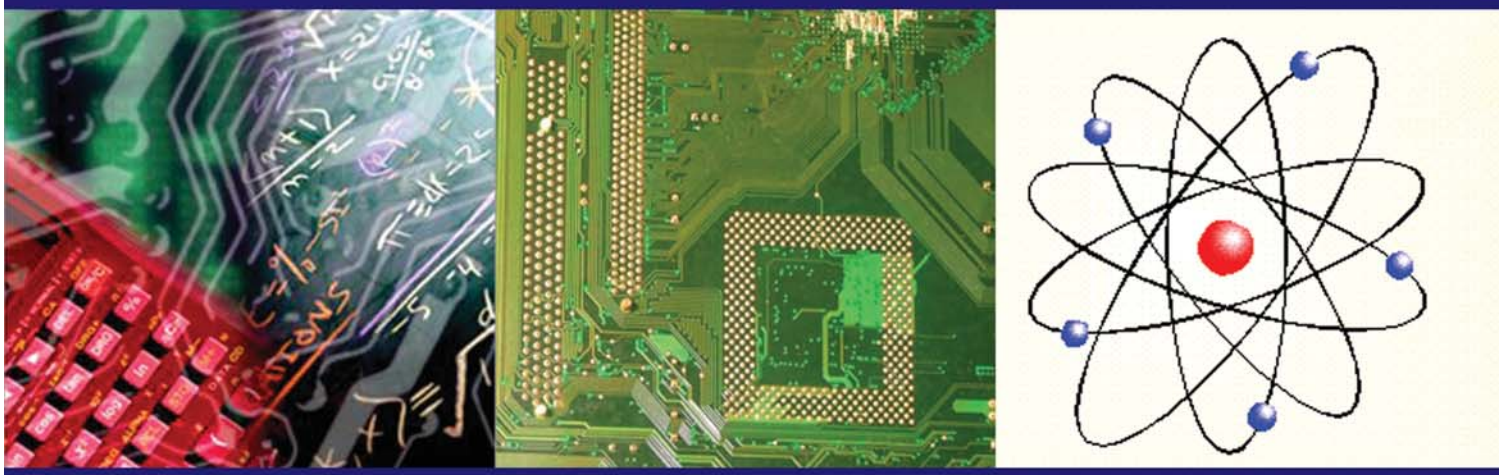
USA - VIETNAM

A Report
Presented to the Vietnam Education Foundation
by
the Site Visit Team of the National Academies of the United States

OBSERVATIONS ON UNDERGRADUATE EDUCATION IN COMPUTER SCIENCE, ELECTRICAL ENGINEERING, AND PHYSICS AT SELECT UNIVERSITIES IN VIETNAM

August 2006



VIETNAM EDUCATION FOUNDATION

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

Vietnamese Co-Sponsors:

MOET

SEAMEO RETRAC

VIETNAM NATIONAL UNIVERSITY - HOCHIMINH CITY
UNIVERSITY OF SOCIAL SCIENCES AND HUMANITIES

GDNC

OBSERVATIONS

ON UNDERGRADUATE EDUCATION

in Computer Science, Electrical Engineering, and Physics
at Select Universities in Vietnam

A Report
Presented to the Vietnam Education Foundation
by the Site Visit Teams of
the National Academies of the United States

August 2006

AUTHORS

Dr. Stephen W. Director
Senior Vice President and Provost
Drexel University

Dr. Philip Doughty
Associate Professor
Chair of Instructional Design Development and Evaluation
School of Education
Syracuse University

Dr. Peter J. Gray
Director of Academic Assessment
Faculty Enhancement Center
United States Naval Academy

Dr. John E. Hopcroft
Professor
Computer Science Department
Cornell University

Dr. Isaac F. Silvera
Thomas Dudley Cabot Professor of the Natural Sciences
Lyman Laboratory of Physics
Harvard University

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

This report was authored by a team of experts, who served as members of the site visit teams organized by the National Academies of the United States, and assisted by Dr. Nguyen Thi Thanh Phuong, VEF Consultant, and Dr. Lynne A. McNamara, Acting Executive Director, VEF. Dr. Phuong conducted extensive pre-site interviews, prepared the summary of the pre-site visit data, recorded and paraphrased the interviewees' responses, and organized this phase of the project from the beginning through the end, including the arrangements for all the interviews, meetings, and the site-visits by the two U.S. teams. Dr. McNamara provided extensive guidance during the development of the project and provided revisions and significant editing of preliminary and final documents. During the site visits, the U.S. experts provided their observations and recommendations through organized discussions, facilitated by Dr. McNamara. Based on these meetings and the many detailed notes, recordings, outlines, and group discussions, Dr. Phuong composed and compiled the final report herein for the National Academies on behalf of the U.S. experts.

Special gratitude is extended to all of the U.S. experts for their contributions, in particular, to Dr. Peter Gray, who provided important composing and editing at critical points in time, and to Dr. Gloria Rogers, who provided editing remarks and documents from ABET, Inc., incorporated into the Appendices. We thank the National Academies staff as well as the VEF staff in the U.S. and in Vietnam for all of their help in making this project a success. In addition, we express appreciation to the Public Affairs Section, U.S. Embassy – Hanoi, for authorizing the use of the bi-national logo, representing the United States and Vietnam, used on the cover of this report.

We especially wish to thank the four Vietnamese universities and all of the Vietnamese participants, who willingly and openly shared their experiences and opinions with the intent of helping higher education in Vietnam. Finally, and most importantly, we thank the Vietnamese co-sponsors of the project, namely, the Ministry of Education and Training (MOET), the University of Social Sciences and Humanities (USSH) of the Vietnam National University in Ho Chi Minh City (VNU- HCM), the Southeast Asian Ministers of Education Organization Regional Training Center (SEAMEO RETRAC) in Vietnam, and the Institute for Educational Research in Ho Chi Minh City (IER-HCMC) without whose endorsement and support the success of this project would not have been possible.

Recipients of the report are encouraged to share the information herein broadly in the hope that the observations presented will promote the further development of higher education in Vietnam.

Washington, D.C., August 25, 2006

H. Ray Gamble, Ph.D.
Director, Fellowships Office
National Research Council
National Academies

LIST OF ABBREVIATIONS

ABET	ABET, Inc. (formerly known as Accreditation Board for Engineering and Technology)
ADSL	Asymmetric Digital Subscriber Line
AUN	ASEAN University Network
CCD	Charge coupled device
CHEA	Council for Higher Education Accreditation
CHERA	Centre for Higher Education Research and Accreditation
CP	Chinh Phu (i.e., the Government)
CS	Computer Science
Dr. Sc.	Doctor of Science
EC2000	Engineering Criteria 2000
EE	Electrical Engineering
ESL	English as a Second Language
E & T	Electrical and Telecommunications
GOATs	Goals, objectives, activities, and tasks
GPA	Grade Point Average
GS	General subjects
HCMUNS	Ho Chi Minh City University of Natural Sciences
HCMUT	Ho Chi Minh City University of Technology
HUS	Hanoi University of Science
HUT	Hanoi University of Technology
IAES	International Academy of Electrotechnical Science
ID	Instructional development
IELTS	International English Language Testing System
IEM	Institute for Educational Management
IEP	Institutional Effectiveness Plan
IER-HCMC	Institute for Educational Research, Ho Chi Minh City
IT	Information Technology
MIT	Massachusetts Institute of Technology
MOET	Ministry of Education and Training
NA	The National Academies
OD	Organizational development
PC	Personal Computer
PD	Professional development
RMIT	Royal Melbourne Institute of Technology
SEAMEO RETRAC	The Southeast Asian Ministers of Education Organization Regional Training Center
SS	Specialized subjects
TOEFL	Test of English as a Foreign Language
U1	University 1 (pseudonym for case study university 1)
U2	University 2 (pseudonym for case study university 2)
U3	University 3 (pseudonym for case study university 3)
U4	University 4 (pseudonym for case study university 4)
U.S.	The United States

USSH	University of Social Sciences and Humanities
VIFOTEC	The Vietnam Fund for Supporting Technological Creations
VEEA	Vietnam Electrical Engineering Association
VEF	Vietnam Education Foundation
VND	Vietnamese Dong
VNU	Vietnam National University
VNU-Hanoi	Vietnam National University – Hanoi
VNU-HCM	Vietnam National University – Ho Chi Minh City

EXECUTIVE SUMMARY

The project entitled *Observations on Undergraduate Education in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam* was conducted under the auspices of the Vietnam Education Foundation (VEF), an independent U.S. Federal agency. This project, referred to as the VEF Undergraduate Education Project, was begun at the request of Prof. Dr. Nguyen Thien Nhan, presently Minister of Education and Training and, at the time of the request, the Vice Chairman of the People's Committee of Ho Chi Minh City. The project was conducted with the cooperation and support of the Ministry of Education and Training (MOET) and the co-sponsorship of the University of Social Sciences and Humanities (USSH) of the Vietnam National University in Ho Chi Minh City (VNU-HCM), the Southeast Asian Ministers of Education Organization Regional Training Center (SEAMEO RETRAC) in Vietnam, and the Institute for Educational Research in Ho Chi Minh City (IER-HCMC).

Through the auspices of the National Academies in the United States, leading American experts in assessment and instructional design and experts in the selected scientific and engineering fields joined this effort. The Undergraduate Education Project was a multiple case study, qualitative research project with the following phases: (1) Phase 1 from January to August 2006, to assess the current conditions of teaching and learning in computer science, electrical engineering, and physics at four select universities in Vietnam and to identify opportunities for change; (2) Phase 2 from September 2006 to August 2009, to assist in implementing changes; and (3) at the end of Phase 2, to produce models that can be adopted across academic fields and institutions.

Four Vietnamese institutions (two in Hanoi and two in Ho Chi Minh City) were selected to participate in this Undergraduate Education Project. Their names are kept in confidence to preserve their identity and respect their openness and honesty in participating in this study. This project is intended to help higher education leaders and managers in their efforts to advance curriculum, pedagogy, and evaluation in the sciences and engineering in Vietnam.

Site visits in May 2006 by two U.S. multidisciplinary expert teams led to the conclusion that there are five critical areas of Vietnam higher education in need of change: undergraduate teaching and learning, undergraduate curriculum and courses, instructors, graduate education and research, and assessment of student learning outcomes and institutional effectiveness. Not all of the issues identified are present in all of the programs, departments, and institutions that were visited. Nonetheless, the teams identified many good examples of solutions to the problems and issues that can provide models for others to adopt. Furthermore, the teams found very good students; dedicated, hard working, and competent junior and senior faculty members; and enthusiastic and forward looking administrators at all levels. They also found exciting research currently underway and the use of advanced technologies and equipment.

Specifically, the teams identified *Issues and Opportunities for Change* in relationship to the five critical areas and offered general recommendations for consideration at the national level. The following list highlights the primary issues and opportunities as this section comprises an essential part of the report. The bulleted items under each area briefly describe the major issues that were identified and the potential

solutions suggested by the site visit teams related to these issues. Please note that the conclusions reached by the U.S. expert teams are specific to the situations that they evaluated and may not be universally true in all cases. Also, please note that the issues are purposefully not listed in any order of priority, and thus are not enumerated.

Undergraduate teaching and learning

- Ineffective teaching methods: lectures, presentation of factual knowledge, rote memorization, little use of homework, not much faculty-student interaction.
  Potential solutions include incorporating active learning strategies, requiring graded homework, emphasizing conceptual learning or higher order learning, and establishing Centers of Teaching and Learning Excellence.
- Inadequate facilities and resources.
  Potential solutions include modernizing classrooms, libraries, and laboratory facilities; and providing resources (people and equipment) to support teaching and learning.

Undergraduate curriculum and courses

- Too many courses (over 200 credits to graduate).
  Potential solutions include giving more autonomy to institutions in terms of curriculum content and sequencing so that departments can consolidate courses in order to decrease the overall number of credits to graduate.
- A large number of requirements and few choices.
  Potential solutions include increasing flexibility and providing more elective courses.
- Out-of-date content of individual courses and the overall curriculum, which are not at the same level of top universities worldwide. In particular, not enough concepts and principles are taught and too much emphasis is placed on factual knowledge and skills.
  Potential solutions include emphasizing higher order thinking skills (application, analysis, synthesis, and evaluation) in instruction and then testing for higher order thinking skills.
- An imbalance between theoretical courses (concepts and principles with too much emphasis on factual knowledge) and applied/practical courses (laboratory or practicum experiences).
  Potential solutions include developing more applied hands-on experience, practical applications, exercises, and projects.
- Lack of common or professional skills (team work, oral and written communication in English, project management, problem solving methods, pro-active initiative-taking, life-long learning).
  Potential solutions include providing English language instruction and providing opportunities to develop skills through course activities and in real-life settings (work-study, internships, and practicum experiences).
- Lack of flexibility to transfer between majors.
  Potential solutions include developing articulation agreements between majors within the same institution and between institutions.

- Courses and curricula are not guided by explicit statements of expected student learning outcomes.
  Potential solutions include providing expectations for, and assistance in, developing student learning outcomes as the basis for program curricula and course syllabi.

Instructors

- Lack of qualified teachers.
  Potential solutions include increasing research-oriented universities and having top universities produce undergraduate instructors for other Vietnamese universities.
- Low level of academic preparation of teaching faculty.
  Potential solutions include providing advanced degree opportunities in Vietnam and abroad.
- Lack of skills of faculty in modern teaching practices and research.
  Potential solutions include conducting professional development programs in pedagogy and research skills.
- Lack of up-to-date knowledge by faculty in their fields with regard to curriculum and course content.
  Potential solutions include providing access to recent scholarly resources, up-to-date curricula, syllabi, and related learning materials on the Web.
- Faculty overworked and underpaid for an acceptable teaching load and, therefore, lack the time necessary for teaching preparation, availability to students, and research.
  Potential solutions include reducing teaching load; hiring and paying instructors "full-time" with understanding that they will work 40 hours per week at their home institution with a balance of teaching, research, and service; and increasing time for research by providing support and assistance in the form of teaching assistants as graders, research assistants, and clerical assistants.
- No incentives for faculty to upgrade teaching skills, courses and curricula, and research ability since promotion and salary increases seem to be based on teaching load and seniority, not on merit, performance, or conducting research.
  Potential solutions include establishing merit-based reward system; rewarding and recognizing teachers who make improvements in teaching, learning, and research.

Graduate education and research

- Little opportunity for Ph.D.s, who have studied abroad, to pursue their research or apply the teaching methods learned abroad when they return to Vietnam.
  Potential solutions include hiring Ph.D.s, who have studied abroad, when they return to Vietnam to provide leadership in disseminating the use of the discipline knowledge, teaching methods, and research skills; providing adequate graduate library resources and access to recent scholarly resources on the Web; upgrading laboratories; and offering support for international conference attendance.
- Academic inbreeding, thus inhibiting a dynamic research environment.
  Potential solutions include employing graduates from other universities.

- Separation of research institutes and laboratories from teaching departments, thus limiting the opportunities for many faculty members to engage in research activities.
    Potential solutions include reorganizing the structure and relationships of the universities, research institutes, and laboratories so that more research is conducted in universities by teaching faculty and graduate students.

Assessment of student learning outcomes and institutional effectiveness

- Lack of clearly articulated and coordinated student learning outcomes at the institutional, departmental, program, and course levels.
    Potential solutions include setting expectations for the creation and use of student learning outcomes at the institutional level, basing program curricula on general student learning outcomes, including specific student learning outcomes in course syllabi, and providing support for development and implementation of student learning outcomes through Centers of Teaching and Learning Excellence and University Assessment Centers.
- Institutional effectiveness not evaluated in terms of student learning. As a result, faculty have little motivation since few incentives or rewards are given for change.
    Potential solutions include holding institutions accountable for improving student achievement as part of institutional accreditation; and basing resource allocation for institutions, departments, and programs, at least in part, on student learning outcomes.
- Program and course quality not based on evaluation of student learning.
    Potential solutions include developing and implementing a system of program review based in part on the achievement of student learning outcomes in individual courses and in the program as a whole, as well as developing and implementing a system for course evaluation and annual review of faculty to provide feedback on teaching and learning for the purpose of improvement.
- Lack of institutional research infrastructure at university level.
    Potential solutions include creating offices of institutional research, providing training for academic administrators responsible for research functions, and providing electronic resources for tracking, analyzing, and reporting student data including enrollment, progress toward degree, graduation, and learning outcomes.

Recognizing that MOET has a significant role in relationship to Vietnamese universities, the U.S. expert teams also identified broader, more general recommendations, suggesting that MOET might want to consider the following:

- ❖ How to expand the university education system throughout Vietnam, with appropriate distribution across the country, so as to increase accessibility to more high school students to obtain a university education. The current 255 universities do not meet the demand.
- ❖ Ways to prepare highly trained future faculty by empowering the current major universities to produce excellent teachers in sciences and technology for the other Vietnamese universities.
- ❖ Options for making a strategic decision to fund fundamental and basic research in universities to ensure future generation of scientists.

- Possibilities for providing more local institutional autonomy and flexibility to enhance quality and to keep curricula up-to-date.
- How to develop the accreditation process to include assessment of student learning outcomes and to work with local institutions to develop or enhance the program review process for academic departments.
- Ways to develop a mechanism to ensure that resources distributed are based on merit and quality.
- How to evaluate the level of quality of universities across Vietnam, based on student learning and research, and to establish a mechanism to assist those institutions at a lower level of quality to rise to the highest possible level.
- How to enable access to the latest public information for all universities via high speed Internet connections to electronic journals and data bases.
- Ways to build instructor capacity in content, teaching methods, interaction with students, and research through systematic professional development efforts.
- How to reorganize the faculty workload to give instructors more time for preparation, interaction with students, and research.
- Ways to revise and reorganize the MOET mandated curriculum so that students spend more time on learning relevant content and on integrating course information.
- How to improve teaching methods in high school to better prepare students for a new, more demanding, post-secondary education.
- Ways to help high school students to be prepared to choose a major while still in high school.

In addition to *Issues and Opportunities for Change*, this report includes the following sections: *Discipline Specific Observations*, that presents brief comments on the specific areas of computer science, electrical engineering, and physics; *Scenarios for Change*, that presents scenarios at the national, regional, institutional, and programmatic levels; and *Conclusions*, in which the educational importance of this Undergraduate Education Project is discussed. The report also includes extensive appendices providing more details on various aspects of the project.

OVERVIEW

The project entitled *Observations on Undergraduate Education in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam* was conducted under the auspices of the Vietnam Education Foundation (VEF), an independent U.S. Federal agency. Through its Fellowship program, VEF provides financial support for Vietnamese nationals to receive graduate training in the U.S. in science, engineering, technology, and public health. With the Fellowship program and its Seminars and Projects program, VEF helps to build capacity in science and technology in Vietnam.

The VEF Undergraduate Education Project was begun at the request of Prof. Dr. Nguyen Thien Nhan, presently Minister of Education and Training and, at the time of the request, the Vice Chairman of the People's Committee of Ho Chi Minh City. The project was conducted with the cooperation and support of the Ministry of Education and Training (MOET) and the co-sponsorship of the University of Social Sciences and Humanities (USSH) of the Vietnam National University in Ho Chi Minh City (VNU-HCM), the Southeast Asian Ministers of Education Organization Regional Training Center (SEAMEO RETRAC) in Vietnam, and the Institute for Educational Research in Ho Chi Minh City (IER-HCMC).

Through the auspices of the National Academies in the United States, leading American experts in assessment and instructional design and experts in the selected scientific and engineering fields joined this effort. The U.S. experts represented ABET, Inc. (formerly known as the Accreditation Board for Engineering and Technology); Cornell University; Drexel University; Harvard University; Syracuse University; and the Faculty Enhancement Center of the United States Naval Academy (Appendix 1 – *List of U.S. Experts*).

The Undergraduate Education Project was a multiple case study, qualitative research project with the following phases: (1) Phase 1 from January to August 2006, to assess the current conditions of teaching and learning in computer science, electrical engineering, and physics at four select universities in Vietnam and to identify opportunities for change; (2) Phase 2 from September 2006 to August 2009, to assist in implementing changes; and (3) at the end of Phase 2, to produce models that can be adopted across academic fields and institutions (Appendix 2 – *Project Description*). Four Vietnamese universities were selected to participate in this project because of the following characteristics: (a) their exemplary undergraduate programs in computer science, electrical engineering, and/ or physics; and (b) the high number of VEF Fellows from these universities' programs.

The following three research questions guided the data collection for Phase 1:

1. What is the current status of teaching and learning in Vietnamese universities in the selected disciplines, namely, computer science, electrical engineering, and physics?
2. What are the opportunities for improvement?
3. What are the potential changes that can bring about the improvements?

For the purpose of triangulation, various data collection techniques (reviewing documents, interviewing, and observing) were used. The weaknesses of one data collection technique were counterbalanced by the strengths of the others (Newman and

Bentz, 1998). Data were collected by reviewing online and other archival documents from the four universities, as well as from the Web site of MOET. The interviews were conducted with various stakeholders, including senior administrators (at both the university and the department level), faculty members, staff members, students (undergraduate and graduate), alumni, employers, and MOET officials. Observations included touring campus facilities (e.g., labs, libraries, student and faculty areas) and visiting classrooms (e.g., to see the classroom set up, availability of teaching aids, and potential for student-teacher interactions).

Two multidisciplinary teams of U.S. experts visited the four Vietnamese participating universities in May 2006 where data from interviews, observations, documents, and archival materials were gathered (Appendix 3 – *Undergraduate Education Project Team Members' Meeting Schedules*; Appendix 4 – *List of Participants and Contributors*). Before the May visits, the U.S. team members had many questions about Vietnamese higher education in general and about the specific fields of study to be evaluated in particular. Therefore, prior to the visits, extensive information was gathered by the VEF Consultant, Dr. Phuong Nguyen, to prepare the U.S. team members for their visits (Appendices 5, 6, and 7 – *Pre-Site Visit Interviews: Questions for Administrators, Faculty Members, and Students*; Appendix 8 – *Summary of Pre-Site Visit Data*). The pre-site visit data were confirmed by and large through the observations and interviews by the visiting U.S. expert teams.

The purpose of the on-site interviews in May 2006 by the visiting expert teams was multifold: to meet and interact directly with Vietnamese administrators, faculty, staff, students, alumni, and employers; to learn about current conditions and opportunities for enhancing teaching and learning in computer science, electrical engineering, and physics at the four select Vietnamese universities; and to identify what might be required in order to take advantage of these opportunities (Appendix 9 – *Interview Protocol for University Site Visits*, Appendix 10 – *Interview Questions for Employers*).

The constant comparative method was used to analyze the data. Interviews, observations, field notes, and documents during the data collection phase were analyzed continually. This approach helped to identify gaps in the data and to make adjustments as necessary. Merriam (1998) states that "the development of categories, properties, and tentative hypotheses through the constant comparative method is a process whereby the data gradually evolve into a core of emerging theory" (p. 191). During the visits, the team members met and discussed their observations and findings on a daily basis.

As part of the Undergraduate Education Project, five other activities were conducted. First, the paper entitled *The Role of Quality Assurance and Accreditation in Stimulating and Sustaining Higher Education Innovation in Vietnam* was presented at the national conference on *Quality Assurance in Higher Education Innovation* organized by the Vietnam National University - Ho Chi Minh City on March 31, 2006.

Second, VEF, MOET, and SEAMEO RETRAC hosted full-day public panel discussions on evaluating higher education and its academic programs and on building relationships between industry and academia. The same topics were addressed both in Ho Chi Minh City on May 12 and in Hanoi on May 18, 2006. The public panel discussions were attended by Vietnamese professionals involved in the evaluation of various aspects of higher education; by faculty members and administrators of Vietnamese universities and colleges that offer computer science/information technology, electrical engineering,

and physics programs; and by industry representatives in Vietnam (Appendices 11 and 12 – *Public Panel Discussions in Ho Chi Minh City and Hanoi*).

Third, four research colloquia, entitled *Current "Hot" Areas of Research in Physics,* were conducted at the four participating universities. Fourth, the second visiting team was invited to make two presentations at the Vietnamese regional conference on *Developing Curriculum for Training Programs that Use a Credit Transfer System and the Internet,* hosted by the Institute for Educational Research, Ho Chi Minh City (IER-HCMC) on May 26, 2006.

Finally, at the request of specific universities visited, a template was developed to facilitate and optimize the visits to the United States by Vietnamese university teachers and administrators associated with the Advanced Programs Project, initiated by MOET (Appendix 13 – *Recommendations for Vietnam University Advanced Program Site Visitors to Exemplary Programs in the U.S.*).

ORGANIZATION OF THE REPORT

The organizing scheme for presenting the findings and recommendations of the visiting U.S. expert teams is as follows. In the first section, entitled *Issues and Opportunities for Change*, the issues and recommendations of the teams are discussed. They are organized around five topic areas: (1) undergraduate teaching and learning; (2) undergraduate curriculum and courses; (3) instructors; (4) graduate education and research; and (5) assessment of student learning outcomes and institutional effectiveness. Under each topic area, the issues are presented, followed by the opportunities for improvement, which are organized according to the following areas: professional development, instructional development, and organizational development. After the discussion of the five topic areas, this section concludes with general recommendations regarding opportunities for change that might be considered at the national level.

The teams recognized that not all of these issues were present in all of the departments, programs, and institutions that were visited. Nonetheless, the teams identified many good examples of solutions to the problems and issues that might provide models for others to adopt. On an optimistic note, the teams found very good students; motivated and hardworking junior and senior faculty members; exciting research currently underway; and some use of advanced technologies and equipment. In fact, the teams met many teachers and administrators at all levels, who eagerly and sincerely wish to bring Vietnamese higher education to a level of quality that could be recognized professionally by internationally acclaimed organizations and recognized academically by top universities world-wide.

In addition, recent events suggest that there is a great commitment to upgrading higher education in Vietnam. First, the Undergraduate Education Project was initiated at the request of Prof. Dr. Nguyen Thien Nhan, presently Minister of Education and Training and, at the time of the request, the Vice Chairman of the People's Committee of Ho Chi Minh City, and was undertaken with the cooperation and support of MOET. Second, the recent remarks, which were made by Deputy Prime Minister to the Rectors of the Vietnamese universities regarding the urgent need for the leading Party, the State, the leadership of MOET, and Rectors of all Vietnamese universities and colleges "to change [their] thinking in order to find out directions for creativity," (Thu Hong, 2006, p. 1)

provide a blueprint for improving higher education in Vietnam. Third, MOET identified ten Advanced Programs at nine select Vietnamese universities and has an accreditation process underway. Finally, in a recent visit to Vietnam, Microsoft founder, Bill Gates, called for investing in higher education as a way to transform the Vietnamese economy, saying, "Opportunity is determined not by region, but by the educational investment that you make" (Thien Y, 2006, p. 1).

In addition to the general discussion of issues and opportunities found in the first section of the report, the second section, entitled *Discipline Specific Observations*, includes specific observations, made by the U.S. subject area specialists on the teams, for the areas of computer science, electrical engineering, and physics.

The third section of the report, entitled *Scenarios for Change,* presents scenarios of programmatic solutions to the various problems and issues based on the opportunities for improvement. These scenarios are informed by eight general conditions that facilitate change, which are described at the beginning of this third section. These conditions are critical to creating sound plans and ensuring that changes are eventually institutionalized. In many cases, the programmatic solutions build on current efforts by Vietnamese educators. These scenarios integrate recommendations presented in the first section and provide guidance for the development and implementation of potential pilot projects involving U.S. and Vietnamese institutions and organizations. It is hoped that these pilot projects might provide models for advancing Vietnamese higher education in all academic disciplines and at all levels.

Finally, in the fourth section, entitled *Conclusions*, the educational importance of this Undergraduate Education Project is discussed.

I. ISSUES AND OPPORTUNITIES FOR CHANGE

The teams recognize that many of the issues or problems identified under the five topic areas are highly interconnected. For example, a major problem regarding undergraduate teaching and learning is that the primary teaching method consists of lectures that are two to four 45-minute periods long, typically focusing only on the presentation of factual knowledge while students passively take notes. The learning that is generally expected of students is rote memorization of the factual knowledge, which is tested through a final exam. Typically, there is little use of homework to reinforce the lecture material or to practice the application of the information provided. Thus, the long factual lectures with little, if any, required homework, intertwine to affect the level of student interest and learning outcomes.

The factors that cause these problems are many, including the following: cultural expectations regarding the relationship between teachers and students; traditional definitions of teaching methods; traditional curricula, courses, and content; the large number of courses/credits that students take each semester and that are part of the undergraduate curriculum (approximately 200 credits); the way that faculty income is determined (fixed low salary plus additional income based on the number of credits of instruction, which reportedly motivates teachers to teach 20 hours or more per week at

one or more institutions); and the way that university and department[1] budgets are set. In addition, curriculum and course development as well as program review and methods of evaluation do not emphasize institutional effectiveness in terms of student learning outcomes and in terms of the continuous improvement of teaching and learning. Therefore, for the teaching faculty, there is little motivation and there are few incentives or rewards for change. If real and lasting changes are to be made in Vietnamese higher education, then all of these factors must eventually be taken into account in order to address the issues and take advantage of the opportunities described next.

The following discussion of each of the five topic areas includes, first, brief descriptions of the importance of the issues (or problems) observed in that area and, second, opportunities (or recommendations) for improvement through professional, instructional, and organizational development. Because of the interrelationship of the different areas, the lists of issues and opportunities may be redundant. Please note that the enumeration is not meant to be a listing in any order of priority.

Undergraduate Teaching and Learning

The primary area that the teams identified concerns the content and methods of undergraduate teaching and learning in Vietnamese universities. This area is the foundation of the higher education enterprise and, as such, improvement is fundamental to any effort to create research universities in Vietnam that meet a level of quality recognized internationally by leading professional organizations and by top level universities world-wide.

Issues

Specifically, the following issues or problems were identified:

1. Ineffective teaching methods, which have too high a dependence on lectures and little use of active learning techniques (e.g., graded homework and class discussions), result in not much interaction between faculty and students in or outside of the classroom. Many faculty do not seem to hold office hours.
2. An overemphasis on rote memorization of factual knowledge and a lack of emphasis on conceptual learning or higher order learning (e.g., analysis and synthesis) result in shallow versus deep student learning.
3. Student learning is passive (listening to lectures, taking notes, and reproducing memorized information on exams).
4. Most undergraduate classes are too large.
5. Too many students do not attend class.

[1] The term "Faculty" is used in Vietnamese universities to refer to the equivalent of a "Department" in U.S. higher education. The term "Department" is used in Vietnamese universities to mean the equivalent of a "Major" in U.S. higher education. The Vietnamese do not use the term "faculty" to refer to their teaching staff. For the purpose of this report in English, the generally accepted terms used by U.S. universities will be used in the body of the report.

6. Students spend too much time in classes each day and take too many courses per semester with no time to internalize the material (no deep learning and comprehension).
7. After classes most students have a job and work to earn money, thus they do not have much time to do any homework that might be assigned.
8. A lack of understanding exists on the difference between *education* (general preparation for personal and professional life-long learning) and *training* (specific preparation for task completion).
9. A lack of emphasis exists on developing professional or common skills such as team work, oral and written communication in English, project management, problem solving methods, initiative-taking, life-long learning, etc.
10. A lack of understanding exists about the relationship between using contemporary teaching methods and the quality and extent of student learning.
11. A lack of faculty development is apparent in:
    a. pedagogy (i.e., teaching and learning methods and materials);
    b. instructional design and development for improving courses and curricula;
    c. professional advancement (e.g., graduate education).
12. Few written or electronic resources or professional support staff are available to provide training in up-to-date teaching and learning approaches.
13. Books, lecture materials, and software are out-of-date.
14. Classrooms facilities are poor (high noise and low comfort level), and laboratory facilities and equipment for undergraduate instruction and research are inadequate or non-existent.
15. Library facilities and resources are inadequate (i.e., insufficient physical space, inadequate printed and electronic books and journals, limited access to high bandwidth Internet, and too few computers).
16. Lack of respect for intellectual property is apparent for both written material and software.

Opportunities for the Improvement of Undergraduate Teaching and Learning

Recommendations for improving undergraduate teaching and learning are presented in terms of professional development (PD), instructional development (ID), and organizational development (OD).

Professional Development

Consider ways to provide support for the improvement in teaching and learning in the form of:

1. the establishment and funding of national, regional, and/or local centers of teaching and learning excellence with experienced staff and both written and electronic resources to provide pedagogical, instructional, and professional development support (see also ID);

2. targeted workshops and other training activities by recognized professionals, who have general skills in pedagogy and instructional design and development as well as specific expertise related to teaching particular content areas (e.g., computer science, electrical engineering, and physics); and
3. opportunities to go abroad to observe first hand the use of active learning and other effective pedagogical practices (see also the *Instructors* section below).

Instructional Development

Consider the best means to:

1. Raise the level of learning from rote memorization of factual information to higher order thinking abilities, that is, comprehension, application, analysis, synthesis, and evaluation.
2. Incorporate active learning strategies into class discussions, for example, questions and answers, group work, projects, and graded homework.
3. Require graded homework that is connected with the ideas in class; that is regular; and that is used to provide feedback on student learning. For example, require two hours of graded homework for one hour in class.
4. Incorporate homework grades, attendance, and class participation into a final grade.
5. Make instructional materials Vietnam-relevant and current; coordinate the course content/materials package (i.e., lecture notes, PowerPoint, class activities, tests, lab work); customize to local conditions and make available to students electronically.
6. Develop practical applications, exercises, projects, laboratory experiments, internships, and other opportunities for students to get training for specific task completion.
7. Evaluate student performance during the term, not just at the end of the term with a final exam.
8. Reduce teaching loads and provide teaching assistants as graders. Teaching assistants would be useful in reducing the load on professors for grading of homework, midterm, and final exams.
9. Provide general electronic access for all instructors in order to update curricula, syllabi, and related learning materials on the Web and through the Massachusetts Institute of Technology (MIT) or other publicly available open courseware systems (see also OD).

Organizational Development

Consider the best ways to:

1. Reduce the number of credits and, therefore, the number of courses taken by students and taught by instructors each semester.
2. Increase flexibility and provide more elective courses in the curriculum (see also the *Undergraduate Courses and Curricula* section).
3. Give students an opportunity to change majors after they have enrolled in a program.

4. Update lab and classroom facilities. Institutional facility audits would be required to assess the gap.
5. Reorganize and reduce class sizes in order to facilitate student participation and active learning methodologies. Establish a system to monitor student attendance; consider attendance part of the final grade.
6. Require instructors to hold office hours. (This assumes that teachers have office space and the time to meet with students outside of class).
7. Protect intellectual property rights by getting country-wide copyright approval and by educating students and instructors about professional ethics (i.e., the importance of copyright and academic integrity, and the understanding of what constitutes plagiarism).
8. Encourage instructors to work with colleagues on their own campus, at other institutions in Vietnam, and in the region in order to share course materials.
9. Establish interlibrary loans within Vietnam and the Southeast Asian region.
10. Provide up-to-date printed and electronic resources (books, journals, etc.) for faculty and students in order to facilitate teaching, learning, and research.
11. Provide adequate access to high speed/bandwidth Internet and provide adequate numbers of up-to-date computers for instruction.
12. Create a program of donations and gifts, of institutional advancement, and of institutional development investments from Vietnam and from the U.S. and other countries to support the improvement of teaching and learning.

Undergraduate Curriculum and Courses

The content, structure, and methods involved in courses and curricula make up the second area of concerns and issues that the teams identified. There are too many courses in the curriculum (approximately 200 credits). Most of the courses include too many topics and are out-of-date. Furthermore, many courses, while even excluding political courses, are not directly relevant to the field of study. Teaching and learning are adversely affected. As a result, current undergraduate degree programs do not prepare graduates at the same level as students are prepared at other major international institutions.

Issues

More specifically, the following concerns or issues were identified:

1. The undergraduate curriculum requires an excessive number of courses (6-8) and credits (around 25) per semester, and as a result, students cannot attain in-depth knowledge. This presents a heavy workload for teachers and students. Students cannot master concepts and content, cannot internalize principles, and cannot complete homework. Teachers have no time for course and class preparation or for feedback to students.
2. Typically, the number of credits required for graduation at top level institutions of higher education outside of Vietnam are much lower than 200, and generally number about 120 units for an undergraduate degree. MOET has extensive control over the content of the first two years; for example, “technical drawing” is

required of all engineering students. This is a skill that should be acquired prior to university enrollment or through other courses, and it would be better if it is not designated as a course in itself.

3. Often a disconnection exists between related courses. Furthermore, proper sequencing is not apparent for the entire undergraduate curriculum (e.g., engineering courses are taught too late).
4. Many courses in the curriculum are unrelated to the given subject or discipline.
5. The content of individual courses and the overall curriculum are out-of-date and not at the same level of top universities world-wide. In particular, not enough concepts and principles are taught and too much emphasis is placed on factual knowledge and skills.
6. Practical applications focus on low level tasks such as doing programming and solving exercises to get the correct answer, rather than on critical thinking abilities such as analysis, synthesis, evaluation, and problem solving.
7. Practical lab experiences are inadequate due to inadequate laboratory curriculum, facilities, and equipment. There is an imbalance between theoretical courses and laboratory or practical courses.
8. The undergraduate curriculum does not offer adequate English language preparation (including writing, reading, speaking, and listening), which is critical since English has become the international language of science and much of the important research literature is in English.
9. Preparation is lacking in common or professional skills such as oral and written communication and presentation skills, team work, problem solving, project management, critical thinking, and self-confidence.
10. The unique nature of the curriculum in each major means that students are unable to transfer between majors after they have enrolled in a program.
11. The courses and overall undergraduate curriculum are not guided by explicit statements of expected student learning outcomes.
12. Regular opportunities do not exist for students to evaluate courses and the overall curriculum with regard to their perceived learning achievement.

Opportunities for the Improvement of Undergraduate Curriculum and Courses

Opportunities for improving the undergraduate curriculum and courses are presented in terms of professional development (PD), instructional development (ID), and organizational development (OD).

Professional Development

Consider the best means to:

1. Provide instructional design and development support from recognized experts to help teachers update the content, structure, and pedagogical methods of courses and curricula (also see the *Undergraduate Teaching and Learning* section above).
2. Send instructors abroad to study with exemplary teachers in their discipline (also see the *Instructors* section below).

Instructional Development

Consider the best ways to:

1. Provide students with more applied hands-on experience and practice in the form of integrated laboratory exercises, design-and-build projects, and problem-based learning.
2. Engage industry in project-related experiences, internships, and co-op programs.
3. Use these opportunities (in items 1 and 2 above) for the development of oral and written communication and presentation skills, team work, problem solving, project management, critical thinking, and the development of self-confidence.
4. Have students evaluate courses as a normal practice.
5. Use student and industry feedback on courses and on specific educational experiences to help guide improvement efforts.

Organizational Development

Consider the best means to:

1. Consolidate courses in order to conform with recognized credit systems of top universities world-wide, typically consisting of 120 to 130 credits for an undergraduate degree, which will reduce the number of courses that students take and that instructors teach each semester, and thus reduce their workloads.
2. Consolidate and reduce the number of courses without creating financial disadvantages for teachers (see the *Instructors* section below).
3. Modernize laboratory facilities and equipment so that it is possible to develop experiments, exercises, and projects that promote higher order thinking and problem solving skills.
4. Allow MOET to be less prescriptive on the number and type of courses and to give more autonomy to institutions in terms of curriculum content and sequencing (e.g., allow engineering to be introduced earlier in the curriculum).
5. Develop articulation agreements among programs and/or coordinate curricula so that students can transfer between majors after they have enrolled in a program.

Instructors

The quality of the teaching staff is the third area that the teams identified. While the teams found many dedicated, hard working, and competent instructors, overall their background and experience did not prepare them to develop and implement a modern undergraduate curriculum or to conduct research that measures up to the same level of that being conducted at top universities worldwide

Issues

More specifically, the following concerns or issues were identified:

1. The teaching staff had a low level of academic preparation due to the focus on the memorization of factual knowledge (theory) in undergraduate education and the lack of modern research facilities for them as graduate students. Specific issues that surfaced include:
    a. Instructors with Bachelor's degrees are responsible for labs. (They have little or no research experience). University administration might consider placing laboratories under the supervision of higher level faculty members.
    b. Instructors with limited graduate education because of the level of their own master's degree are responsible for theoretical lectures on factual knowledge, resulting in their delivering an unsophisticated understanding of the material.
    c. Instructors with doctorates are not involved in research and, therefore, are not able to mentor graduate students or bring their research into the undergraduate classroom.
2. Instructors lack up-to-date knowledge in their field with regard to curriculum and course content, teaching practices, and research. Therefore, there is a lack of qualified teachers who can modernize undergraduate teaching and learning methods, curricula, and facilities, as well as graduate education and research.
3. Academic inbreeding within institutions inhibits cross-fertilization of knowledge since undergraduates from the same institution are selected as laboratory assistants, master's degree students, doctoral students, instructors, and professors.
4. Faculty are overworked and underpaid (teaching up to 20 contact hours or more per week plus outside jobs in order to made a living) and, thus, have heavy teaching loads. Therefore, they lack the time necessary to upgrade teaching skills, courses and curricula, and research ability. Additionally, no incentives are provided to encourage them to improve in these areas. Furthermore, because of the teaching load, faculty are not available to students.
5. Instructors are passive and may be resistant to considering innovation/change since this requires their time and effort.
6. Full-time teachers lack support and assistance as demonstrated in:
    a. little or no professional development support for instructors as teachers or scholars;
    b. few human resources available to instructors such as teaching and/or research assistants, secretaries, and instructional development experts; and
    c. out-of-date and poorly equipped facilities both for teaching (classrooms) and research (laboratories).
7. There are inadequate library holdings and little or no access to other scholarly resources such as text books, e-journals, international journals, and electronic data bases.
8. Promotion and salary increases are based on seniority, not merit or performance.

9. Teaching staff are rewarded financially primarily for the amount of teaching and not for conducting research.
10. Some new faculty coming back from abroad are frustrated with the slow pace of change.
11. Faculty are not aware of the visions of higher administration for improving the university and undergraduate education.
12. Faculty are not involved in significant curricular decisions and other related matters.
13. Faculty are not evaluated and, therefore, do not get feedback on their performance.
14. Faculty are not fully aware of procedures and steps of the reward system (e.g., promotion, recognition, and tenure) or of the consequences of their performance.

Opportunities for the Improvement of Instructors

Opportunities for improving the quality of instructors are presented in terms of professional development (PD), instructional development (ID), and organizational development (OD).

Professional Development

Consider the best means to:

1. Help teaching staff get advanced academic preparation by offering:
    a. focused professional development programs in Vietnam in specific disciplines and subjects;
    b. short term study abroad programs (i.e., 1-6 months) or sabbaticals in specific disciplines and subjects so that teachers can experience first hand exemplary courses taught at top level international institutions by professors recognized in their profession;
    c. opportunities in Vietnam to obtain advanced degrees in their discipline; and
    d. study abroad opportunities to obtain advanced degrees, such as VEF Fellowships.
2. Support teachers to attend professional conferences as both presenters and participants.

Instructional Development

(See also the *Professional Development* sub-section under the section on *Opportunities for the Improvement of Undergraduate Teaching and Learning.)*

Consider ways to:

1. Help instructors learn how to design and teach courses that emphasize student learning at the conceptual level.

2. Help instructors learn how to develop and use interactive teaching and active learning methods so that they can present course material in different ways, using various perspectives.

Organizational Development

Consider the best ways to:

1. Reduce and standardize teaching loads and increase time for research by:
    a. paying teachers a total combined salary/income that adequately supports them to work at their home institution for a full work week of approximately 40 hours per week of professional responsibilities, focusing on teaching, research, and service at one single institution;
    b. revising the compensation system so that teachers do not require additional jobs outside their home institution and so that the number of courses taught would be independent of salary/income; and
    c. changing the promotion and reward system so that faculty pay and other financial rewards are based on conducting research and service (advising students, instructional development, and faculty governance) in addition to teaching. In many countries such as the U.S., faculty are paid for teaching, but hired or promoted for their research performance. Promotion would bring a higher salary.
2. Set expectations and provide administrative and financial support and recognition for teachers who make improvements in teaching, learning, and research.
3. Develop programs for instructor development and evaluation as the basis for promotion beyond lecturer, in which the department chair conducts an annual evaluation that focuses on performance and is related to increases in merit base pay. The program ideally would use criteria related to evidence of student learning outcomes, course evaluations by students, number of publications, conference presentations, course development, research funding, effective links with industry, and service to the department and institution.
4. Produce a faculty handbook with clearly defined procedures and steps for the reward system (e.g., promotion, recognition, and tenure).
5. Create favorable working conditions to attract and retain new ambitious, dedicated, and well-trained faculty coming back from studying abroad.
6. Provide teaching assistants, research assistants, and clerical assistants to full-time teachers.
7. Provide resources to modernize undergraduate research labs and classroom facilities through additional investments by the government, business, industry, and international organizations.
8. Provide personal computers with high-speed Internet access to all instructors.
9. Recruit graduates for teaching positions from other universities.
10. Foster interactions/collaborations between departments. One result would be to avoid unnecessary duplication of courses. For example, there is significant overlap in some courses in the Faculty of Electrical Engineering and the Faculty of Telecommunications and Electronics.
11. Communicate more fully and dynamically the vision and rationale for change to faculty and other stakeholders and engage teaching staff in developing the vision.

12. Provide up-to-date scholarly resources in the form of:
    a. current textbooks for individual use and for students to use in courses;
    b. access to e-journals and electronic data bases for all instructors; and
    c. leading/seminal books in libraries.

Graduate Education and Research

While not the main focus of this project, the quality of graduate education and research has a direct impact on the quality of undergraduate teaching and learning, courses and curricula, and teaching staff.

Issues

More specifically, the following concerns or issues were identified:

1. Poor preparation of graduate level teaching staff and students can be related to an overemphasis on the memorization of factual knowledge (theory) in undergraduate education.
2. Graduate teachers appear to lack up-to-date knowledge in their field as well as in the latest curriculum and course content, teaching practices, and research. Therefore, there is an apparent lack of qualified professors to modernize undergraduate and graduate education and research programs.
3. Modern research laboratory facilities are lacking for professors and graduate students. Those that are available seem to be largely out-of-date and poorly equipped.
4. Few, if any, research laboratory assistants or technical and clerical support staff are provided for graduate instructors.
5. Graduate level library holdings are inadequate and there is little, if any, access to other scholarly resources such as text books, e-journals, and electronic data bases.
6. There does not seem to be sufficient support for international conference attendance.
7. Little opportunity seems to exist for Ph.D.s who have studied abroad to pursue their research or apply the teaching methods that they have learned when they return to Vietnam.
8. Apparent academic inbreeding inhibits a dynamic research environment.
9. The separation of research institutes and laboratories from teaching departments limits the potential opportunities for many faculty members to engage in research activities.

Opportunities for the Improvement of Graduate Education and Research

In addition to the above recommendations related to improving the quality of instructors, the following recommendations are provided as a means to improve the quality of graduate teaching and research.

Professional Development

Consider the best means to:

1. Offer professional development that gives instructors opportunities at the graduate level to increase their level of conceptual, discipline specific knowledge and understanding; to conduct academic research at the same level of top universities worldwide; and to understand effective graduate level teaching and learning approaches used at leading research universities worldwide.
2. Provide opportunities for instructors to attain advanced degrees (master's and doctorates) from leading research universities in specific disciplines in science, technology, and engineering and in other subjects such as instructional design, professional development, evaluation, and assessment.
3. Fund instructors to participate in international conferences.

Instructional Development

Consider the best ways to:

1. Raise graduate curricula and courses to the same level of quality of top universities worldwide in both content and methods of teaching and learning. This might be done by emulating the best programs world-wide.
2. Engage experts in teaching specific disciplines and in teaching pedagogy to provide guidance for the improvement of teaching and learning.
3. Employ Ph.D.s, who have studied abroad, when they return to Vietnam to provide leadership in disseminating the use of the teaching methods that they have learned in their advanced training.
4. Provide graduate level library holdings and access to other scholarly resources, such as text books, e-journals, and electronic data bases nation-wide.

Organizational Development

Consider the best means to:

1. Have decision-makers reconsider where basic research is conducted in order to prepare the next generation of scientists. Consider reorganizing the structure and relationships of the universities, research institutes, and laboratories so that more research is conducted in universities by teaching faculty and graduate students.
2. Provide funds to build modern laboratory research facilities for professors and graduate students.
3. Provide personnel resources to faculty. Consider employing research laboratory assistants and technical and clerical support staff for graduate instructors.
4. Encourage and facilitate collaboration among major research universities.

Evaluation of Student Learning Outcomes and Institutional Effectiveness

An overarching area noted by the teams concerns how the government, individual institutions of higher education, and departments monitor and improve quality. In general, there appears to be a lack of systematic evaluation of student learning, of programs, and of institutional effectiveness. At the foundation of these concerns and issues is an apparent lack of clearly articulated and coordinated student learning outcomes at the institutional, departmental, and course levels.

Issues

More specifically, the following concerns or issues were identified:

1. At the course level, apparently few mechanisms are used to provide feedback on teaching and learning for the purpose of improvement. Formative assessment seems to be lacking.
    a. Homework is not regularly assigned and, if it is, there is little or no grading or feedback to students.
    b. There seems to be too much reliance on final exams as the primary source of grades. Students are not aware of performance until the end of the course.
    c. Typically, course evaluations are not used to gather student feedback on teaching and learning.
    d. Exams and quizzes are not regularly used to assess student learning or to determine the strengths and weaknesses of instruction.
    e. Teachers do not seem to be held accountable for the quality of teaching and learning and the improvement of instruction.
    f. There appears to be a general lack of evidence regarding the quality of teaching and learning.
    g. Instructors seem to lack knowledge and skills regarding the evaluation of teaching and learning.
2. At the departmental level, there is apparently little ongoing review, based on sound assessment data, of the quality of courses in the curriculum and the achievements of students majoring in specific areas.
    a. Curricula and courses are generally not revised nor kept up-to-date based on feedback on teaching and learning.
    b. Direct evidence of student learning is not apparently used in the evaluation of courses or curricula.
    c. Neither academic achievement nor the success of graduates appears to be closely monitored.
    d. Programs do not seem to be regularly reviewed in order to continually improve quality, based on norms usually associated with top level universities worldwide.

3. There is an apparent lack of institutional research infrastructure at the university level. To clarify, this refers to research on information about the institution, not research projects in the disciplines.

   Potential solutions include providing training for academic administrators responsible for registrar functions; creating offices of institutional research; and providing electronic resources for tracking, analyzing, and reporting student data including enrollment, progress toward degree, graduation, and learning outcomes.
4. Institutional effectiveness is not typically evaluated in terms of student learning or research productivity.
   a. Administrative areas do not seem to be held accountable for their contribution to the quality of teaching and learning.
   b. Departments do not seem to be held accountable for the quality of teaching, achievement of well-defined student learning outcomes, and research productivity.
   c. There are few expectations for continuous improvement based on evidence of student learning and institutional effectiveness.
   d. Few resources seem to be available to support evaluation processes.
5. Governmental accreditation (i.e., summative assessment) is in its early stages of development with some potential for development.
   a. The current standards seem to be more concerned with compliance than with the assessment of student learning and continuous improvement.
   b. Inadequate personnel resources seem to exist to assist the various institutions and departments. Ideally, staff in MOET and the VNU central offices could provide training and support related to accreditation and assessment.

Opportunities for the Improvement of the Evaluation of Student Learning Outcomes and Institutional Effectiveness

Recommendations for improving the evaluation of student learning outcomes (i.e., what students would be expected to know, to be able to do, and to value) and the evaluation of institutional effectiveness include the following:

Professional Development

1. MOET might consider providing incentives and support in the form of professional development for local assessment experts.
2. Professional development opportunities could include the following:
   a. Provide full funding for in-country training, such as institutes, workshops, short courses, and seminars, all of which could count toward merit-based pay.
   b. Engage international experts to provide formal training and informal consultation to local assessment experts.

    c. Offer opportunities for instructors to attain advanced degrees (master's and doctorates) from leading research universities in such subjects as instructional design, development, evaluation, and assessment.
3. Training for academic administrators responsible for registrar functions would be very beneficial including:
    a. advanced degrees in educational psychology, measurement, and statistics;
    b. short-term institutes on how to keep/maintain student records in order to help administrators understand the principles of institutional research; and
    c. training programs for support staff to learn how to do data entry and analysis.

Instructional Development

Consider the best means to:

1. Develop measures to evaluate student learning using a combination of formative methods (e.g., assignments and quizzes) and summative methods (e.g., capstone exams, projects, and portfolios).
2. Develop and implement a system for student feedback in each department. In regular course evaluations, consider soliciting input from students regarding their perceptions of the extent that the instructor and course helped them to achieve the intended student learning outcomes.
3. Develop clearly articulated statements of general learning goals that are related to courses in the curricula.
4. Include specific student learning outcomes that are related to lectures, assignments, quizzes, and exams in the course syllabi.

Organizational Development

Consider the best ways to:

1. Have institutional planning serve as the guide for the evaluation of the institution and departments.
2. Encourage each institution and department to develop and implement evaluation plans that have processes and support structures for continuous improvement of teaching and learning, based on quality practices as seen at top universities worldwide.
3. Require departments to have regular program reviews conducted by external/international reviewers.
4. Establish offices of institutional research at the local university level and at the Vietnam National University level in order to organize, analyze, and report student data.
5. Provide training for academic administrators responsible for research functions.
6. Provide electronic resources for tracking, analyzing, and reporting student data including enrollment, progress toward degree, graduation, and learning outcomes in order to provide the information that is necessary to support the evaluation of student learning outcomes and institutional effectiveness.

7. Establish Centers for Excellence in Teaching and Learning at each university to support the development and implementation of evaluation plans that incorporate the direct measure of student learning as the basis for continuous improvement.
8. Institute annual reviews of faculty to guide professional development (see also the section on *Instructors*).
9. Review and consider standards and practices as exemplified in the following:
    a. ASEAN University Network: *Quality Assurance Guidelines* (ASEAN University Network, 2004);
    b. SEAMEO: *Framework for Regional Quality Assurance Cooperation in Higher Education* (SEAMEO, 2003);
    c. ABET, Inc.[2]: *2006-2007 Criteria for Accrediting Computing Programs* (ABET, 2006a) and *2006-2007 Criteria for Accrediting Engineering Programs* (ABET, 2006b); and
    d. The Council for Higher Education Accreditation[3] (CHEA) at http://www.chea.org/. Also see the Middle States Commission on Higher Education[4] document, entitled *Characteristics of Excellence* (Middle States Commission on Higher Education, 2002).
10. Assure that faculty and other stakeholders can be involved in establishing accreditation criteria.
11. Reduce teaching loads to allow faculty time to provide to students more feedback that is based on sound classroom evaluation techniques.
12. Hire graders and/or teaching assistants to help provide timely feedback. Consider creating a system of teaching assistantships (e.g., each student could be required to work as a teaching assistant for a semester, which could count toward the completion of the undergraduate degree).
13. Reward faculty for providing appropriate student feedback. Various simple grading techniques can be used (e.g., allow students to cross-grade their assignments in class, and/or have students grade their own assignments by comparing against the answer keys that are posted publicly on certain dates either on a bulletin board or the Internet).
14. Engage senior students and honor students for peer mentoring of the first, second, and third year students as a way to provide feedback on learning.
15. Provide incentives and support, perhaps from MOET, in the form of:
    a. financial support for the establishment and/or enhancement of VNU Assessment Centers and local institutional Centers for Excellence in Teaching and Learning;
    b. technical advice to administrators and instructors; and
    c. help in developing a mechanism for establishing positive, supportive relationships with U.S. universities and determining good U.S. universities with which to partner.

---

[2] ABET Inc. is the recognized U.S. accreditor of college and university programs in applied science, computing, engineering, and technology.

[3] CHEA is a U.S. national advocate and institutional voice for self-regulation of academic quality through accreditation. CHEA is an association of 3,000 degree-granting colleges and universities and recognizes 60 institutional and programmatic accrediting organizations.

[4] The Middle States Commission on Higher Education is one of the six recognized U.S. regional accrediting bodies.

Opportunities for Change at the National Level

The U.S. expert teams also identified the following general recommendations that MOET might want to consider.

- How to expand the university education system throughout Vietnam, with appropriate distribution across the country, so as to increase accessibility to more high school students to obtain a university education. The current 255 universities do not meet the demand.
- Ways to develop a plan to prepare highly trained future faculty by empowering the current major universities to produce excellent teachers in sciences and technology for the other Vietnamese universities.
- Options for making a strategic decision to fund fundamental and basic research in universities to ensure future generation of scientists.
- Ways to provide more local institutional autonomy and flexibility to enhance quality and to keep curricula up-to-date.
- How to develop the accreditation process to include assessment of student learning outcomes and how to work with local institutions to develop or enhance the program review process for academic departments.
- Ways to develop a mechanism to ensure that resources are distributed based on merit and quality.
- How to evaluate the level of quality of universities across Vietnam, based on student learning and research, and how to establish a mechanism to assist those institutions at a lower level of quality to rise to the highest possible level.
- How to enable access to the latest public information for all universities via high speed Internet connections to electronic journals and data bases.
- Ways to build instructor capacity in subject matter knowledge, teaching methods, interaction with students, and research through systematic professional development efforts.
- How to reorganize the faculty workload to give instructors more time for preparation, interaction with students, and research.
- Ways to revise and reorganize the MOET mandated curriculum so that students can spend more time on learning relevant content and on integrating course information.
- How to improve teaching methods in high school to better prepare students for a more demanding, post-secondary education.
- Ways to help high school students to be prepared to choose a major for their university degree program while still in high school.

II. DISCIPLINE SPECIFIC OBSERVATIONS

In the following section are brief, pointed observations by the U.S. experts in computer science, electrical engineering, and physics, who participated in the site-visit teams.

Computer Science

Computer science faces two major issues that are specific to the discipline: a lack of qualified teachers and a lack of good internet capacity. On the first major issue, information technology is a significant driver of the economy, which creates a high demand from industry for individuals to be sophisticated with computers. This demand competes with the Vietnamese national need to upgrade and expand computer science education. If the Vietnam economy is ultimately to approach that of the U.S., Vietnam will be required to increase significantly the number of research-oriented universities. The population of Vietnam is 80 million compared to 240 million in the U.S. So, Vietnam is roughly one-third the population of the U.S. The U.S. has at least 200 research intensive universities, each with computer science departments with roughly 30 Ph.D. faculty. If Vietnam is to have the same educational level as the U.S., it would mean creating 60 research intensive universities, each with 30 Ph.D. faculty members in computer science. This will require producing 1,800 Ph.D.s in computer science to fill this need alone. The need of industry for highly educated individuals will be far greater. This means that the top institutions in Vietnam will be required to improve significantly the quality of their programs so that they can start producing the faculty needed by the other institutions to improve their output.

The second major issue is that research in computer science requires high bandwidth network connectivity and modern computers. Vietnamese faculty will not be able to compete at the level of faculty at top universities in the world unless there is a major upgrade of networks and computers. Access to recent research in computer science has become electronic. The current network bandwidth is a serious handicap for Vietnamese researchers.

Electrical Engineering

The electrical engineering (EE) curriculum appears on the surface to parallel EE curricula used at a majority of engineering schools in the U.S. However, there are some areas of concern. One of these is that some parts of the curriculum are significantly out of date. For example, two technical drawing courses are required during the first year of study. It is not clear what purpose these courses serve. Also, most of the curriculum for the first two years seems to be the same for all engineering students, regardless of major; and there are no engineering classes offered during the first year. Most engineering curricula in the U.S. today offer at least one engineering class during the first year. Finally, there does not seem to be many opportunities for students to select electives. The

curriculum is fully loaded with prescribed courses, offering little in the way of flexibility and preventing students from tailoring the program to their own special interests.

Furthermore, the first three semesters and part of the fourth semester in the engineering curriculum are apparently specified by MOET, which does not allow the individual universities to set their own curriculum. It might be beneficial if each university had greater autonomy to experiment with alternative curricula. There also seems to be significant duplication of courses. At one of the universities visited, there were multiple versions of the same course developed for different levels of students based on academic achievement. But course content seemed to be identical in each course. It was never made clear by either the faculty or the students interviewed what criteria were used to decide which course a student took or what was really achieved by offering multiple versions of the same course.

Physics

This brief evaluation of physics education in Vietnam covers undergraduate and graduate physics. Most comments are general and at the end some distinction will be made between the various universities. The teaching faculty is very enthusiastic about their subject and the teaching of physics, and the same can be said of the students interviewed, who were mainly honor students. Physics is a mature field, and the theoretical and experimental education at an undergraduate level is quite standard internationally. Thus, a book that was written 20 or 30 years ago can be used as a text for students today. Standard subjects such as mechanics, electricity and magnetism, thermodynamics and statistical physics, waves and optics, and quantum mechanics are taught to the students at the Vietnamese universities visited.

However, there are serious problems in that the experimental or practical laboratories for undergraduates, in general, are quite out of date, simplistic, or lacking in equipment. A good education in laboratory techniques should culminate with a more advanced laboratory, using modern measurement techniques (lock-in amplifiers, high speed oscilloscopes, charge coupled devices--CCDs, optical detectors laser spectroscopy, microwaves, low temperature, etc.) on modern experiments. Some of this laboratory experience would typically be found in top level universities around the world when students associate in experimental research groups in their third and fourth years; but then it is not general or broad, but rather very specific and focused.

A very serious problem for the students, as evidenced from the broad range of interviews at the Vietnamese universities, is that they have a large number of requirements in the curriculum and very little elective choice. The curriculum could easily be reduced by a factor of two, and still provide the students with a solid core education. The students get little feedback on their performance during the academic year and many do not have time to do their homework assignments, which in many cases is not registered or graded by the teaching faculty. The teaching faculty are overworked in order to earn a living wage and thus do not have time for more contact with the students and for response on the students' performance.

At the graduate level, the advanced courses are at a minimal level and the laboratories are far below what would be found at top universities worldwide. Laboratories are inadequately equipped and space is lacking; in many instances, an

experimental laboratory is the rear part of a student's study desk. As a measure of the level, in the Vietnamese universities visited, low temperature physics is considered working with liquid nitrogen (77.3K) whereas on international levels (where liquid helium is available) low temperature physics begins with liquid helium (4.2 K and lower) and goes down to millikelvin or even microkelvin temperatures.

Finally, it was found that there is a gradient in the level, equipment, and educational requirements, improving as one goes from the universities of natural sciences to the technical universities and improving as one goes from South to North. Efforts might be considered to equalize the educational opportunities.

III. SCENARIOS FOR CHANGE

In the following section, scenarios for change are described that integrate recommendations from the five topic areas and the discipline specific observations. But first, the management of change is discussed in order to guide the development and implementation of the scenarios and subsequent potential pilot projects intended to produce models for the development of higher education in Vietnam that might be adopted across academic fields and institutions.

Management of Change in Higher Education Reform

The basic premise of the Government Resolution No. 14/2005/NQ-CP dated November 2, 2005, on the Fundamental and Comprehensive Reform of Higher Education in Vietnam 2006-2020, is that improvement in both the process and results of Vietnamese higher education is desired and, in fact, necessary. This mandate is consistent with the charge to the U.S. expert teams, invited by VEF through the National Academies, namely to evaluate the status of undergraduate education in specific fields and provide observations and recommendations with the intent to help improve Vietnamese higher education. However, it is a tremendous challenge to consider changing all components of a country's higher education system including organizational structure, policies, teaching and learning methods, and administrative and fiscal procedures. Such extensive modifications require careful, thoughtful, and systematic planning and management of the change process.

The following eight general conditions represent a synthesis of various studies of organizational change (Ely, 1990). These conditions are critical to creating sound plans and ensuring that changes are eventually institutionalized. They are used as an organizing structure for the recommendations included in this report. The topic is followed by a quote, which might be used by individuals involved in change and which is intended to embody the essence of the idea. All of these conditions exist with regard to the intent and outcome of this report.

1. Dissatisfaction with the Status Quo: "Things can be better."
   Some level of dissatisfaction appears to exist throughout the Vietnamese higher education community, including MOET, university administrators, teaching faculty, and students. Government Resolution 14 on the Fundamental and Comprehensive Reform of Higher Education in Vietnam 2006-2020 reflects this condition as well.

2. Knowledge and Skills Exist: "Implementers are up to the task."
   The basic level of knowledge and skills exists in Vietnam, but is low, in comparison to U.S. models of higher education, including methods of teaching and learning, academic program structure, institutional financing, and assessment and accreditation. Addressing this condition may require considerable faculty, administrative, and organizational development. Training workshops, on-site support by experts in the field, case studies and practical examples, and new models of higher education may all be required.
3. Resources are Available: "Inadequate or insufficient resources can torpedo a change."
   The scope and nature of the changes required for the transformation of Vietnamese higher education imply the addition of extensive and varied amounts of resources. Important resources to consider are the following: qualified faculty, sufficient numbers of instructors, up-to-date laboratory equipment, current learning materials, quality learning facilities, and funds to pay for these resources.
4. Time is Available: "Individual time and organizational timelines exist."
   Time is a special resource that is relevant to many components in the change process and includes the following: (a) for faculty—time on a day-to-day basis (e.g., time to provide substantive feedback) and professional development time on a long-term basis (e.g., time to develop new knowledge and skills); (b) for institutions and departments—organizational and instructional development time (e.g., time to change structures and approaches); and (c) for country-wide decision-makers—capacity building time (e.g., time to enhance MOET resources for the assessment and accreditation process, time to provide professional and instructional development support services, and time to enhance project and change management capabilities).
5. Rewards and Incentives Exist for Participants: "What's in it for me?"
   All participants, including administrators, teaching faculty, support personnel, and students want to know the external benefits to change, including incentives for being involved in the change process and rewards for successful change implementation. Comprehensive and consistent attention to these external inducements to change is an essential part of the planned change process.
6. Participation is Expected and Encouraged: "Why should I change?"
   Important inducements to change are the expectations set by those with formal administrative authority and by informal opinion leaders. Such encouragement will facilitate the involvement by more than a select few, who are invited to participate, or who volunteer to participate, in the change process. Thus, encouraging a broad range of people to embrace change will help to move the innovation from the early adopters to the willing majority of those in any community.
7. Commitment: "Long-term institutionalization of change is essential."
   Advocacy by Government officials or Rectors alone will not suffice to establish a major change, such as the reform of higher education in Vietnam. Deans, chairs, teaching faculty, and students must all make a commitment to comprehensive change. How to demonstrate commitment will vary by situation and role, but consistent messages and actions suggesting commitment will be required of all.

8. Leadership: "It is essential to identify and develop formal and informal leaders." In the relatively early stages of the change process, top-level formal leadership from all sectors is required to set expectations, incentives, and rewards for participating in change. As changes are spread, many other leaders, including informal leaders among groups such as new instructors and students, should play leadership roles.

The issues identified through the visits of the U.S. expert teams include information related to these conditions. The recommendations include strategies and interventions that will address these conditions and thus facilitate the overall management of change regarding the improvement of higher education in Vietnam. The following are scenarios and potential pilot projects that integrate the information produced by the visiting teams.

Scenarios and Potential Pilot Projects

The following scenarios sketch out the context of potential pilot projects for future efforts at various levels, which include MOET and the Vietnam National Universities at the national level, regional universities, universities at the local level, and departmental programs at the institutional level. The scenarios provide general descriptions of actions that might be taken at each level. The opportunities for improvement described in the previous sections provide detailed suggestions that can be used to implement the scenarios.

National Level

As noted above, Government Resolution 14 on the Fundamental and Comprehensive Reform of Higher Education Vietnam 2006-2020 mandates improvement in both the process and results of Vietnamese higher education. MOET is the primary agency responsible for ensuring such improvements. Therefore, a scenario for change that could be led by MOET might include the following activities:

1. A national effort to enable access to the latest scholarly information for all universities via high speed Internet connections to electronic journals and data bases. By contracting with major service providers and suppliers of such journals and data bases, MOET could create a nation-wide network of scholarly information related to both specific disciplines and pedagogy. This, in turn, would potentially provide the foundation for efforts to build instructor capacity in subject matter knowledge, teaching methods, interaction with students, and research.
2. Leadership efforts to continue to foster local autonomy and flexibility so that programs can keep curricula up-to-date. One step that MOET might take is to revise and reorganize the state mandated curriculum, allowing for curricular decisions at the institutional level.
3. Institutional evaluation that emphasizes continuous improvement. MOET might consider holding institutions accountable for taking advantage of MOET's efforts to foster local autonomy and flexibility.

4. A program review process that incorporates feedback from national and international scholars with expertise in both disciplinary content and pedagogy. The development and implementation of local program review processes also could be considered a "criterion" of institutional accreditation.
5. Ways to evaluate the quality of universities across Vietnam on their continuous improvement of student learning and research productivity. MOET might consider establishing mechanisms to assist those institutions judged to be of lower quality to rise to the highest possible levels.
6. Ways to ensure change by requiring systematic professional development efforts at all levels of Vietnam's higher education system, including MOET.

Vietnam National University

VNU provides a potential organizational structure for facilitating systematic professional and organizational development efforts. Among the universities that constitute the VNU, there are experts in disciplinary specialties and pedagogy as well as numerous administrators and instructors with experience and advanced degrees from internationally recognized institutions. In addition, there are units specifically dedicated to assessment and improvement. A scenario for change led by VNU might include the following activities:

1. Experts at VNU could provide leadership in the establishment of Centers for Excellence in Teaching and Learning in each university.
2. VNU and local Centers for Excellence in Teaching and Learning might help to organize professional development workshop series that build capacity among the teaching staff and academic administrators with the goal of improving curricula, course content, and instructional methods.
3. Long-term development efforts might be guided by national and international consultants, who potentially build relationships with university teams. It is essential that individual workshops and long-term development activities be guided by specific goals and measurable objectives related to immediate capacity building, instructional improvement, and the improvement of student learning.

University Level

At each university, the academic administrators have the responsibility to take advantage of the autonomy and flexibility offered by MOET. A scenario for change led by individual universities includes the following activities to be considered:

1. Revising curricula, consolidating courses, and reducing the number of courses in order to conform with top level universities, typically requiring a credit system of 120 to 130 credits for an undergraduate education.
2. Reducing the number of courses that instructors teach each semester. However, it is important that reducing the teaching workload does not create financial disadvantages for teachers. This change might be accomplished by paying teachers a total combined salary/income that adequately supports them for working a full work week of approximately 40 hours that includes professional

responsibilities of required teaching, research, and service to one's home institution. With a revised compensation system, teachers would not require outside jobs. It is crucial that the number of courses taught be independent of salary/income.

3. Changing the reward system so that a teacher's merit-based pay and other financial rewards are based on conducting professional service (advising students, instructional development, and faculty governance) and doing research, in addition to teaching, at one's home institution.
4. Instituting instructor development and evaluation programs as the basis for promotion beyond the position of lecturer. The department chairperson might consider conducting an annual evaluation that focuses on performance and is related to increases for merit that is reflected in one's base pay. The promotion program might take into consideration criteria related to evidence of student learning outcomes, course evaluations by students, quality of publications, conference presentations, course development, research funding, effective links with industry, and service to the department and institution.
5. Creating faculty handbooks that clearly define procedures and steps for the reward system (e.g., promotion, recognition, merit-based pay, and tenure).
6. Establishing Centers of Excellence in Teaching and Learning at each university (with the support of VNU and MOET resources). It is important that these Centers have experienced staff and both written and electronic resources to provide pedagogical, instructional, and professional development support. These Centers could potentially offer targeted workshops and other training activities by international professionals, who have general skills in pedagogy and instructional design and development as well as specific expertise related to teaching particular content areas such as computer science, electrical engineering, and physics.
7. Offering opportunities for administrators and faculty to go abroad for study or professional programs to observe first hand the use of active learning and other effective pedagogical practices.
8. Providing up-to-date printed and electronic resources (books, journals, etc.) for faculty and students to facilitate teaching, learning, and research. This might be accomplished by working cooperatively with MOET and VNU.
9. Providing teachers with adequate access to high speed/bandwidth Internet and an adequate number of up-to-date computers for instruction.
10. Modernizing laboratory facilities and equipment so that it is possible to develop experiments, exercises, and projects that promote higher order thinking and problem solving skills.
11. Creating an Institutional Effectiveness Plan (IEP) that provides strategies, tactics, timelines, and criteria for making the improvements that are deemed of the highest priority.

Taken together, these activities potentially would not only create favorable working conditions to attract and retain new ambitious, well-trained faculty coming back to Vietnam from abroad, but would also better prepare university students of Vietnam to compete at the same level of students from top universities worldwide.

Program Level

The main purpose of the Undergraduate Education Project was to assess the current conditions of teaching and learning in computer science, electrical engineering, and physics at four select Vietnamese universities and, as a result, to produce models for the improvement of higher education in Vietnam that might be adopted across academic fields and institutions. The pilot projects at the program level provide potential models for improvement in undergraduate teaching and learning, undergraduate curriculum and courses, instructors, graduate education and research, and assessment of student learning outcomes. A scenario for change led by the departments at the program level might include the following activities.

1. Undergraduate teaching and learning projects that focus on: (a) raising the level of learning from rote memorization of factual information to higher order thinking abilities; (b) incorporating active learning strategies into class discussions; (c) requiring graded homework that is used to provide feedback on student learning; and (d) incorporating homework grades, attendance, and class participation into the final grade.
2. Undergraduate curriculum and course projects that focus on the consolidation of courses in order to conform with typical credit systems at top level universities worldwide, consisting of 120 to 130 credits for an undergraduate education. Such a consolidation would reduce the number of courses students take and that instructors teach each semester.
3. Curricula and courses that include educational activities that give students applied hands-on experience and practice in the form of integrated laboratory exercises, design-and-build projects, and problem-based learning.
4. Development of courses that include only those topics relevant to a given area, based on a review of course syllabi from leading, internationally recognized programs of study.
5. Courses that include opportunities for the development of oral and written communication and presentation skills, team work, problem solving, project management, critical thinking, and building self-confidence.
6. Professional development opportunities for junior and senior instructors to improve their discipline specific knowledge and skills. Both Vietnamese and international experts can provide in-service education of current instructors, including targeted workshops and other training activities in discipline topics and pedagogy related to teaching particular content areas in computer science, electrical engineering, and physics.
7. Ways to provide teachers first hand experience with courses taught by leading foreign professors. This might be accomplished by providing opportunities for faculty to engage in short-term development activities, such as those suggested by the *Recommendations for Vietnam University Advanced Program Site Visitors to Exemplary Programs in the U.S.* (Appendix 13), and long-term study abroad opportunities to obtain advanced degrees, such as VEF Fellowships.
8. Short- and long-term professional development opportunities for instructors in order to provide them with the foundation to enhance the delivery of graduate education and the development of research. As a result, graduate curricula and

courses will be brought up to the same level of top universities worldwide in both content and teaching and learning methods by emulating the best programs world-wide.

9. Means to help instructors develop and implement measures to evaluate student learning (e.g., homework assignments, quizzes, projects, group work, port folios, and capstone exams and projects). This is vital to the improvement of higher education since the evaluation of student learning outcomes starts at the program and course level,
10. Ways to require programs to revise their curricula and to require instructors to revise their course syllabi based on intended student learning outcomes. It is essential that course evaluations and program reviews be based on the accomplishment of student learning outcomes, which would then guide the continuous improvement of courses and programs.

IV. CONCLUSIONS

This report presents the results of Phase 1 of the *Observations on Undergraduate Education in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam* (January – August 2006). This Phase has accomplished the first two objectives of the Undergraduate Education Project: (a) to assess the current conditions of teaching and learning in computer science, electrical engineering, and physics at four select Vietnamese universities; and (b) to identify opportunities for improvement and models for change. In accomplishing these two objectives, this project provides the basis for improving higher education practice in Vietnam.

The contributions of this phase include, first, helping to meet the critical needs expressed by the government, MOET, and the higher education community to improve the quality of teaching and learning in sciences and technology in particular, and in higher education in general.

Second, the findings might be used potentially to inform efforts at all levels of higher education to reform curriculum, pedagogy, and evaluation in the sciences and engineering in Vietnam based on the insights from experienced U.S. experts in the disciplines and in assessment and instructional design.

Third, this phase of the Undergraduate Education Project provided the four participating universities with an opportunity to consider reflection upon their current practices and, together with the U.S. expert teams, to examine some aspects of where they are in terms of undergraduate education. Such a self-evaluation might help them to formulate pilot projects that best fit their own contexts and needs and that facilitate achieving their visions, missions, and goals.

Fourth, not only the four participating universities and the areas of computer science, electrical engineering, and physics, but also other universities and disciplines may benefit from the recommendations offered in this report.

Fifth, the project's results potentially have implications for higher education institutions in Vietnam in that the results might be used to develop favorable working environments (salary and research facilities) that could potentially attract those who receive graduate degrees from overseas programs (including VEF Fellows) to come back to teach and do research in Vietnam.

Sixth, the project's findings are intended to fill the current perceived void in research-based documentation concerning educational quality in the three targeted disciplines and, more generally, in higher education institutions in Vietnam and, as such, might serve as a point of reference for educators, researchers, and policymakers in the future.

And finally, Vietnamese researchers and educators may gain valuable skills and capacities through the detailed descriptions of the research methodology used in this multiple case study qualitative research project, through discussions with Vietnamese professionals involved in assessment and accreditation, and through the participation of the Vietnamese universities and MOET representatives in the project's activities. It is hoped that the project's methods of conducting the observations and study of the four select institutions and three targeted programs in Vietnam may be applicable to other higher education institutions and fields of study besides computer science, electrical engineering, and physics.

Furthermore, the results of this project may help U.S. educators and researchers to better understand the circumstances in higher education in Vietnam when they are considering cooperative activities with Vietnamese institutions.

The Undergraduate Education Project is expected to embark on Phase 2 (September 2006 – August 2009) in which the nine departments of the four select universities might have the opportunity to develop improvement plans and initiate pilot projects that meet their own needs and contexts. Upon completing Phase 2, it is hoped that the two last objectives of the project will be accomplished: (a) to assist in implementing change through successful pilot projects; and (b) to produce models that can be adopted across academic fields and institutions.

These conclusions suggest that another comprehensive activity in 2009, which evaluates and builds on the results of the pilot projects and models of Phase 2 and perhaps extends the project to other programs and institutions, would be beneficial to higher education institutions in Vietnam.

REFERENCES

ABET, Inc. (2005a). *2006-2007 Criteria for Accrediting Computing Programs.* Retrieved from http://www.abet.org/Linked%20Documents-UPDATE/ Criteria%20and%20PP/C001%2006-07%20CAC%20Criteria%205-25-06.pdf on August 12, 2006.

ABET, Inc. (2005b). *2006-2007 Criteria for Accrediting Engineering Programs*. Retrieved from http://www.abet.org/Linked%20Documents-UPDATE/Criteria%20and%20PP/E001%2006-07%20EAC%20Criteria%205-25-06-06.pdf on August 12, 2006.

ASEAN University Network. (2004). *ASEAN University Network: Quality assurance guidelines.* Retrieved from http://www.aun.chula.ac.th/ Quality%20Assurance_file/pic_file/QA%20Guideline.pdf on August 9, 2006.

Ely, D. P. (Winter 1990). Conditions that Facilitate the Implementation of Educational Technology Innovations. *Journal of Research on Computing in Education*, *(23)*2, 298-305.

Government of Socialist Republic of Vietnam. (November 2005). Government Resolution No.14/2005/NQ-CP on the Fundamental and Comprehensive Reform of Higher Education in Vietnam (2006-2020). Author.

Kells, H. R. (1995). *Self-study processes: A guide to self-evaluation in higher education***.** Phoenix, AZ: Oryx Press.

Merriam, S. B. (1998). *Qualitative research and case study applications in education* (Rev. ed.). San Francisco: Jossey-Bass.

Middle States Commission on Higher Education (2002): *Characteristics of Excellence in Higher Education*. Philadelphia, PA. Retrieved from http://www.msache.org/msache/ content/pdf_files/ characteristicsbook.pdf on August 9, 2006.

Newman, I., & Benz, C. R. (1998). *Qualitative-quantitative research methodology: Exploring the interactive continuum*. Carbondale, IL: Southern Illinois University Press.

Southeast Asian Ministers of Education Organization. (2003). *Framework for regional quality assurance cooperation in higher education*. Available from SEAMEO Secretariat, Mom Luang Pin Malakul Centenary Bldg., 920 Sukhumvit Rd., Bangkok 10110, Thailand. E-mail: library@seameo.org.

Thien Y. (April 26, 2006). Financial Times: "Gates ky vong vao 'Phep mau IT' tại Viet Nam" [Financial Times: “Gates expects ‘The wonder of IT’ in Vietnam”], *Vietnam Net*. Hanoi, Vietnam. Retrieved from http://www.vnn.vn/ cntt/2006/04/564567/ on August 9, 2006.

Thu Hong (2006). *Hoi nghi Hieu truong cac truong DH-CD toan quoc: Pha bo tu duy bao cap trong giao duc [National Conference of Rectors of Universities and Colleges: Eliminating subsidized thoughts in education]*. Retrieved from http://www.thanhnien.com.vn/Giaoduc/2006/5/11/148205.tno on June 9, 2006.

USEFUL SOURCES

1. The workshop for the Association for Institutional Research: http://www.airweb.org/?page=822

2. The workshops sponsored by ABET: http://www.abet.org/workshop.shtml

3. Assessment Planning with Gloria Rogers, Ph.D.: http://www.abet.org/assessment.shtml

4. The Engineering Education program at Purdue: https://engineering.purdue.edu/ENE/Graduate/

5. Institute for Educational Management (IEM) at Harvard University: http://www.gse.harvard.edu/ppe/highered/programs/iem.html

6. A reference for the principles for good practice in undergraduate education: Chickering, A. W., & Gamson, Z. F. (March 1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*.

APPENDICES

Appendix 1

List of U.S. Experts

Dr. Stephen W. Director
Senior Vice President and Provost
Drexel University

Dr. Philip Doughty
Associate Professor
Chair of Instructional Design Development and Evaluation
School of Education
Syracuse University

Dr. Peter J. Gray
Director of Academic Assessment
Faculty Enhancement Center
United States Naval Academy

Dr. John E. Hopcroft
Professor
Computer Science Department
Cornell University

Dr. Gloria Rogers[5]
Associate Executive Director, Professional Services
ABET, Inc. (Formerly known as Accreditation Board for Engineering and Technology)

Dr. Isaac F. Silvera
Thomas Dudley Cabot Professor of the Natural Sciences
Lyman Laboratory of Physics
Harvard University

[5] Dr. Rogers was not able to participate in the site visits in May, but played an important role in contributing to the development of the project and the final report.

Appendix 2

Project Description

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics
at Select Universities in Vietnam

Background

The Vietnam Education Foundation (VEF) provides financial support through its VEF Fellowship program to the education of Vietnamese nationals in the fields of science, engineering, technology, and health sciences. These VEF Fellows receive graduate training in the U.S. and then return to Vietnam to become part of a new generation of highly-trained professors and researchers. To help build capacity in science and technology in Vietnam, this project aims at understanding how new models and approaches to undergraduate education can contribute to increased effectiveness in teaching and learning in the sciences, engineering, and technology in Vietnam.

Purpose

The purpose of this project is multi-fold: (a) to review the strengths and challenges in undergraduate education in Vietnam in the fields of computer science (CS), electrical engineering (EE), and physics; (b) to develop recommendations for change intended to bring the quality of education in these fields in Vietnam to a competitive regional and international level; (c) to suggest potential pilot projects to the Vietnamese that would help to implement these changes, including cooperation with U.S. faculty and institutions; and (d) to use this experience to formulate a model of institutional, departmental, and curricular evaluation that can be applied to other fields in undergraduate education in the sciences and engineering.

Participating Organizations and Experts

MOET representatives: Experts in the Ministry in science and technology, in higher education, and in assessment and evaluation

U.S. experts: Experts in instructional design, in development and evaluation, and in the subject areas of CS, EE, and physics, organized by the National Academies in Washington, D.C.

Vietnamese participants: Deans, faculty, students, alumni from CS, EE, and Physics departments of four select Vietnamese universities as proposed by VEF (Universities 1, 2, 3, and 4) as well as industry representatives in Vietnam, who have a high need for graduates of CS, EE, and physics. VEF Fellows provided recommendations regarding the Vietnamese universities and participants to include.

Vietnamese co-sponsors: University of Social Sciences and Humanities (USSH), VNU- HCM, Southeast Asia Ministers of Education Organization Regional Training Center (SEAMEO RETRAC) in Vietnam, and Ho Chi Minh City Institute for Educational Research (IER).

Resources

VEF provided logistical support and funding for the U.S. experts and the project consultant involved.

Research Design

As this is a qualitative research study, the data includes online and other archival documents, interviews, observations, and follow-up correspondence.

Proposed Steps for the Program Evaluation Study

Phase One: January to August 2006

1. Proposal Development by VEF and the NA
    a. Organize a planning meeting with experts in instructional design, in development and evaluation, and in the subject areas.
    b. Design the program evaluation (a data collection and analysis, a plan of action and milestones, a list of who is responsible for what tasks, a list of support requirements, etc.). The proposed program improvement model includes four steps:
        i. Program review and evaluation by experts in instructional design, in development and evaluation, and in the subject areas and local participants;
        ii. Development by departments of an achievable three-year program improvement plan with measurable goals, objectives, activities, and tasks (GOATs), based on results of the evaluation;
        iii. Annual evaluation by the departments to determine where they are in achieving the GOATS, identifying what works and what does not work, and modifying the plan based on new developments;
        iv. Comprehensive follow-up evaluation by departments at the end of the three-year improvement program.

2. Agreements with Vietnamese Constituents by VEF
    a. Obtain an endorsement from MOET.
    b. Work out cooperative agreements with SEAMEO RETRAC; USSH, VNU-HCM; IER, and the presidents of the four select universities.

3. Initial Program Review/Evaluation by VEF and the NA
    a. Conduct a program review and evaluation using experts in instructional design, development and evaluation and in the subject areas as well as local participants to assess CS, EE, and physics at the four universities.
    b. Complete the report including recommendations.

Phase Two: September 2006 to August 2009
The following are suggested activities that might be considered by the Vietnamese universities:

1. Plan for Improvement
   Develop the program improvement plan with measurable GOATs by departments together with contributions from faculty members and input from U.S. experts provided in the Phase One report, entitled *Observations on Undergraduate Education in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam*.

2. Faculty Development
   Consider ways to fund recommended pilot projects, including potentially sending selected faculty members from the CS, EE, and physics departments of four pilot universities for train-the-trainer fieldwork study programs to the U.S., focusing on the following: (a) learning ways to implement the changes as proposed in the plan; and (b) improving the plan based on their fieldwork experience in the U.S.

3. Program Improvement
   Implement the program improvement plan by CS, EE, and Physics departments. Consider ways to fund recommended pilot projects.

4. Annual and Three-Year Evaluation
   a. Produce annual reports of progress on the program improvement plan by the CS, EE, and Physics departments.
   b. Conduct a comprehensive program evaluation after three years by the CS, EE, and Physics departments.

Appendix 3

Undergraduate Education Project Team Members' Meeting Schedules

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam

AGENDA FOR SITE VISITS: UNIVERSITY 1

U.S. EXPERTS AND VEF STAFF

First Team Visit (May 6 – 19)

1. Dr. Peter J. Gray
Director of Academic Assessment
Faculty Enhancement Center
United States Naval Academy
2. Dr. John E. Hopcroft
Professor
Computer Science Department
Cornell University
3. Dr. Isaac F. Silvera
Thomas Dudley Cabot Professor of the Natural Sciences
Lyman Laboratory of Physics
Harvard University
4. Dr. Lynne McNamara
Director of Programs
Vietnam Education Foundation (VEF)
5. Dr. Nguyen Thi Thanh Phuong
Project Consultant
Vietnam Education Foundation (VEF)

Second Team Visit (May 21 – 27)

1. Dr. Stephen W. Director
Senior Vice President and Provost
Drexel University
2. Dr. Philip Doughty
Associate Professor
Chair of Instructional Design Development and Evaluation
School of Education
Syracuse University
3. Dr. Lynne McNamara
Director of Programs
Vietnam Education Foundation (VEF)
4. Dr. Nguyen Thi Thanh Phuong
Project Consultant
Vietnam Education Foundation (VEF)
5. Ms. Kari Gazdich
Program Officer
Vietnam Education Foundation (VEF)

Note: All scheduled times are approximate and the meetings may have been longer or shorter. Also, lunch time is not recorded in the table below and was scheduled each day from 12:00 p.m. – 2:00 p.m.

FIRST VISITING EXPERT TEAM

Time	Activity	U.S. Experts, VEF Staff Involved
TUE., MAY 16		
8:00 a.m. – 8:15 a.m.	A quick campus tour (library, canteen, book store, student center)	First U.S. team
8:15 a.m. – 8:45 a.m.	Meeting with the University administrators and administrators of Faculties of Information Technology (IT), of Electricity, Electronics and Telecommunications, and Institute of Engineering Physics	First U.S. team
Assessment Group 9:15 a.m. – 10:00 a.m.		Dr. Gray, Dr. McNamara
9:15 a.m. – 10:00 a.m.	Meeting with the person in charge of accreditation and assessment for the Faculty of IT	Dr. Gray, Dr. McNamara

Time	Activity	U.S. Experts, VEF Staff Involved
CS Group 8:45 a.m. – 4:30 p.m.		Dr. Hopcroft, Dr. Phuong
8:45 a.m. – 9:30 a.m.	Group meeting with two IT Faculty administrators	Dr. Hopcroft, Dr. Phuong
9:30 a.m. – 11:00 a.m.	Individual meetings with 2 IT faculty members (45 minutes each)	Dr. Hopcroft, Dr. Phuong
1:30 p.m. – 3:00p.m.	Individual meetings with 2 IT faculty members (45 minutes each)	Dr. Hopcroft, Dr. Phuong
3:00 p.m. – 4:30 p.m.	Individual meetings with 3 IT students of different years (30 minutes each)	Dr. Hopcroft, Dr. Phuong
Physics Group 8:45 a.m. – 4:30 p.m.		Dr. Silvera
8:45 a.m. – 9:30 a.m.	Group/individual meeting(s) with 4 administrators of the Institute of Engineering Physics	Dr. Silvera
9:30 a.m. – 11:00 a.m.	Individual meetings with 2 faculty members (45 minutes/each)	Dr. Silvera
1:30 p.m. – 3:00p.m.	Individual meetings with 2 faculty members (45 minutes/each)	Dr. Silvera
3:00 p.m. – 4:30 p.m.	Individual meetings with 3 students of different years (30 minutes/each)	Dr. Silvera
WED., MAY 17		
CS Group 8:15 a.m. – 2:40 p.m.		Dr. Hopcroft, Dr. Phuong
8:15 a.m. – 9:15 a.m.	Individual meeting with 1 doctoral student	Dr. Hopcroft, Dr. Phuong
9:15 a.m. – 10:15 a.m.	Individual meeting with 1 master's degree student	Dr. Hopcroft, Dr. Phuong
10:15 a.m. – 11:15 a.m.	Individual meeting with 1 doctoral student	Dr. Hopcroft, Dr. Phuong
2:00 p.m. – 2:40 p.m.	Individual meeting with 2 IT graduate employers	Dr. Hopcroft, Dr. Phuong
Physics Group 8:15 a.m. – 2:50 p.m.		Dr. Silvera
8:15 a.m. – 10:15 a.m.	Individual meetings with 2 graduate students (60 minutes each)	Dr. Silvera
10:15 a.m. – 10:45 a.m.	Individual meeting with 1 faculty member	Dr. Silvera
11:00 a.m. – 12:00 p.m.	Research colloquium: *Current "Hot" Areas of Research in Physics*	Dr. Silvera
2:00 p.m. – 2:50 p.m.	Individual meeting with 1 lab assistant	Dr. Silvera
Off-Campus Activity		
3:00 p.m. – 4:00 p.m.	Off-campus meeting with MOET	First U.S. team
Wrap-up Session		
4:15 p.m. – 5:15 p.m.	Wrap-up session with University administrators; administrators of the Faculty of IT; and an official from the General Department of Testing and Accreditation, MOET.	First U.S. team

SECOND VISITING EXPERT TEAM

Time	Activity	U.S. Experts, VEF Staff Involved
MON., MAY 22		
EE Group **8:15 a.m. – 5:00 p.m.**		Dr. Director, Dr. Doughty, Dr. McNamara
8:00 a.m. – 8:15 a.m.	Quick campus tour (library, canteen, book store, student center)	Second U.S. team
8:15 a.m. – 8:45 a.m.	Meeting with the University administrators and administrators of Faculties of Electricity, of Electronics and Telecommunications	Second U.S. team
8:45 a.m. – 9:15 a.m.	Individual meeting with the administrator in charge of accreditation and assessment of the University	Dr. Director, Dr. Doughty, Dr. McNamara
9:15 a.m. – 9:45 a.m.	Individual meeting with the person in charge of accreditation and assessment of the Faculty of Electricity	Dr. Director, Dr. Doughty, Dr. McNamara
9:45 a.m. – 10:15 a.m.	Individual meeting with 1 administrator of the Faculty of Electricity	Dr. Director, Dr. Doughty, Dr. McNamara
10:15 a.m. – 11:15 a.m.	Individual meeting with 2 faculty members (30 minutes each)	Dr. Director, Dr. Doughty, Dr. McNamara
1:30 p.m. – 2: 30 p.m.	Individual meeting with 2 faculty members (30 minutes each)	Dr. Director, Dr. Doughty, Dr. McNamara
2:30 p.m. – 3:00 p.m.	Group meeting with 2 fourth-year students	Dr. Director, Dr. Doughty, Dr. McNamara
3:00 p.m. – 3:30 p.m.	Individual meeting with 1 second-year student	Dr. Director, Dr. Doughty, Dr. McNamara
3:30 p.m. – 4:00 p.m.	Group meeting with 1 graduate student	Dr. Director, Dr. Doughty, Dr. McNamara
4:00 p.m. – 4:30 p.m.	Group meeting with 2 lab assistants	Dr. Director, Dr. Doughty, Dr. McNamara
4:30 p.m. – 5:00 p.m.	Group meeting with 3 employers of graduates in Electricity	Dr. Director, Dr. Doughty, Dr. McNamara
TUE., MAY 23		
EE Group **8:15 a.m. – 4:00 p.m.**		Dr. Director, Dr. Doughty, Dr. McNamara
8:15 a.m. – 8:45 a.m.	Individual meeting with the person in charge of accreditation and assessment of the Faculty of Electronics and Telecommunications	Dr. Director, Dr. Doughty, Dr. McNamara, Dr. Phuong
8:45 a.m. – 9:15 a.m.	Group meeting with 2 administrators of the Faculty of Electronics and Telecommunications	Dr. Director, Dr. Doughty, Dr. Phuong
9:15 a.m. – 11:15 a.m.	Individual meetings with 4 faculty members (30 minutes each)	Dr. Director, Dr. Doughty, Dr. Phuong
1:30 p.m. – 2: 30 p.m.	Individual meetings with 2 undergraduate students of different years (30 minutes each)	Dr. Director, Dr. Doughty, Dr. McNamara, Dr. Phuong
2:30 p.m. – 3:00 p.m.	Group meeting with 2 graduate students	Dr. Director, Dr. Doughty, Dr. McNamara, Dr. Phuong
3:00 p.m. – 3:30 p.m.	Group meeting with 2 employers of graduates in Electronics and Telecommunications	Dr. Director, Dr. Doughty, Dr. McNamara, Dr. Phuong
3:30 p.m. – 4:00 p.m.	Individual meeting with 1 lab assistant	Dr. Director, Dr. Doughty, Dr. McNamara, Dr. Phuong
Wrap-up Session		
4:00 p.m. – 5:30 p.m.	Wrap-up session with University administrators and administrators of Faculties of Electricity and of Electronics and Telecommunications	Second U.S. team

Undergraduate Education Project Team Members' Meeting Schedules

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam

AGENDA FOR SITE VISITS: UNIVERSITY 2

U.S. EXPERTS AND VEF STAFF:

1. Dr. Peter J. Gray
Director of Academic Assessment
Faculty Enhancement Center
United States Naval Academy

2. Dr. John E. Hopcroft
Professor
Computer Science Department
Cornell University

3. Dr. Isaac F. Silvera
Thomas Dudley Cabot Professor of the Natural Sciences
Lyman Laboratory of Physics
Harvard University

4. Dr. Lynne McNamara
Director of Programs
Vietnam Education Foundation (VEF)

5. Dr. Nguyen Thi Thanh Phuong
Project Consultant
Vietnam Education Foundation (VEF)

6. Ms. Kari Gazdich
Program Officer
Vietnam Education Foundation (VEF)

Note: All scheduled times are approximate and the meetings may have been longer or shorter. Also, lunch time is not recorded in the table below and was scheduled each day from 12:00 p.m. – 2:00 p.m.

Time	Activity	U.S. Experts, VEF Staff Involved
MON., MAY 15		
7:50 a.m. – 8:00 a.m.	A quick campus tour (library, canteen, book store, student center)	Whole U.S. team (listed just above)
8:00 a.m. – 9:00 a.m.	Meeting with the University administrators and administrators of Faculty of Physics	Whole U.S. team
Assessment Group 9:00 a.m. – 3:00 p.m.		Dr. Gray, Dr. McNamara
9:00 a.m. – 9:45 a.m.	Individual meetings with 2 administrators in charge of accreditation and assessment of the University	Dr. Gray, Dr. McNamara
Unspecified time	Meetings with person(s) in charge of accreditation and assessment of Faculty of Physics	Dr. Gray, Dr. McNamara
Unspecified time	Meetings with others interested in accreditation and assessment	Dr. Gray, Dr. McNamara
Physics Group 9:00 a.m. – 3:00 p.m.		Dr. Silvera, Dr. Phuong
Unspecified time	Individual meetings with administrators of Faculty of Physics	Dr. Silvera, Dr. Phuong
Unspecified time	Individual meetings with 4 faculty members (30 minutes each)	Dr. Silvera, Dr. Phuong
Unspecified time	A group meeting with students of different years	Dr. Silvera, Dr. Phuong
Unspecified time	A group meeting with graduates, master's degree students, doctoral students	Dr. Silvera, Dr. Phuong
Unspecified time	Group or individual meeting(s) with employers of graduates in Physics	Dr. Silvera, Dr. Phuong
Unspecified time	Group or individual meeting with lab assistants	Dr. Silvera, Dr. Phuong
3:00 p.m. – 4:00 p.m.	Research colloquium on *Current "Hot" Areas of Research in Physics*	Dr. Silvera
Wrap-up Session		
4:00 p.m. – 5:30 p.m.	Wrap-up session with University administrators and administrators of Faculty of Physics	Whole U.S. team

Undergraduate Education Project Team Members' Meeting Schedules

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam

AGENDA FOR SITE VISITS: UNIVERSITY 3

U.S. EXPERTS AND VEF STAFF

First Team Visit (May 6 – 19)

1. Dr. Peter J. Gray
Director of Academic Assessment
Faculty Enhancement Center
United States Naval Academy
2. Dr. John E. Hopcroft
Professor
Computer Science Department
Cornell University
3. Dr. Isaac F. Silvera
Thomas Dudley Cabot Professor of the Natural Sciences
Lyman Laboratory of Physics
Harvard University
4. Dr. Lynne McNamara
Director of Programs
Vietnam Education Foundation (VEF)
5. Dr. Nguyen Thi Thanh Phuong
Project Consultant
Vietnam Education Foundation (VEF)

Second Team Visit (May 21 – 27)

1. Dr. Stephen W. Director
Senior Vice President and Provost
Drexel University
2. Dr. Philip Doughty
Associate Professor
Chair of Instructional Design Development and Evaluation
School of Education
Syracuse University
3. Dr. Lynne McNamara
Director of Programs
Vietnam Education Foundation (VEF)
4. Dr. Nguyen Thi Thanh Phuong
Project Consultant
Vietnam Education Foundation (VEF)
5. Ms. Kari Gazdich
Program Officer
Vietnam Education Foundation (VEF)

Note: All scheduled times are approximate and the meetings may have been longer or shorter. Also, lunch time is not recorded in the table below and was scheduled each day from 12:00 p.m. – 2:00 p.m.

FIRST VISITING EXPERT TEAM

Time	Activity	U.S. Experts, VEF Staff Involved
WED., MAY 10		
7:50 a.m. – 8:00 a.m.	A quick campus tour (library, canteen, book store, student center)	First U.S. team
8:00 a.m. – 9:00 a.m.	Meeting with the University administrators and administrators of Faculties of Information Technology (IT) and of Electrical & Electronics Engineering (EEE)	First U.S. team
Assessment Group 9:00 a.m. – 12:00 p.m.		Dr. Gray, Dr. McNamara
9:00 a.m. – 9:45 a.m.	Individual meetings with administrators in charge of accreditation and assessment of the University	Dr. Gray, Dr. McNamara
9:45 a.m. – 10:30 a.m.	Meetings with person(s) in charge of accreditation and assessment of Faculty of EEE	Dr. Gray, Dr. McNamara
10:30 a.m. – 12:00 p.m.	Meetings with person(s) in charge of accreditation and assessment of Faculty of IT	Dr. Gray, Dr. McNamara

Time	Activity	U.S. Experts, VEF Staff Involved
CS Group 9:00 a.m. –5:00 p.m.		Dr. Hopcroft, Dr. Phuong
9:00 a.m. – 9:45 a.m.	Individual meeting with 1 administrator of Faculty of IT	Dr. Hopcroft, Dr. Phuong
9:45 a.m.– 12:00 p.m.	Individual meetings with 3 faculty members (45 minutes each)	Dr. Hopcroft, Dr. Phuong
2:00 p.m.– 5:00 p.m.	Group meetings with students of different years	Dr. Hopcroft, Dr. Phuong
THU., MAY 11		
CS Group 9:30 a.m. – 3:00 p.m.		Dr. Hopcroft, Dr. Phuong
9:30 a.m. – 11:00 a.m.	A group meeting with graduates, master's degree students, doctoral students	Dr. Hopcroft, Dr. Phuong
11:00 a.m. – 12:00 p.m.	Individual meeting with lab assistants	Dr. Hopcroft, Dr. Phuong
2:00 p.m. – 3:00 p.m.	Group meeting with 2 IT graduate employers	Dr. Hopcroft, Dr. Phuong
Physics Group		
2:00 p.m. – 3:00 p.m.	Research colloquium: *Current "Hot" Areas of Research in Physics*	Dr. Silvera
Wrap-up Session		
3:00 p.m.– 5:00 p.m.	Wrap-up session with: University administrators; Administrators of Faculty of IT; Head, Division of Accreditation, General Department of Testing and Accreditation, MOET	First U.S. team

SECOND VISITING EXPERT TEAM

Time	Activity	U.S. Experts, VEF Staff Involved
THU., MAY 25		
EE Group 7:50 a.m. – 5:00 p.m.		Dr. Director, Dr. Doughty, Dr. McNamara
7:50 a.m. – 8:00 a.m.	A quick campus tour (library, canteen, book store, student center)	Second U.S. team
8:00 a.m. – 9:00 a.m.	Meeting with University administrators and administrators of Faculty of EEE	Second U.S. team
9:00 a.m. – 9:45 p.m.	Individual meetings with administrators in charge of accreditation and assessment of the University	Dr. Director, Dr. Doughty, Dr. McNamara, Dr. Phuong
9:45 a.m. – 10:30 a.m.	Group meeting with two administrators in charge of accreditation and assessment of Faculty of EEE	Dr. Director, Dr. Doughty, Dr. McNamara, Dr. Phuong
10:30 a.m. – 11:15 a.m.	Group meeting with 2 administrators of Faculty of EEE	Dr. Director, Dr. Doughty, Dr. McNamara, Ms. Gazdich, Dr. Phuong
11:15 a.m. – 12:00 p.m.	Group meeting with 3 lab assistants	Dr. Director, Dr. Doughty, Dr. McNamara, Ms. Gazdich, Dr. Phuong
2:00 p.m. – 3:30 p.m.	Group meeting with 3 faculty members	Dr. Director, Dr. Doughty, Dr. McNamara, Ms. Gazdich, Dr. Phuong
3:30 p.m. – 4:15 p.m.	Group meeting with 7 students of different years	Dr. Director, Dr. Doughty, Dr. McNamara, Ms. Gazdich, Dr. Phuong
4:15 p.m. – 5:00 p.m.	Group meeting with 2 graduate students	Dr. Director, Dr. Doughty, Dr. McNamara, Ms. Gazdich, Dr. Phuong

Time	Activity	U.S. Experts, VEF Staff Involved
FRI., MAY 26		
EE Group 8:00 a.m. – 4:00 p.m.		
8:00 a.m. – 9:00 a.m.	Meet with 2 University administrators	Dr. Director, Dr. Doughty, Dr. McNamara, Ms. Gazdich, Dr. Phuong
Off-Campus Activities		
11:00 a.m. – 12:00 p.m.	Visit Royal Melbourne Institute of Technology (RMIT), HCM	Dr. Director, Dr. Doughty, Dr. McNamara, Ms. Gazdich, Dr. Phuong
1:30 p.m. – 2:30 p.m.	Two presentations at IER-HCM *Conference on Developing Curriculum for Training Programs that use a Credit Transfer System and the Internet*: (a) Challenges to the Traditional Credit System; and (b) Engineering Curriculum for 2020	Dr. Director, Dr. Doughty, Dr. McNamara, Dr. Phuong
Return to University		
3:00 p.m. – 4:00 p.m.	Group meeting with 2 EEE graduate employers	Dr. Director, Dr. Doughty, Dr. McNamara, Ms. Gazdich, Dr. Phuong
Wrap-up Session		
4:00 p.m. – 5:00 p.m.	Wrap-up session with University administrators and administrators of Faculty of EEE	Second U.S. team

Undergraduate Education Project Team Members' Meeting Schedules

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam

AGENDA FOR SITE VISITS: UNIVERSITY 4

U.S. EXPERTS AND VEF STAFF:

1. Dr. Peter J. Gray
Director of Academic Assessment
Faculty Enhancement Center
United States Naval Academy

2. Dr. John E. Hopcroft
Professor
Computer Science Department
Cornell University

3. Dr. Isaac F. Silvera
Thomas Dudley Cabot Professor of the Natural Sciences
Lyman Laboratory of Physics
Harvard University

4. Dr. Lynne McNamara
Director of Programs
Vietnam Education Foundation (VEF)

5. Dr. Nguyen Thi Thanh Phuong
Project Consultant
Vietnam Education Foundation (VEF)

Note: All scheduled times are approximate and the meetings may have been longer or shorter. Also, lunch time is not recorded in the table below and was scheduled each day from 12:00 p.m. – 2:00 p.m. or earlier.

Time	Activity	U.S. Experts, VEF Staff Involved
MON., MAY 8		
7:50 a.m. – 8:00 a.m.	A quick campus tour (library, canteen, book store, student center)	Whole U.S. team (listed just above)
8:00 a.m. – 9:00 a.m.	Meeting with the University administrators and administrators of Faculties of Physics and of Information Technology	Whole U.S. team
Assessment Group 9:00 a.m. – 3:30 p.m.		Dr. Gray, Dr. McNamara
9:00 a.m. – 10:00 a.m.	Individual meetings with University administrators	Dr. Gray, Dr. McNamara
10:00 a.m. – 10:30 a.m.	Individual meeting with 1 administrator in charge of accreditation and assessment of the University	Dr. Gray, Dr. McNamara, Dr. Phuong
Unspecified time	Meeting with the person in charge of accreditation and assessment of Faculty of Physics	Dr. Gray, Dr. McNamara
Unspecified time	Meeting with the person in charge of accreditation and assessment of Faculty of IT	Dr. Gray, Dr. McNamara
Unspecified time	Meetings with others interested in accreditation and assessment	Dr. Gray, Dr. McNamara
Off-Campus Activity		
2:30 p.m. – 3:30 p.m.	Meeting with Director, Centre for Higher Education Research & Accreditation (CHERA)	Dr. Gray, Dr. McNamara
Physics Group 9:00 a.m. – 5:00 p.m.		Dr. Silvera
9:00 a.m. – 9:30 a.m.	Meeting with a faculty member	Dr. Silvera, Dr. Phuong
9:30 a.m. – 10:00 a.m.	Meetings with administrators of the Faculty of Physics	Dr. Silvera, Dr. Phuong
10:00 a.m. – 10:30 a.m.	Individual meeting with a faculty member	Dr. Silvera
10:30 a.m. – 11:00 a.m.	Individual meeting with a faculty member	Dr. Silvera, Dr. Phuong
2:00 p.m. – 5:00 p.m.	Group and individual meetings with students of different years	Dr. Silvera, Dr. Phuong

Time	Activity	U.S. Experts, VEF Staff Involved
TUE., MAY 9		
Physics Group **8:30 a.m. – 4:00 p.m.**		Dr. Silvera, Dr. Phuong
8:30 a.m. – 11:00 a.m.	A group meeting with young faculty members	Dr. Silvera, Dr. Phuong
2:00 p.m. – 2:30 p.m.	Meetings with lab assistants	Dr. Silvera, Dr. Phuong
3:00 p.m. – 4:00 p.m.	Research colloquium: *Current "Hot" Areas of Research in Physics*	Dr. Silvera, Dr. Phuong
CS Group **8:00 a.m. – 4:00 p.m.**		Dr. Hopcroft
8:00 a.m. – 8:20 a.m.	Individual meeting with 1 administrator of Faculty of IT	Dr. Hopcroft
8:20 a.m. – 11:00 a.m.	Individual meetings with 4 faculty members (40 minutes each)	Dr. Hopcroft
1:30 p.m. – 2:15 p.m.	A group meeting with 7 graduates, master's students, and doctoral students	Dr. Hopcroft
2:15 p.m. – 3:00 p.m.	A group meeting with 4 students of different years	Dr. Hopcroft
3:00 p.m. – 3:30 p.m.	A group meeting with 3 lab assistants	Dr. Hopcroft
3:30 p.m. – 4:00 p.m.	A group meeting with 2 employers of graduates in IT	Dr. Hopcroft
Wrap-up Session		
4:00 p.m. – 5:30 p.m.	Wrap-up session with University administrators and administrators of Faculties of Physics and of IT	Whole U.S. team

Appendix 4

List of Participants and Contributors

I. U.S. Field Experts – Interviewers

1. Dr. Stephen W. Director
Senior Vice President and Provost
Drexel University

2. Dr. Philip Doughty
Associate Professor
Chair of Instructional Design Development and Evaluation
School of Education
Syracuse University

3. Dr. Peter J. Gray
Director of Academic Assessment
Faculty Enhancement Center
United States Naval Academy

4. Dr. John E. Hopcroft
Professor
Computer Science Department
Cornell University

5. Dr. Isaac F. Silvera
Thomas Dudley Cabot Professor of the Natural Sciences
Lyman Laboratory of Physics
Harvard University

II. U.S. Experts– Contributors

1. Dr. H. Ray Gamble
Director, Fellowships Office
National Research Council of the National Academies

2. Dr. Gloria Rogers
Associate Executive Director, Professional Services
ABET, Inc. (Formerly known as Accreditation Board for Engineering and Technology)

III. VEF Staff – Interviewers

1. Dr. Lynne McNamara
Director of Programs
Vietnam Education Foundation (VEF)

2. Dr. Nguyen Thi Thanh Phuong
Project Consultant
Vietnam Education Foundation (VEF)

IV. VEF Staff – Contributors

1. Hoa Bui
Program Assistant

2. Thuy Bui
Manager of Finance, Accounting & Administration

3. **Kari K. Gazdich**
Program Officer

4. Hoang Hang
Special Assistant to the Executive Director

5. Huyen Le
Executive Assistant to the Country Director

6. Tu Ngo
IT system Expert

7. Giang Nguyen
Program Assistant

8. Long Nguyen
Chief of Staff

9. Kien Pham
Executive Director

10. Hung Tran
Technical Director, IT and OCW

11. Duc Vu
Program Manager

V. Vietnamese Participants and Contributors (listed alphabetically according to the Vietnamese system with the given name in the final position)

No.	Name	Role/Title	Department[6], Institution/ Organization
1	Mr. Pham Duy Anh	Fifth year student, Department of Communications Engineering	Faculty of Electronics & Telecommunications, Hanoi University of Technology (HUT)
2	Ms. Nguyen Mai Anh	Fifth year student, Department of Communications Engineering	Faculty of Electronics & Telecommunications, HUT
3	Mr. Nguyen Minh Anh	Undergraduate student	Faculty of Information Technology, HUT

[6] The term "Faculty" is used in Vietnamese universities to refer to the equivalent of a "Department" in U.S. higher education. The term "Department" is used in Vietnamese universities to mean the equivalent of a "Major" in U.S. higher education. In this table, the terms used by the Vietnamese are given for each individual while the column heading uses the English terminology.

No.	Name	Role/Title	Department[6], Institution/ Organization
4	Mr. Dang Tuan Anh	Senior student	Ho Chi Minh City University of Natural Sciences (HCMUNS)
5	Ms. Tran Thi Van Anh	Undergraduate student	Faculty of Information Technology, HUT
6	Mr. Luong Huu Bac	Graduate student	Institute of Engineering Physics, HUT
7	Assoc. Prof. Dr. Nguyen The Binh	Vice Dean	Faculty of Physics, Hanoi University of Science (HUS)
8	Dr. Phan Thi Thanh Binh	Head, Department of Electricity Supply	Faculty of Electrical & Electronics Engineering, Ho Chi Minh City University of Technology (HCMUT)
9	Assoc. Prof. Dr. Bui Duy Cam	Vice Rector	HUS
10	Ms. Tran Huyen Chau	Second year student in Automation, Electric Power Systems	Faculty of Electrical Engineering, HUT
11	Dr. Dao Ngoc Chien	Lecturer, Department of Telecommunication Systems	Faculty of Electronics & Telecommunications, HUT
12	Prof. Dr. Nguyen Duc Chien	Director	Institute of Engineering Physics, HUT
13	Assoc. Prof. Dang Van Chuyet	Dean	Faculty of Information Technology, HUT
14	Assoc. Prof. Dr. Bach Thanh Cong	Dean	Faculty of Physics, HUS
15	Dr. Nguyen Duc Cuong		EVN
16	M.S. Nguyen Manh Cuong	Vice Director, Center for Instructional Technology	Institute of Education Research, HCMC University of Pedagogy (IER-HCMC)
17	Dr. Hoang Ngoc Cuong	Deputy Head, Office for Scientific Research, Postgraduate Studies and International Cooperation	HCMUNS
18	Mr. Vu The Cuong	Deputy Manager, Sales Department	Electricity of Vietnam, Ho Chi Minh City Power Company
19	Ms. Bui Minh Tu Diem	Faculty member	Faculty of Information Technology, HCMUNS
20	M.S. Han Huy Dung	Faculty member, Department of Communications Engineering	Faculty of Electronics & Telecommunications, HUT
21	Dr. Nguyen Kim Dung	Center for Higher Education Research and Accreditation	IER-HCMC
22	Mr. Ngo Minh Dung	Ph.D. student	Faculty of Information Technology, HUT
23	Mr. Le Duy Tu Duong	Senior, Electrical Engineering	Faculty of Electrical & Electronics Engineering, HCMUT
24	Mr. Nguyen Tien Dat	Undergraduate student	Faculty of Information Technology, HUT
25	Dr. Dinh Dien	Deputy Head of Knowledge, Engineering Department	Faculty of Information Technology, HCMUNS
26	Dr. Duong Anh Duc	Dean	Faculty of Information Technology, HCMUNS
27	Mr. Bui Kinh Duong		ABB

No.	Name	Role/Title	Department[7], Institution/ Organization
28	Mr. Le Vu Cat Gia	Senior, Electronics-Telecommunications, Electrical and Electronics Engineering	Faculty of Electrical & Electronics Engineering, HCMUT
29	Ms. Nguyen Tung Giang	Integrated Technology Services, Services and Business Development Manager	IBM
30	Mr. Hoang Manh Ha	Business Unit No. 2, Vice Division Leader	FPT Software
31	Assoc. Prof. Dr. Tran Thi Ha	Director, Department of Higher Education	Ministry of Education and Training (MOET)
32	Dr. Pham Tuong Hai	Dean	Faculty of Information Technology, HCMUT
33	Mr. Nguyen Trung Hai	Graduate, Faculty of Physics	Faculty of Physics, HCMUNS
34	Mr. Dinh Viet Hai	Second year student	Faculty of Information Technology, HCMUNS
35	Ms. Vu Thuy Han	Officer, R&D and International Relations Office	HCMUT
36	Mrs. Pho Thi nguyet Hang	Faculty administrator	Institute of Engineering Physics, HUT
37	Ms. Tran Thi Bich Hanh	Lab assistant	Faculty of Information Technology, HCMUNS
38	Ms. Mai Hong Hanh	Fifth year student in Quantum Optics	Faculty of Physics, HUS
39	Ms. Nguyen Hong Hanh	Officer, International Cooperation Department	HUT
40	Assoc. Prof. Dr. Pham Xuan Hau	General Director	IER-HCMC
41	Dr. Truong Chi Hien	Vice Rector	HCMUT
42	Mr. Le Tue Hieu	Senior, Automatic Control, Electrical and Electronics Engineering	Faculty of Electrical & Electronics Engineering, HCMUT
43	Mr. Dang Nhon Hoa	Senior student	Faculty of Information Technology, HCMUNS
44	Mr. Nguyen Anh Hoan	Master's degree student	Faculty of Information Technology, HUT
45	Dr. Pham Huy Hoang	Faculty member, Department of Data Communications and Computer Networks	Faculty of Information Technology, HUT
46	Dr. Huynh Thai Hoang	Deputy Head, Department of Automatic Control	Faculty of Electrical & Electronics Engineering, HCMUT
47	Ms. Tran Thi Kim Hong	Fourth year student, Electric Power Systems	Faculty of Electrical Engineering, HUT
48	Mrs. Tran Thi Minh Hong	Director	Active-Semi Vietnam Limited
49	Mr. Tran Phuc Hong	Project Manager	TMA Solutions

[7] The term "Faculty" is used in Vietnamese universities to refer to the equivalent of a "Department" in U.S. higher education. The term "Department" is used in Vietnamese universities to mean the equivalent of a "Major" in U.S. higher education. In this table, the terms used by the Vietnamese are given for each individual while the column heading uses the English terminology.

No.	Name	Role/Title	Department[7], Institution/ Organization
50	Ms. Pham Thi Bach Hue	Ph.D. student	Faculty of Information Technology, HCMUNS
51	Dr. Nguyen Chan Hung	Lecturer, Department of Telecommunication Systems	Faculty of Electronics & Telecommunications, HUT
52	Mr. Nguyen Tai Hung	Graduate student	Faculty of Electronics & Telecommunications, HUT
53	Mr. Nguyen Tuan Hung	Fifth year student	Institute of Engineering Physics, HUT
54	M.S. Le Vu Tuan Hung	Vice Dean	Faculty of Physics, HCMUNS
55	Mr. Quach Lam Hung	Deputy Manager, Technical Department	Power Company No. 2
56	Dr. Nguyen Thi Le Huong	Senior Expert, Department of Higher Education	MOET
57	Mr. Tran Anh Huy	Senior student	Faculty of Information Technology, HCMUNS
58	Mr. Tran Van Huy	Lab assistant	Faculty of Electrical Engineering, HUT
59	Mr. Jean-Paul Tschumi	General Director	ELCA Information Technology (Vietnam) Ltd.
60	Assoc. Prof. Dr. Nguyen Quoc Khanh	Head, Department of Theoretical Physics	Faculty of Physics, HCMUNS
61	Mr. Pham Xuan Khanh	Ph.D. student	Faculty of Information Technology, HUT
62	Mr. Huynh Quang Khoa	Senior, Electronics-Telecommunications, Electrical and Electronics Engineering	Faculty of Electrical & Electronics Engineering, HCMUT
63	Mr. Nguyen Trung Kien	Graduate student	Faculty of Electronics & Telecommunications, HUT
64	Dr. Nguyen Huu Lam	Faculty member	Institute of Engineering Physics, HUT
65	Dr. Tran Dinh Lam	Head, Office of International Relations and Research Affairs	University of Social Sciences and Humanities, Vietnam National University - Ho Chi Minh City (USSH, VNU-HCMC)
66	Mr. Tran Xuan Lam	HR and Training Group, Recruitment Manager	FPT Software
67	Prof. Dr. Nguyen Thi Hoang Lan	Vice Dean; Head, Department of Data Communications and Computer Networks	Faculty of Information Technology, HUT
68	Dr. Nguyen Thi Ngoc Lan	Head, Office of Academic Affairs	HCMUNS
69	Prof. Dr. Ngo Van Le	Rector	USSH, VNU-HCMC
70	Dr. Truong Ngoc Lien	Faculty member	Institute of Engineering Physics, HUT
71	Ms. Cao Thi Thuy Lien	Ms. Sc. student	Faculty of Information Technology, HCMUNS
72	Assoc. Prof. Dr. Nguyen Van Lien	Dean	Faculty of Electrical Engineering, HUT
73	Dr. Dang Van Liet	Dean Head of staff of Physics-Computer Science	Faculty of Physics, HCMUNS

No.	Name	Role/Title	Department[8], Institution/ Organization
74	Doctor of Science (Dr. Sc.) Tran Hoai Linh	Faculty member, Institute of Instrumentation and Industrial Informatics	Faculty of Electrical Engineering, HUT
75	Dr. Trinh Van Loan	Faculty member	Faculty of Information Technology, HUT
76	Prof. Dr. Tran Dinh Long	Professor; Full Member, International Academy of Electrotechnical Science (IAES); Vice-President, Vietnam Electrical Engineering Association (VEEA)	Faculty of Electrical Engineering, HUT
77	Prof. Dr. Nguyen Canh Luong	Vice Rector	HUT
78	Mr. Duong Trong Luong	Lab assistant with MS degree	Faculty of Electronics & Telecommunications, HUT
79	Ms. Doan Thi Quynh Mai	Senior student	Faculty of Information Technology, HCMUNS
80	Mr. Pham Van Mau		Cement Cooperation
81	Ms. Vu Thi Minh	Fifth year student, Department of Communications Engineering	Faculty of Electronics & Telecommunications, HUT
82	Mr. Nguyen Quang Minh	Senior student	Faculty of Information Technology, HCMUNS
83	Mr. Luong Vy Minh	Lab assistant	Faculty of Information Technology, HCMUNS
84	Dr. Pham Ngoc Nam	Lecturer, Department of Electronics - Informatics	Faculty of Electronics & Telecommunications, HUT
85	Dr. Nguyen Thanh Nam	Head, Office of Academic Affairs	HCMUT
86	Dr. Phan Duy Nga	Director of International Relations Department	HUS
87	Assoc. Prof. Dr. Nguyen Phuong Nga	Director, Center for Educational Quality Assurance and Research Development	Vietnam National University – Hanoi (VNU- Hanoi)
88	Dr. Duong Hoai Nghia	Vice Dean	Faculty of Electrical & Electronics Engineering, HCMUT
89	Assoc. Prof. Dr. Nguyen Hoi Nghia	Director, Center for Educational Testing and Evaluation	Vietnam National University – Ho Chi Minh City (VNU HCM)
90	Mr. Vo Trong Nghia	Teaching Assistant, Department of Solid States Physics, Faculty of Physics	Faculty of Physics, HCMUNS
91	Assoc. Prof. Dr. Tran Van Nghia	Deputy Director, General Department of Testing and Accreditation	MOET
92	Assoc. Prof. Dr. Le Duc Ngoc	Deputy Director, Centre for Educational Quality Assurance and Research Development	VNU- Hanoi

[8] The term "Faculty" is used in Vietnamese universities to refer to the equivalent of a "Department" in U.S. higher education. The term "Department" is used in Vietnamese universities to mean the equivalent of a "Major" in U.S. higher education. In this table, the terms used by the Vietnamese are given for each individual while the column heading uses the English terminology.

No.	Name	Role/Title	Department[8], Institution/ Organization
93	Mr. Le Khoi Nguyen	Senior, Electronics-Telecommunications, Electrical and Electronics Engineering	Faculty of Electrical & Electronics Engineering, HCMUT
94	M.Sc. Pham Thi Xuan Nguyet	Senior Training Manager	PSV Solutions Vietnam
95	Assoc. Prof. Dr. Nguyen Thien Nhan	1. Minister 2. Former Standing Vice-Chairman	1. MOET 2. People's Committee of Ho Chi Minh City
96	Dr. Nguyen Van Nho	Vice Dean	Faculty of Electrical & Electronics Engineering, HCMUT
97	Prof. Dr. Tran Van Nhung	Vice Minister	MOET
98	Dr. Nguyen An Ninh	Director, General Department of Testing and Accreditation	MOET
99	Dr. Nguyen Huu Phuc	Vice Dean	Faculty of Electrical & Electronics Engineering, HCMUT
100	Dr. Nguyen Hua Phung	Faculty member, Faculty of IT	Faculty of Information Technology, HCMUT
101	Mr. Luong Huu Phuoc	Lab assistant	Institute of Engineering Physics, HUT
102	Assoc. Prof. Dr. Duong Ai Phuong	Rector	HCMUNS
103	Mr. Le Quang Phuong	Fifth year student in Quantum Optics (Undergraduate program for talented students	Faculty of Physics, HUS
104	Mr. Do Quyen	Master's degree student in Electrical Apparatus	Faculty of Electrical Engineering, HUT
105	Mr. Do Huu Quyet	Undergraduate student	Institute of Engineering Physics, HUT
106	Dr. Le Hai Sam	Faculty member	Faculty of Electrical Engineering, HUT
107	Assoc. Prof. Dr. Vo Van Sen	Vice-Rector	USSH, VNU-HCMC
108	Mr. Nguyen Le Hong Sinh	Senior, Electronics-Telecommunications, Electrical and Electronics Engineering	Faculty of Electrical & Electronics Engineering, HCMUT
109	Dr. Hoang Minh Son	Faculty member	Faculty of Electrical Engineering, HUT
110	Dr. Vo Thach Son	Faculty administrator	Institute of Engineering Physics, HUT
111	Ms. Ton Nu Minh Tam	Officer, Office for Scientific Research, Postgraduate Studies and International Cooperation	HCMUNS
112	Mr. Cao Dang Tan	Faculty member	Faculty of Information Technology, HCMUNS
113	Mr. Huynh Minh Tan	Third year student	Faculty of Information Technology, HCMUNS
114	Dr. Chau Van Tao	Vice Dean	Faculty of Physics, HCMUNS
115	Mr. Tran Quoc Thang	Lab assistant	Faculty of Electrical Engineering, HUT
116	Dr. Huynh Quyet Thang	Head, Software Engineering Department	Faculty of Information Technology, HUT

No.	Name	Role/Title	Department[8], Institution/ Organization
117	Dr. Nguyen Vu Thang	Lecturer, Department of Telecommunication Systems	Faculty of Electronics & Telecommunications, HUT
118	Dr. Nguyen Huu Thanh	Vice Dean, Department of Communications Engineering	Faculty of Electronics & Telecommunications, HUT
119	Assoc. Prof. Dr. Le Nhu Thanh	Director of Department of Postgraduate Training	HUS
120	Assoc. Prof. Dr. Vu Dinh Thanh	Dean	Faculty of Electrical & Electronics Engineering, HCMUT
121	Dr. Pham Xuan Thanh	Head, Division of Accreditation, General Department of Testing and Accreditation	MOET
122	Ms. Pham Nguyen Thao	Lab Assistant	Faculty of Information Technology, HCMUNS
123	Assoc. Prof. Dr. Do Huy Thinh	Director	SEAMEO RETRAC
124	Ms. Nguyen Hoang Thoan	Graduate student	Institute of Engineering Physics, HUT
125	Prof. Dr. Ha Manh Thu	Vice Director, International Cooperation Department	HUT
126	Dr. Phan Viet Thu	Director of Department of Academic Affairs	HUS
127	Mr. Nguyen Duc Thuan	Fifth year student	Faculty of Information Technology, HCMUT
128	Assoc. Prof. Dr. Le Tien Thuong	Professor, Electrical and Electronics Engineering, Director for Overseas Studies	Faculty of Electrical & Electronics Engineering, HCMUT
129	Prof. Dr. Nguyen Thanh Thuy	Vice Dean	Faculty of Information Technology, HUT
130	Assoc. Prof. Dr. Dong Thi Bich Thuy	Vice Rector	HCMUNS
131	Mr. Vu Thuy	A graduate in CS with a Bachelor's degree	Faculty of Information Technology, HCMUNS
132	Dr. Nguyen Manh Tien	Head, Department of Industrial Automation	Faculty of Electrical Engineering, HUT
133	Dr. Dang Van To	Senior Lecturer	Faculty of Physics, HCMUNS
134	Mr. Do Duc Ton	Fourth year student, Electric Power Systems	Faculty of Electrical Engineering, HUT
135	Dr. Tran Van Top	Vice Dean	Faculty of Electrical Engineering, HUT
136	Prof. Dr. Le Ngoc Tra	Former General Director	IER-HCMC
137	Ms. Nguyen Thi Huynh Tram	A graduate in CS with a Bachelor's degree	Faculty of Information Technology, HCMUNS
138	Ms. Nguyen Le Quynh Tram	Coordinator, International Development Department	SEAMEO RETRAC
139	Assoc. Prof. Dr. Doan Thi Minh Trinh	Head, Postgraduate Training Office	HCMUT
140	Dr. Cao Hoang Tru	Vice Dean, Research & International Relations	Faculty of Information Technology, HCMUT
141	Mr. Nguyen Ngoc Trung	Faculty member	Institute of Engineering Physics, HUT
142	Prof. Dr. Ha Duyen Tu	Vice Rector	HUT

No.	Name	Role/Title	Department[8], Institution/ Organization
143	Mr. Nguyen Cong Tu	Undergraduate student	Institute of Engineering Physics, HUT
144	Dr. Ngo Anh Tuan	Faculty administrator	Institute of Engineering Physics, HUT
145	Dr. Le Tuan	Faculty member	Institute of Engineering Physics, HUT
146	Mr. Ung Quoc Tuan	Third year student	Faculty of Information Technology, HCMUNS
147	Mr. Ho Thanh Tung	General Director, Indochina Region	Oracle Vietnam Pte Ltd
148	Assoc. Prof. Dr. Phan Thi Tuoi	Rector	HCMUT
149	Ms. Dang Hai Van	Third year student	Faculty of Information Technology, HCMUNS
150	Mr. Tran Bang Viet	Project Manager	TMA Solutions
151	Dr. Nguyen Xuan Hoang Viet	Faculty member, Department of Electric Power Systems; Head, Power System Protection & Control Laboratory	Faculty of Electrical Engineering, HUT
152	Mr. Lam Quang Vu	Faculty member	Faculty of Information Technology, HCMUNS

Appendix 5

Pre-Site Visit Interviews: Questions for Administrators

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics
at Select Universities in Vietnam

PLEASE PROVIDE THE FOLLOWING:

Name:
Title:
Faculty/Department:
University:
Phone: **E-mail:**
Educational background:
- Bachelor's in [subject] **From:**
- Master's in **From:**
- Doctorate in **From:**

***Note*:** Your participation is voluntary. We ask for you to identify yourself so that we can list your name as a contributor to the project. We assure you that your responses will be kept anonymous and that what you say will be summarized into a general statement. We appreciate your complete honesty in answering each item in order to provide an accurate picture of higher education practices in Vietnam. Thank you for your help!

Please confirm with your signature below so that we can list your name and use the information that you provide:
_____ Date: _____

Directions: The questions below are provided for your review in advance of a meeting with you in person. During a personal interview, Dr. Phuong will record your answers to the questions. In addition to your comments about your particular situation, we appreciate your adding answers also from a general perspective, if possible. Please provide copies and samples if available.

* * * * * * * * * * * * * * *

1. INSTITUTION

1. Describe the line of reporting within the University and in relation to MOET, other related ministries, and relevant authorities. If possible, please provide an organizational chart.
2. What are your University's various locations, enrollments, and yearly academic schedule?
3. To which outstanding university do you compare yourself in Vietnam and in the region?

2. DEPARTMENT

1. What is your department's strategic plan, including goals and expected outcomes? If possible, please provide your most recent strategic plan.
2. Describe the line of reporting within the department. If possible, please provide an organizational chart.

3. Summarize your duties within the department.
4. How were you selected for your current administrative position? How long is your term?
5. Describe the composition of the faculty members.
    a. Number of faculty members at different ranks (i.e., lecturer, senior lecturer, associate professor, professor)
    b. Number of faculty members with highest degree of Bachelor's, of Master's, of Ph..D.
    c. Names of universities from which faculty members received degrees (those with Bachelor's? With Master's? With Ph.D.s?)
    d. What percentage of faculty are trained overseas?
    e. What percentage of faculty are full-time and part-time?
    f. At what other universities do faculty members teach in addition to their full-time job?
6. How do you assign a faculty member to teach certain courses (i.e., based on what qualifications, background, years of experience)?
7. What types of teaching methods do faculty members use (lecture, group work, research project)?
8. Do faculty members get any help with their responsibilities (i.e., teaching assistants, research assistants)?
9. Describe the compensation and reward structure for faculty.
    a. What is the salary range for administrators and faculty members?
    b. How does one get promoted and get tenure?
    c. What are the incentives for improvement?
    d. How are exemplary contributions by faculty members and administrators rewarded?
    e. Do faculty receive sabbatical leave; how often, how long?
10. Is the degree program assessed? By whom? How often? What is the process? How is a program review conducted?
11. Describe the composition of the student body.
    a. Can students outside of this department take courses in this department? If not, why?
    b. What is the typical class size for courses in this department?
    c. What are the completion rates of entering undergraduates? Specifically, what percentage of students drop out after 1 year, 2 years, and 3 years? What are the primary reasons for one to drop out?
    d. How long is the average time for a student to complete the degree? What is the shortest and longest time?
12. Describe your typical day (approximate hours for each activity).

3. DEGREE PROGRAMS

1. List requirements for the bachelor's degree in [subject area]. Please address core curriculum (core courses) and electives (optional courses), the number of credit hours, and lecture versus lab courses.
2. Please describe the credit system, if applicable, in your department.

3. How many courses/credits are students required to take in one semester/term? In one year (over 12 months)?
4. How many hours per week do courses meet?
5. How much time is expected for homework outside of the meeting time for each course?

4. CURRICULUM AND SYLLABI

1. How is the curriculum developed and approved? If possible, please provide a copy of the curriculum.
2. How much can faculty members/ departments make changes to the curriculum? (a lot, some, very little, not at all)
3. Do you use curriculum mapping in planning course sequences and content? If so, how?
4. What is the standard format for a syllabus? Please provide samples.
5. How often are the syllabi revised?
6. What is the proportion of theory and practice in the curriculum? In the syllabi? Is this adequate?
7. How often are foreign books and materials (i.e., curricula, syllabi, etc.) used? (frequently, occasionally, never)
8. Do students receive copies of the curriculum and syllabi? If so, in what format and when?
9. In your opinion, what part of the curriculum (overall program) is most useful to students? What are the students most proud of?
10. Do faculty share and exchange syllabi with other faculty members in the same department? How about with departments in other universities?

5. ASSESSMENT OF STUDENT LEARNING

1. How often is student learning assessed (i.e., weekly tests, mid-term exams, semester or year-end final exams)?
2. What types of assessments (i.e., in-class tests, homework, group projects, presentations) are used to evaluate students?
3. What types of tests are used (i.e., multiple choice, short answer, essay, and/or oral exam)?
4. What grading standards do faculty members use? How are students informed of grading standards?
5. What percentage of the syllabi is assessed in tests?
6. At the end of a course, how does a faculty member assess student learning outcomes with the goals set in the course syllabus and overall curriculum?
7. If you could make one change to further develop student learning, what would that be?

6. EVALUATION OF FACULTY TEACHING

1. What types of assessments are used to evaluate faculty teaching, who does the evaluation (i.e., self, students, peers, supervisors), and how often? Please provide sample forms.

2. Are these assessments used to reward faculty? If so how? (e.g., promotion, increased salary)
3. Are assessment results used for further development/improvement of faculty teaching? If so, how?
4. If you could make one change to further develop faculty teaching effectiveness, what would that be?

7. TEACHING AND LEARNING RESOURCES

1. Please describe the availability of educational aids, materials, textbooks, and resources (i.e., computers, Internet access, reference materials, journals)?
    a. How many computers are available (to faculty, to students)? How many computers with high-speed Internet access? Are they free for faculty, for students?
    b. Do faculty have their own copies of the textbooks (all, some, none)? Do students have their own copies (all, some, none)?
    c. If copies of textbooks are in the library, how do students have access to them (must read in library, can copy, can check books out)?
    d. If no text books are available, do faculty develop course notes? Are the course notes available on the Web?
    e. How do faculty and students access the latest professional journals (Internet, library subscription, interlibrary loan)?
2. What student services are available (i.e., bookstore, canteen for meals, counseling, job placement assistance, health facilities, library)?
3. What support structures are available for students who need additional help? (i.e., remedial courses, learning centers, writing center, etc.). If available, how are they funded and staffed?

8. HOW MUCH, AND WHAT KIND OF, INTERACTION EXISTS BETWEEN

1. Faculty members and students (frequent, occasional, never)
2. Faculty members (frequent, occasional, never)
3. Faculty members and administrators (frequent, occasional, never)
4. Faculty members and alumni (frequent, occasional, never)
5. Faculty members and industries, companies (frequent, occasional, never)

9. RESEARCH

1. What percentage of faculty conduct research?
2. What is the source of research funding? (e.g., University (%), government (%), private (%)?
3. Are faculty members encouraged to conduct research? If so, how?
4. What research projects are underway now among faculty in [subject]?
5. Is research incorporated into courses? If so, how is this done?
6. Are students involved in doing the research?
7. Is joint research with other faculty and/or students encouraged? If so, how?
8. Are paid positions available to students to do research toward their degree?

10. OTHER ACTIVITIES

1. Describe the support provided by the University for faculty professional development, including the funding and staffing, to assist faculty in:
    a. pedagogy;
    b. curriculum development;
    c. assessment of student learning; and
    d. program/curriculum assessment.
2. Are faculty members encouraged to participate in committees and other services to the University? If so, how?
3. How many committees are faculty members expected to serve on? Describe the types of committees and services.

11. STUDENT LEARNING

1. How many hours per week do students meet with the teacher for a course (i.e., contact hours in class per week for each course)?
2. How many hours per week are students expected to study (for each class) outside class (i.e., homework assignments, etc.)? (1-2, 3-5, 6-10)
3. How often do students meet with faculty members outside of the class for help and mentoring? (frequently, occasionally, rarely, never)
4. How much is English as a foreign language required in your department? [Are the students required to take the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS)? If so, what is the average score?]

12. FINANCIAL ISSUES

1. How much tuition and fees do students pay for one semester? for one year?
2. How do students fund their studies
    a. by working besides going to school (%)
    b. by getting a scholarship and/ or financial aid from the University (%)
    c. by getting a scholarship and/ or financial aid from the government (%)

13. JOB PREPARATION

1. Does the University help students find jobs upon graduation? If so, how?
2. What percentage of your graduates are employed in government, industry, and academia (teaching, research)?
3. What percentage of your graduates get jobs within one month of graduation? Six months? One year?

14. OTHER COMMENTS

THANK YOU FOR YOUR COOPERATION!
If you have any questions, please contact Dr. Nguyễn Thị Thanh Phượng
on her cell phone: 0909-388-227 or by e-mail: phuongnguyen@vef.gov

Appendix 6

Pre-Site Visit Interviews: Questions for Faculty Members

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics
at Select Universities in Vietnam

PLEASE PROVIDE THE FOLLOWING:

Name:
Title:
Faculty/Department:
University:
Phone: **E-mail:**
Educational background:
- Bachelor's in [subject] **From:**
- Master's in **From:**
- Doctorate in **From:**

***Note*:** Your participation is voluntary. We ask for you to identify yourself so that we can list your name as a contributor to the project. We assure you that your responses will be kept anonymous and that what you say will be summarized into a general statement. We appreciate your complete honesty in answering each item in order to provide an accurate picture of higher education practices in Vietnam. Thank you for your help!

Please confirm with your signature below so that we can list your name and use the information that you provide:

_____ Date: _____

Directions: The questions below are provided for your review in advance of a meeting with you in person. During a personal interview, Dr. Phuong will record your answers to the questions. In addition to your comments about your particular situation, we appreciate your adding answers also from a general perspective, if possible. Please provide copies and samples if available.

1. CURRENT TEACHING SITUATION

1. List the courses that you teach in this department.
2. How many hours do you teach (in this department)?
3. How many students are in a typical class?
4. What other duties do you have in this department?
5. What types of teaching methods do you use (i.e., lecture, group work, research project)?
6. Do you get any help with your responsibilities (i.e., teaching assistants, research assistants)?
7. Describe your typical day as a faculty member (approximate hours for each activity).
8. At what other universities do you teach in addition to your full-time job?

2. CURRICULUM AND SYLLABI

1. How is the curriculum developed and approved?
2. How much can faculty members/ departments make changes to the curriculum? (a lot, some, very little, not at all)
3. Do you use curriculum mapping in planning course sequences and content? If so, how?
4. List requirements for the bachelor's degree in [subject area]. Please address core curriculum (core courses) and electives (optional courses), the number of credit hours, and lecture versus lab courses. If possible, please provide a copy of the curriculum.
5. Describe, and please provide current examples of, the curriculum and specific syllabi that you are using now, particularly for core courses. Please identify the subject area and/or courses.
6. What is the standard format for a syllabus? Please provide samples.
7. How often are the syllabi revised?
8. What is the proportion of theory and practice in the curriculum? In the syllabi? Is this adequate?
9. Please provide some sample materials (i.e., grading standards, homework assignments, exams) on a few undergraduate courses of your choice.
10. How many hours per week do courses meet? How much time is expected for homework outside of the meeting time for each course?
11. How often are foreign books and materials (i.e., curricula, syllabi, etc.) used? (frequently, occasionally, never)
12. Do students receive copies of the curriculum and syllabi? If so, in what format and when?
13. In your opinion, what part of the curriculum (overall program) is most useful to students? What are the students most proud of?
14. Do faculty share and exchange syllabi with other faculty members in the same department? How about with departments in other universities?

3. ASSESSMENT OF STUDENT LEARNING

1. What grading standards do you use? How are students informed of grading standards?
2. What types of assessments (i.e., in-class tests, homework, group projects, presentations) are used to evaluate students? Please provide samples.
3. How often is student learning assessed (i.e., weekly tests, mid-term exams, semester or year-end final exams)?
4. What types of tests are used (i.e., multiple choice, short answer, essay, and/or oral exam)?
5. What type of feedback do you give to students on their homework assignments? Please provide samples of students' work with your feedback.
6. What percentage of the syllabi is assessed in tests?
7. At the end of a course, how do you assess student learning outcomes with the goals set in the course syllabus and overall curriculum?
8. If you could make one change to further develop student learning, what would that be?

4. EVALUATION OF YOUR TEACHING

1. What types of assessment are used to evaluate your teaching, who does the evaluation (i.e., self, students, peers, supervisors), and how often? Please provide sample forms.
2. Are these assessments used to reward faculty? If so how? (e.g., promotion, increased salary)
3. Are assessment results used for further development/improvement of your teaching?
4. If you could make one change to further develop faculty teaching effectiveness, what would that be?

5. TEACHING AND LEARNING RESOURCES

1. Please describe the availability of educational aids, materials, textbooks, and resources (i.e., computers, Internet access, reference materials, journals)?
    a. How many computers are available (to faculty, to students)? How many computers with high-speed Internet access? Are they free for faculty, for students?
    b. Do you have your own copies of the textbooks? Do students have their own copies?
    c. If copies of textbooks are in the library, how do students have access to them (must read in library, can copy, can check books out)?
    d. If no text books are available, do you develop course notes? Are the course notes available on the Web?
    e. How do you and your students access the latest professional journals (internet, library subscription, interlibrary loan)?
2. What student services are available (i.e., bookstore, canteen for meals, counseling, job placement assistance, health facilities, library)?
3. What support structures are available for students who need additional help? (i.e., remedial courses, learning centers, writing center, etc.). If available, how are they funded and staffed?

6. HOW MUCH, AND WHAT KIND OF, INTERACTION EXISTS BETWEEN YOU AND

1. Your students (frequent, occasional, never)
2. Other faculty members (frequent, occasional, never)
3. Administrators (frequent, occasional, never)
4. Alumni (frequent, occasional, never)
5. Industries, companies? (frequent, occasional, never)

7. RESEARCH

1. What percentage of faculty conduct research?
2. What is the source of research funding? (e.g., University (%), government (%), private (%)?
3. Are faculty members encouraged to conduct research? If so, how?
4. What research projects are underway now among faculty in [subject]?

5. Who is the principal investigator (PI) of the various projects?
6. What research are you involved in now?
7. How is information about, and results of, the research made known to the public?
8. Is research incorporated into your courses? If so, how?
9. Are students involved in doing the research?
10. Is joint research with other faculty and/or students encouraged? If so, how?
11. Are paid positions available to students to do research toward their degree?

8. OTHER ACTIVITIES

1. Describe the support provided by the University for faculty professional development, including the funding and staffing, to assist faculty in:
    a. pedagogy;
    b. curriculum development;
    c. assessment of student learning; and
    d. program/curriculum assessment.
2. Are faculty members encouraged to participate in committees and other services to the University? If so, how?
3. How many committees are faculty members expected to serve on? Describe the types of committees and services.

9. OTHER COMMENTS

THANK YOU FOR YOUR COOPERATION!
If you have any questions, please contact Dr. Nguyễn Thị Thanh Phượng
on her cell phone: 0909-388-227 or by email: phuongnguyen@vef.gov

Appendix 7

Pre-Site Visit Interviews: Questions for Students

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics
at Select Universities in Vietnam

PLEASE PROVIDE THE FOLLOWING:
Name:
University:
Faculty/Department:
Degree sought:
Major:
Year:
Phone: **E-mail:**

***Note*:** Your participation is voluntary. We ask for you to identify yourself so that we can list your name as a contributor to the project. We assure you that your responses will be kept anonymous and that what you say will be summarized into a general statement. We appreciate your complete honesty in answering each item in order to provide an accurate picture of higher education practices in Vietnam. Thank you for your help!

Please confirm with your signature below so that we can list your name and use the information that you provide:
_____ Date: _____

Directions: The questions below are provided for your review in advance of a meeting with you in person. During a personal interview, Dr. Phuong will record your answers to the questions. In addition to your comments about your particular situation, we appreciate your adding answers also from a general perspective, if possible. Please provide copies and samples if available.

* * * * * * * * * * * * * * * *

1. CURRICULUM AND SYLLABI

1. Do your teachers use a standard format for a syllabus?
2. How often do your teachers revise the syllabi?
3. What is the proportion of theory and practice in the curriculum? In the syllabi? Is this adequate?
4. How often are foreign books, materials, curricula, and syllabi used (frequently, occasionally, never)?
5. Do you receive copies of the curriculum and syllabi? If so, in what format and when?
6. In your opinion, what part of the curriculum (overall program) is most useful to you? What are you most proud of?

2. STUDENT LEARNING SITUATION

1. What are your expectations for how long it will take you to obtain your degree?
2. Do you consider this an appropriate length of time?
3. How many courses/credits do you take in one semester/term? In one year (over 12 months)?

4. How many hours per week do you meet with the teacher for a course (i.e., contact hours in class per week for each course)?
5. How many hours per week do you study outside class per course (i.e., homework assignments, etc.)? (1-2, 3-5, 6-10)
6. How often do you meet with your teacher outside of the class for help and mentoring (e.g., number of times/week, length of time)?
7. How often do you use the library and other learning resources (e.g., hours/day, hours/week)? Do these meet your needs?
8. How often do you use the Internet (hours/day, hours/week)? Where do you access the Internet (e.g., classroom, library, home, internet café)?
9. How do you study in preparation for classes, tests, exams (e.g., by yourself, in a group)? How many hours do you study per test?
10. Do you find your courses in general, useful or not useful?
11. Which specific courses do you think are most useful? How are they useful?
12. Which courses do you think should be omitted? Why?
13. Do you have a favorite professor? If so, what makes that professor especially good?
14. What foreign languages have you studied?
15. If you have studied English, have you taken the TOEFL or IELTS? If so, what were your scores?
16. What type of interaction occurs between you and faculty members (e.g., helping to understand concepts, mentoring)? If so, how often (frequently, occasionally, rarely)?
17. If you could make one change to further develop your learning, what would that be?
18. Describe your typical day (approximate hours for each activity).

3. LEARNING RESOURCES

1. Please describe the availability of educational aids, materials, textbooks, and resources (i.e., computers, Internet access, reference materials, journals)?
    a. How many computers are available to students? How many computers with high-speed Internet access?
    b. Do students have their own copies of the textbooks (all, some, none)?
    c. If copies of textbooks are in the library, how do students have access to them (must read in library, can copy, can check books out)?
    d. If no text books are available, do faculty develop course notes? Are the course notes available on the Web?
    e. How do students access the latest professional journals (Internet, library subscription, interlibrary loan)?
2. What student services are available (i.e., bookstore, canteen for meals, counseling, job placement assistance, health facilities, library)?
3. What support structures are available for students who need additional help? (i.e., remedial courses, learning centers, writing center, etc.).

4. ASSESSMENT OF STUDENT LEARNING

1. How often do you have tests (i.e., weekly tests, mid-term exams, semester or year-end final exams)?
2. What types of tests are used (i.e., multiple choice, short answer, essay, and/or oral exam)?
3. What type of feedback do your teachers give to you on your homework assignments? Please provide samples of your work with your teacher's feedback.
4. What percentage of the syllabi is assessed in tests?
5. If you could make one change to improve the assessment of your learning, what would that be?

5. RESEARCH

1. Is faculty research incorporated into teaching (Y/N)?
2. If so, does this make the information more interesting (Y/N)?
3. How are you involved in doing research for any courses?
4. How is joint research with your teachers encouraged?
5. Are paid positions available to you to do research toward your degree?

6. ASSESSMENT OF FACULTY TEACHING

1. Are you asked to assess/ give feedback on your teachers' teaching? If so, how often?
2. Is feedback written or oral?
3. Do you feel you can give an honest assessment of how well you are taught? If so, how?
4. If you could make one change to further develop teaching effectiveness, what would that be?

7. FINANCIAL ISSUES

1. How much tuition and fees do you pay for one semester? For one year?
2. Do you work besides going to school? If so, what do you do?
3. How do you fund your studies? Do you receive any form of scholarship and/ or financial aid?

8. JOB PREPARATION

1. Does the University help students find jobs upon graduation? If so, how?
2. Is this help for jobs in Vietnam only?
3. In your view, are you well-prepared for the job market? (Y/N)
4. After graduating, what do you plan to do? (e.g., teaching, research, government, private industry, other)

9. OTHER COMMENTS

THANK YOU FOR YOUR COOPERATION!
If you have any questions, please contact Dr. Nguyễn Thị Thanh Phượng
on her cell phone: 0909-388-227 or by e-mail: phuongnguyen@vef.gov

Appendix 8

Summary[9] of Pre-Site Visit Data

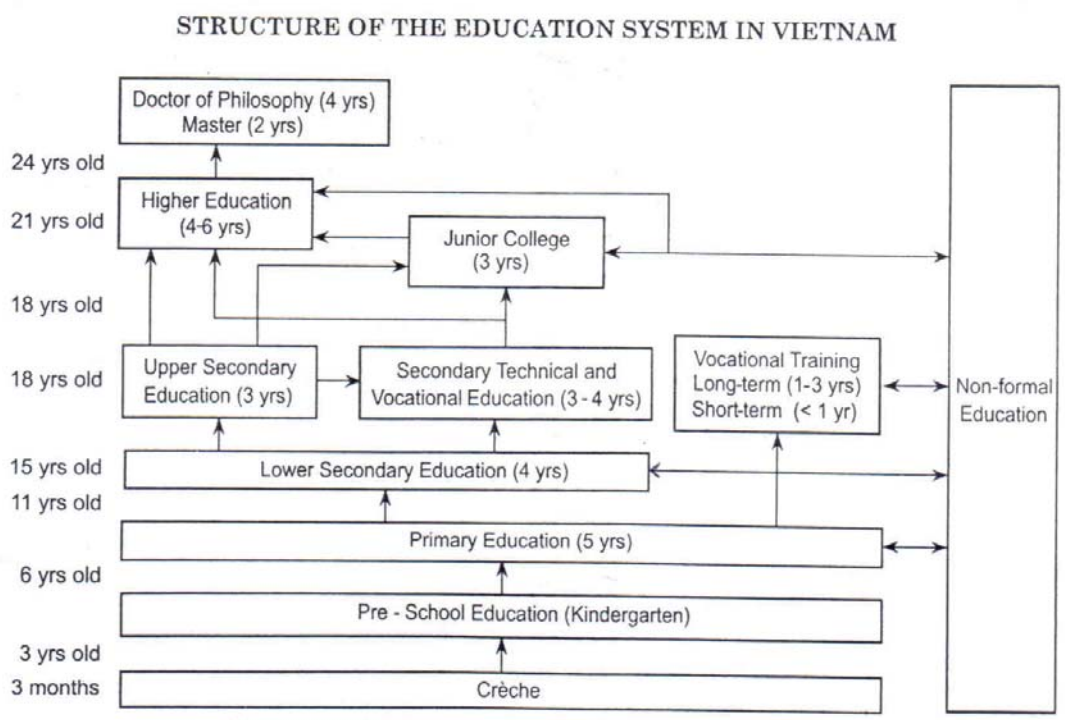
Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics
at Select Universities in Vietnam

BACKGROUND INFORMATION

Educational System in Vietnam

Education is traditionally highly valued in Vietnamese society. It is also regarded as being of critical importance to Vietnam's success in the global economy. During the academic year 2004-2005, there were about 22 million students in the educational system (MOET, 2006a). Education in Vietnam occupies 17.1% of all state budget expenditures (Institute of International Education, 2005). The structure of the education system in Vietnam is provided in Chart 1:

Chart 1: The Structure of the Education System in Vietnam



Source: Vietnam Education and Training Directory (MOET, 2004, p.15)

[9] This information was compiled in the form of a summary report by Dr. Nguyen Thi Thanh Phuong, VEF Consultant, at the request of the U.S. experts in order to understand the Vietnamese higher education system before their on-site visits to Vietnam in May 2006. The pre-site visit data, which was collected through interviews by Dr. Phuong, were by and large confirmed through the observations and interviews by the U.S. visiting expert teams.

Higher Education in Vietnam

The Ministry of Education and Training (MOET) was established in 1990 and given responsibility for all education and training at the national level, including higher education. Since the mid-1980s, and especially since 1993, there has been a sustained effort to build and reform the higher education system. Over the period from 1993 to 2003, higher education enrollment increased by more than 600 per cent and there was a doubling in the number of higher education institutions. By the academic year 2005-2006, there were 255 universities and colleges (as of May 2006), including two national universities: Vietnam National University, Hanoi, and Vietnam National University, Ho Chi Minh. A summary of the types of higher education institutions and their distribution from the academic year 1999-2000 to 2005-2006 is provided in Table 1:

Table 1. Higher education institutions and their distribution from 1999-2000 to 2005-2006

	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006[10]
INSTITUTIONS	**153**	**178**	**191**	**202**	**214**	**230**	**255**
Junior Colleges	**84**	**104**	**114**	**121**	**127**	**137**	**151**
Public	79	99	108	115	119	130	142
Non Public	5	5	6	6	8	7	9
Universities	**69**	**74**	**77**	**81**	**87**	**93**	**104**
Public	52	57	60	64	68	71	79
Non Public	17	17	17	17	19	22	25
STUDENTS	**893,754**	**918,228**	**974,119**	**1,020,667**	**1,131,030**	**1,319,754**	**1,387,107**

Source: http://www.edu.net.vn/Data/ThongKe/dhcd.htm

As background for this project, numerous points can be made about Vietnamese higher education. First, according to Nguyen and McDonald (2001), the Vietnamese higher education system has been totally redesigned twice in the last 200 years. "Now comes the third reorganization, based on the on-going renovation ('doi moi') of the country's social organization so as to fit into a socialist market economy" (Nguyen and McDonald, 2001, p. 1). Second, the administration and financing of education are becoming more decentralized both horizontally and vertically. Horizontal decentralization has meant that, while MOET is pre-eminent, other functional departments within the government also have responsibility for education and training (e.g., the University of Medicine under the Ministry of Medicine, the University of Culture and the Conservatory of Music under the Ministry of Culture and Information, the University of Architecture under the Ministry of Construction, the Vietnam National University Hanoi, and the Vietnam National University HCM). Vertical decentralization means that different levels of government have become more responsible for education and training in their functional, geographic, and political areas.

[10] Statistics of higher education institutions for academic year 2005-2006 were based on personal communication by email with the Higher Education Department, Ministry of Education and Training.

The third point regarding higher education in Vietnam is that the Decree 85 on educational reform allows local education authorities more power and responsibility to undertake long-term education programs. Fourth, in 1993, the government issued Decree 90/CP[11] that addressed the structure of national education and expressed commitment to the concept that all should have the right to study and pursue higher education. Fifth, MOET recently introduced the first institutional accreditation standards for Vietnam higher education in December 2004. Ten pilot institutions carried out and completed their self-studies between March 2005 and December 2005. Another cohort of ten institutions is expected to complete their self-studies and peer review by December 2006. Between 2007 and 2020, the rest of the institutions in Vietnam are expected to be accredited.

As for the sixth point, according to MOET's *Pre-Feasibility Report regarding the Higher Education Project No. 2*, a large number of small, single-discipline colleges and institutes transformed into one with far greater institutional diversity (MOET, 2006b). Seventh, the growth of a "non-public" sector has been striking. Approximately eleven percent of all students now attend higher education institutions that rely almost entirely on tuition fees for their income. It is expected that this proportion will increase to 40% by 2010. Eighth, a related change is that over three-quarters of all higher education students in Vietnam now pay tuition fees.

Ninth, as for funding for future growth, the demand for places in higher education in Vietnam is increasing at a faster pace than their availability. Financing this growth will inevitably require that more of the burden of cost will be transferred to students and their families, and thus comes the conflict between promoting equity of access and encouraging the development of high standards in teaching and research. Tenth, as the system expands, far more institutional autonomy will be required as will better governance and management processes within higher education institutions.

Finally, quality is a major issue, in particular, the quality of the inputs, processes, and outcomes of the higher education sector.

METHODOLOGY

Research Design

This study entitled *Observations on Undergraduate Education in Computer Science, Electrical Engineering, and Physics at Select Universities in Vietnam* was designed to be a multiple case study qualitative research project. Data includes online and other archival documents, interviews, observations, and follow-up correspondence.

Selection of Case Institutions

Four Vietnamese universities (Universities 1, 2, 3, and 4) were selected to participate in this project, referred to as the Undergraduate Education Project, because of (a) their exemplary undergraduate programs in CS, EE, and/ or physics and (b) the high number of VEF Fellows from these universities' programs.

[11] CP stands for Chinh Phu (i.e., the Government)

Research Questions

The following three research questions were used to guide the project as a whole. The first research question was used to guide the preliminary interviews.

1. What is the current status of teaching and learning in the selected disciplines, namely, computer science, electrical engineering, and physics, in Vietnamese universities?
2. What are the opportunities for improvement?
3. What are the potential changes that can bring about the improvements?

Data Collection

Archival data were collected from MOET and the four universities, as well as their Web sites. The three sets of interview questions were developed for administrators, faculty members, and students. The interview questions were sent to the participants in advance. Interview appointments were made, followed by in-person interviews, and follow-up correspondences for clarification. The data described herein were collected by Dr. Nguyen Thi Thanh Phuong, VEF Consultant, at interviews conducted in advance of the site visits by the U.S. expert teams and was presented as background information to the U.S. expert teams before their arrival in Vietnam.

Data Analysis

The constant comparative method was used to analyze the data. "The researcher begins with a particular incident from an interview, field notes, or document and compares it with another incident in the same set of data or in another set" (Merriam, 1998, p. 159). Merriam (1998) also states that "the development of categories, properties, and tentative hypotheses through the constant comparative method is a process whereby the data gradually evolve into a core of emerging theory" (p. 191).

SUMMARY OF DATA

Four Participating Universities

The identity of the four universities participating in the Undergraduate Education Project was protected by using pseudonyms University 1 (U1), University 2 (U2), University 3 (U3), and University 4 (U4). Some brief background information on these four universities was gathered prior to the expert team visits in May 2006 and is summarized in Table 2.

Table 2: Four Universities Participating in the Undergraduate Education Project.

University (U1, U2, U3, U4)	Reporting To	Enrollment	Degree Program Duration	Participating Departments		
				CS*	**EE***	**Physics***
U1	MOET	25,000 (Full-time)	5 years	Yes	Yes** (EE &ET)	Yes
U2	VNU-Hanoi	9,597 (Full-time: 4,317 & Part-time: 5,280)	4 years			Yes
U3	VNU-HCM	27,000 (Full-time: 19,954 & Part-time: 7,046)	4.5 years	Yes	Yes	
U4	VNU-HCM	8,560 (Full-time: 7,800 & Part-time: 760)	4 -5 years	Yes		Yes

* CS: Computer Science (which is often called Information Technology in Vietnam); EE: Electrical Engineering; and Physics

** University 1 has two separate departments: (a) Faculty of Electrical Engineering; and (b) Faculty of Electronics and Telecommunications.

Admission to the departments of CS, EE, and Physics at the four universities is a two-part process coordinated through MOET. Students must first pass the High School Graduation Examination. They then are required to pass the national entrance exams on math, physics, and chemistry that take place in mid-July each year.

Organization

Similar to U.S. universities, the university in Vietnam is divided into departments and each department (Faculty) is divided into majors (Departments). To clarify the use of terminology, Vietnamese universities use the term "Faculty" in English to refer to the equivalent of a department in U.S. universities and "Department" to refer to the equivalent of a major or specialization. A Vietnamese "Faculty" is comprised of departments, and the head of the Faculty is the Dean. Each Department has a department head.

Degree Programs

In Vietnam, the credit system seems to be preferred to the yearly system, in which students move in a cohesive cohort throughout their years of study. Of the four universities, Universities 3 and 4 use a credit system. University 3 has used this system since 1993 and University 4, since 1994. Universities 1 and 2 are working towards applying a credit system, and in fact, University 1 will pilot the system with some departments in the academic year 2007-2008.

As seen from Table 2, the duration of Bachelor's degree programs differs from one university to another. It takes students five years, four years, four and a half years, and four to five years to complete a Bachelor's degree at Universities 1, 2, 3, and 4 respectively.

The students favor courses in their specialized discipline more than generic education courses. It was suggested that some courses be combined as they are quite repetitive. By doing this, either the program duration can be shortened or more discipline specific courses could be added. A summary of credit hours required for the undergraduate programs at the four universities is provided in Table 3.

Table 3. Credit hours required for undergraduate programs at the four universities.

University	Subjects								
	Computer Science			Electrical Engineering			Physics		
	GS (Credits)	SS (Credits)	**Total (Credits)**	GS (Credits)	SS (Credits)	**Total (Credits)**	GS (Credits)	SS (Credits)	**Total (Credits)**
University 1 (U1)	121	150	**271**	122	160	**282**	131	156	**287**
University 2 (U2)							103	94	**197**
University 3 (U3)	69	80	**149**	131	112	**243**			
University 4 (U4)	92	115	**217**				101	50	**151**

Notes: GS: General Subjects**; SS**: Specialized Subjects

It would potentially be better to introduce more obvious connections among courses so that students can see the relationship between and among courses. The proportion of theoretical and experimental or laboratory courses is viewed as inadequate. It might be advisable to add more practical experience (experiments and/or lab hours) to the curriculum.

Curricula and Syllabi

Based on MOET's curriculum framework, the department's Scientific Council develops courses, course sequence, and main content for each course; it appoints a faculty member to develop detailed syllabi (chapters, time required, text books, and reference materials). After the curriculum is approved by the department's Scientific Council, the curriculum is sent to the university's Scientific Council, then to MOET (or VNU) for approval. The curriculum consists of the following: (a) a core course component that is mandatory; (b) an optional/elective course component; (c) a core section set by MOET and the University; (d) a section of foundation knowledge for the field of study; and (e) specialized knowledge. Thirty percent of the curriculum seems to be adjusted (decided) by the universities. The adjustment is more flexible for elective courses. The materials are in both English and Vietnamese; students also find course materials online.

Faculty members teaching different sections of the same course use the same syllabi as approved for the same subject. Similarly, the same tests appear to be given in the same courses taught by different faculty members; and the questions for tests, based on input from faculty members, are determined by the Department Head. University 3 uses a standard format for curriculum within the whole university. At University 3, faculty members in the same department use the same syllabi; they also refer to curriculum and syllabi from other universities.

Teaching

Current Teaching Situation

Faculty members are assigned to teach certain courses based on their qualifications and years of experience. Outstanding graduates are recruited to become faculty members, starting as an assistant lecturer (which lasts for about two years) with a mentor. Faculty members may have a Ph.D., a Master's, or a Bachelor's. Each year, institutions organize an examination in June to recruit faculty members and staff members to become official state employees.

A senior professor at University 1 commented that the faculty members' workload is three times heavier than several years ago because, while the number of faculty remains almost the same, the number of students has increased by a factor of three. Faculty members are extremely busy. They do not have teaching or research assistants. Generally, outside of class time, students do not meet professors for mentoring. Faculty members generally do not have their own offices or keep office hours.

The income of a vice dean is reported to be 2,000,000 VND (US$130)/month. A nationally known professor might receive a monthly salary of 4,000,000 VND (US$260). Only excellent graduates would be retained to become young faculty members at their own universities; however, he or she would receive as pay only a quarter of what his classmates would receive when working in other organizations such as private companies. The structure of the monthly income of a faculty member's salary is based on two factors: (1) the basic salary provided by the central government; and (2) hourly wages, based on the number of teaching hours. The higher the title is (lecturer, senior lecturer, professor), the higher the basic salary and the hourly teaching income are.

To increase their income to an acceptable level, faculty members indicate that they have to moonlight, normally by teaching at other universities (open universities, privately established universities) or by working for companies. This practice is neither prohibited nor encouraged. Thus, the majority have no time to dedicate themselves fully to teaching and research. Faculty members are not entitled to sabbatical leave.

Depending on the subject and individual faculty members, different teaching methods are used. However, the most prominent teaching method is lecture style, using chalk boards with a large class size (50-300) while students take notes. Criticism falls on some senior faculty members who do not seem to improve themselves and remain the same over many years. Young faculty members seem to be viewed as more enthusiastic, and thus more appreciated by students. These young faculty members are easy to meet, according to student reports, and willing to use technology and new teaching methods. The typical day of a faculty member includes teaching, conducting research, and improving one's knowledge in their field.

The following recommendations were made by those interviewed in advance of the U.S. expert team visits: (a) consider revising the salary of teaching staff so that they earn enough to live and have enough time to retrain themselves, acquire new knowledge, and conduct more research; (b) consider creating more opportunities for students to interact with faculty members; and (c) consider collecting student evaluations of faculty teaching in order to seek recommendations for faculty to improve.

Evaluation of Faculty Teaching

A majority of the interviewees indicated that no evaluation of faculty teaching exists. Others mentioned three practices pertaining to evaluation of faculty teaching: self-reflection, peer review, and student feedback. First, some faculty members, at the end of the course, reflect on the outcomes versus the goals set for the course and make adjustments for improvement (e.g., search for good examples of assignments on the Internet and make changes accordingly).

Second, as for peer review, at University 1 and University 3, a committee of experienced teachers audit classes taught by young faculty members. Based on these observations, recommendations for improvement are offered to the young faculty members, who were observed by the committee, which appears to be more mentoring than evaluating. Universities 2 and 3 have inspectors to check the actual learning and teaching practices (e.g., punctuality, attendance). Also, a common practice to evaluate faculty teaching annually in Vietnamese universities is a self-evaluation followed by a peer review. This process consists of several stages: (a) first, all the faculty fill in the self-evaluation form and send it to the Department; (b) then, they read their self-evaluations aloud at a meeting in the presence of others, who can comment on the self-evaluation; and (c) finally, their colleagues elect and vote on individuals to be nominated for prestigious titles/rewards, such as the excellent teacher award at the level of the Ministry or the level of the university, and a maximum of 25% of the faculty are entitled to be awarded in this manner.

Third, as for student feedback, students are not used to commenting on their teachers' teaching effectiveness. In some cases, candid written comments by students reportedly are deleted by a University moderator. University 4 has a forum where students can give feedback. University 3 uses a teacher evaluation form to evaluate faculty teaching in some select departments. It might be better (a) to consider making students more active in class by incorporating interactive learning techniques; and (b) to look at obtaining more evaluations and feedback from students.

Teaching and Learning Resources

The following seem to be lacking at the four universities: (1) computers with good Internet access; (2) up-to-date books in the field; and (3) reference materials. The books available in the library are old and outdated. Internet connections are slow. The borrowing procedure is complicated and time-consuming. Students have to make a financial deposit in order to borrow books and a maximum of only two books at a time can be borrowed. The maximum time that students can keep books is two weeks. Only in a few instances was there easy access to e-journals; thus students and faculty alike have great difficulties with getting current information. It might be better to look at attaining licensed access to e-journals for all universities.

Faculty members often have their own textbooks and students buy or copy these textbooks on their own. Thus, students have textbooks, either an original or a photo copy. Student services (i.e., bookstore, canteen for meals, counseling, job placement assistance, health facilities, library) are available; however, the quality is not good. Web pages are not optimized to increase teaching effectiveness.

Recommendations by those interviewed before the U.S. expert team visits include the following to consider: (a) expanding library operating hours to include weekends and evenings in order to accommodate the students as well as simplifying the book borrowing procedures; (b) providing more space and facilities for students; (c) developing more facilities for sports and recreation for students; (d) obtaining more equipment and simulation software for labs for practicum hours; and (e) establishing cooperation with other libraries inside and outside Vietnam.

Faculty Interactions

Except in some special cases, little interaction seems to exist between students and faculty members outside of class. Faculty members reportedly meet more regularly with students, who are in the final stage of writing their thesis or conducting research.

An alumni organization does not seem to exist with official activities or an organizational structure. The link between universities and industry is apparently not strong. Businesses seem to come to the universities mainly for future recruitment purposes.

Research

All faculty members interviewed indicated that they would like to do research but not all are able to do so because of other commitments (e.g., moonlighting and teaching too many classes). Research and teaching are officially required at one University, each reportedly at 50% of one's time commitment. At that same University, research products (publications) are converted into teaching hours. Various types of research are encouraged for faculty members and students.

Research projects receive funding from different organizations: the government, the Ministry of Education and Training, the University, and international joint-research projects (not popular). The level of funding provided for these projects is correlated with the level of research being granted.

Learning

Student Learning

Students at these four participating universities are generally highly qualified (the top 12% of candidates that apply) after passing the high school graduation exam and the competitive national entrance exams. A common remark during the pre-site visit interviews was that Vietnamese students are generally passive although some study very hard. Students' English level is limited, except those who have an opportunity to take additional English classes in the evening. English for engineers is taught by teachers who are English majors not engineering majors. So, they do not seem to have the depth of the field of engineering, thus affecting their effectiveness to teach English for those specific purposes.

Assessment of Student Learning

There is little or no use of formative assessment because of the high number of students in each class (except for classes for talented students, which have about 15 students or fewer per class). Faculty members do not have time to grade the tests. They have no teaching assistants. They only have laboratory staff that assist them with keeping track of students' laboratory time.

The most popular tests used are final tests with short answers. Only Universities 2 and 3 use mid-term tests worth 30% and a final exam worth 70% of the final grade. As for mid-term tests, because of the high number of students, faculty members are unable to give feedback to each of the students. Students normally just receive a grade for their work. Some faculty members summarize errors and correct tests in class.

No feedback is given to students on their final exams. Final exam papers are kept by the Office of Academic Affairs and not returned to students. It is recommended to have more formative assessment (i.e., regular homework, assignments, and mid-term tests with feedback).

Financial Issues

Most students are reportedly supported by their families. A majority seem to work as tutors or have part-time jobs during their second and third year in order to earn a living. Outstanding students receive scholarships from the University, the faculty, companies, and other organizations.

University 4 provides some financial aid but not many students use it because the bureaucratic procedures to apply consume too much time. The EE department at University 3 gave loans to students, worth 2,000,000 Vietnamese Dong (VND) per year.

Job Preparation

All of the four Vietnamese universities are considered prestigious within Vietnam, thus most graduates get a job. Although students are well-prepared for general knowledge in their fields, they require additional training when working in specific jobs. The graduates of these universities are not as good as those coming from topic-centered training centers in terms of their knowledge in specific software and skills. However, this is not unusual. In most top-level universities internationally, students receive general education in their fields (basic concepts and principles), not training to perform specific functions.

FINAL REMARKS

The above is a general summary of the data reported during the interviews that took place in advance of the U.S. expert teams' on-site visits. Please refer to Summaries 1, 2, and 3 below, which provide specific paraphrased remarks for this data summary and provide more detailed information about the current status of teaching and learning in the fields of CS, EE, and physics at the four universities. It is also worth noting that during the meetings that these four universities had with Dr. Lynne McNamara in February and March 2006, ABET criteria and processes for accreditation were mentioned to be of great interest to MOET and the universities (Appendix 14 – *ABET: Criteria and Processes for Accreditation*).

REFERENCES

Institute of International Education. (2005). *Higher Education in Vietnam Update. Hanoi, Vietnam: Institute of International Education*. Retrieved from http://projects.vef.gov/assessment//uploads/Higher%20Education%20in %20VN-2005%20by%20IIE.pdf on April 4, 2006.

Merriam, S. B. (1998). *Qualitative research and case study applications in education* (Rev. ed.). San Francisco: Jossey-Bass.

Ministry of Education and Training (MOET) International Cooperation Department. (2004). *Vietnam Education and Training Directory* (3rd ed.)

Ministry of Education and Training (MOET). (2006a). *So lieu thong ke giao duc [Statistics on education]*. Retrieved from http://www.edu.net.vn/Data/ThongKe/ on August 20, 2006.

Ministry of Education and Training (MOET). (2006b). *Technical Assistance for Preparation of the Higher Education Project No 2 [HEP2]: Pre-feasibility*. Retrieved from http://www.tahep2.edu.vn/Default.asp?catid=25

Nguyen, P. N. and McDonald, J. J. (2001). *Quality assurance in Vietnamese higher education*. Paper presented at the sixth QHE Seminar on "The End of Quality?" organized in Birmingham, May 25-26, 2001.

Summary 1: Initial Data for Computer Science

The following details are statements gathered during the pre-site visit interviews and paraphrased by the VEF consultant.

Institution and Department
Similarities between U1, U3, & U4: ● Reporting line: university is divided into departments; each department is divided into majors.
U1 ● Belongs to MOET. ● Enrolls students based on the national entrance exams in math, physics, and chemistry every year. ● Yearly academic schedule: mid-August to mid-July. ● Academic year has two five-month terms. ● In Vietnam, U1 is considered the leading engineering university and cannot be compared with other universities in the region. As for IT Department: ● Strategic plan: become a research university, have advanced postgraduate training, attract industrial investment, support technological ideas in incubators. ● Reporting line: university is divided into departments; each department is divided into majors ● Composition of the faculty: Lecturers: 47; Senior Lecturers: 24; Associate Professors: 5; Professors: 1. ● Faculty degrees: Bachelors: 22 (graduated from U1); Master's: 44 (from U1 and others); Ph.D.s: 21 (from France 10, VN 4, Russia 2, Japan 2, England 1, Germany 1, Bulgaria 1). ● Trained overseas: Bachelor's: 6% (5/87); Master's: 39% (17/44); Ph.D.: 81% (17/21). ● To be selected for an administrative position, must have a good reputation in academia. The following is the procedure: department/school members give their opinion based on the candidate's confidence, then the Rector decides which candidate should be nominated. Term for an administrative position: 5 years. ● The regular method for assigning a faculty member to teach certain courses is based on: background, years of experience in teaching advanced/professional courses (in fourth/fifth year); basic courses (in third/fourth year); and/or excellent training programs such as the Program for Training Excellent Students for Vietnam (a joint-program organized with France), the Talented Training Program, and the French-speaking Training Program. ● Dean holds a key role in improving the quality of teaching and/or learning. ● The most important improvement recently is to keep all scholar activities as discipline specific as possible, not only for students but also for lecturers. ● Salary range for administrators and faculty members: Not much difference, depending on tenure (years of experience and academic activities). ● To get promoted, faculty members must show their academic achievements and reputation. ● Tenure is reserved for high-ranking lecturers (senior lecturer, associate professor, and professor). ● Incentives for improvement are offered in the form of gifts, promotion, and praise. ● Exemplary contributions by faculty members and administrators are rewarded by public recognition, promotion, and material presents. ● Program is assessed by the opinions of the Government, MOET, industrial community, and alumni. ● Program review is conducted by the Scientific Committee of the Faculty, U1. ● Typical day of an administrator: lectures (2 lectures/week for undergraduates, and 1 lecture/week for graduates); administrative work: 2 hours/day or all-day meetings, work with research groups (Ph.D. students).
U3 ● Belongs to VNU-HCM. ● IT Faculty enrolls 360 students/year (total enrollment is 1,600 students). ● 2 missions: (a) ensure high quality of IT; and (b) improve infrastructure, faculty development, student teaching. ● Dean's duties: responsible for the whole faculty; predict, receive and give feedback to the system, society, and student. ● Dean was selected based on trust and recommendations; term: 5 years.

● Faculty numbers: Total: 42; assistant lecturers: 16; lecturers: 16; senior lecturers: 8; associate professors: 2.
● Faculty degrees: Junior college: 1; Bachelor's: 14; Master's: 12; and Ph.D.s: 15.
● Trained overseas: 38% (16/42) and locally trained: 62% (26/42).
● Class size: Used to have 12 students/class. Now 50-60 students/ class.
● System of incentives and rewards: None, but nationally there are incentives and reward system regulations: excellent labor or good labor with different levels of monetary rewards; different levels of rewards: university, VNU-HCM, and nation-wide.
● Faculty leave/vacation: 5-week leave during the summer break, and 2 weeks during the lunar new year, but no sabbatical leave.
● Program reviews: introduced recently; (a) MOET evaluates institutionally (human resources, education and training); and (b) VNU-HCM focuses on student learning at the departmental level.
● Typical class size: 20-150 students.
● Drop out rate: 4% (71/1600).
● Program duration: 4.5 years; longest time allowed: 6.5 years (13 semesters).
● Dean's typical day: administrative work, teaching, supervising students in the stage of writing thesis, and meetings.

U4
● Established in 1995, IT is 1 of the 7 major fields of studies in U4.
● Dean: teaches 4 classes (12 periods); is responsible for management and research.

Degree Programs

U3
● Started using the credit system in 1993.
● Students study at least 10-22 credit hours/semester (Average: 17-18 credits/semester).
● A course of 4 credit hours: 4 periods (45 minutes) in-class meeting; expected hours for self-study is twice the amount of in-class time (the equivalent of 8 periods).

U4
● Using the credit system.
● Students study at least 2-6 courses (max. 35 credits): 26-28 credit hours (6 courses) /semester.
● A course of 4 credit hours: 3 periods (45 minutes) in-class meeting; expected hours for self-study is twice the amount of in-class time (the equivalent of 8 periods); 15 periods (theory)/credit and 30 periods (practice)/credit.
● Students know their curricula from the beginning of their programs.

Curriculum and Syllabi

U1
● Curriculum and syllabi are prepared by faculty members on the Scientific Council and approved by the dean of the department.
● Teacher must follow the approved curriculum and syllabi.
● Course planning is set by the department, not by the teacher.
● No standard exists for syllabi.
● Curriculum and syllabi are revised annually.
● Theory/practice proportion is 3/1.
● Students spend 24-30 hours./week in class, so, hours on homework cannot be managed.
● Foreign books are used a lot (most in English, some in French).
● Students rarely receive copies of curriculum and syllabi. If they do, it can be downloaded from a Web site.
● Students are proud of a teacher’s professional background.
● Curriculum and syllabi are often shared and exchanged with other universities.

U3
● Based on MOET's curriculum framework, the University’s Scientific Council develops courses, sequencing, and main content for each course. It also appoints a faculty member to develop in detail the syllabus (chapters, time required, text books, and reference materials, etc.).
● After the curriculum is approved by the Department Scientific Council, the curriculum will be sent to the University's Scientific Council, then to VNU-HCM for approval.

● The curriculum is comprised of (a) core courses (mandatory) and (b) optional/elective courses. The curriculum is also organized according to (a) a core section set by MOET and the University, (b) a section of foundation knowledge in the fields of study, and (c) specialized knowledge. ● 30% of the curriculum can be adjusted, though this is more easily possible with the elective courses. ● Faculty members of the same subject use the same approved syllabi; the same tests are given to students taught by different faculty members; the questions for tests, based on input from faculty members, will be decided by the major head. ● A standard format for a curriculum is used across the whole university. ● The hours of practice are sufficient, but the methods of carrying out the practice are not satisfactory. ● Most of the materials are in English as well as Vietnamese; students also find materials online. ● Faculty members in the same department use the same syllabi; they review curriculum and syllabi from other universities.
U4 ● The University Scientific Council approves updates on the curriculum; VNU-HCM approves the new curricula. ● Changes to curriculum are considered by the department, then sent for approval to the Department Scientific Council, which consists of Ph.D.s and 12 major heads, who, in turn, advise the dean. Changes can be made, except for the amount of time allocated for the courses, which must not be altered. ● Considers the market needs: software technology, practical applications, not computer engineering (less demand in the labor market) ● Uses a standard format for all syllabi. ● Revises the curriculum yearly by faculty members of the same department. This must be approved by the department head in late September. ● Proportion of theory to practice in the curriculum is 2/3 or 1/3 (in principle), though in fact, the curriculum has more practice. ● 90-100% foreign books are used. ● Suggestion by students: shorten the general education component since some courses do not seem useful.
Current Teaching Situation
U1 ● A typical class has 45-300 students. ● The main teaching methods are lecture and research projects. ● No teaching assistants are provided. ● A typical day is teaching and doing research. ● Part-time teaching depends on the teacher's academic background.
U3 ● Must create a connection between courses and practical applications. ● Traits of favorite professors: enthusiasm, knowledge, and excellent delivery of the contents, and thus, the teacher is very interesting.
U4 ● 100-200 students/class. A class for foreign languages is divided into 5 sections of 20 each and the practice hours are also divided. ● Besides teaching, one faculty member is also in charge of international training programs. ● Uses the methodologies of lecture (60%) and group projects (40%). ● No teaching assistant, only lab assistant. ● Typical day: teach for 3 hours, do administrative work for 1 hour, and conduct research for 4 hours in the afternoon. ● Teach at three other institutions. ● Traits of favorite faculty members: they use new teaching methods, create a pleasant atmosphere, give more homework, allow discussion, and teach additional knowledge beyond the subject matter.

Assessment of Student Learning
Similarities between U1, U3, & U4: ● Students are passive, and teachers give a test at the beginning of class to motivate them to study. ● Teachers rarely use oral tests because they take a lot of time.
U1 ● The grading system is based on a 10 point scale with 10 as the highest point. ● Grading based on in-class tests, homework, project assignments, and presentations. Students are informed in advance of examinations. ● Student learning is evaluated through mid-term, semester-end, and year-end exams. ● Types of test: multiple choices; short answers; programming; and essays. Type of home work: discussion during the presentation. ● 80% of the syllabi is evaluated in tests. ● The course outcomes are surveyed at the end of the course. ● If they could change in the future, they would make students focus more on learning technological aspects, more on labs and programming, and on projects. ● Is required to review the level of difficulty of the tests. Grades are not high.
U3 ● At least, mid-term and final tests are given; a project counts from 10-20%. ● In-class tests are popular. ● Group projects take time to grade (15 minutes x 300 students), and thus are not typically assigned. ● Multiple choice-tests, essays, oral exams are rarely used. ● Students are informed of the grading standards at the beginning of the course; and in each test, the value of points is mentioned. ● 60-90% knowledge taught is assessed on tests, but little is asked related to practical applications. ● Exams are organized seriously, 20 students/proctor. Some adjustments are made based on reflection about the results. ● Proposed changes: reduce the number of students in each class; reduce teaching load (during the last semester, the dean taught 4 courses, totaling 13 periods of 45 minutes each). ● The faculty member, who just completed his Ph.D. from Australia, said he knows how to use teaching assistants in a useful manner, but no money is available to pay teaching assistants. ● A suggested solution from one faculty member: instead of teaching 5 separate classes of 100 students in each, combine them into 2 classes of 250 each. He would use the money remaining from his salary to hire teaching assistants to help him with class management, and then he would evaluate the effectiveness of such a pilot program.
U4 ● Student attendance: Some students commented that ineffective teachers use roll call to make their students attend rather than focusing on excellence in teaching. ● Provides a grade improvement program: a student can retake the course and retake exam to try to get higher grades. ● Grades are not adequately allocated for theoretical and practical requirements in tests. ● Uses multiple choice tests, essays, and oral tests. ● 70-100% of the content that is taught is also tested. ● Uses assessment results to reflect and make necessary adjustments (e.g., to help weak students). ● Proposed changes: improve learning facilities, student learning attitudes, and teaching methods; improve faculty's low income (3-5,000,000 VND or US$200-375/month), which discourages faculty members, who do not dedicate their whole mind and heart to the teaching job. (The number of teaching hours as stipulated by the government is 200 hours per year, whereas this University's faculty members teach extensive overtime for a total of about 700 hours/year. Calculating one's wage: US$/3 hour x 700 teaching hours = $2,100 plus $1,500 (basic salary)/year = $3,600 total per year.) ● Proposed changes by one faculty member: use a good curriculum from abroad; increase homework; appoint 4-5 teaching assistants to help students understand theory; use simulation software to teach (useful for demonstration).

Evaluation of Faculty Teaching
U1 ● Faculty are not evaluated by outside inspectors/reviewers. ● Faculty are annually evaluated by self, peers, supervisors, and department's administrators, as well as students. Feedback given to teachers for improvement and teachers try to improve themselves based on student reactions. ● Proposed changes: get students more actively involved and try to get more evaluations from students.
U3 ● Faculty teaching is not evaluated yet. One uses own feelings to judge/evaluate. ● Because of the Vietnamese culture of respecting the teacher, evaluations of faculty teaching need to be done on a small scale, and then, when students get used to it, use of evaluations will be expanded. ● Only uses student evaluations on a faculty form to get feedback from students about the courses offered in the Bachelor degree programs for talented students. ● Evaluation of faculty teaching has not been done for two reasons: (a) there is no system to deal with the questionnaires; and (b) there is no procedure for what to do to those who are not good faculty members (as a public university, it is very hard to punish someone who is tenured).
U4 ● Not much feedback is given to students on their assignments/homework. ● One faculty member indicated that s/he does self-reflection, makes adjustments, searches for good examples from the Internet and makes changes. ● One faculty member fills in the self-evaluation form, sends it to the department where it is read aloud for all to listen to and for all to comment on what the faculty member has accomplished. ● Proposed changes by one administrator: should have more opportunities for faculty members to participate in research and to go for training abroad. ● Proposed changes by one faculty member: reduce teaching load, allow faculty members to learn how teaching is conducted abroad, and use a good curriculum from abroad (teachers are required to have English proficiency). ● Needs to help young faculty members with effective teaching methods. ● Students can give their feedback/comments on the opinion form, but the moderator censors and deletes some students' comments. ● Recently, the survey is used for evaluating lab hours; students dare not comment frankly.
Teaching and Learning Resources
U1 ● One administrator indicates: 200 Personal Computers (PCs) for all students, and 50 PCs for IT students, while one faculty member says: 100 PCs for faculty and some of them are for students. All computers are connected to the Internet and are free of charge. ● One administrator says: Faculty and students all have their own copies of textbooks. ● Students can go to the library to borrow textbooks, but they are not enough. Some lectures have course notes, available on the course Web site. ● A few teachers have personal accounts in order to get the latest professional information online, but students do not. ● Provides all services for students: canteen, bookstore, health facilities, library, and center for job placement (sometimes). However, the quality is not high. ● Students can receive additional help through the student association or meeting with their teachers.
U3 ● PCs are connected with 2 Asymmetric Digital Subscriber Line (ADSL) lines, thus slow. ● 1 PC for each faculty member. ● 3 Labs x 20 computers each: closed in the evening due to security reasons; students writing theses are provided with PC free of charge. ● Students buy Vietnamese text books, but borrow and copy English and foreign books. To solve the problem of copyright, the faculty members are trying to write text books in Vietnamese and they have contacts in India to get books at cheap prices reserved for Asian countries. ● E-books are also used. ● Library has not met the needs of users: only open from 7:00-11:00 a.m. and 1:00-5:00 p.m. daily. Internet speed is slow. ● Each faculty member has one Web page for his/her courses.

● Access to journals is limited to what is available through the Internet. ● One advisor helps advise 100 students to select their courses 3 times/semester. The use of advisors is to overcome the cultural shock emerging from shifting from the academic-year block system to a credit system.
U4 ● Limited numbers of journals, which are typically more than 1 year old. The Internet provides the primary access to journals. ● Students borrow the text books from faculty members, and make copies for students. ● Students can borrow 2 books for 2 weeks with a deposit of VND100,000 (US$8)/ 2 books. ● Career Center is available. ● Suggestion: library might consider expanding hours.
Faculty Interactions
U1 ● Interactions between faculty occur every Monday morning during a meeting in the departmental office. ● Interactions between faculty and students occur frequently through lectures, project discussions, and meetings during office hours. ● Interactions between faculty and administration: open access. ● Between faculty and alumni: difficult. ● Between faculty and companies: sometimes, but generally through personal channels. ● Between administrators: every week. ● Between administrators and students: every week. ● Between administrators and alumni: difficult. ● Between administrators and companies: sometimes.
U3 ● Interactions occur often with students writing theses. ● Between faculty and faculty in the same department: frequent, meeting in the department: once/month. ● Between faculty and administrators: once/semester for a comprehensive review; or other events called by the university. ● Between faculty and alumni: some occur on a personal basis, but no official relationship exists; not closely monitored. ● Little contact exists with industries.
U4 ● Interactions occur to meet those undertaking some research. ● Faculty want to meet students, but do not have time. ● Faculty have no office hours; students must make appointments (young faculty members are enthusiastic). ● Faculty attend weekly meetings for their majors and monthly meetings in the department. ● Meeting occurs between administrators and department heads: 1/week. ● Meeting with the whole faculty: 1/semester. ● Not much official interaction exists with alumni; one might meet alumni on the occasion of the annual Tradition Day. ● Interaction with industries: regularly, for recruitment purposes.
Research
U1 ● Mostly done by individuals. However, since 2005, each publication is rewarded to be the equivalent to teaching hours. ● Currently the department has 8 national projects on fundamental research and 5 international joint research projects. ● The University, Ministry, and Government all provide funding to the research projects. ● Currently, one administrator interviewed is involved in several domestic and international projects. ● Research findings are made known to the public through publications or brochures of the department and the University. ● The research is incorporated into courses. ● Students at the end of their third year or beginning of their fourth year can participate in doing research. ● Joint research is encouraged, but not much. ● Paid positions are available to students doing research toward their degree.

U3 ● 30% faculty (14 Ph.D.s/40) conduct research. ● Research is encouraged, highly valued, and given a score for the purpose of annual promotion. ● Research findings are presented in a seminar format in the department or university, presented at a conference or published in a journal, introduced into courses; however, not all research could be brought into classrooms because it is very specialized in certain areas/fields. ● Students are encouraged to conduct research. Awards are available for research, such as the Vietnam Fund for Supporting Technological Creations (VIFOTEC) and the Creativity of the Youth.
U4 ● Less than 50% of the faculty conduct research; about 10 out of 100 faculty members get publications in international journals/year. Findings are published in international journals, and presented at international and national conferences. ● Funding for research: 97% from government, 3% from private entities—a small amount, related to recruitment. ● Research is encouraged: 1/3 time is expected to be reserved for research and more funding is provided for research; used as a form of reward (publications are considered in evaluations with an accompanying monetary reward). ● Incorporates research into teaching. ● Students are involved in doing research, gaining additional points for doing research, Faculty members offer few research topics, thus only a few students, who register promptly, can do research. In some cases, faculty members chose the students to do research. ● No paid positions exist for students conducting research, except when they participate in research projects that receive grant funding.
Other Activities
U1 ● Faculty members are encouraged to participate in committees such as the Trade Union[12] as well as in managerial positions. ● The University assists faculty in all activities, including pedagogy and curriculum development.
U3 ● Faculty are encouraged to participate in various committees for which they receive an additional allowance of 300,000 VND/month (= $19).
U4 ● Faculty participate little in some committees (the trade union) or in others a lot (those involved in humanitarian activities). ● A faculty member interviewed indicated that s/he participates in the committee of inspectors, which meets every 2-3 months.
Student Learning
U1 ● Has not applied the credit system yet. ● Students have to take 25-30 credits/term, 2 terms/year. ● Students meet with teachers to study in-class about 25-30 hours/week. However, out-of-class time during projects and the number of hours of study out-of-class are uncontrolled. ● English is taught as English as a Second Language (ESL), but no requirements are established for the level of TOEFL or IELTS to enter or to exit programs. ● An additional course is offered of English for Specific Purposes, specifically in IT. ● Completion rate of students is 80%.
U3 ● Students take 30-35 credits/year with a maximum of 22 credits per semester. ● Thesis is worth 10 credits. ● A student interviewed wished to have more choices, like 7 out of 10 courses. ● Another student interviewed would like to understand the connections between the goals of the courses, input and outcomes of the courses, and the ability to know how the assignments are related.

[12] The Trade Union is a working-class organization in a university/company to protect the rights and interests of employees and workers.

U4

● Each course is 3-4 hours/week. Students take about 8 courses/semester.
● Students contact faculty members through email; meet once/week when writing the thesis.
● Learn English as a Foreign Language. A student reported his TOEFL score of 590.
● Students drop out because they are not academically able; only few drop out due to family difficulties.
● Students study theory a lot but do not have enough practice, so they forget what they learned.
● Due to the slow Internet connection, students living in HCMC prefer studying at home to studying in the library. Students coming from other localities normally do not have a computer with Internet access. They normally study in the Internet café, which costs about 3000VND ($.20)/hour.
● Because the students indicated that they study their lessons regularly throughout the semester, it takes them only about 1-2 days to review in a group or individually for one test.
● Proposed changes: increase practice, including more practical internships; improve teaching methods; have a larger auditorium; provide more information about the courses for students to know before registration; divide the Grade Point Average (GPA) into two components because the general education courses normally lower the students' GPA; provide more recreational facilities to students (swimming pool, basketball courts).
● A typical day for a student: check mail, do the housework and ironing; study 8:30 a.m.-12:30 p.m.; on 2 days in a week, work until 4:30 p.m.; study English 3 evenings/week; relaxation and entertainment from 9:00 p.m. -11:00 p.m.; study from11:00 p.m. to 12:00/2:00 a.m..

Financial Issues

U1

● Tuition and fees are 160,000 VND(~$10)/per month.
● A scholarship consists of 160,000 -280,000 VND (~$10 – 18)/per month.
● Money is provided mostly from family support. Some students work part-time or get a scholarship from the University, government, or companies.

U3

● The student interviewed receives a scholarship, and gets a little support from his family.

U4

● Tuition: 240,000 VND (~$14)/month.
● If one gets a GPA of 8 or above, s/he can receive a scholarship of 180,000VND (~$ 12)/month; with a GPA between 7 and 8, one can receive 120,000VND (~$8)/month.
● Students can obtain financial aid, but the formality is difficult and takes time.

Job Preparation

U1

● Helps students find jobs via announcements or counseling.
● Students have background, but are required to have more skills.
● Most students work in private or government companies.
● Upon graduation, 80% of students can find a job after 1 month.
● Employers are not satisfied with students' skills.

U3

● Graduates continue to pursue graduate study or work for private companies; most students can find jobs.

U4

● Faculty contact industries and announce employment opportunities and workshops to students. Students are not taught material in depth, but they are trained to adapt well to other situations; they have a good foundation and can self-train further.
● Students would like to go on learning and doing research, working to get experience, and then going on for further education.

Other Comments

U4

● Universities might consider working with foreign universities and allow mutual cultural exchanges.
● Suggestion: use a completely new curriculum from a foreign university. Each course is required to have a classic foundation textbook.

Summary 2: Initial Data for Electrical Engineering

The following details are statements gathered during the pre-site visit interviews and paraphrased by the VEF consultant.

Degree Programs
U1 (EE) ● The credit system is not used for the undergraduate programs at the moment. The credit system will be piloted for some selected courses next year.
Curriculum and Syllabi
Similarities between U1 (EE), U1 (E&T), & U3: ● Curriculum is fixed. Faculty members can discuss and propose changes and get final approval from the Scientific Council. ● Theory makes up a large proportion of course content. ● Equipment and lab facilities are not sufficient for students. ● Materials in foreign languages are used widely.
U1 (EE) ● Syllabi are revised every 5 years.
U1 (E&T) ● Faculty members can make lots of changes to the curriculum.
Current Teaching Situation
Similarities between U1 (EE), U1 (E&T), & U3: ● There are 50-100 students/ class. ● Teachers can get help from Teaching Assistants and lab assistants.
Assessment of Student Learning
Similarities between U1 (EE), U1 (E&T), & U3: ● Students are well-informed about grading standards at the beginning of the course and reminded about these standards again before the exam. ● All types of assessment are used (i.e., homework, group projects) and all types of tests (i.e., multiple choice, short answer, essay and written/oral exams) are used. ● Written final exams are most common. ● The tests cover the entire syllabi.
U1 (EE) ● Uses a 10 point grading scale to assess students, with 10 as the highest and quite rare, while 7 is equivalent to a B and below 5 is failing.
U1 (E&T) ● Uses a 10 point grading scale to assess students.
U3 ● Uses a 10 point grading scale to assess students (for the first two years), and a 4 point grading scale for the last 2.5 years of an undergraduate program.
Evaluation of Faculty Teaching
U1 (EE) ● Gets feedback from students. The supervisor (a member of the faculty) audits the lecture to provide suggestions to the teacher for improvement.
U1 (E&T) ● The Education Inspection Committee conducts the assessment of teaching once every semester.
U3 ● Gets feedback from students, but not officially.

Teaching and Learning Resources
U1 (EE) ● Enough computers exist for lecturers/researchers, but the Internet is slow and not enough working space is available for faculty members. Students have limited access to the Internet on campus. ● Students can find textbooks at the library or make copies. ● Teachers develop course notes, but do not post these on a Web site. ● Teachers and students can access professional journals in the library. ● Services for students, such as a canteen, library, and health facilities, are available but the quality is low.
U1 (E&T) ● PCs are old and not sufficient for faculty and students. Internet is slow and not free. ● Students can get textbooks at the libraries or make photocopies. Students can access professional journals in the library. School services for students are rarely used.
U3 ● High speed computers are limited.
Research
U1 (EE) ● All faculty want to do research, but not all can afford the time and most lack the resources. Results of research are made public through school bulletins, conference presentations, alumni contacts, and research reports. Research is incorporated in the course as team projects for final-year students. Teachers provide students a list of research projects, then students can select an appropriate one for them. One faculty member, who was interviewed, selects outstanding students to do research. Joint research with other faculty members and students is welcomed. No paid positions in research exist for students.
U1 (E&T) ● 30% of faculty conduct research. 20% of funding comes from the University, 60% from the government, and 20% from private companies. Department leaders encourage faculty members to do research through an approval procedure. Principal Investigators of the projects are the project implementers. Results of the research are made known to the public by publications of papers and presentations. Research is incorporated into the course and students are involved in research. Joint research is encouraged. No paid positions are available for students.
U3 ●A lot of research is conducted, but funding is limited.
Other Activities
U1 (EE) ● The University provides a small fund for teachers to prepare and print their lesson plans.
U1 (E&T) ● Senior staff are members of different university committees. ● Many teachers join the Vietnam (VN) Electricity Union[13]. ● Young teachers can have an opportunity to pursue their further studies.
U3 ● Teachers are provided with computers with high speed Internet. ● Professional magazines are shared among teachers.
Student Learning
U1 (EE) ● The credit system has not yet been applied. Students meet teachers every week in class. ● When getting ready to graduate, students meets teachers more frequently.
U1 (E&T) ● Students have to study an English for Engineers course.

[13] The Vietnam (VN) Electricity Union is a professional organization.

Financial Issues
Similarities between U1 (EE), U1 (E&T), & U3: ● Many students get funding from their families. Some work as tutors to partially support themselves. ● A few outstanding students get scholarships from the government, companies, or other organizations.
U1 (E&T) ● Some students work as tutors for small children as part-time jobs to get finances for their studies.
Job Preparation
Similarities between U1 (EE) & U1 (E&T): ● U1 has a good reputation among the country's companies and institutions. Generally, students can easily find jobs upon graduation. The university does not specifically assist students in how to prepare a Curriculum Vitae, and how to prepare for interviews. ● Students are required to have more practical knowledge to adapt to the job market. ● Students are employed as engineers. ● There are very few unemployed among the students after one year of graduation.
U1 (E&T) ● The department has a student research club that serves as a bridge with companies. ● Companies come to school to talk with students about employment possibilities.
U3 ● Companies contact the department to recruit graduates for employment. ● Most students wish to continue their studies to prepare further for a job.

Summary 3: Initial Data for Physics

The following details are statements gathered during the pre-site visit interviews and paraphrased by the VEF consultant.

Institution and Department
U1 ● Teaches physics closely related to engineering, and teaches physics to 4,000 full-time students (10,000 students in the whole university). ● Recruits 40-50 students/year, including 10-15 students in the Bachelor's program for talented students; total number of students: 200. ● Staff and faculty members: 90, of which are 5 professors, 14 associate professors, and 36 Ph.D.s. ● Comprised of 7 departments and 2 labs. ● The Dean teaches, does research, and supervises graduate students (5 Ph.D. students and 30 Master's students). ● The Dean was selected, based on the number of votes received, and nominated by the Rector for a 5-year term. ● A faculty member is assigned to teach course(s) based on the training s/he received or on her/his research topic(s) for new courses (elective courses in the curriculum). Each faculty member is in charge of several courses. ● Teaching methods: lecture, group work, and research projects. ● No teaching assistants. One faculty member teaches theory and one teaches lab and exercises. ● Faculty members receive basic salary and, in addition, compensation based on teaching hours. ● Has an open recruitment policy. A search committee is formed; the candidate meets with the Department, gives a demonstrative lecture, and provides transcripts. After the department agrees, the University will provide an opinion. The University tries to attract talented people, thus it uses a simple recruitment procedure. ● No sabbatical leave. ● Class size: 150 students/theory class and 40 students/lab class. ● Recruits about 3,500 students/year; about 3,000 students graduate per year. ● The Dean's typical day: many meetings; teaches 3 classes/week (6-7 periods), supervises Master's and Ph.D. students; reads reports, documents; writes comments for doctoral dissertations from other universities; prepares various reports.
U4 ● Sends students to study overseas. ● Has 4 professors in the Department. ● Since 1990, trained only 4 Ph.D.s
Degree Programs
U2 ● During the first two years, all students in the University study together. ● From the third year, students go into their specialized field of study.
U4 ● 4 -4.5 years to finish the Bachelor's degree.
Curriculum and Syllabi
Similarities between U1, U2, & U4: ● A needed change is to increase practice. ● Student's English level is low
U1 ● Curriculum is developed based on MOET's curriculum framework, approved and reviewed by the Scientific Council annually to determine what adjustments are required to be made. ● Every 4-5 years: review curriculum and reduce the number of credit hours required; reduce contact hours and increase the self-study hours. ● Can make changes (add new things, explore information). If they are substantial changes, they are required to obtain approval from the Scientific Council; can propose a new course. ● No use of a standard form of a syllabus.

● Changes are normally not made to the foundation courses, but can be made to specialized courses when there are new findings and results. ● The labs for physics are quite strong, but the University even tries to push it higher. Several labs are available with a small number of students, thus sophomores and juniors are encouraged to be involved in research. U1 might consider increasing lab hours. ● Most reference materials are in English. Vietnamese textbooks are used. Some English materials are used as textbooks; one can search for information on the Internet. One faculty member interviewed indicated that he provides his students with overview articles in English and French. He uses the textbook that was compiled by the previous faculty member. ● Students know their major from the first year. After 1 year, students are introduced to the major in more details. During the fourth year, they will select their specialized field of study. ● Students seem to favor the specialized knowledge rather than the general education component. ● Normally the faculty discuss and exchange ideas within the same department in the University, but not much with similar departments in other universities ● A student interviewed suggested that the first semester of the fifth year be omitted as students can read the materials at home.
U2 ● Has not applied credit system. ● Two steps: (a) based on MOET's curriculum framework, the curriculum framework at the departmental level (number of hours and content) is approved by the Scientific Council; and (b) based on the curriculum framework, syllabi are developed. ● Before, followed the Soviet curricula with no change for a long time. Since 1980 to now, change has occurred. Specifically since 1990, courses are multi-professional, less deep, more updated, and include more subjects. ● Faculty members do not change the curriculum framework; they only change the syllabi. ● Must maintain the approved curricula. ● Before, the curriculum was revised every five years. ● Students meet 2 periods (of 45 minutes each period) for a 2-credit course x 30 periods. ● Although more foreign materials are introduced and used in parallel with Vietnamese text books, these books still do not meet the faculty and students' needs. ● At the beginning of the semester, students are informed of what they are going to study in the following semester. ● Supplementary courses occupy a large amount of time, thus, there is no more time to add more depth to the program when necessary. Therefore, it is important to make adjustments to the curriculum.
U4 ● No standard form for syllabus. Physics is a basic science, so basically it stays unchanged. ● Students mainly use English books and materials for reference.
Current Teaching Situation
U1 ● At the end of a class and a course, one faculty member, who was interviewed, takes notes to find more information and reflects on the achievement of the goals set. ● When the students get low scores for a course, it might be that the faculty member is too strict in grading.
U2 ● Different sections of a course are taught to many classes. ● A typical class size: 60-70 students; however, for physics for talented students: 15 student/each course. ● Teaching methods: lecture and lab hours. ● For a general subject, a young cadre of instructors help to correct assignments. ● A Vice Dean's typical day: in the morning, teaches 3-6 hours and does administrative work; in the afternoon, works in the lab, supervises Bachelor's and Master's students. ● A faculty member interviewed teaches at other universities within VNU-Hanoi. ● Proposed changes: (a) improve the auditorium (more projectors); (b) improve facilities: library needs to be a good learning environment; offer good sports facilities; (c) improve text books; (d) set standards/expectations for faculty members to improve outcomes; (e) modify grading system. ● Proposed changes: (a) link lessons with practical situations; (b) use simulation equipment to demonstrate contents of classes; (c) increase students' ability to study independently; (d) improve persuasion skills; and (e) allow students to express their points of view.

U4
● Faculty members are overloaded.
● Young faculty members do apply new teaching methods.
● A faculty member interviewed teaches students how to look for information and how to make a presentation; uses English PowerPoint slides, but gives explanations in Vietnamese.

Assessment of Student Learning

Similarities between U1, U2, & U4:
● No teaching assistants

U1
● Students take in-class mid-term exams (counts 25% of grade) and in-class final exams (counts 75% of grade), sometimes coupled with a project.
● More than 60-70% courses have homework.
● Types of tests: 50% multiple choice test and 50% essay; from third year onward, projects and essays are used.
● Students receive feedback for the mid-term test and any oral tests. For other tests, it takes from 1-1.5 months to know the grade, and no feedback is provided.
● 10-point grading scale is applied.
● 60-70% knowledge taught is tested; for projects, one must demonstrate that their access of knowledge goes beyond what has been taught in class.

Similarities between U2 and U3:
● School inspectors at U2 and U3 evaluate both students and faculty members.

U2
● Test questions can be at different levels: (a) understand the lesson; (b) synthesize the information; and (c) evaluate the situation.
● Mid-term (30%) and final test (70%). In the final year, oral tests should be used. Mid-term tests are returned to students with faculty feedback and corrected in front of class.
● To ensure objective grading of exam papers, the upper part of each exam paper bearing the examinee's name and code are cut off before being graded.
● Experimenting with multiple-choice tests for foreign language courses.
● 70% of knowledge taught is tested.
● One faculty interviewee indicated that s/he assesses the results based on the set goals.

U4
● Final tests are commonly used. Some subjects require mid-term tests. Types of tests: written tests, multiple choice tests, oral tests, or essays. Teachers give homework and assignments, and correct the exercises for the students. Tests cover all parts of the syllabi.

Evaluation of Faculty Teaching

U1
● Students are not used to evaluate the lecturers.
● One faculty member interviewed observes the students closely, asks if the students understand, and explains again as necessary.
● One faculty member interviewed wishes to have more interaction between faculty and students, to receive more questions in class and in person, and to use survey/questionnaire to receive feedback from students.
● Students can give honest feedback verbally or in writing and can fill in the survey at the end of the course once/semester.

U2
● Sometimes faculty use a survey (in some departments); colleagues are elected and voted to receive prestigious titles/rewards (i.e., an excellent teacher at the level of university or Ministry receives a maximum award of 25 percent of salary).
● No peer review.
● An award is often accompanied with 200,000 VND (US$13). If accumulated 5 times, then that faculty member will be elected for a higher position.
● A student interviewed indicated that s/he dare not express his/her thoughts.
● Faculty elected to receive an award through discussion.

U4

● Students provide feedback in person on teachers' teaching. There is no place (i.e., a private office or room) to receive the feedback from students.

Teaching and Learning Resources

U1

● Limited PCs with Internet connections for students. Those available have a firewall, so restrictions apply for downloading big files. A new electronic library is going to be in operation soon.

● The present library does not have enough books for the courses. Books are outdated. Students have difficulty reading English books.

● Lack journals; no materials available for certain courses; some faculty members develop course notes, photocopy, and post on the Web.

● For the first 2 years, students borrow text books from the library and return them at the year end. For the final two years, no borrowing occurs because the materials are outdated or the library has nothing.

● Students can borrow available books from the library, but the procedure is complicated and takes time. At one university, students have to deposit 100,000 VND (~$7) to borrow books (maximum allowed: 2 books/time). Students can keep books for 2-3 weeks.

● No support provided by the library. One finds the articles online by themselves or asks friends to get the articles for them.

● Through the Youth Union and Student Association, businesses come to the university to make a presentation about their company to recruit graduates.

● MOET expects universities to establish a Career Consultation Office.

● One student interviewed organizes short courses for students on such topics as creativity; students pay a small fee to attend.

U2

● Lacks PCs, outdated, not free for students. Faculty and students have a copy of textbooks for themselves. Faculty loan the books and materials to students, and students copy for themselves.

● Few magazines available.

Faculty Interactions

U1

● Interaction between faculty and students: frequent. An advisor is a young faculty member who reports to student's parents monthly on student's academic results. One student interviewed said that he meets with the faculty members during break time or right after the class finishes; he rarely meets with faculty members outside the class.

● Interaction among faculty members: department meeting once/week and the Institute organizes meetings once/month or seminars about one specific topic or teaching methods.

● Interaction between faculty and alumni: occurs on Teacher's day, November 11, or on the anniversary celebration.

● Interaction between faculty and industries: limited due to the nature of the subject matter (physics).

U2

● Interaction between faculty and students: frequent.

● On teacher's day, November 11, meet alumni. Some consultants conduct research and have relations with businesses, introduce students regularly to businesses.

U4

● No interaction with industries and companies.

Research

Similarities between U1, U2, & U4:

● Research findings are published in journals, or presented at local and national conferences.

● Research findings incorporated into teaching when it is relevant.

U1

● 50% of faculty members conduct research.

● Reported 2 research projects at the ministry level and one research project with Belgium.

● Depending on the faculty member, research is introduced.

● Few sophomore students are encouraged to be involved in doing research, whereas more students in later stages of study participate in research; in the third year, students visit labs. After each year, a list of research projects/topics is sent to faculty members and students; based on this list, students can ask faculty members to participate in doing research.

● Research is encouraged by the government, ministries, universities (a publication in a national journal will be converted into teaching hours and awarded with money, and used as consideration for tenure/promotion).
U2 ● Work consists of administrative work, teaching, and research (typically, 50% for teaching and 50% for research). ● Best in terms of research: U2 carries out 60-70% all research topics in Vietnamese universities. ● Two sources of funding: (a) University; and (b) Ministry of Science, Technology, and Environment. ● Research is one of the factors considered in evaluation of faculty. ● Each year results of research are shared at conferences in Hanoi and overseas. ● Quite a few research projects are underway, mainly of specialized topics. ● Sophomore and junior students are encouraged to be involved in research. Each year, there is a conference for students' scientific research organized in the Department; good presentations are then selected for presentations at a university-wide conference. ● Principal investigators are professors, associate professors, and young faculty members.
U4 ● 7-10 million VND (~$400-600) is provided to each research project at the university level. More research funding is given to senior and experienced faculty for conducting large research projects at the VNU level. Teachers meet with senior students who are interested in doing research and invite them to join project teams.
Other Activities
U1 ● Experienced faculty members audit classes conducted by young faculty members and give comments on how to improve (e.g., delivery of lecture, how to get students to actively participate).
Student Learning
U1 ● One student reported studying 8-9 courses or 30-32 hours/week; in the summer the student studies 2 periods/week for a 2-credit course outside the University. ● Proposed changes: one administrator suggested improving teaching methods; one faculty member suggested improving students' participation to be more proactive. ● One student suggested using more formative types of assessment (not only mid-term and final tests) and improving the way to assess student learning. ● One student wishes to have more study field trips, more lab hours, demonstrations, and visual simulations. ● One student uses the Internet 3-4 hours/day. ● One student regularly studies lessons learned from class, thus it does not take him much time to review for tests. He generally plans to take 5 days to review for a test for a 5-credit subject. ● Students find specialized courses more useful. ● Proposed changes: (a) motivate students to do more self-study; (b) improve learning facilities; (c) set higher expectations for students; (d) provide training opportunities for faculty members; and (e) use more formative assessment.
U2 ● Student takes 28-30 hours/week (7-8 courses). ● Meets with advisor once/week. ● Faculty members facilitate and encourage students to ask questions. ● One student uses the Internet 2 hours/day. ● Spend 3-5 hours to review for tests, or 10 hours if the test is important. ● Proposed change: use visual aids for lectures. ● Allow students to conduct simple lab exercises. ● Introduce more links related to the courses.

● One student's typical day: 7:00 a.m.: get up 7:30 a.m.-11:00 a.m.: study in the lab of the specialized subject 11:00 a.m.-12:30 p.m.: lunch 12:30 p.m.-4:00 p.m.: study 4:00 p.m.-6:00 p.m.: housework 8:00 p.m.-10:00 p.m.: study 10:00 p.m.-12:00 p.m.: access the Internet
U4 ● 4-4.5 years to finish the Bachelor's degree. Students take 30 courses per semester on average. Basically, the school library has enough materials, but no new journals. Some materials can be searched on the Internet or one can ask friends who study overseas to help obtain them. The Internet service outside the university is much faster. For the tests, students work in groups, which is a very effective way of learning. In general, the specialized subjects are useful. Students think that a professor is defined as a good one if he/she shows his/her responsibility toward students, is interested in scientific research, and has effective ways of imparting knowledge to students. It's very easy to meet young teachers (in the department office) to discuss various matters while experienced senior professors are harder to meet. ● Takes 28-30 credit hours (7-8 courses), 4-5 periods/courses/week.
Financial Issues
U1 ● Tuition: 900,000VND (or US$60)/semester and 300,000-400,000 VND (US$20-27) to pay for books. ● One student funds his studies by working as a tutor in the first two years, teaching less in the third and fourth years, and working as a research assistant in an advertisement company. ● Excellent students receive scholarships from the university (= 10-15% of students in the whole department). For a GPA from 6.-7, the Center for Talented Students gives scholarships of 600,000 VND (US$40) /semester; for a GPA between 7-8, it gives 900,000 VND (US$60); if the GPA is equal or above 8, the student receives 1,200,000 VND (US$80).
U2 ● 900,000 VND (UD$60)/semester/6 months ● One student funds her studies by working as a tutor, receiving assistance from her family, and receiving scholarships (varies each semester).
U4 ● Tuition fee is 1,500,000 VND (US$100)/ semester. Students work part-time as a tutor for high school students. Most students are funded by their families. Some good students receive scholarships: 1,000,000 VND (US$65)/semester.
Job Preparation
U1 ● Students are not provided with job search skills. ● The faculty members introduce students to industries on a personal basis. ● Bac Thang Long Industrial Zone recruited 99% graduates from U1; for physics alone, it recruited 100% and commented that graduates' skills were excellent. ● Outstanding graduates are invited to teach at the Institute; they are employed in other research institutes and universities to teach, or open their own private company linked with high tech. ● After 6 months, 100% of graduates get jobs, or pursue further education. ● One student thinks he is not well-prepared for the job market. ● One student either is looking for a scholarship or applying to work in a big company; does not want to conduct research, nor teach physics, but wishes to teach industrial engineering.
U2 ● Curriculum on general foundation courses is fairly good; however specialized knowledge is not sufficient. To get a job, one is required to study additional courses.
Other Comments
U1 ● Strengths: has good infrastructure. ● Weaknesses: hard to attract students into physics; salary is low. ● English level of students is low; they are also required to demonstrate other general skills in communication.

U2 ● U2 is the leading institution; restricted to operate within the parameters that have been stipulated by MOET. ● Due to a long history of being influenced by the system of Eastern Europe, it takes time to change over to a more European system. ● 1990: adopted the open policy; however, it takes time to formulate standards. ● While the economy is making progress initially, the education system is inadequate. Faculty members do not earn enough, thus they are worried and not totally dedicated to teaching nor going to the library to conduct research, thus they do not update themselves with new knowledge. Those faculty members who were trained abroad with a good knowledge of English are doing well. ● For students, not 100% are motivated even if they have excellent professors, because the learning infrastructure is poor. The dormitory can accommodate 20% of the students; the others have to rent accommodations outside, which are more expensive and somewhat affect their level of learning.
U4 ● Proposed changes: (a) conduct job orientation for first-year students; (b) organize talks with managers and well-known professors to encourage high school students to become more interested in the sciences; and (c) cooperate with other libraries overseas.

Appendix 9

Interview Protocol for University Site Visits

The following outline was used as a guideline for the visiting expert teams to use during on-site interviews

1. Introduction
   a. Self (name, title, institution, area of expertise).
   b. Purpose of the VEF Undergraduate Education Project and visits:
      "The purpose of the VEF Undergraduate Education Project and visits is to assess the current conditions of teaching and learning of CS, EE, and Physics at 4 select Vietnamese universities; to make recommendations; to assist in implementing changes for improvement; and overall to produce models for the improvement of higher education in Vietnam that can be adopted across academic fields and institutions."
   c. Purpose of the interview
      i. to become acquainted with you (interviewee);
      ii. to learn about current conditions and opportunities for enhancing teaching and learning; and
      iii. to identify what is required to take advantage of those opportunities.
   d. Relationship between previous interview by Dr. Phuong and present interview/discussion:
      "The U.S. teams had many questions about higher education and the specific fields of study in Vietnam. Thus, we asked Dr. Phuong to gather some initial information and summarize it to the team. So, we have a basic idea of how teaching and learning occur. But now, we would like to hear from you more specifically."
   e. "The interview will be confidential and anonymous with regard to any individual's name, position, and institution. The information that you provide in the interview may be used in summaries, but no individual's name, position or institution will be associated directly with the information. Therefore, we hope that you will feel comfortable being completely honest and open in your remarks."
   f. The results will be summarized in a report that will suggest a plan for pilot program improvement projects involving faculty members in the cooperating departments with input from U.S. scientists and assessment experts. The report will be distributed widely to co-sponsors and participants, including MOET, SEAMEO RETRAC, IER, USSH (VNU HCM), the university and department administrators and faculty (teachers) that participated in the Undergraduate Education Project.

2. Who are you?
   a. Your name?
   b. What is your current position and responsibilities?
   c. What is your background and experience?

3. Descriptions of current conditions and opportunities for improving teaching and learning

How do they differ by level-undergraduate/graduate, department, and institution?

a. How is teaching provided (examples)?
   Probes for faculty: How are courses taught? Is homework assigned (give an example of a question)? What text is used and, if no text, what material was covered? What is an example of the content of a specific lecture?
b. What is the current quality/level of learning (documentation)?
   How is learning monitored? What are the problems that you see? What are your concerns?
c. Are you satisfied with your situation?
   What is working well? Where are the needs?
d. What opportunities are there for enhancing teaching and learning that you see?
   What are your desires? What is your vision? What is the competition?

4. What is needed to take advantage of opportunities for enhancing teaching and learning?

a. How would you describe the ideal future of teaching and learning in Vietnam?
b. Who should be involved in enhancing teaching and learning?
c. What knowledge and skills do administrators and/or faculty members need to enhance teaching and learning?
d. What resources are required (e.g., time, money, personnel, materials, travel, facilities, training, and education) to enhance teaching and learning?
e. What rewards and incentives are needed for a commitment to enhance teaching and learning?
f. Where should the leadership come from to enhance teaching and learning?

5. Is there anything else that you would like to tell me?

6. Thank you very much for talking with me!

Appendix 10

Interview Questions for Employers

Observations on Undergraduate Education
in Computer Science, Electrical Engineering, and Physics
at Select Universities in Vietnam

1. What is the profile of people that you hire (e.g., education, experience, skills)?
2. Is there a sufficient supply?
3. Do you hire new graduates?
4. What universities are your sources?
5. Are students from these universities adequately prepared or do they require additional training on the job?
6. What universities provide you the best prepared students?
7. What improvements in preparation could be implemented to better meet employer/industry/business needs?
8. What are the new skills or future requirements of your employees?

Appendix 11

Public Panel Discussions in Ho Chi Minh City

MOET

PANEL DISCUSSION AGENDA
ACCREDITATION AND ASSESSMENT IN HIGHER EDUCATION: A FOCUS ON COMPUTER SCIENCE, ELECTRICAL ENGINEERING, AND PHYSICS

Time: 8:00 a.m. – 12:00 p.m., Friday, May 12, 2006
Venue: SEAMEO RETRAC, 35 Le Thanh Ton, District 1, Ho Chi Minh City

Time	Contents	By
8:00 a.m. – 8:15 a.m.	Registration	
8:15 a.m. – 8:30 a.m.	Opening remarks	- Assoc. Prof. Dr. Do Huy Thinh, Director, SEAMEO RETRAC - Prof. Dr. Nguyen Thien Nhan, Vice Chairman, HCMC People's Committee - Dr. Lynne McNamara, Director of Programs, VEF
8:30 a.m. – 8:35 a.m.	VEF Undergraduate Education Project	Dr. Nguyen Thi Thanh Phuong Project Consultant
8:35 a.m. – 8:45 a.m.	Overview of U.S. Higher Education	Dr. Lynne McNamara Director of Programs, VEF
8:45 a.m. – 9:30 a.m.	Overview of institutional accreditation and assessment	Dr. Peter Gray Director of Academic Assessment, Faculty Enhancement Center, United States Naval Academy
	Quality assurance in computer science in the U.S.	Dr. John Hopcroft Professor, Computer Science Department, Cornell University
	Assessment of programs in physics in the U.S.	Dr. Isaac Silvera Thomas Dudley Cabot Professor of the Natural Sciences, Lyman Laboratory of Physics, Harvard University
9:30 a.m. – 10:00 a.m.	Questions and answers	
10:00 a.m. – 10:20 a.m.	Tea break	
10:20 a.m. – 10:35 a.m.	Update on accreditation of Vietnamese higher education	Dr. Pham Xuan Thanh Head, Division of Accreditation, Department of Testing and Accreditation, MOET
10:35 a.m. – 10:45 a.m.	Quality Assessment at VNU HCM	Assoc. Prof. Dr. Nguyen Hoi Nghia Director, Center for Educational Testing and Quality Assurance VNU HCM
10:45 a.m. – 11:00 a.m.	Assessment	Dr. Nguyen Kim Dung Director, Center for Higher Education Research and Accreditation, IER
11:00 a.m. – 11:45 a.m.	Questions and Answers	U.S. and Vietnamese experts
11:45 a.m. – 12:00 p.m.	Closing remarks	Assoc. Prof. Dr. Do Huy Thinh Director, SEAMEO RETRAC Dr. Lynne McNamara, Directors of Programs, VEF

MOET

PANEL DISCUSSION
INDUSTRY AND ACADEMIA: BUILDING RELATIONSHIPS

Time: 1:15 p.m. – 5:00 p.m., Friday, May 12, 2006
Venue: SEAMEO RETRAC, 35 Le Thanh Ton, District 1, Ho Chi Minh City

Time	Contents	By
1:15 p.m. – 1:30 p.m.	Registration	
1:30 p.m. – 1:40 p.m.	Opening remarks	- Assoc. Prof. Dr. Do Huy Thinh Director, SEAMEO RETRAC - Prof. Dr. Nguyen Thien Nhan, Vice Chairman, HCMC People's Committee - Dr. Lynne McNamara Director of Programs, VEF
1:40 p.m. – 1:50 p.m.	The current status of relationships between industry and academia	Mr. Thinh Nguyen Chairman ICT Committee AmCham
1:50 p.m. – 2:00 p.m.	Some thinking of the collaboration between the Universities and IT Companies for developing the professional IT manpower	Dr. Hoang Kiem & Dr. Do Phuc, Director and Vice Director, Center for IT Development
2:00 p.m. – 2:10 p.m.	TMA University Interaction Program	Mr. Tran Phuc Hong Corporate Development Director TMA Solutions
2:10 p.m. – 2:25 p.m.	PSV with top universities to develop IT human resources	Ms. Pham Thi Xuan Nguyet Senior Training Manager Paragon Solutions Vietnam
2:25 p.m. – 2:40 p.m.	Relationships between industry and Faculty of Electricity and Electronics	Dr. Vu Dinh Thanh, Dean of Faculty of Electricity and Electronics, HCMUT
2:50 p.m. – 3:00 p.m.	Industry expectations from universities and vice versa	Dr. Nguyen Thien Tong, Head of Aeronautical Engineering Department, HCMUT
3:00 p.m. – 3:20 p.m.	Tea break	
3:20 p.m. – 3:35 p.m.	U.S. universities and industry linkages	- Dr. Peter J. Gray, Director of Academic Assessment, Faculty Enhancement Center, United States Naval Academy - Dr. John E. Hopcroft, Professor, Computer Science Department, Cornell University - Dr. Isaac F. Silvera, Thomas Dudley Cabot Professor of the Natural Sciences, Lyman Laboratory of Physics, Harvard University
3:35 p.m. – 4:25 p.m.	Questions and Answers	U.S and Vietnamese experts, academia and industry
4:25 p.m. – 4:30 p.m.	Closing remarks	- Assoc. Prof. Dr. Do Huy Thinh Director, SEAMEO RETRAC - Dr. Lynne McNamara, Director of Programs, VEF

Appendix 12

Public Panel Discussions in Hanoi

MOET

PANEL DISCUSSION AGENDA
ACCREDITATION AND ASSESSMENT IN HIGHER EDUCATION: A FOCUS ON COMPUTER SCIENCE, ELECTRICAL ENGINEERING, AND PHYSICS

Time: 8:00 a.m. – 12:00 p.m., Thursday, May 18, 2006
Venue: MOET, Room 205, Building D, 49 Dai Co Viet, Hanoi

Time	Contents	By
8:00 a.m. – 8:15 a.m.	Registration	
8:15 a.m. – 8:30 a.m.	Opening remarks	- Dr. Tran Van Nghia, Deputy Director, General Department for Educational Testing and Accreditation, MOET - Dr. Lynne McNamara, Director of Programs, VEF
8:30 a.m. – 8:35 a.m.	VEF Undergraduate Education Project	Dr. Nguyen Thi Thanh Phuong Project Consultant
8:35 a.m. – 8:45 a.m.	Overview of U.S. Higher Education	Dr. Lynne McNamara Director of Programs, VEF
8:45 a.m. – 9:30 a.m.	Overview of institutional accreditation and assessment	Dr. Peter Gray Director of Academic Assessment, Faculty Enhancement Center, United States Naval Academy
	Quality assurance in computer science in the U.S.	Dr. John Hopcroft Professor, Computer Science Department, Cornell University
	Assessment of programs in physics in the U.S.	Dr. Isaac Silvera Thomas Dudley Cabot Professor of the Natural Sciences, Lyman Laboratory of Physics, Harvard University
9:30 a.m. – 10:00 a.m.	Questions and answers	
10:00 a.m. – 10:20 a.m.	Tea break	
10:20 a.m. – 10:35 a.m.	Higher education accreditation in Vietnam	Dr. Pham Xuan Thanh Head, Division of Accreditation, Department of Testing and Accreditation, MOET
10:35 a.m. – 10:45 a.m.	Advanced Programs	Dr. Nguyen Thi Le Huong Director, Advanced Programs, MOET Senior Expert Department of Higher Education, MOET
10:45 a.m. – 11:00 a.m.	VNU Hanoi Accreditation Standards	Assoc. Prof. Dr. Nguyen Phuong Nga Director, Center for Education Quality Assurance and Research Development VNU Hanoi
11:00 a.m. – 11:45 a.m.	Questions and Answers	U.S. and Vietnamese experts
11:45 a.m. – 12:00 p.m.	Closing remarks	Dr. Lynne McNamara, Directors of Programs, VEF

VIETNAM EDUCATION FOUNDATION

MOET

PANEL DISCUSSION
INDUSTRY AND ACADEMIA: BUILDING RELATIONSHIPS

Time: 1:15 p.m. – 5:00 p.m., Thursday, May 18, 2006
Venue: MOET, Room 205, Building D, 49 Dai Co Viet, Hanoi

Time	Contents	By
1:15 p.m. – 1:30 p.m.	Registration	
1:30 p.m. – 1:40 p.m.	Opening remarks	- Dr. Nguyen Thi Le Huong, Senior Expert, Department for Higher Education, MOET - Dr. Lynne McNamara Director of Programs, VEF
1:40 p.m. – 1:50 p.m.	Teaching students how to ask questions is as important as teaching them the answers: Higher education in Vietnam at the crossroads	Mr. Adam Sitkoff Executive Director Amercican Chamber of Commerce (AmCham)
1:50 p.m. – 2:05 p.m.	Coordinating with Academia in Human Resource Development: Experiences and Challenges	Dr. Nguyen Quoc Khanh, Project Manager FPT
2:05 p.m. – 2:20 p.m.	Industry expectations from universities and vice versa	Mr. Nguyen Truong Director of Business & Technology Development IDG Ventures Vietnam
2:20 p.m. – 2:30 p.m.	Some initial solutions regarding "How can industry and academia co-ordinate with each other to improve the training of computer sciences, electrical engineering, and physics"	Assoc. Prof. Dr. Bach Thanh Cong Dean of Faculty of Physics Hanoi University of Science
2:30 p.m.– 3:00 p.m.	Questions and Answers	
3:00 p.m. – 3:20 p.m.	Tea break	
3:20 p.m. – 3:35 p.m.	U.S. universities and industry linkages	- Dr. Peter J. Gray, Director of Academic Assessment, Faculty Enhancement Center, United States Naval Academy - Dr. John E. Hopcroft, Professor, Computer Science Department, Cornell University - Dr. Isaac F. Silvera, Thomas Dudley Cabot Professor of the Natural Sciences, Lyman Laboratory of Physics, Harvard University
3:35 p.m. – 4:25 p.m.	Questions and Answers	
4:25 p.m. – 4:30 p.m.	Closing remarks	Dr. Lynne McNamara Director of Programs, VEF

Appendix 13

Recommendations for Vietnam University Advanced Program Site Visitors to Exemplary Programs in the U.S.

The intent of these guidelines and suggestions is to assist selected Vietnam higher education site visitors as they seek information and guidance in designing or redesigning an academic program designated by MOET as essential to the future of the country. Visitors representing an assigned academic institution in Vietnam and a particular discipline will visit one or several U.S. academic programs identified as exemplary to request access to program and curriculum information and rationale suitable for adaptation and adoption in Vietnam.

Initial discussions of willingness and availability on the part of U.S. program personnel will include consideration of the range of information, level of explanation, and extent of involvement desired and required. The following Guidelines are intended to inform these initial discussions as well as to guide collaborative planning by both sets of academic programs.

Program Selection

Ways might be considered to plan carefully the U.S. program identification, solicitation, and site visit implementation processes to ensure willingness, approval, and information technology transfer success. Examples of sound planning include:

- Endorsements from the highest possible Vietnamese and U.S. authorities. This could include MOET, the Ministry of Science and Technology (MOST), VNU, VEF, and the National Academies in the U.S.
- Rationale for selection and solicitation of specific programs. Substantive reasons beyond personal connections could include specific research and development expertise, a history of sustained excellence, a cadre of well-respected faculty, a curriculum recognized as dynamic and functional, an assessment and evaluation system that provides ample evidence of what works and what requires attention.
- Identification of appropriate individuals from the Vietnamese universities to serve on the site visit team(s), who will represent the many components of what is being requested. Organization and administration competence is only one component to consider. Specific instructional and content-related expertise along with assessment expertise could all be well-served on a site visit team. It is important that faculty designated to eventually design and implement the Advanced Program in Vietnam as well as to serve as the disseminators of the model to other Vietnamese institutions be given high priority. The visits themselves have the potential to serve as powerful faculty development ventures, which can serve to establish the standards for future professional practice in Vietnam.

Site Visit Team Activities

Consider identifying a full range of activities in which the site visit team might participate. These could include:

- Attendance and participation in key courses throughout a semester.
- Participation in any and all feasible faculty and administrative events such as assemblies, faculty meetings, curriculum committees, and program review meetings.
- Observe faculty-student interactions in different settings, including individual, team, and program-focused venues.
- Attend local, regional, and national professional conferences with U.S. host university faculty.
- Seek explanations and examples of exemplary centers and institutes focusing on research, training, development, and/or advocacy for the discipline.
- Invite VEF Fellows to participate in site team activities. This will further the education and careers of the Fellows as well as expand the pool of people to assist in information gathering.

Timeframe for Site Visit(s)

Consider defining the preferred timeframe for site visit team involvement so as to notify potential U.S. academic program hosts of the dates and duration of a possible visit (or visits). This could include the following:

- Use the targeted U.S. program's Web site to identify initial student orientation and semester startup dates as well as holiday and extended vacation periods. These vacation periods can be used as travel opportunities to visit other U.S. programs or relevant institutes and centers.
- Review national professional association Web sites for information on national conferences and conventions. Such events offer a wealth of information on research, curriculum development, and assessment of students and programs.

Collaboration Options

Identify possible collaboration opportunities to discuss with host program personnel. These could include the following:

- Joint or one-way faculty exchanges as instructors, research collaborators, or participants in a study program.
- Student exchanges for individuals or groups during a short period (vacation time), a semester, or summer.
- Collaborative research, development, or publications addressing topics of common interest.

Documentation Control

Consider ways to determine an agreed upon system for collecting, documenting, indexing, storing, and maintaining a record of who is using program materials. Procedures to consider would include:

- Determine whether the system will be centralized in an institutional library or in a faculty (school or college) location maintained by a staff member.
- Develop a coding and indexing scheme to allow easy labeling, storage, retrieval replacement and checkout recording.
- Consider backup systems for electronic files and records.
- Build the system to allow additions as the program is developed and implemented. If files of the latest course syllabi are not currently maintained, this system could house such items as well, once the curriculum and courses are operational.

Fundamental Principles of Learning and Instruction

Seek out potential applications of fundamental principles of quality learning and instruction[14]. Examples could include:

- Evidence of learner involvement.
- Active learning strategies.
- Context focused learning and instruction.
- Providing ongoing knowledge of progress and results (feedback, mentoring, peer review).
- Increasing the amount of learning time on task (assignments, team exercises, independent assignments).

Identify possible partners and collaborators to assist in making connections and finalizing site visit arrangements. This could include any of the following:

- Contact VEF Fellows currently studying in the U.S. to assist in linking with U.S. colleagues.
- Request VEF assistance through National Academies' consultants involved in selecting VEF Fellows or doing the site visits for this study.
- Identify potential exemplary programs via reviews of U.S. professional association recommendations and involvement in association conferences and conventions.
- Request recommendations from Vietnamese faculty with experience in working with U.S. faculty in the designated discipline.

[14] A reference for the principles for good practice in undergraduate education is:
Chickering, A. W., & Gamson, Z. F. (March 1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*.

Instructional Materials

Consider ways to identify the full array of instructional materials reflecting curricula, courses, and workshops in the targeted discipline. These could include any or all of the following:

- Program curriculum development records as well as rationale for specific scope (how much) and sequence (what order) decisions.
- Course syllabi including grading standards, content outlines, learning expectations, product requirements, team activities and the like.
- Course texts, recommended professional journals, and collections of readings.
- Electronic files including relevant Web sites, practice exercises, sample problems and solutions, dynamic models, and other courseware.
- Program and course policies related to proper listing of citations and references, collaborative work, examination practices, requirements for making up missed classes, exercises, labs or tests.

Preferably assure that the study team has an ample budget to allow purchase of key textbooks, collections of readings, lab manuals, electronic courseware and the like. If the study team is tasked with documenting a full Bachelor's degree program and perhaps even a master's degree program, the amount of material to be purchased could be considerable, using as a basis to estimate costs the usual ten courses per year multiplied by four years of a B.S. program, for example.

Faculty Development Knowledge and Skills

Consider how to construct a set of files addressing faculty and program development elements that support instruction and research. These could include:

- Procedures and standards for promotion in academic rank as well as tenure (if relevant).
- Support systems for facilitating faculty in developing research and development proposals as well as managing such projects once approved.
- Approaches to the development and operationalization of a personal or work group research agenda. This could include labs, equipment, support personnel, student roles, documentation, and presentation and publication schemes.
- Assessment, accreditation, certification, and summative evaluation schemes used to ensure quality control (of process) and quality assurance (of product) for exemplary programs.
- Testing and measurement guidelines for development and validation of course examinations and practical exercise review.
- Formative evaluation procedures and instruments used to obtain information from students, alumni, and employers on program and course content, outcomes and processes.

Appendix 14

ABET: Criteria and Processes for Accreditation

ABET, Inc., is the recognized U.S. accreditor of college and university programs in applied science, computing, engineering, and technology. ABET was established in 1932 and is now a federation of 28 professional and technical societies representing the fields of applied science, computing, engineering, and technology. ABET also provides leadership internationally through activities and agreements such as the Washington Accord, Mutual Recognition Agreements, and international faculty workshops.

Currently, ABET accredits some 2,700 programs at more than 550 colleges and universities nationwide. Each year, over 1,500 volunteers from its member societies actively contribute to ABET's goals of leadership and quality assurance in applied science, computing, engineering, and technology education, serving as program evaluators, committee members, commissioners, and Board representatives.

In 1997, following nearly a decade of development, ABET adopted Engineering Criteria 2000 (EC2000), considered at the time a revolutionary approach to accreditation criteria. The revolution of EC2000 was its focus on what is learned rather than what is taught. At its core was the call for a continuous improvement process informed by the specific mission and goals of individual institutions and programs. Lacking the inflexibility of earlier accreditation criteria, EC2000 meant that ABET could enable program innovation rather than stifling it, as well as encourage new assessment processes and subsequent program improvement.

Today, the spirit of EC2000 can be found in the evaluation criteria of all ABET disciplines, and studies are underway to measure the success of that spirit. Internationally, ABET is extremely active in sharing that spirit with other accreditation boards and degree programs. It readily participates in global education and worker mobility through agreements like the Washington Accord and activities such as substantial equivalency evaluations. ABET has also added to its activity list faculty workshops, assessment leadership institutes, outreach programs, special events for institutional representatives, an active industry advisory council, and several important initiatives spurred by the visionary strategic planning of its Board.

The accreditation process, which is the core service of ABET, is a non-governmental, peer review process that ensures educational quality. Educational institutions or programs volunteer to periodically undergo this review in order to determine if the accreditation criteria are being met. It is important to understand, however, that accreditation is not a ranking system. It is simply assurance that a program or institution meets established quality standards. ABET accreditation is assurance that a college or university ABET-related program meets the quality standards established by the profession for which it prepares its students. For example, an accredited engineering program must meet the quality standards set by the engineering profession. An accredited computer science program must meet the quality standards set by the computing profession.

Each program must conduct an internal evaluation and completes a self-study questionnaire. The self-study documents whether students, curriculum, faculty, administration, facilities, and institutional support meet the established criteria.

While the program conducts its self-examination, the appropriate ABET commission (Applied Science, Computing, Engineering, or Technology Commission) forms an evaluation team to visit the campus. A team chair and one or more program evaluators make up the evaluation team. Team members are volunteers from academe, government, and industry, as well as private practice.

During the on-campus visit, the evaluation team reviews course materials, student projects, and sample assignments and interviews students, faculty, and administrators. The team investigates whether the criteria are met and tackles any questions raised by the self-study.

Following its campus visit, the team provides the school with a written report of the evaluation. This allows the program to correct any misrepresentations or errors of fact, as well as address any shortcomings in a timely manner.

At a large annual meeting of all ABET commission members, the final evaluation report is presented by the evaluation team, along with its recommended accreditation action. Based on the findings of the report, the commission members vote on the action, and the school is notified of the decision. The information the school receives identifies strengths, concerns, weaknesses, deficiencies, and recommendations for improvements. Accreditation is granted for a maximum of six years. To renew accreditation, the institution must request another evaluation. ABET Criteria for Accreditation may be viewed on the ABET Web site at www.abet.org.