

During classes held in the 1st year, the e-library computer room was used. In the end, the 2nd semester was able to use the Package 1 information machinery on February 25, 2008 and the 4th semester was able to use the machines on January 21, 2008.

There still is no system operation management system similar to those in Japanese universities. For

that reason, the ICT committee (including the training of personnel for this purpose) framework was presented to counterparts, but nothing was realized.

In the 3rd year, it was decided to debate the current usage of the information classrooms with C/Ps. Also, as it was found that the yen loan Package 2 paperwork was going to be considerably late, usage in the new semester was discussed. Japanese experts submitted an overview of software to be adjusted, and preparations began for the 5th semester.

Also, the operating scheme for the information classrooms from the latter half of the 3rd year was decided at the August 14, 2008 PIU meeting to be follows. From now, technology transfers to these individuals will occur in the areas of system operation and management.

Instructors: Cao Tuan Dung

Ha Quoc Trung

Staff: Do Quang Tu

3. 1. 4 Regular Course 1st Year Classes and part of the Intensive Course will be implemented

(1) Regular Course Classes

There were at first 121 students in the 1st year student class, but at the beginning of the 2007 academic year this fell to 120. The 2nd year student class has 126 students. Based on class schedules for both 1st and 2nd year students, the 1st-4th semester classes were implemented. The 3rd year students will be greeted and the new semester will begin September 22, 2008.

(2) Intensive Course Implementation

From the beginning there was a strong demand from some Counterparts for the implementation of a Linux and ITSS Software Development Basic Course for the private sector and preparations were carried out.

However, due to many problems described previously, the development of Syllabus and Educational Materials was not completed on time, and the implementation of the 2007 course for professionals was abandoned. This course will be re-examined in the future.

3. 1. 5 Collaboration plans for industry and other educational institutions are made and collaboration is started.

As during Phase 1 the main focus was on starting up the Project, goals for collaboration with industry and other educational institutions were not clearly defined. Furthermore, the target university for collaboration has not been determined, which can lead one to say that collaboration work is not being carried out in force. Concrete activities, other than the industries contacts listed below, include consultations with VITEC, VJCC, and FPT University, and the joint seminar held on November 14, 2007 with JETRO and VINASA.

Each year, more visitors have come from local industries and Japanese industries in Vietnam (see Detached Document—011) . Consultation contents include hearings to provide an overview explanation of the work, site inspections, internships, scholarships, and finding jobs. Furthermore, on May 10, 2008 (Saturday), a job fair targeting FIT students was held. Local businesses (36) and Japanese businesses (2) had booths, and the conference hall was almost filled to capacity. Most students had interviews with companies, and it was decided to include HEDSPI students from the next year's implementation.

In regards to educational institution collaboration, information is being exchanged with FPT University, and in the area of Japanese and IT Japanese education much help is being received from VJCC.

3. 1. 6 Information from the market into IT and IT related areas is collected to be reflected in the curriculum.

In the first year a local IT market investigation was carried out by an outsourced company. However, the company used was of a low level and it was difficult to obtain information from local businesses in such a short time frame. As a result, the outcome was not as was hoped. From this, local investigation was not carried out from the 2nd year.

In regards to the current curriculum, a technology transfer for the latest Japanese university Syllabus and Educational Materials is under way, and in Phase 1, given the level of importance to the development of the 1st through 6th semester Syllabi and Educational Materials, it was clear the C/Ps were not interested in reflecting Vietnamese IT information into the products. As such, the local IT market investigation was not conducted.

3. 1. 7 Plans to advertise inside and outside of HUT are made and activities begin.

Advertising activities were not engaged in earnest do to the fact that the appropriate system was not achieved from the Vietnamese side. Concretely speaking, the following activities occurred:

- ① Using the JICA homepage, on Nov. 2, 2007 a Japanese language homepage for the project was established and updated thereafter.

<http://project.jica.go.jp/vietnam/0601790/>

- ② Pamphlets were made and distributed.
- ③ Dec. 26 2007: interviewed by Global Net One
- ④ Feb. 14 2008: interviewed by Tokyo TV and was broadcast on March 1 (Sat)
- ⑤ Mar. 7, 11 2008: interviewed by Asahi Newspaper Asia Office
- ⑥ Aug. 4, 2008: television interview by JETRO

3. 1. 8 Preparatory activities for the transition to the School are begun.

On May 22, 2008 HUT wrote a proposal to MOET suggesting the creation of the school with FIT

being central. MOET investigated the creation of the School, but has not yet responded to HUT's proposal. From the perspective of the Project's development, instructors and staff should be made full-time; budgeting, human resources and facilities should be made independent, and should be watched over carefully for a long time.

3. 1. 9 Plans for Counterpart training are developed and training is carried out according to plan.

Training in Japan was carried out 3 times in Phase 1 (Detached Document—012: 1 - 3) . The main topic of the first session was raising PIU organizational power and managerial skills. To two PIU members (Dr. Pham Huy Hoang, Dr. Dao Ngoc Chien) , further training was given regarding Japanese university education, research, and administrative management.

The second session had 6 C/Ps (Dr. Huynh Quyet Thang, Dr. Cao Tuan Dung, Dr. Nguyen Linh Giang, Dr. Vu Tuyet Trinh, Dr. Trinh Van Loan, Master. Nguyen Khanh Phuong) , and they learned Syllabus and Educational Materials development method, teaching method, and research. From this training the greatest effect was in instructors showing their desire to develop the Syllabus and Educational Materials, and in regard to teaching method, the introduction of the Japanese SA (Student Assistant) system.

At the third session of Japan side training, a training course beneficial to the development of 5th and 6th semester Syllabus and Educational Materials was planned. 6 C/Ps (Team leader: Dr. Tran Dinh Khang, Mr. Nguyen Thanh Kien , Mr. Nguyen Ngoc Duong ,Mr. Tran Trung Kien , Dr. Ta Tuan Anh, Mr. Le Duc Trung) participated.

4. Implementation Operations Devices and Precepts

Devices and precepts devised in Phase 1 are as follows.

4. 1 Regular Course Syllabus and Educational Materials Creation Technology Transfers

An important part of Phase 1 is the Syllabus and Educational Materials technology transfer. In order to efficiently carry out and verify the technology transfer, a regimen was devised by which a four part set of Lecture Scenario, Syllabus, Lecture Notes, and Student Notes were developed, Japanese experts observed classes, and students evaluated classes. For this, Syllabus·Educational Materials development was made into a manual, and the certainty of work was increased.

Another point of worry for the Japanese experts is the fact that with a specialized course/ITSS course based syllabus, even if the Syllabus/Educational Materials technology transfer is completed successfully, there will not be experienced individuals on the HUT side, resulting in difficulty in ascertaining whether class operation is functioning smoothly.

4. 2 Intensive Course Design and Development

Problems encountered during the 2nd year include the instability of C/P placements and copyright problems. In regards to the former, the HUT instructors' low skills became apparent. Considering the Vietnamese system of paying college instructors there is a limit to the number of human resources at HUT that can be secured that comprehend the Japanese technology. Vietnam is developing rapidly, but the university payment scheme has not followed suit. It is assumed that the problem of securing instructors for IT classes will continue into the future.

In regards to the copyright problem, as experts from private enterprise must adhere to compliance standards, as long as problems relating to copyright law remain, they cannot participate in the Project. To ameliorate this, C/Ps are being trained in general knowledge of copyright law and have prepared documents such as "Regarding the Copyright of Products Based on Work Contracts" and "Items to Remember Regarding Copyright when Developing Educational Materials".

The Japanese side has followed a direction to exchange memorandums regarding certain written works. However the fundamental problem of copyright in the Project has not been resolved, and it is left to the Japanese experts to carefully deal with these situations during technology transfers.

4. 3 Student Assistant (SA)

In order to make IT-related education practical, there must be adequate classroom assistance. In order to increase the efficiency of education, from the middle of the 2nd year, the introduction of the SA system

was lobbied to C/Ps. Now, there are 24 SAs from the 1st year student group, and they have been working since the 2nd semester.

However, at HUT there has never been an SA system, and reliable students have not yet been properly trained. In order to improve Regular Course Classes, in particular exercise and experiment classes, it is necessary for JICA experts to provide the Know-how of Japanese universities in the form of technology transfers to instructors and SAs.

From September 22, the information classrooms will 2 experiment and exercise courses in the 1st, 3rd, and 5th semester schedule: C Programming (Basic) and Programming (Advanced), Computer Literacy, Experiment in ICT 1 (Database), and Experiment in ICT 2 (Logic Circuit). The current SAs cannot assist in these classes. Especially, as the SAs are taking the classes, this system cannot be used.

Japanese experts are submitting class support/system recommendations and conducting technology transfers in improve smooth class operation. However the current information classroom system operation management system is inadequate, and the technology transfers were not able to be completed during the current semester. In order to prepare for September it is necessary to conduct technology transfers as soon as Phase 2 begins.

4. 4 System Operation Management System Adjustment

Form the new semester beginning in September, the 1st-3rd years of students will all begin classes. Therefore, it is paramount that classes in computer exercise are operated smoothly. However, in the current HEDSPI, there is no System Operation Management System similar to the ones used at Ritsumeikan or Keio. It is feared that if the System Operation Management System for information-related courses is poor, it will derail the entire class. As it is not possible to quickly construct a management system to back up this many information machines and high-level IT subjects, it is important to begin preparations as soon as possible.

There is a necessity in Phase 2 to perform technology transfers that will provide the framework for the system operation/management system including the currently proposed ICT committee.

4. 5 The relationship between ITSS and the Regular Course Curriculum

The relationship between ITSS and the Regular Course Curriculum is expressed in a report (see Detached Document—014), and explained to C/Ps. However, not all Counterparts understand the relationship completely and it is necessary to continue to explain this to them in the future.

The explanatory report shows in a complete way how the HEDSPI curriculum relates to ITSS. ITSS is understood to be based on a systematic organization of skills used in the workplace. At universities, general fundamental classes such as language, math, physical science, chemistry, etc.; fundamental

classes, exercises, and experiments for computer science; and computer science application subjects are all part of the undergraduate education and can be considered the traditional education style. However, given that ITSS is meant to improve the skills of people already in the workforce, there is a limit to how it can be applied in the university landscape.

IN the Regular Course Curriculum, the desired ITSS Level is Level 2, and in some areas Level 3 knowledge is aimed for. This has been confirmed by both the Japanese and Vietnamese sides. Considering that HEDSPI program graduates already have ITSS Level 2 skills, with only 3 to 5 years of experience in the work force ITSS Level 3 skills will reasonably be expected. In order to further improve the HEDSPI Curriculum, C/Ps, IPA, VITEC must continue to hold consultations. The Regular Course Curriculum has as its goal the creation of IT human resources able to apply their skills immediately in the workforce, and we wish to continue to pursue the ITSS scheme to the greatest extent possible.

4. Proposals

5. 1 JICA work and the educational project

In the first phase, there were places where the technology transfers did not go smoothly. This stems from the fact that both the C/Ps and experts are for the most part university professors. In other words, as the Vietnamese and Japanese university schedules do not sync with each other, the experts' local activities could not be well adjusted, and the technology transfers did not go as planned.

As a partial solution to this, if feasible, it is necessary to conclude contracts during the Vietnamese summer holiday and Tet holiday, or conclude contracts for longer than 2 years.

5. 2 Technology transfers for educational work and curriculum operation

The number of Japanese and English classes, as well as the beginning date of the IT Japanese class, has often been a point of discussion in curriculum amendment discussions. While this has from the beginning a problem, Japanese classes are not included in the JICA work TOR. Furthermore the contents of these classes do not fall under the scope of JBIC work.

However, in order to advance the Project as a whole, language classes must not be ignored. If a solid framework for management is not soon realized, implementing the curriculum will prove impossible, and the success of the entire Project is made difficult.

Furthermore, in the course of the 5th – 10th semester IT classes there are classes which no Vietnamese university has experience with. For this, in order for the curriculum to take hold in Vietnam it is necessary for technology transfers to occur, and an education expert to reside in Vietnam. In order for the curriculum provided by Japanese experts and Syllabus to take hold, it is necessary to carefully explain to C/Ps the teaching method, student evaluation, and syllabus reform on a daily basis. For this it is most desirable to have a Japanese expert here on a permanent basis.

5. 3 Evaluation of Technology Transfers

In order to evaluate the educational area technology transfers, a scientific approach to evaluating the classes must be thought of; and based on necessity Japan-side tests must be conducted. Based on the results of these, both sides must hold consultations, the curriculum amended, and these reflected in the Regular Course Syllabus and Educational Materials development technology transfers.