The Final Report

Skills and Competitiveness for Poverty Reduction in Northeast Thailand

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Executive Summary

Background
Under the grant from the ASEM II Trust Fund administered by the International Bank for Reconstruction and Development, the project “The Productivity Analysis Project: Skills and Competitiveness for Poverty Reduction in Northeastern Thailand” is aimed at solving the problem of the inadequacy of education that hinders the Northeastern students’ skills development and capacity in their careers.

Scope of the Study
The purpose of the current program is to improve the competitiveness of the Northeast by building skills to increase the quality of human resources with a use of ICT. Under the program, the following three projects are developed: (1) a survey project for identifying skills to be taught for increasing competitiveness, (2) a workshop training project for developing the identified target skills, and (3) a portal development project for building a website that provides information that is useful for stakeholders in the region, including findings of the survey project and follow up on the training project.

Methodology
Participants: A total of 200 students studying at either one of the educational institutions that participated in the institution survey responded to the student survey.
Instrument: Prior to a development of the questionnaire, the survey team conducted interviews with two education commissions offices in Bangkok (i.e., the office of the higher education commission and the office of the vocational education commission) and six educational institutions located in the target region. Based upon the interview data, the survey team and the PIU members developed the questionnaire.
Procedure and Analysis: Numerical responses on the survey forms completed by the representative were first entered onto excel files by the PIU coordinator and then transferred to SPSS files for analysis by the author of the present report. For the quantitative data, descriptive statistics were performed to examine characteristics of responses. ANOVAs and T-tests were used to contrast groups. Correlations were calculated in order to find any meaningful relationships between variables of interest. Multiple regression analyses were performed to find a linear relationship between the criterion variable and its predictors.

Findings and Conclusion
Findings from the research project have revealed that students’ competency in using the IT tools was significantly lower than what is required by employers, which might be one of the major factors that has limited the opportunities for students in obtaining jobs in their local region, as was also indicated in the findings. A need to design a curriculum and teaching strategies that maintain students’ frequent use of computers and the Internet with a view to completing course assignments is urgent, when considering the relatively less frequent use of computers and the Internet reported by the students in the present survey. For the training sessions, formulation of a virtual community that involves teachers in the Northeast region of Thailand is recommended. The community enables participating teachers to maintain and expand their network after the training, which would encourage them to improve the level of education in the region through the corporative projects.

Contact Organization
The program is developed and enforced under a grant from the ASEM II Trust Fund.
administered by the International Bank for Reconstruction and Development, coordinated by a Project Implementation Unit (PIU) within the Ministry of information and communication technology (MICT).

1. Introduction to the Project

Recovery from the poor productivity performance of Thai firms as well as gaps in international competitiveness is an urgent demand on the Royal Thai Government. In particular, the high concentration of poverty in the Northeast region of Thailand requires improvement in its competitiveness. The current Skills and Competitiveness for Poverty Reduction in Northeast Thailand is an approach to improve the competitiveness and thus reduce the poverty of the region of Northeastern Thailand with a use of ICT.

1.1. Objectives and Scope of the Project

The ultimate goal of the Skills and Competitiveness for Poverty Reduction in Northeast Thailand program is to increase opportunities for individuals in the Northeast region by building skills and enhancing their productivity through the local education institutions. The entire program is divided into three components, coordinated and supervised by the PIU.

In order to accomplish the goal of the entire program, it is necessary to begin by obtaining information on the current productivity and effectiveness of the local educational institutions.

In Component 1, the productivity and effectiveness are assessed in terms of “the capacity and capability of those local institutions in delivering career knowledge and skills” (p. 2, Component 1 Interim Report, 2006).

In addition to the local educational institutions, local employers that currently employ a large portion of local graduates and students currently enrolled in the local educational institutions are targeted in the survey. The purpose is to “evaluate the effectiveness of the output from the skill delivery institutions and to explore the employers’ needs and requirements of graduates’ skills and qualifications” (p. 4, Component 1 Interim Report, 2006.)

Finally, the survey postulates the further goal to identify factors that influence the productivity and effectiveness of the local educational institutions. The scope of component 1 includes the development of survey questionnaires, selection of participants, data collection, analysis of the findings, summarization of the current situation of the local human capital, and specification of the skills requirements of the local business community.

Needs and factors that are necessary to be addressed in order to improve the productivity and competitiveness of individuals in the target region are passed on to the Component 2 team. The Component 2 team identifies skills to be targeted and designs and develops a workshop that is to provide teachers in the Northeast region with training in the target skills.

The findings of the research are posted on the portal website created in Component 3 for the use of local stakeholders and those who are interested in the result.

Component 1 intends to:

- Conduct a survey on education institutions, employers, and students in the Northeast region of Thailand to find needs and problems that need to be addressed in order to improve productivity or effectiveness of tertiary institutions in the target region.
Component 2 intends to:
- Design and develop a learning program that is aimed at improving skills and knowledge of teachers in the Northeast region, which has been suggested by the findings in the research project conducted by the component 1.
- Implement and evaluate effectiveness of the program.

Component 3 intends to:
- Develop and maintain the portal website, which posts findings of the research project for the use of local stakeholders and those who are interested in the results.

1.2. Project Plan and Summarize Project terms of Reference

1.2.1. Component 1: Survey Project

The survey project is carried out as follows:

**Stage 1:**
- To ask the PIU to issue an official letter to ask for cooperation from relevant organizations and the target institutions cooperation via the PIU.
- To conduct in-depth interviews and develop survey questionnaires based on the interview data.

**Stage 2:**
- To visit institutions and organizations and ask for their participation in the survey.
- To conduct the survey on the target institutions, organizations, and students at the institutions.

The survey data is entered onto Excel worksheets. The data on the worksheets is further translated into SPSS data by the e-learning consultant who is in charge of analysis.

1.2.2. Component 2: Workshop Training Project

The survey project is carried out as follows:

**Stage 1:**
1. To identify the target skills based on the analysis of the research findings.
2. To design the outlines and templates of the workshop syllabus.
3. To design the templates of the teaching materials and evaluation items to be used in the workshop.
4. Based on the designed outlines and templates, to develop a detailed syllabus, teaching materials, course schedule, and assessment tools to be used in the workshop.

**Stage 2:**
1. To employ and train instructors.
2. To set up the location of the workshop.
3. To advertise the workshop by delivering letters to institutions in the target region.
4. To keep records of registrations.

**Stage 3:**
1. To conduct the workshop.
2. To evaluate effectiveness of the workshop by observing and using the assessment tools.

**Stage 4:**
1. To analyze the assessment data and report the results.

**1.2.3 Component 3: Portal Website**

The project is carried out as follows:

**Stage 1:**
1. To design a format of the portal website.
2. To develop the portal website by posting findings from Component 1.

**Stage 2:**
1. To conduct a workshop and train the local stakeholders to make effective use of the information on the website.

**1.3. Methodology of the Research and Analysis Processes**

**1.3.1. Participants**

For the institution survey, a total of 180 colleges and universities that had vocational programs located in the Northeast region of Thailand were selected.

For the employer survey, a total of 60 organizations were selected for the survey. Criteria of the selection were: (a) located in one of the 19 provinces in the Northeast region of Thailand, and (b) at least 90 percent of employees had to have completed their education in the Northeast region of Thailand.

Finally, a total of 200 students studying at either one of the educational institutions that participated in the institution survey responded to the student survey.

Detailed characteristics of the participants are described in Annex B.

**1.3.2. Instruments**

Prior to a development of the questionnaire, the survey team conducted interviews with two education commission offices in Bangkok (i.e., the office of the higher education commission and the office of the vocational education commission) and six educational institutions located in the target region. Based upon the interview data, the survey team and the PIU members developed the questionnaire (see the interim report by the component 1 for more details).

Variables of interest and methods of collections are described in Annex B.

**1.3.3. Procedure**

Prior to the data collection, the survey team visited the selected participants to explain the purposes and significance of the survey and request their participation. At the same time the PIU sent official letters to those institutions and organizations requesting participation. On agreement with the institutions, the team arranged
times and dates for the interview. Prior to the interview, the team provided the questionnaire form to the institutions and organizations so that they could prepare for it by obtaining information that their responses were based upon and filling a part of the questionnaire that requested numerical responses. A trained member of staff visited each participant on the appointment date and interviewed the representative of the institution and a student recommended by him or her (see the interim report by the component 1 for more details), or the representative of the organization. Numerical responses on the survey forms completed by the representative were first entered onto excel files by the PIU coordinator and then transferred to SPSS files for analysis by the author of the present report. Responses to open-ended questions, which were called qualitative data in the present project, were summarized by the survey team. Similar responses were gathered together. Each group of responses was labeled in English and entered onto the Excel files.

1.3.4. Analysis Processes

For the quantitative data, descriptive statistics were analyzed to examine characteristics of responses. ANOVAs and T-tests were used to contrast groups. Correlations were calculated in order to find any meaningful relationships between variables of interest. Multiple regression analysis was performed to find a linear relationship between the criterion variable and its predictors. The detailed processes of analysis were described in the Annex B.

For the “qualitative data”, grouped responses were listed.

2. Analysis of Research Findings

2.1 Background on Investment Climate Assessment of Skills Gaps and Literature Review on the Linkages between Skills and Competitiveness

Findings from the survey on institutions, employers, and students highlighted a gap among them in a level of skills in using the IT tools. The institutions estimated their students’ competency in using the IT tools to be moderate, which was significantly lower than what the employers required for their applications. Moreover, the confidence level of students was significantly lower than what the institutions estimated.

In this survey, among students who were in employment after graduation, only half were found to be employed in the Northeast region. The other half had had to move to Bangkok or other regions. Those findings imply that improving the students’ competency in using the IT tools is critical for promoting opportunities for the students to find jobs in the Northeast region.

Findings on a regression analysis revealed that the percentage of the school computers that were available for classroom use, the percentage of school computers that were equipped with the Internet connection, and the size of school were the important factors for predicting the competency of students’ skills in using the IT tools. The student-computer ratio appeared to have no bearing on predicting the level of students’ skills.

Based on the findings, the following assumptions were formulated:
1. The larger the institution was, the more funding was available for equipping their
computers with the Internet connections, which would further provide students with more opportunities for using IT tools to enhance their competency.

2. Having a larger number of computers that allowed students to work individually might not necessarily enhance their competency in using the IT tools.

3. There might be other important factors which were not assessed in the present survey but which had an impact on students’ level of competence in using the IT tools together with the availability of computers for classroom use, such as policies of the institution to emphasize the importance of the IT training for their students.

In order to examine those assumptions, theories and findings on the previous research on factors that are impacting on students’ competency in IT skills are reviewed.

Based on his case studies on a number of early childhood, high school, and university classrooms in the United States, Cuban argues that investment to increase the number of computers as well as Internet access does not necessarily improve academic learning and prepare students for an information-based workplace (Cuban, 1993; Cuban, 2001). A number of researchers have supported this argument (e.g., Oppenheimer, 2003; Stoll, 1999). Based on work done by Sandholtz, Ringstaff, & Dwyer (1997), Cuban listed the following levels of technology integration: entry, adoption, appropriation, and invention. Teachers in the entry level are beginner users of computers. Teachers in the adoption level provide students with some explanation on how to use computers; however, they tend to take more traditional teaching approaches. Teachers in the adaptation level still mostly use the traditional approaches but allow students to use computers for homework and some class work. Finally, teachers in the appropriation level integrate technology regularly into the curriculum, and those in the invention level further use project-based and interdisciplinary approaches.

Among his participating schools, Cuban found that most schools remained at the adoption level. The majority of teachers including those using computers maintained traditional approaches in teaching; and few students used technologies at the invention level. He claims that no matter how many computers, along with Internet access, are brought into institutions, they would still be underused unless teachers and institutions acknowledge the importance of reaching the invention level and elicit an effort for accomplishing the goal. He further suggests that new technologies reform can be accomplished through a cooperation between teachers, parents, policy makers, corporate officials, and public officers to work on building stronger communities with technology.

Cuban’s argument is consistent with the findings of the present research project that revealed availability of Internet access and computers for classroom use were important for the improvement of the level of competency of students’ skills; however, these two factors together explained only about 24 percent of the variance in the total score of the IT skills. There should be other factors that are similarly or more important.

In the present survey, the following factors could explain the variance in the total score of students’ IT skills: institutions’ readiness in the hardware, software, maintenance, instructors’ skills, instructors’ motivation, and students’ general skill of using the IT tools. Findings, revealed that these factors all together explained about 31 percent of the variance in the total scores of the IT skills. However, among these factors, only the readiness in maintenance and the students’ general skill appeared to be reliable predictors. In particular, the finding that instructors’ skills and motivation did not account for the students’ levels of competency is not consistent with Cuban’s argument that emphasizes skills and motivation of teachers for using technology in instruction.
Becker (2000) questions the validity of Cuban’s argument when taking into consideration numerous changes in the capabilities and functionality of computers since Cuban’s research took place. He suggests that Cuban’s argument may have applied in the mid-1980’s, when individual teacher’s skill and motivation were highlighted, since computers and software applications required more skills and knowledge by users. However, nowadays computers and software applications have matured to enable users with a limited knowledge and experience of technology to take full advantage of their functions. He considers that it should not be a problem as long as teachers are personally comfortable and at least moderately skilled in using computers. Rather, it is necessary to focus more on teachers’ personal philosophies – whether they “support a student-centered, constructivist pedagogy that incorporates collaborative projects defined partly by student interest” (Becker, 2000).

In addition, he addresses importance of the school’s daily class schedule that permits allocating time for students to use computers as part of class assignments as well as the readiness of school’s equipment.

Criticality of teachers’ personal philosophies for students’ learning, in particular, e-learning will be discussed more in another section (i.e., 6. future learning program).

Here, I will highlight the importance of the school’s schedule and equipment that allow students to work on computers on a daily basis. The positive association between students’ frequent technology use and their academic achievement has been evidenced by previous research (e.g., Bussière & Gluszynski, 2004; O’Dwyer et al., 2005).

Despite the importance of students’ frequent use of computers and the Internet, both use of computers and the Internet for students in the present survey were strikingly low. The percentage of students who used computers on a daily basis was only about 40 percent. More of the students’ use was limited to two times or three times per week or less. The percentage of students who used the Internet on a daily basis was only about 19 percent; 50 percent of the students used the Internet twice or three times per week, and the rest of them used it only once a week or less.

The percentage of students using the Internet on a daily basis was nearly the same as that of Vitartas and Sangkamanee’s (2000) research conducted on 170 students studying at an international university in Bangkok. They reported that 19 percent of the students accessed the Internet at least once per day; 31 percent of the students accessed it a few times per week; and 40 percent of the students accessed it either a few times per month or less. However, at least 6 years has passed since the data was collected. It is reasonable to assume the percentage of students accessing the Internet at least once per day may be much higher now.

**Summary and Conclusion**

Findings from the present survey on educational institutions, employers, and students in the Northeast region of Thailand revealed a gap between them. In particular, the level of competency in using the IT tools that the employers required from their applicants exceeded the level of current competency reported by the institutions, as well as that of the confidence of students. Therefore, improvement in the competency levels of students’ IT skills is critical for increasing employment opportunities of the students in the target region.

The findings that the size of an institution, percentage of the school computers with Internet connection, and percentage of the school computers available for classroom use were important predictors of students’ competency in IT skills were examined for their validity. In particular, the finding that the student-computer ratio had no relationship to
students’ competency has confirmed Cuban’s (1993, 2001) argument that an increase in the number of computers or Internet access might not necessarily enhance students’ academic achievement; it needs to take into consideration other important factors when considering the issue of computers and Internet access.

As suggested by Becker (2000) and evidenced by a number of empirical studies, teachers’ philosophies of integrating IT in a way that support a student-centered instruction with the constructivist pedagogy are of greater importance than their computer literacy. Moreover, as suggested, it is necessary to design a curriculum and teaching strategies in a way that maintains students’ frequent use of computers and the Internet with the purpose of completing course assignments. This need is urgent, when considering the relatively less frequent use of computers and the Internet reported by the students in the present survey.

2.2 Summarized Results of the Survey (Quantitative and Qualitative)

The following is a summary of the major findings. For more details, see Annex B: Data from research survey.

2.2.1. Institution Survey

A total of 180 colleges and universities that had vocational programs located in the Northeast region of Thailand were selected for the present survey. Among those 180 institutions, 129 (45%) were vocational colleges, 30 (43%) were regular colleges and universities, and 21 (11%) were community colleges.

1 Size of institutions: regular colleges and universities appeared to have a higher number of students and instructors than did the other types of institutions; however, the student-instructor ratio did not differ among institutions.

2 Teaching strategies, curricula, and assessment: overall institutions had been highly aware of the importance of enhancing students’ autonomous learning skills and using strategies that were effective for strengthening the skills when developing teaching strategies, curricula, and assessment tools.

3 Important factors that were related to students’ competency in using IT tools: percentage of computers available for classroom use, percentage of computers with Internet access, and size of school found to be the key factors.

4 E-learning

4.1 Over 90 percent of regular colleges and universities, and nearly a half of vocational and community colleges had offered E-learning course(s). E-learning courses were most likely to be developed by the course instructors.

4.2 Factors that impeded effectiveness of e-learning courses: institutions had been concerned more about problems with facilities and equipment as well as students’ skill as downsizing the effectiveness of e-learning courses rather than a lack of instructors’ skills for teaching e-learning courses.

4.3 Factors that prevented institutions from offering e-learning courses: institutions that had not been offering e-learning courses were significantly lower than their counterparts on levels of budget, hardware, Internet access, instructors’ skills and motivation for teaching e-learning courses, and students’ skills for learning through e-learning courses. In particular, budget was significantly lower for institutions that had no plans for offering the e-learning course than those that had not offered e-learning courses but had plans to do so in the future.
5. Employment
5.1 Overall, a half of the students who were employed after graduation stayed in the Northeast region, while less than 40 percent of them moved to Bangkok.
5.2 Effective sources for obtaining a job: institutions reported that career placement center (CPC) and training programs such as Co-op training program (CTP) and Dual vocational training program (DVTP) were less effective sources for getting jobs than students’ directly approaching employers and medium such as information available on newspapers and the internet.

2.2.2. Employer Survey

A total of 60 organizations that were located in the target region and having at least 90 percent of employees who completed their education in the target region. A half of them were in the private sector (n = 32), and the other half consisted of government sectors (n = 14) and state enterprises (n = 14).

1. Type of gender that the organizations employed. The following patterns were commonly found among all three sectors: nearly half of the positions were currently open to both males and females. Regarding positions that were limited to either males or females, currently more were for males than for females.

2. Positions that was open to both males and females would be increased in the future; however, they would still remain less than 60% of the total positions available.

In addition to the above commonalities, the following variations were found among organizations with regard to their future requirements, in particular, for those that were limited to either males or females:

- Government sectors: an equal number of positions would be open to males and females (23% for each).
- State enterprises: requirements for females would decrease to less than one sixth of those for males (32% for males, 5% for females).
- Private sectors: little change in proportions for either gender would be made, with nearly twice as many positions offered for males as for females (32% for males, 18% for females).

3. Level of education that the organizations required

The following tendencies were revealed for the current requirement:

3.1 All of the participating organizations currently required a bachelor’s degree for over 60% of their positions.
3.2 The government sectors and state enterprises: the number of positions having requirements lower than the bachelor’s degree was less than 30%, with no positions available for either high school or secondary school qualifications, or for lower levels.
3.3 The private sectors: showed relatively higher demand for the vocational levels, in particular, for vocational diplomas.

For the future requirements, the following patterns were observed:
- The government sectors: showed little change, with a slight decrease in demand for the higher education levels (a bachelor degree and graduate levels) and a slight increase in acceptance of the vocational diploma.
- The state enterprises and the private sectors: showed an increase in demand for bachelor's degree and higher levels, while the acceptance of the vocational levels appeared to decline.

2.2.3. Student Survey

A total of 200 students studying at the educational institutions that participated in the institution survey responded to the present survey. Among those 200 students, 136 (68%) were from vocational colleges, 42 (21%) were from regular colleges and universities, and the rest of 22 (11%) were from community colleges.

The main purpose of the survey was to draw comparisons to find gaps among institutions, employers, and students.

1 Competitiveness in autonomous learning skill and other critical skills:
   - Skills those students and institutions estimated equally, but significantly lower than did organizations: interpersonal skills
   - Skills in which students expected to achieve significantly higher than the current levels reported by the institutions (both were significantly lower than what employers required): problem solving, responsibility, and leadership

2 Skills that students expected to achieve to the level of what the employers required: autonomous learning skills and foreign language skills

3 Level of competency in using the IT tools: among skills of using the following seven types of IT tools (i.e., Microsoft Office software, graphic design tools, architectural drawing tools, multimedia, accounting, human resources management tools, inventory and warehouse, software development, and web design), students rated the level of their competency significantly lower than did the institutions for all except skills using human resources management tools and inventory and warehouse tools.

3. Recommendations for Action

In this section, two subsections are highlighted. The first part indicates major areas for action, which draws the crucial points of view from the findings to be considered as input to recommendations for action in the second one.
Major Areas for Action

After reviewing and analyzing the results of institution, organization and student surveys, we found that the major areas that brought the most attention are;

1. Areas with High Job Market Demand

   The study shows that presently organizations have a high demand for employees with an educational background in Accounting/Accounting software, Computer/Computer for Business, and Business. This finding is in line with the study result which shows that there is also a high demand for academic study in these areas: Accounting/Accounting software, Computer/Computer for Business. The study also indicates that in the future there will be a high demand for employees with qualifications in Computer/Computer for Business, Business--, and Marketing. Computer qualifications continue to be in high demand in the job market because computers are playing a significant role in various areas of business: accounting, human resources management, and inventory management. The current education system, however, does not encourage the development of students’ computer skills because it focuses mainly on theory, not on hands-on practice. In addition, most computer classes are lecture-based for which instructors use computers solely as class presentation tools but not for students’ hands-on practice. This ineffective computer teaching method therefore reduces students’ enthusiasm to use computers for self learning.

   Computers have become indispensable in today's society. Institutions should therefore gear towards developing effective computer classes, which equip students with enough computers for hands-on practice. This will help improve students’ attitudes towards computer uses and increase their enthusiasm in learning new computer programs and technology.

2. Practical Training

   The study reveals that institutions have three types of practical training program: Co-Op Training Program, Dual Vocational Training Program, and Non-Student Training Program. In general, organizations are only involved in specifying training schedules and in identifying students’ assessment criteria. They are hardly involved in designing the training programs. The lack of active participation in designing training programs generally generates poor training results: student trainee’s end up performing work in the areas out of their concentrations. This mismatch of qualifications has therefore made organizations mistakenly perceive that students lack adequate knowledge and analytical skills to perform the assigned work. If organizations and institutions work together on designing practical training programs, the rate of success will be high and both students and organizations will truly benefit from the training program.
Importantly, institutions should prepare students before the start of the programs by training them on theoretical knowledge and skills required to perform work effectively. Good preparation will remove the organizations’ previous negative comments that students were lacking theoretical knowledge and analytical skills to perform work. If students are well equipped with required knowledge and skills before training, they will be able to perform work effectively in the areas of their expertise. Institutions should follow up student assessments continuously during training periods to be informed of any problems.

Organizations should assign work to students according to their educational background and expertise; students should not be doing work just to provide free help to organizations. The training should also be meaningful and educative to students.

3. IT Utilization

The study shows that most organizations are using computers, especially basic software and accounting software, for their businesses. Their staff members are very skillful with basic computer software such as MS Office, but they hardly ever use other advanced software programs due to the lack of skills. Like most employees at organizations, students are very competent in basic computer software and lack other advanced computer skills.

IT is being underemployed in institutions and organizations. IT is mainly utilized in organizations in office related work and only occasionally used in other areas e.g., Accounting, Human Resources, Staff Training, etc. The low usage is because organizations still lack qualified personnel with a computer background; most employees possess only knowledge of basic computer software. Hence, organizations should consider providing training to staff on the new computer programs, which can be applied to work, to enhance staff’s computer skills; staff should also be equipped with enough computers for their own practice. Now, we are in a fast paced world with rapidly changing technology. Organizations' Management should therefore support technology development and IT networks so that the organizations can stay relevant in the changing environment.

It is revealed that E-learning is little used at organizations and some of them are using their own developed E-learning. In general, organizations still do not fully support E-learning development. In today’s competitive environment, staff development is critical, especially with organizations that require specialized skills; instead of repeated in-person training, new employees can easily be trained via E-learning tools at any preferred time. E-learning undeniably allows constructive, low-cost training with the same standard content to new employees. Organizations with E-learning implementation will thus enjoy cost saving for staff development.

Institutions still do not widely use E-learning in teaching and learning because of the limitation on support equipment and funding. The teaching method commonly used at institutions is
of a lecture type. E-learning poses some concerns over student learning effectiveness: students may not be able to follow E-learning lessons well, in which case they will lose their enthusiasm, and their study performance will be affected. These concerns are tied to Thai culture. Thai people do not like to learn by themselves, when there is no one around to control their learning process, and they prefer doing enjoyable, entertaining and fun activities. Therefore, it would be difficult to persuade them to sit down and learn by themselves via E-learning, with all lesson content the same as is taught in class. Although E-learning can encourage self-development in students, lack of sufficient interactive and interesting E-learning programs and close follow-ups from instructors will affect students’ perception towards E-learning and their ability to use it in the future. Institutions in fact view E-learning as useful, but they lack enough funding to support it.

Computers are commonly used among students. Most students use computers to conduct presentations and to do research. On average, students use computers 2 to 3 times per week. Computer usage and computer skills are still low among students (students are competent only in basic computer software) due to insufficient reliable computers at institutions, and sometimes due to lack of students’ interest in their use. Students should always be keen to seek more knowledge, e.g., computer skills, in addition to what is learnt from instructors.

Therefore we believe that in order to enhance Northeast students’ skill and competitiveness, institutions, organizations and students should assist each order in the following areas:

- **Institutions**
  - There should be on-going computer courses for students to keep them updated on new technologies.
  - Computers and other equipment should be sufficiently available for students to use in learning.
  - Institutions should develop E-learning courses for students, so that they will have E-learning experience and will be able to apply it in the future.
  - Institutions should involve organizations in designing practical training programs so that students are to be selected according to their qualifications and the organizations’ requirements.
  - Institutions should get students ready before sending them to participate in practical training programs.

- **Employer Organizations**
  - Organizations should work together with institutions in selecting students for training programs according to their fields of studies.
  - Organizations should provide designated staff to assist students with questions and
problems.

✔ Organizations should enroll employees into new computer software training which is suited to their job so as to enhance their knowledge and skills.

✔ E-learning is an alternative training tool for organizations to save staff development costs.

✔ Organizations should develop the right assessment criteria to screen applicants into the workforce according to the desired qualifications.

➢ Students

✔ Students should at all times seek more knowledge, within and beyond their fields of studies.

✔ Students should act and behave properly during practical training and also follow organizations’ codes of conduct.

✔ Students should use computers more often for their study and also keep themselves updated on new computer software.

4. Future Learning Program

Planning, Design, and Development of the Learning Program

4.1 Background – Literature Review on various Learning Methods, including e-Learning

Online courses have been offered worldwide. One of the major benefits of the online courses is that they enable students to undertake learning with fewer constraints in time and place on their programs of studies (Smith & Hardaker, 2000; Sorensen & Takle, 2002).

In the present research, over 60 percent of the participating institutions (109 institutions) answered that they had currently offered one or more E-learning courses. Moreover, among 70 institutions who had not currently offered e-learning courses, 52 institutions indicated that they had a plan for offering the e-learning courses in the future.

With the high demand and the need among the institutions to provide courses online, we decided to design the training that was to help teachers learn to develop effective e-learning courses. Moreover, with the current movement toward
integration of a constructivist approach to learning in all educational institutions in Thailand, the training was designed to support collaboration among trainees. The constructivist approach and the technology integration training programs that have been referred to during our designing processes are reviewed in the succeeding sections.

4.2 Constructivist Pedagogy

In the previous section, the importance of teachers’ personal philosophies – whether they “support a student-centered, constructivist pedagogy that incorporates collaborative projects defined partly by student interest” (Becker, 2000) was introduced. What is the constructivist pedagogy and why it is critical?

The constructivist pedagogy views learning as a personal, reflective, and transformative process in which knowledge is constructed by a learner (Muir-Herzig, 2004). It is opposed to the traditional pedagogy that tends to decontextualize knowledge and skills in ways that remove the links to real-world application (Bennett, 2003).

The traditional teacher-oriented approach utilizes the “direct-transfer” or “one-way knowledge transmission” model, in which teachers are the source of information, while students are listen to the teachers’ lecture and memorize it (Harasim, 1990, cited in Hiltz, & Benbunan-Fich, 1997). On the other hand, in the constructivist classroom, the teacher's role is to facilitate students’ problem-solving skills, concept development, and critical thinking through collaboration (Hiltz, & Benbunan-Fich, 1997; Muir-Herzig, 2004).

The constructivist approach utilizes collaborative learning because it helps students build a deep understanding that takes account of multiple perspectives, and reflects the ways in which knowledge is shared within communities in practice (Bennett, 2003). Collaborative learning takes a variety of formats; however, all types of collaborative learning share the principle that participants must actively work together (Cohen, 1990, cited in Gumperz, Cook-Gumperz, & Szymanski, 1999).

Gumperz et al. (1999) introduced methods developed by Brown and Campione
(1993, cited in Gumperz et al., 1999) which have been used widely in collaborative learning classrooms. In those classrooms, students work in small groups first to accomplish specific pedagogical tasks, then in larger participatory groups, until the whole class is involved in what is called a “community of learners”. Throughout the instruction teachers play a role of facilitators. Through the instruction, students can share their findings in a multitude of ways, from discussing in a small group to presenting in front of a whole classroom community.

Those merits do not just happen when students are put together and are required to do tasks in groups. Pejuan (2005) reports about both successful and unsuccessful groups in her research on university students beginning their engineering studies. The collaborative teamwork, when it was successful, was a help for the students to positively level out their differences in problem solving skills with that of their stronger group members. Those students also expressed positive feelings about their group activities. On the other hand, for some groups of students, scores that their groups gained were not reflected in the corresponding exam marks that they obtained individually. Pejuan (2005) attributes it to a lack of real collaboration among the group members and/or to the lack of effort to involve themselves in the activity. Based on the findings, Pejuan (2005) suggests that the instructors’ direct interaction, feedback and active engagement are necessary for effective collaborative learning. However, as Gumperz et al. (1999) point out, it is often hard to detect whether collaboration is productively carried out in student groups.

Research on collaborative learning has been done on various levels of students in many fields. Although they are fewer than studies on the primary or secondary levels of students, a number of studies have presented empirical evidence on the effectiveness of collaborative learning at the college level, including those in the United States (e.g., Felder, 1995; Gokhale, 1995; Pejuan, 2005) and in Thailand (e.g., Becker and Manusaiyat, 2004).

Although most of the studies that addressed collaborative learning have been done in western countries, education reformation to apply constructivist pedagogy has universally taken place. On its website, the University of Michigan (2006) introduces the current educational issues in Thailand, including a movement toward integration of a constructivist approach to learning in all educational institutions in
Thailand. It also reflects on the policies formulated by the Eighth National Educational Development Plan (ENEDP), which leans towards a constructivist approach to teaching (University of Michigan, 2006).

4.3 Technology Integration Training Program

Elsenberg (2001) argued that the goal of computer-based instruction was to lead students to become “computer literate” (p. 45), which did not simply mean operating a computer, but using technology (not limited to a computer) flexibly and creatively. He explained, “We want them [students] to be able to size up a task, recognize how technology might help them to fulfill the task, and then use the technology to do so.” (Elsenberg, 2001, p. 46).

Petropoulos (2001) identified stages that were necessary for technology integration including (1) budgeting and planning to get equipped with the required hardware, software and peripherals, (2) making a plan to integrate technology with instruction, (3) preparing teachers for the integration, (4) guiding students in using technology to complete tasks, and (5) looking forward to adopting new technology as needed. Petropoulos (2001) further argued that the most important step in the whole process was the third step (i.e. preparing teachers for the integration), which could be provided by effective teacher training. Petropoulos (2001) criticized the current training sessions for focusing on learning technological skills, such as learning software applications, instead of integration.

A number of training projects that focus on integration of technology are available, such as the West Virginia K-12 RuralNet project (Koul, Wiesenmayer, and Rubba, 2001) and the Educational Technology Professional Development Program (Ivers, 2001). In these programs, teachers’ perceived level of technology proficiency, as well as their perceptions regarding self-efficacy toward teaching with the Internet, are measured prior to the training and are monitored during and after to evaluate the effects of training.

Among a various training projects, we found the Michigan Technology Integration Training program (reported by Brown & Fouts, 2005) was particularly helpful due to the following reasons:
✓ The program was aimed at guiding and supporting teachers to develop not only the technical skills but also pedagogical skills needed for effective technology integration.

✓ The program was designed to ensure the following key factors that are critical for successful technology integration training: in-depth training that incorporates hands-on learning, collaboration, real-task, follow-up training and support, time for exploring and planning, strong and supportive leadership, and adequate access to technology.

✓ The program targeted a large number of teachers (over 8,000) at the different levels of schools (i.e., universities, colleges, and K-12 classrooms).

✓ The program was comprised of multiple training sessions each focused on its own phase on the technology integration.

✓ Each component of the program was designed to be completed within 2-5 days.

The program comprised the following three sessions: ATA Technology Academy, Intel© Teach to the Future, and Teacher Leadership Seminar. The ATA course was a two-day training session focusing on planning and professional development for the best use of technology. At the beginning, teachers were provided with an overview of the technology integration. Then they were guided to build teams and worked together to design a technology plan for their schools. The importance of teamwork was emphasized throughout the session. The Intel© Teach course was a five-day training course that provided teachers with the depth of training that focused on technical skills in the context of unit planning. First, teachers were directed to collaborate with other teachers and discuss ideas for both introducing and using technology in their classroom. Then they developed a specific unit (“the Unit Portfolio”) that they could use at their schools. The seminar was a three-day course, modeled after Washington State’s Teacher Leadership Project which provided an in-depth focus on integrating technology into the curriculum and the development of more advanced technical skills. The seminar was available only to those teachers who had completed the Intel training.

The program had a significant impact on participating teachers, including the following:
1. Teachers were beginning to use technology in a variety of ways to support student learning.

2. Teachers were becoming more comfortable with teaching strategies that support technology integration (Brown & Fouts, 2005).

**Planning, Design, and Development of the Learning Program**

As described in the previous section, the present program was planned to provide teachers in the Northeast region of Thailand with technology integration training. The training was modeled after the Michigan Technology Integration Training program, which had been successful in enhancing teachers’ skills in using technology in instruction through collaboration.

Prior to the designing, the following conditions and directions were proposed by the PIU:

- The training must include an introductory course for teaching basic concepts related to e-learning.
- The training must include a course for teaching skills for developing online course contents with a course management system, Moodle, since it was a free, open source software, which had been widely used in Thailand.
- The training had to accept all individuals who registered.

In addition, it was considered desirable that the entire sessions should be completed at most within a week, since some of the participants who resided away from the place where the training would be held had to travel and stay in hotels during the program.

By taking into consideration of the first two requests and the time constraint, a two-day e-learning training course and a two-day Content Management Systems (CMS) by Using Moodle course were designed. Collaborative learning methods would be used in both courses because of the following advantages it offered:

- As reviewed, the importance of a collaborative learning method has been acknowledged and emphasized worldwide, as it has in Thailand.
- By working in groups, teachers with a variety of skills would be able to assist each other, which would be beneficial not only for those who were tutored but
also those with advanced skills playing the role of tutors.

- Experience of collaborative learning would enhance teachers’ skills in facilitating students’ collaborative learning, which was also one of the keys to successfully integrating technology into instruction.

For the E-learning course, task sheets (see Annex D) were designed, which provided learners with hands-on exploratory tasks that they would accomplish by working together in small groups, followed by whole class discussions. For the Content Management Systems (CMS), the advanced session in which learners would create online course content that they could take back to their school was planned to be completed by groups of teachers with the same or related subjects.

### 4.4 E-learning Training

#### Objectives

The E-learning training is a prerequisite course of the Content Management Systems (CMS) by Using Moodle training. The purpose of the course is to provide teachers with the necessary knowledge and skills for successfully completing the portal training. In particular, the course is designed to help the teachers to become familiar with:

1. Major E-learning tools,
2. Features including benefits and problems related to the use of each E-learning tool for teaching, and

Furthermore, the learners will explore online courses related to their subject areas and discuss their potential and problems in a small group.

#### Learning Paths

The training consists of the following two learning paths: (1) Introduction to E-learning tools, and (2) Effective design of E-learning courses. Each course is followed by an assessment to ensure the learner has acquired the required level of knowledge for success.
Course Description

1. Introduction to E-learning Tools

The course is designed to provide the learners with an overview of E-learning, in particular, types of E-learning tools and their features including benefits and problems. Tools such as video conferencing, electronic notice board, and virtual classroom will be introduced.

Training outcomes: on completion of the course, learners should be able to: list major e-learning tools and describe each tool’s features including benefits and problems in their own words.

2. Effective Design of E-learning Courses

The purpose of the course is to help the learners (1) evaluate strengths and weaknesses of an existing online course, and (2) design the syllabus of an online course that is to enhance benefits and overcome the problems identified with regard to the existing course.

Each learner will join one of the subject-specific groups at the beginning of this course. All the activities will be completed within each group.

Training outcomes: on completion of the course, learners should be able to:
1  Evaluate strengths and weaknesses of an existing online course.
2  Design a syllabus for an effective online course to effectively support learning in a specific subject area.

4.5 Content Management Systems (CMS) by Using Moodle

Objectives

The Content Management Systems (CMS) by Using Moodle (CMS training) is designed to help teachers:
1 Become familiar with a Moodle environment,
2 Learn how to use the fundamental features of Moodle, and
3 Design, organize, and manage their online content on Moodle.

Learning Paths

Three learning paths, Moodle Essentials, Working with Moodle, and Moodle Advanced, have standard courses that can be followed by the test to ensure the learner has acquired the right level of knowledge and skills for success.

Course Description

1 Moodle Essentials

The course is designed to provide the learners with the knowledge and skills to exploit Moodle’s full capabilities.

The learners will explore examples of online courses developed in the Moodle environment to understand how Moodle’s features assist teachers in designing online courses.

Finally, the learners will be introduced to websites that support Moodle users.

Training outcomes: on completion of the course, learners should be able to:
1 List Moodle features and describe in their own words how they assist teachers in designing online courses.
2 Visit websites that support Moodle users.

2 Working with Moodle

The learners will do hands-on exercises for navigating on Moodle assisted by the instructor.

Training outcomes: on completion of the course, learners should be able to:
1. Create the Moodle environment by downloading and installing EasyPHP and Moodle.

2. Navigate on Moodle to use its fundamental features.

### 3 Moodle Advanced

The course is designed to assist the learners in designing their online course in the Moodle environment. First, given the guidelines, the learners will develop online content on Moodle. Then the learners will organize and manage the content to develop their own online content. The role of the instructor is to monitor and support each learner as is necessary.

Training outcomes: on completion of the course, learners should be able to develop, organize, and manage their online content on Moodle.

#### 4.6 Implementation and Guidelines of the Program

In order to achieve the goal of the program, that is, to assist teachers in acquiring and enhancing skills for integrating technology into instruction, and to accomplish the goal through collaborative learning, specific directions about qualifications of the course instructors were described:

1. The course instructors must be capable of facilitating discussions.
2. The course instructors must be capable of monitoring each student working on the computer and scaffolding when she or he has a difficulty or problem.

Course design including guidelines (i.e., objectives and a list of sub-courses and description of each), syllabus, learning guidebooks including the task sheets to be utilized by learners, contents to be instructed, and evaluation questionnaires (i.e., assessment of learning and learner’s opinions about the courses) (see Annex D) were submitted to the PIU to transfer to the training team.

With those designs and guidelines, the training team further developed teaching materials, assessment instruments, and scheduling in a Thai version. The team recruited two doctoral students in the engineering department who had expertise in
teaching technology and trained them.

The PIU advertised the training program by sending letters to schools in the Northeast region and maintained registration. The PIU further identified a training site and prepared for the training.

The four-day training took place at the Khon Kaen University, faculty of Humanities and Social Sciences in Khon Kaen. A total of five training sessions were held at the same location in April and May, 2006. The first training session was observed and logged by the consultant.

The training was presented in the computer lab. The lab was equipped with a wide screen, projector, microphone, and speakers. In addition, a lab assistant was sitting next to the instructor. All of the computers in the lab were connected to the Internet.

Prior to and after the training, participants took the tests that were to assess their comprehension of the contents provided in the training session. Both tests were scored and contrasted to examine the impact of the training on the participants’ level of comprehension. In addition, after the training, the participants filled out the questionnaires that asked their opinion about the training and the instructors. The results were documented by the training specialist.

At the end of the last session, certificates were provided to those participants who had completed all of the training sessions.

### 4.7 Evaluation of the Program and Next Steps

**Facilities**

The facilities and equipment strengthened the training. First, a sufficient number of computers (74 computers for 47 learners) enabled the learners to work on their own computers. The use of the large screen and the microphone supported the instructor’s presentations and lecturing. In addition, the lab assistant helped the instructor and the learners when they encountered problems relating to the computers and the network. Moreover, members of the PIU sat in the back seats...
and provided assistance to the learners who had difficulty in following the directions. A number of advantages can be listed with regard to the staffs’ circulating and assisting the learners who seemed to have problems. First, it was impossible for one trainer to assist all of the large number of students who differed in their level of skills in using a computer. Provisions of assistance by the other instructor and the staff members helped the instructor continue his lecture as well as demonstrations without pausing to help the learners who were left behind. Second, students who had difficulties in following the instruction due to insufficient prior knowledge and skills of using the computer seldom asked for help in class unless someone approached and offered help individually. The other instructor and the staff members assisted those learners who had a problem and yet remained quiet. Third, it is common for computer-related courses to encounter unpredictable technical problems. Because of the assistance of the other instructor, the PIU staff, and the lab assistant, problems could be dealt with quickly.

The downside of providing the computers to each learner was that it could distract the learners who were bored or having difficulties in following the instruction. For instance, some learners were browsing unrelated websites when the instructor was lecturing on the concepts related to the e-learning tools. It was also observed that some learners were playing a card game on their computers instead of working on their assignment.

**Learners**

A total of 47 people (20 males and 27 females) registered and attended at the first workshop. Over 90% were teachers. According to the staff and the instructors who interacted and assisted the learners, only 20% were advanced in using computers and already knew at least a little about Moodle, while 30% had difficulties in operating the computers. That 30% did not know some commonly used technical terms such as “save”, and “download”, and had difficulties in typing on the keyboard. Due to this diversity in the learners' skills levels, it was difficult for the trainers to present to all of the students simultaneously. For instance, those who had experience in developing course contents with the Moodle wanted to learn new advanced features, while those who had difficulties in operating the computers hardly followed the instruction. When the CMS instructor introduced information that the advanced learners wanted to obtain, some learners who had no experience...
in using the Moodle could hardly differentiate what was fundamental and what was the additional information that targeted the advanced learners.

In order to support those technologically challenged learners, the PIU staff, the other instructor, and the lab assistant circulated and provided assistance as requested by a learner. Later in the CMS training course, some learners visited and assisted their fellow learners who had difficulties.

Instructors
Two instructors had been hired to instruct the e-learning courses (i.e., the Introduction to E-learning tools course and the effective design of E-learning course) and the CMS training courses (i.e., the Moodle Essentials course, the working with Moodle course, and the Moodle advanced course; see Table 1 for details of the courses). The instructor who was in charge of the CMS training courses was observed to be more interactive than the other instructor who was in charge of the e-learning courses. For instance, the CMS course instructor was more likely to stand closer to the learners and to focus on them, while the e-learning course instructor tended to stand on the stage and looked at the instructor’s computer or the screen in the center more frequently than at the learners. The learners were observed to be more attentive to the lecture and demonstrations provided by the CMS course instructor than the other instructor. It was observed that a number of the learners opened and were browsing websites that were not related to the content of the course in the E-learning courses, while all listened to the CMS course instructor’s directions and worked on the assignments that he provided in the CMS courses. However, there might be other factors that resulted in the differences in attitudes of the learners in addition to the characteristics of instructors, including the learners’ higher motivation on learning the CMS courses and a lack of appreciation of the value of paying attention to the content of the E-learning courses.

Both instructors developed the PowerPoint slides and presented them in the courses. Each slide was effectively designed: having a consistency throughout the file, and was simply and clearly organized so that the learners would be less likely to get distracted. Moreover, the e-learning course instructor’s slides had images that helped the learners comprehend the content of the presentation.
The task sheets and group activities were not utilized. A traditional lecture method with the PowerPoint presentation was used throughout the sessions.

Course Evaluations

Gaps between the designed and actual courses
There were gaps between the planned and actual instructions. First, no assessments of the learners’ mastery of each course were administered. All the learners were allowed to take the succeeding course regardless of their level of mastery of the previous course. As a result, we did not know whether and to what extent each learner had successfully completed each course. However, characteristics of the learners and insufficient time did not allow the administrations of the assessments. As stated above, it was observed that 30% of the learners lacked the skills that were required for the successful completion of each course. If we required all the learners to achieve the mastery level of learning prior to going on to take the succeeding course, those technologically challenged learners would not be able to complete the course on the limited schedule. Furthermore, because of unexpectedly larger number of learners who lacked the prerequisite skills, the instruction had to take a longer time, which resulted in a lack of time for completion of the courses. The lack of time for the instruction was also due to a cultural factor that allowed more than an hour delay in starting the instruction.

Second, group work had been planned for the effective design of E-learning course and the Moodle advanced course in order for the learners with various levels of skills to help one another through the completion of a group project. However, individual work instead of group work was utilized in the actual courses. It was explained that the reason was related to a cultural factor that the learners were not familiar with a group work in learning. In particular, there was concern that those who were not confident in working on the assigned project would be more likely to lag behind. Due to the use of individual work, all the learners including technologically challenged learners actively engaged in the assignments. However, two major downsides were observed relating to a lack of group work. First, there was little interaction among the learners. It had been planned to facilitate exchanging and sharing ideas among the learners through group work; however,
individual work separated each learner. As a result, a primary source of target knowledge and skills was limited to the lecture and demonstrations provided by the instructors. Moreover, it had been expected that the experience of group work would encourage the learners to formulate a community in which learners contacted one another and learned together after the workshop. However, most of the learners stayed with their friends throughout the workshop, and little contact was observed between learners who had actually met in the workshop.

The second deficit was a lack of cooperation among the learners, which resulted in an inability or difficulty for the technologically challenged learners to achieve the objectives of the courses. For instance, given an assignment to evaluate an existing online course syllabus by filling out a provided Word document in the effective design of E-learning course, the learners who had little experience of using the Word focused primarily on working on the Word document rather than evaluating the course, which was the objective of the course. The lack of opportunities for cooperation might be deficit for the advanced learners as well as the technologically challenged learners. Since the instructors needed to adjust the content and a speed of lecture in order for the technologically challenged learners to follow, the advanced learners were observed to be getting frustrated or bored. If group work had been utilized, mutual learning among the team members would have been possible. For instance, those who were advanced in using the computer and applications could support others who had difficulties, while the learners who had lower skills in using the computers but had longer teaching experience could also contribute to the team by sharing their experience with others.

The third gap between the planned and the actual courses was in the format of the first introductory course: the introduction to E-learning tools. The course had been designed to be task-oriented, and tasksheets were to have had the learners explore the information rather than passively obtaining it from the instructor. However, the actual instruction was done primarily with a lecture, and those prepared tasks were not utilized. Probably due to the use of traditional lecture typed instruction, it was observed that a quite number of learners were not focusing on the content during the instruction. Furthermore, it was questionable whether the objective of the course (i.e., being able to list major e-learning tools and to describe each tool’s features including benefits and problems) and its value was fully appreciated by
each learner.

Finally, the contents of the CMS training courses were required to be changed due to insufficient time and the learners’ skills. For instance, after observing quite a number of learners having difficulties in using the computers, the instructor made an effort to simplify the procedures of downloading and installing the Moodle so that the learners could do it by simply opening and extracting the provided file. However, many learners still had difficulties in following the simplified procedures, and it took longer for the installation than had been expected, which affected the succeeding schedule. To cover the contents within a limited time, two courses (i.e., working with Moodle and Moodle advanced) were merged, so that the learners followed the instructor’s demonstrations and worked to create their own online course contents concurrently. Again, individual instead of group work was utilized throughout the courses.

**Major difficulty and the solution**

As stated in the learners’ characteristics, a large portion of the learners (30%) appeared to lack the skills that were required for the successful completion of the courses. It was observed that some of them had difficulties typing on the keyboard, lacked knowledge of the fundamental terms such as “save” or “download”, and had little experience in using Word and the Internet. Those learners hardly followed the instruction, especially for the CMS training courses. I observed several learners getting lost when trying to take notes during the instruction or failing to correctly follow the directions. Those learners hesitated to ask for a help or ask the instructor to repeat the demonstration in front of the entire class, and stayed silent, or tried to catch up with the direction by clicking on whatever was shown on the screen and got more confused. However, in spite of the difficulties, no learners dropped out of the courses. This was due to the support provided by the other instructor who was not in charge of teaching and the staff, including the training specialist, PIU members, and the lab assistants at the university. These people circulated in the class and provided support individually to a learner who requested it or looked as though he/she was having a problem. This individual support was critical for the learners who had difficulties both in following the instruction and in asking for help in the face of difficulties.
Most of the learners participated with their friends and sat close to them. Each group of people had a similar level of skills. Although some advanced learners helped other learners who had difficulty in working on an assignment, it did not happen until later in the workshop. At the end of the workshop, a learner commented and addressed the importance of peer support and suggested encouraging communication among the learners by: (a) providing an opportunity to have them get to know each other prior to the course, and (b) arranging tables in the room where they had snacks and lunch so that all the learners could face to one another instead of separately sitting with their friends. As she emphasized, peer support is critical not only for the successful completion of the workshop, but also for the formation of learners’ communities after the workshop.

4.8 Suggestions for Future Programs

Based on the observation of the first workshop, I will propose a number of suggestions for making the training more effective and attractive to the potential learners in the Northeast region.

First, needs assessments are necessary to identify training that is required for individuals with various levels of skills, so that each learner can selectively attend and learn the skill that he or she needs. The current courses were designed for learners who had the fundamental skills, including those of using mouse and keyboard with no difficulties, sending and receiving e-mails, searching and obtaining information on the Internet, downloading applications onto the computer, and understanding commonly used terms such as saving, downloading, uploading, and so on. In particular, the objectives of the current courses were to help the learners design and develop online course contents based on their understandings of the advantages and weaknesses of the online courses as the learning tools. This objective cannot be attained if the learner lacks or does not have sufficient level of fundamental skills. Therefore, in order for the courses to be effective, it is necessary to clearly inform the learners of what skills they have to have in order to learn successfully and meaningfully from the courses prior to their participation in the workshop. In addition, additional courses are necessary that are to help the technically challenged learners obtain the fundamental skills. In the first workshop, quite a number of teachers who had had relatively long careers in
teaching were observed to have difficulty in operating the computers. Despite their deficit in knowledge, they were interested in and willing to learn to utilize the CMS tool (i.e., Moodle.) Therefore, it is necessary to provide additional training courses that fulfill a gap between the current and the required levels of skills. Moreover, in those courses, it is necessary to monitor and provide sufficient support to each learner until they become able to work on their own.

Second, it is necessary to encourage cooperative learning among learners. It has been widely acknowledged that benefits of the cooperative learning surpass those of the traditional type of learning, and the use of technology in the classroom plays an important role in the shift from the traditional to the cooperative learning environment (Badenhorst & Beer, 2004). For instance, in the cooperative learning environment, learners are required to bring their skills and experience together and utilize them in order to accomplish an assigned project, while in the traditional teaching-learning setting, learners passively take and consume information provided by an instructor. It might be challenging to expose learners who have been trained primarily in the traditional type of teaching-learning environment to cooperative learning environment, however, it can be accomplished within the effectively prepared environment (e.g., preparing instructor to become capable of facilitating group activities, organizing the classroom so that each group functions well, assigning each learner a group so that each group is well balanced in terms of members’ skills and characteristics, and providing reasonably challenging assignments).

Finally, the formulation of the virtual learners’ communities will be helpful for connecting individuals, classrooms, and schools around the Northeast region, and for having them share experience by exchanging ideas or planning and working on joint projects. Furthermore, it should be helpful to develop a database that is to accumulate those ideas and experiences, and to provide access to the database to the members of the virtual community. An example is the database that has been developed through a series of projects in Japan. Those projects were aimed at pursuing effective strategies for utilizing technology in classrooms. Knowledge that has been obtained through evaluations of completed projects were placed in a database and posted on the Internet for public use, so that not only schools and teachers that were involved in the project, but also other educators could draw on
5. Conclusions

Findings from the research project have revealed that students’ competency in using the IT tools were significantly lower than what is required by employers, which might be one of the major factors that had limited the opportunities for students to obtain jobs in their local region, which was also indicated in the findings. Moreover, findings indicated that how many of the school computers were equipped with the Internet connections as well as how many of the school computers were available for classroom use accounted for the competency in using IT tools to some extent, but there might be more important factors to be considered.

Previous research suggested a need to design curriculum and teaching strategies in a way to maintain students’ frequent use of computers and the Internet with a purpose of completing course assignments. This need is urgent, when considering the relatively less frequent use of computers and the Internet reported by the students in the present survey.

Moreover, empirical evidence presented by previous research has highlighted the importance of teachers’ philosophies and skills of integrating IT in a way to support a student-centered instruction with the constructivist pedagogy. This implication and the willingness to offer courses online expressed by a wide range of institutions that has been illuminated by the present research reflected upon the design of the training project, which was intended to support teachers in the target region in integrating technology in instruction.

In order for participants of the current workshop sessions to retain and improve knowledge and skills that they have acquired through the session, it is necessary to provide further training sessions in the future. Those sessions should include the following two skills in addition to those in the current sessions: prerequisite skills that are necessary for the mastery of the succeeding courses, and skills to apply what the participants have learned through the current sessions to create effective online course contents.

A demand for providing the prerequisite skills’ training comes from the finding in which a large number of teachers did not have sufficient skills for using the computer. It is recommended that those prerequisite training sessions target skills that are necessary for teachers to use the computer at
work, including: (a) operating the computer (e.g., using a keyboard and a mouse quickly and appropriately, becoming familiar with the fundamental computer terms, creating folders and managing files, and navigating on the Windows); (b) using tools on the Internet (e.g., sending and receiving e-mails with or without attachments, using the search engine to find information, browsing websites, and downloading the target files); and (c) using the major applications including Word, Excel, and PowerPoint. Those skills are not only required for the mastery of the skills and knowledge that were provided in the current training, but also should be helpful for teachers to prepare instruction and to efficiently manage the administrative work. Moreover, a prior experience of browsing and learning through online course contents is necessary for the meaningful completion of the CMS training, and thus needs to be included in the prerequisite skills that the future training should target.

Although the skills to create effective online course contents had been included in the plan of instruction, the actual training was unable to target them due to insufficient time. Those skills are critical for the successful integration of technology into education, and thus need to be included in future training. It is recommended to provide the following three types of trainings: prerequisite skills training that is to help participants who have a difficulty in using the computer, training for learning features of the e-learning tools and for using one or more tools, and training for using the e-learning tool(s) and creating effective contents. For each type of training, it is important to specify and inform the learners of the prerequisite skills that they need to have in order to successfully complete each type of session prior to the registration.

Furthermore, for each type of training, it is necessary to provide opportunities for participants to: monitor their learning after the completion of each session, and practice in the classroom on their own with the assistance of the instructor as is necessary. More importantly, training for instructors to direct the project-oriented group work is needed in order for each course to be more effective, and for the trainers to be able to apply the format to their own instruction.

In order to design, plan, and administrate effective training sessions, it is required that each process is completed on a solid consensus on all who are involved in the project. Meetings with all staff involved are necessary when a process is completed, and a need to change what has been planned emerges in the succeeding or later process.

Finally, in addition to the training sessions, formulation of a virtual community that involves teachers in the Northeast region of Thailand is recommended. The community enables participating teachers to maintain and expand their network after the training, which would encourage them to improve their level of education in the region through cooperative projects.
6. Policy Recommendation

Even though the assessment project is completed, but there are several processes that the Ministry of Information and Communication Technology (MICT) should put in place as part of the policy development. There are several improvements that could be made to enable a strategic vision to be developed for effective e-learning practices. This recommendation has three related parts:

6.1 Utilizing the analysis of the research findings

The MICT should provide support by any means to assist all trainees to be able effectively to identify, acquire, and integrate learning objects that they have learned from the training programs of the project. By doing so, this will be achieved through a combination of enhanced professional development activities including digital resources and the ongoing support of e-learning specialists. The MICT should continue undertake and support projects for e-learning in conjunction with the local government and the private sectors in order to secure the sustainable production, acquisition, and maintenance of learning resources.

6.2 The capacity building program

It can be seen that the project provides training as a support for the people creating and using e-learning systems for the human resource development of the Northeast of Thailand. A crucial success factor for e-learning usage is the adopted to implement on the improved learning by the trainees The MICT should expand its training and support programs, directly targeting all users of e-learning systems. The private sectors involved in IT businesses and related fields should be included in these training sessions and support programs. The re-training programs should be provided to include pedagogical design support and discipline-specific design. In addition, a significant focus on effective use of technology needs to be considered to enhance the context of effective pedagogy.

6.3 Effectiveness of the implemented program

The MICT should determine whether the current IT infrastructure and its components in place or in the planning stage. This will address key e-learning needs. E-learning may be more effectively implemented if the academic systems supporting e-learning are able to seamlessly interface with administrative systems.
Along with guidance towards effective e-learning, a standing committee should be appointed to provide services which will enable the enhancement of the portal and the support system to be sustained. Part of the group's mission based on the users’ perspective in conjunction with the national plan should be to establish an on-going method of sharing both effective and ineffective practices among users, instructors and administration, and to encourage having more local portals. The committee should also be available as a resource to consult with the MICT or the local governments on evaluating on their use of e-learning. Remark that all efforts should be measured against the objectives of using e-learning to improve teaching and learning.

6.4 IT Utilities and E-learning Environment

It is recommended that MICT should provide better IT utilities and e-learning environments for all schools in the NE of Thailand on an “equal-opportunity basis.” The assessment confirmed that about half of all students leave NE Thailand upon graduation for work elsewhere and those that graduated were not as well prepared in terms of ICT skills as the educational institutions thought. Students were shown to be lacking in ICT and foreign language skills in particular, and specifically within the ICT skills set, the weakest skills were in more technical areas where there is growing demand for labor, such as accounting and software development. The report also pointed to an educational system that was relatively unequipped to use and facilitate student learning through ICT tools, but those schools that were well-equipped with computers, internet connections, etc. had better prepared students. The schools appeared to be most in need of the appropriate hardware, software, and maintenance of their IT systems, but the level of instructional readiness was viewed as strong. In addition, over 90% of the colleges and universities, and over 50% of vocational schools were using e-learning courses, but they were not active programs. Finally, the other interesting finding was that students found that open sources (i.e., internet, newspapers, etc.) were more effective at finding jobs after graduation than the schools or the on-the-job training programs.

6.5 IT infrastructure

The sum total of the aforementioned issues points to various possible policy reactions from MICT and the Government. The most obvious one would be to establish facilities to help the schools make the necessary investments in the IT infrastructure. Secondly, the findings reveal a need for a renewed emphasis on training in the core skills areas demanded in the local economy and finding new ways to use e-learning tools to access the best knowledge available to develop those skills among students. Third, a more systematic approach to linking the employers with the schools should be found to encourage better targeting of on-the-job training programs and courses that are more
applicable to the job market. Finally, linkages by the schools to the open source job search websites, companies, etc. should be made to link the job seekers (students) to the employers, as well as to provide the schools with a better idea of the skills demands in the market.

The above recommendation should be considered as it is feasible. We are now moving beyond the early training phase of e-learning for the target groups, multiplying the users through the action of the trained target groups will become more and more important to encourage users to see the real benefits of e-learning.
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ANNEX A: Data from Research Survey and Website Portal

INSTITUTION SURVEY

Method

Participants

A total of 180 colleges and universities that had vocational programs located in the Northeast region of Thailand were selected for the present survey. Among those 180 institutions, 129 (45%) were vocational colleges (i.e., 9 vocational colleges, 22 technical colleges, 11 colleges of agriculture and technology, 12 polytechnic colleges, 43 private vocational colleges, 30 non formal vocational colleges, and 2 colleges of business administration and tourism), 30 (43%) were regular colleges and universities (i.e., 4 state universities, 8 private universities, 5 Rajamangala universities of technology, and 13 Rajabat universities), and 21 (11%) were community colleges (i.e., industrial and community education colleges). A non formal vocational college that reported to have no students was excluded from the further analysis.

Instruments

Prior to a development of the questionnaire, the survey team conducted interviews with two education commissions offices in Bangkok (i.e., the office of the higher education commission and the office of vocational education commission) and six educational institutions located in the target region. Based upon the interview data, the survey team and the PIU members developed the questionnaire (see the interim report by the component 1 for more details).

Demographic information. Institution’s demographic information including the institution’s name, type, contact information, numbers of students, instructors, and administrators, and concentrations and programs that the institution offered was collected.

Perceived effectiveness of the teaching strategies, curricula, and assessment in training students for becoming autonomous learners. In order to examine to what extent participants perceived an importance of each of the following traits that have been acknowledged theoretically and empirically to be important for enhancing the autonomous learning: (a) helping students associate the new information with their existing schema, (b) encouraging interactions between students and instructor (as opposed to the passive learning), and (c) enhancing students to have positive feelings toward learning, the item asked participants to rate a degree of consideration that they have taken into when developing teaching strategies and curriculums on a scale varied from 0 (not at all considered) to 10 (extremely well considered).

For the effectiveness of assessment, participants were asked to provide a degree of an importance of considering each of the following criteria when developing assessment tools on a scale varied from 0 (not at all considered) to 10 (extremely well considered): (a) assessing students’ actual work beyond their theoretical knowledge, and (b) monitoring students’ capability in performing the target skills without instructor’s assistance.

Students’ autonomous learning skills. Participants were asked to estimate a level of their students’ autonomous learning skills on a scale varied from 0 (poor) to 10 (excellent).

Competitiveness of students’ general skills. Participants were asked to estimate their students’ competitiveness regarding the following skills and traits that employers would require or consider when selecting their employees in general on a scale varied from 0 (poor) to 10 (excellent): (a) interpersonal skill, (b) knowledge and skills related to one’s own concentration, (c) problem solving skill (i.e., skills for effectively finding a solution(s) when given an ill-defined problem), (d) foreign language skill, (e) IT and computer skills, (f) responsibility for completing one’s assignments or duties, and (g) leadership.
Institution’s readiness in utilizing Information Technology. Participants were asked to provide the information including the student-computer ratio, percentage of the computers for classroom use, and percentage of the computers that had the Internet access.

Second, participants were asked to report their readiness in utilizing IT in terms of the following aspects on a scale varied from 0 (not ready at all) to 10 (very much ready): (a) hardware, (b) software, (c) maintenance of the IT facilities, (d) instructors’ skills of teaching with IT, (e) instructors’ motivation for using IT for teaching, and (f) students’ general skill of learning with IT.

Finally, participants were asked to indicate how competitive their students were in utilizing the following IT tools on a scale varied between 0 (poor) to 10 (excellent): (a) Microsoft Office software, (b) graphic design tools, (c) architectural drawing tools, (d) multimedia, (e) accounting, (f) human resources management tools, (g) inventory and warehouse, (h) software development, and (i) web design.

Institution’s readiness in offering E-learning courses. Participants were asked whether they had currently offered e-learning course(s). Participants who had offered e-learning course(s) were further asked to report in what why their E-learning courses had been developed by selecting all that applied among the following methods: (a) instructors fully developed E-learning courses, (b) instructors and IT staff developed E-learning courses, (c) instructors cooperated to develop E-learning courses with instructors from other institution(s), (d) instructors purchased off-the-shelf E-learning courses, and (e) instructors designed the course content and had other organization develop the E-learning courses.

Participants who had offered no e-learning course were asked if they had a plan for offering it in the future.

All the participants were requested to indicate whether they were experiencing the following factors that would prevent or minimize effectiveness of using E-learning courses: (a) limitation on IT facility and equipment, (b) limitation on students’ IT skills, and (c) limitation on instructors’ IT skills. Finally, participants were asked to indicate how sufficient they were in developing E-learning courses in the following six elements on a scale varied from 0 (poor) to 10 (excellent): (1) budget for developing E-learning courses, (2) hardware, (3) Internet access, (4) Instructors’ willingness to teach with e-learning courses, (5) instructors’ skills for developing the e-learning courses, and (6) students’ skills for learning through e-learning courses.

Information on students’ employment. Participants were requested to provide information related to employment of their students, including training programs (e.g., Co-op Training Program (CTP) and Dual Vocational Training Program (DVTP)), Career Placement Center (CPC), and employment of the students after the completion of education.

The participants who offered the training programs were further asked to report in what type of business their students completed the programs, whether and in what way the institution involved in designing the program, percentage of the students who were employed by the organizations after the completion of the program (for DVTP only) and how satisfied they and the organizations that the trainings were taken place were with the training programs on a scale varied from 0 (not at all satisfied) to 10 (very much satisfied).

Participants were asked if they had the CPC. The participants who had the CPC were further asked to report role(s) of their CPC by selecting all that applied among the followings: (a) assisting students in preparing themselves for obtaining their desired jobs, (b) assisting students to obtain jobs related to their concentrations, (c) providing information on job openings, and (d) acting as a recruitment agency.

Participants were asked to provide information regarding employment of their
students including the followings: (a) number of students graduated annually, (b) percentage of the students who were employed, (c) percentage of the students who pursued the higher education, (d) percentages of the students who were employed in either Northeast or Bangkok, (e) major types of business that the students were employed and percentage of the students for each type of business, and (f) the average months that the students spent for their job search.

Finally, participants were asked to rank the following sources in order of effectiveness in obtaining jobs: CPC, training programs, medium (i.e., information on newspapers or the Internet), recruitment agency, and students’ directly walking in to the organizations.

Procedure

Prior to the data collection, the survey team visited the selected institutions to explain the purposes and significance of the survey and requested for their participations. At the same time the PIU sent the official letters to those institutions requesting for the participation. On an agreement with the institutions, the team arranged times and dates for the interview. Prior to the interview, the team provided the questionnaire form to the institutions so that they could prepare for it by locating information that their responses were build upon and filling a part of the questionnaire that requested the numerical responses. A trained staff visited each institution on the appointment date and interviewed the representative of the institution and a student recommended by him or her (see the interim report by the component 1 for more details). Numerical responses on the survey forms completed by the representative were first entered onto excel files by the PIU coordinator and then transferred to SPSS files for the analysis by the author of the present report.
Results

The Numbers of Students and Instructors, and the Student-Instructor Ratios

Table 1 shows the average numbers of students, instructors, and the average student-instructor ratios for vocational colleges, regular colleges and universities, and community colleges. As shown, the minimum numbers of students for vocational colleges, regular colleges and universities, and community colleges were 2, 430, and 470, respectively. 36 vocational colleges appeared to have students fewer than did any of the regular or community colleges did.

A series of ANOVAs was performed to contrast the three types of institutions (i.e., vocational colleges, regular colleges and universities, and community colleges) on the numbers of students and instructors, and the student-instructor ratios. Significant group differences were found for the number of students ($F(2, 176) = 32.65, p = .000$) and for the number of instructors ($F(2, 176) = 8.47, p = .000$). Furthermore, Post-hoc Turkey tests revealed that the regular colleges and universities (students: $M = 6032.97, SD = 5669.38$; instructors: $M = 361.10, SD = 902.38$) had significantly higher number of students and instructors than did vocational colleges (students: $M = 1583.48, SD = 1484.81$; instructors: $M = 57.21, SD = 53.35$) and community colleges (students: $M = 2246.33, SD = 2078.14$; instructors: $M = 55.96, SD = 29.52$). Community colleges had the higher numbers of students and instructors than did vocational colleges; however, the differences were only marginal. Regardless of the variations in the numbers of students and instructors, the student-instructor ratio ($M = 31.83, SD = 34.98$) did not differ among the institutions.

Effectiveness of Teaching Strategies, Curricula, and Assessment in Enhancing Students’ Autonomous Learning.

Table 2 shows mean scores and standard deviations for vocational colleges, regular colleges and universities, and community colleges regarding an importance of each of the following traits that have been acknowledged theoretically and empirically to be important for enhancing the autonomous learning: (a) helping students associate the new information with their existing schema, (b) encouraging interactions between students and instructor (as contrasted with a passive learning), and (c) enhancing students to have positive feelings toward learning. Average scores revealed that overall all three traits were highly taken into consideration when developing teaching strategies and curricula (a: $M = 8.19, SD = 1.33$; b: $M = 8.26, SD = 1.33$; c: $M = 8.21, SD = 1.37$).

In order to examine whether different types of educational institutions would differ on the degree of considerations, a series of ANOVAs was conducted on the three kinds of traits with the type of institutions as the independent variable. A significant group difference was found for the trait of helping students associate the new information with their existing schema ($F(2, 176) = 4.87, p = .009$). Furthermore, Post-hoc Turkey tests revealed that the regular colleges and universities ($M = 7.70, SD = 1.18$) scored significantly lower than did community colleges ($M = 8.86, SD = 1.20$), and scored marginally lower than did vocational colleges ($M = 8.20, SD = 1.35$). No significant group differences were found for the other two traits.

Table 3 shows mean scores and standard deviations for vocational colleges, regular colleges and universities, and community colleges on a degree of consideration of the following criteria when developing assessment tools: (a) assessing students’ actual work beyond their theoretical knowledge, and (b) monitoring students’ capability in performing the target skills without instructor’s assistance. Average scores indicated that the institutions were highly concerned of both criteria when developing assessment tools (a: $M = 8.65, SD = 1.29$; b: $M = 8.37, SD = 1.39$).
Furthermore, in order to examine whether different types of educational institutions would differ on the degree of consideration, a series of ANOVAs was conducted on the three kinds of criterion with the type of institutions as the independent variable. A significant group difference was found for the criteria of assessing students’ actual work beyond their theoretical knowledge \((F(2, 176) = 6.63, p = .002)\). Furthermore, Post-hoc Turkey tests revealed that the regular colleges and universities \((M = 7.93, SD = 1.23)\) scored significantly lower than did community colleges \((M = 9.10, SD = 1.41)\) and vocational colleges \((M = 8.74, SD = 1.22)\). No significant group differences were found for the other criteria (i.e., monitoring students’ capability in performing the target skills without instructor’s assistance).

**Students’ Autonomous Learning Skills**

As presented in Table 4, overall institutions perceived their students’ autonomous learning skills to be moderately high \((M = 7.62, SD = 1.54)\). Furthermore, in order to examine whether different types of educational institutions would differently estimate the level of their students’ skills, a series of ANOVAs was conducted on the level of students’ autonomous learning skills with the type of institutions as the independent variable. The result revealed no significant difference among the institutions.

**Students’ Competitiveness in the General Skills**

Table 5 shows mean scores and standard deviations for the levels of students’ competitiveness in the following seven general skills that were estimated by their institutions: (a) interpersonal skill, (b) knowledge and skills related to one’s own concentration, (c) problem solving skill (i.e., skills for effectively finding a solution(s) when given an ill-defined problem), (d) foreign language skill, (e) IT and computer skills, (f) responsibility for completing one’s assignments or duties, and (g) leadership. As shown, participants estimated their students’ skills to be closer to the highest level except for the foreign language skill that was located closer to the midpoint \((M = 5.89, SD = 1.72)\).

In order to examine differences related to type of institutions, a series of ANOVAs was conducted on the above seven variables of interest with the institution type as the independent variable. None of the ANOVAs detected significant differences among the institutions.

**Institution’s Readiness in Utilizing Information Technology**

Student-computer ratio, percentage of the computers for classroom use, and percentage of the computers with the Internet access. 12 Vocational colleges that reported either having no computers \((n = 2)\) or their student-computer ratios to be 0 \((n = 12)\) were excluded from the analysis here. Table 6 presents means and standard deviations of the student-computer ratios, the percentage of the computers for classroom use, and the percentage of computers that had the Internet access.

A significant group difference was detected for the percentage of the computers for classroom use \((F(2, 164) = 4.63, p = .011)\) and the percentage of the computers with the Internet access \((F(2, 164) = 5.25, p = .006)\). Furthermore, findings from the Post-hoc Turkey tests indicate that significantly more of the computers that the school owned were used for classroom teaching at vocational colleges \((M = 82.22, SD = 11.60)\) relative to regular colleges and universities \((M = 75.92, SD = 11.66)\). On the other hand, the findings indicate that significantly lower portions of the computers that the school owned had the Internet access at vocational colleges \((M = 62.73\%, SD = 30.90)\) relative to regular colleges and universities \((M = 81.99, SD = 20.95)\). Community colleges appeared to be in the middle of the other types of institutions for either the percentage of the computers for classroom use (\(M = 75.41, SD = 11.66\)) or the percentage of the computers with the Internet access (\(M = 68.02, SD = 31.15\)).
As shown in Figure 1 thru Figure 3, 4 vocational colleges (3.5 percent of 116 vocational colleges that had computers and nonzero student-computer ratios, and thus included in the analysis) reported that none of their computers had the Internet access, while the other types of institutions had a certain number of computers equipped with the Internet access. The minimum percentage of the computers with the Internet access was 25.00 percent for regular colleges and universities, and 16.67 percent for community colleges. 23 vocational colleges (19.8 percent of 116 vocational colleges), 9 regular colleges and universities (30 percent of total 30 regular colleges and universities), and 5 community colleges (23.8 percent of total 21 community colleges) reported that all of their computers were equipped with the Internet access.

The average student-computer ratio for institutions was 10.12 (SD = 14.20). No significant differences among vocational colleges, regular colleges and universities, and community colleges were found.

As shown in Figure 4 thru Figure 6, vocational colleges and regular colleges and universities appeared to have similarities in distributions of the student-computer ratios. For instance, about 20 percent of vocational colleges (n = 23) and regular colleges and universities (n = 6) had the student-computer ratio of 1.0, while no community colleges had the ratio of less than 2.0. Likewise, about 73 percent of vocational colleges (n = 85) and regular colleges (n = 22) had the ratio of 10 or less than 10, while only about 43 percent of community colleges (n = 9) had the ratio of 10 or less than 10.

Finally, a series of Pearson correlations was calculated between each of the following variables: number of students, student-instructor ratio, student-computer ratio, percentage of the computers for classroom use, and percentage of the computers with the Internet access. Table 7 presents intercorrelations among those variables. As shown, significant correlations were detected only between the number of students and each of the student-instructor ratio (r = .27, p = .000) and the percentage of computers with the Internet access (r = .18, p = .018), which indicate that the larger the institution was, the more students each instructor was in charge of, and the higher percentage of the computers were equipped with the Internet access. It needs to be noted that a significant correlation was not detected between the student-computer ratio and the number of students at the institution (r = .05, p = .51).

Readiness in facilities, instructors, and students. As shown in Table 8, mean scores for the variables regarding the institution’s readiness in utilizing the IT for teaching in terms of the six elements (i.e., hardware, software, maintenance of the IT facilities, instructors’ skills of teaching with IT, instructors’ motivation for using IT for teaching, and students’ general skill of learning with IT) indicated that overall participants estimated their readiness to be moderate but not satisfactory, with the lowest mean score of 5.87 (maintenance of the IT facilities) and the highest mean score of 7.32 (instructors’ motivation for using IT for teaching).

A series of ANOVAs was performed with the institution type as the independent variable on the six variables. The findings showed no group differences for any of the variables.

In order to examine if each of the number of students, percentage of the computers for classroom use, percentage of the computers with the Internet access, and student-computer ratios had a correlation with either of the six variables, a series of Pearson correlations was calculated between each of the variables of interest. Table 9 shows each
correlation. First, readiness in hardware was appeared to be correlated with the number of students \((r = .16, p = .036)\), the percentage of the computers for classroom use \((r = .46, p = .000)\), the percentage of the computers with the Internet access \((r = .27, p = .000)\), and student-computer ratio \((r = -.17, p = .025)\). Readiness in software was correlated with the percentage of the computers for classroom use \((r = .43, p = .000)\) and the percentage of the computers with the Internet access \((r = .22, p = .003)\). Readiness in maintenance of the IT facilities was found to be correlated with the percentage of the computers for classroom use \((r = .42, p = .000)\) and the percentage of the computers with the Internet access \((r = .29, p = .000)\). Readiness in instructors’ skills of teaching with IT was appeared to be correlated with the percentage of the computers for classroom use \((r = .34, p = .000)\). Readiness in instructors’ motivation for using IT for teaching was found to be correlated with the percentage of the computers for classroom use \((r = .25, p = .001)\) and the percentage of the computers with the Internet access \((r = .16, p = .029)\). Finally, readiness in students’ skills of learning with IT was found to be correlated with the percentage of the computers for classroom use \((r = .34, p = .000)\).

Those findings indicate that the percentage of the computers for classroom use was important, since it was associated with the higher rating on all aspects of readiness. The percentage of the computers with the Internet access was also important, since it was positively correlated with all aspects of readiness except for that in instructors’ skills for using the IT for teaching. On the other hand, the student-computer ratio and the school size that was indicated by the number of students were correlated with the readiness in hardware only, that is, the higher rate in the readiness in hardware was associated with the lower student-computer ratio and the larger number of students at the institution.

Finally, a series of Pearson correlations was calculated between each of the six variables. As shown in Table 10, all aspects of readiness were significantly correlated with one another.

**Students’ competitiveness of using the IT tools.** As shown in Table 11, mean scores of students’ competitiveness of using the IT tools (i.e., Microsoft Office software, graphic design tools, architectural drawing tools, multimedia, accounting, human resources management tools, inventory and warehouse, software development, and web design) scattered around the midpoint of the 10-point scale with the highest for the skill of using Microsoft Office tools \((M = 7.37, SD = 2.05)\) and the lowest for the skill of using inventory and warehouse tools \((M = 4.35, SD = 2.92)\).

A series of ANOVAs was performed on the above nine skills with the institution type as the independent variable. The findings showed no group differences except for the skill of using inventory and warehouse tools \((F(2, 170) = 4.15, p = .017)\). Furthermore, Post-hoc Turkey tests revealed that the mean score of this skill was significantly higher for regular colleges and universities relative to vocational colleges.

In order to examine if either the number of students, percentage of the computers for classroom use, percentage of the computers with the Internet access, or student-computer ratios was correlated with either of the skills, a series of Pearson correlations was calculated between each variable of interest. Table 12 shows each correlation. First, significant positive correlations were detected between the percentage of the computers for classroom use and each of all nine skills. The number of student was found to be significantly correlated with all skills except for skills of using accounting and human resources management tools. The percentage of computers with the Internet access was significantly correlated with skills of using Microsoft Office tools \((r = .16, p = .03)\), graphic design tools \((r = .20, p = .010)\), architectural drawing tools \((r = .26, p = .001)\), multimedia \((r = .23, p = .003)\),
and web design tools ($r = .25, p = .001$). Finally, no significant correlations were detected between the student-computer ratio and any of the nine skills.

Furthermore, a series of Pearson correlations was calculated between each skill and each type of the perceived readiness in using the IT at the instruction (hardware, software, maintenance of the IT facilities, instructors’ skills of teaching with IT, instructors’ motivation for using IT for teaching, and students’ skills of learning with IT). As shown in Table 13, the institution’s readiness in hardware, software, maintenance, instructors’ motivation, and students’ IT skills were found to be significantly correlated with all of the nine skills. Readiness in Instructors’ skills was significantly correlated with each of the skills except for those of using human resources management tools and inventory and warehouse tools.

**Predicting students’ competitiveness of using the IT tools.** In order to evaluate whether and how well the environmental factors explained the total score of students’ IT skills, a multiple regression analysis was conducted with the number of students, percentage of the computers for classroom use, percentage of the computers with the Internet access, and student-computer ratio as the predictors and the total of the nine scores on students’ IT skills as the criterion variable. As shown in Table 14, no significant intercorrelations were detected among predictors except for between the percentage of the computers with the Internet access and the number of students. All predictors but the student-computer ratio was significantly correlated with the criterion variable.

The result shows that there was a significant linear relationship between the criterion variable and the entire set of predictor variables ($F(4, 167) = 13.08, p = .000$). The sample multiple correlation coefficient was .488, which indicates that about 23.9 percent of the variance in the total score of the IT skills can be explained by the model. Furthermore, as shown in Table 15, all predictors except for the student-computer ratio appeared to be important for better prediction of the total score of the IT skills. Based on the significant correlation between the percentage of the computers with the Internet access and the number of students ($r = .19, p = .006$), it is assumed that the larger the institution was (i.e., as was reflected on the number of students), the more funding could be made to strengthen the school facilities including the Internet access, which further resulted in enhancement of competitiveness of students in using the IT tools.

In addition, the percentage of the computers for classroom use was also found to be an important predictor for the total score. With a finding that the percentage of the computers for classroom had no relationship with a size of the institution, the assumption is presented – how many of the school computers that the institution made it available for classroom use would play an important role in enhancing competitiveness of students’ IT skills, and it could be consistently observed among institutions regardless of their sizes.

It is rather surprising that how many students had to share the computer in class appeared to be not important for predicting students’ competitiveness in using the IT tools.

Finally, a multiple regression analyses was performed in order to determine the proportion of variance in the total scores of students’ IT skills accounted for by the perceived readiness in the following six elements: hardware, software, maintenance, instructors’ skills, instructors’ motivation, and students’ overall skills. As shown in Table 16, all those six predicting variables were significantly intercorrelated one another and significantly correlated with the criterion variable as well.

A significant linear relationship was detected between the criterion variable and the entire set of predictor variables ($F(6, 166) = 12.29, p = .000$). The sample multiple correlation coefficient was .555, which indicates that about 30.7 percent of the variance in the total scores of the IT skills can be explained by the model. However, as shown in Table 17,
only the readiness in maintenance and the students’ skills appeared to be reliable predictors; none of the other types of readiness were important predictors in spite of their significant correlations with the total score of students’ IT skills.

Readiness in Offering E-Learning Courses

109 institutions (60.9 percent of 179 institutions) answered that they had currently offered one or more E-learning courses (see Figure 7). Among those 109 institutions, 69 (63.3%) were vocational colleges, 28 (25.7%) were regular colleges or universities, and 12 (11.0%) were community colleges. Most of the regular colleges and universities (93.3 percent of 30 institutions) had offered e-learning course(s), while only half of vocational colleges (53.9 percent of 138 institutions) and community colleges (57.1 percent of 21 institutions) had.

Among 70 institutions who had not currently offered e-learning courses, 52 institutions (41 vocational colleges, 28 regular colleges and universities, and 12 community colleges) indicated that they had a plan for offering the e-learning courses in the future, while 18 institutions (all were vocational colleges) answered that they had no plans.

Among 417 courses listed by the 109 institutions, only 147 (35.3 percent of 417 courses) had been offered as the full online courses, while 247 (59.2%) had been offered as a part of the regular courses. The rest 23 courses (5.5%) were not be categorized to be either.

Table 18 lists concentrations and numbers of full and partial courses offered by vocational colleges, regular colleges and universities, and community colleges.

When asked how e-learning courses had been developed, over a half of vocational colleges (65.4 percent of 69 institutions), regular colleges and universities (82.1 percent of 28 institutions), and community colleges (66.7 percent of 12 institutions) that had currently offered e-learning courses answered that they had course(s) that had been thoroughly developed by the course instructors (see Table 19, Figure 8 and Figure 9). Institutions that had e-learning courses developed by the instructors supported by the IT staffs were rare at vocational (30.4 percent of 69 institutions had) and community colleges (33.3 percent of 28 institutions had), while over a half of the regular colleges and universities (57.1 percent of 12 institutions) had developed courses supported by the IT staffs. Developing e-learning courses through a corporation of instructors including those from other institutions was not common at vocational colleges (18.8 percent of 69 institutions had) and regular colleges and universities (32.1 percent of 28 institutions had), while a half of the community colleges that had offered e-learning courses developed them in that way. At many vocational and community colleges (56.5 percent of 69 vocational colleges and 66.7 percent of 12 community colleges), instructors purchased the off-the-shelf courses to use in their courses, while did only 39.3 percent of regular colleges and universities. Finally, only one vocational college reported that it had courses that the instructor designed the course content and had other organization develop to make it an e-learning course.

When asked whether the institutions had been experiencing exemplified problems (i.e., insufficient facilities and equipments, a lack of students’ skills for learning through e-learning courses, and a lack of instructors’ skills for teaching through e-learning courses) that lowered the effectiveness of e-learning courses or prevent the institutions from offering any e-learning courses, nearly a half of the institutions answered that they had problems with facilities and equipments (see Table 20). Likewise, nearly a half of the institutions were concerned that their students did not have enough level of skills that allowed them to learn effectively through e-learning courses. On the other hand, only one vocational college indicated their concern about their instructors’ skills for offering the e-learning courses.

Sufficiency in developing E-learning courses. When asked to indicate how sufficient
they were in developing E-learning courses in budget, hardware, the Internet access, instructors’ willingness to teach with e-learning courses, instructors’ skills for developing the e-learning courses, and students’ skills for learning through e-learning courses, overall institutions rated only to the midpoint of a 10-point scale, with the lowest of 5.02 ($SD = 2.70$) for budget and the highest of 6.46 ($SD = 2.72$) for the provision of the Internet access (see Table 21). In addition, a series of ANOVAs was performed with the institution type as the independent variable on the degrees of sufficiency. The findings showed no group differences for any of the elements.

In order to compare among institutions that had currently been offering e-learning courses, those that had not been offering e-learning courses but had plans for offering, and those that had not been offering e-learning courses and had no plans in the future either, a series of ANOVAs was performed with the type of offering (having courses, having no courses but having plans, having neither courses nor plans) as the independent variable on the degrees of sufficiency. As shown in Table 22, significant group differences were detected for all of the elements. Furthermore, Post-hoc Tukey tests revealed that the institutions that had not been offering e-learning courses and had no plan for offering them in the future were significantly lower than the other two groups for all of the elements. There were no group differences for the other two groups except for the amount of budget for offering e-learning courses, where the institutions that had not been offering e-learning courses but had plans ($M = 4.54, SD = 2.89$) scored significantly lower than did those that had currently been offering e-learning courses ($M = 5.70, SD = 2.25$).

Information on Students’ Employment

Co-op Training Program (CTP). 100 vocational colleges (78.1 percent of 128 vocational colleges) and all of the regular colleges and universities ($n = 30$) and community colleges ($n = 21$) had their students train through the Co-op Training Programs (CTP). Table 23 and Table 24, and Figure 10 and Figure 14 present business types of the private and public sectors that had participated in the CTPs.

Among institutions that had their students participate in the CTPs, one-third of the vocational colleges ($n = 35$) and nearly a half of the regular colleges and universities ($n = 12$) and community colleges ($n = 9$) reported that they had been involved in processes of designing the CTPs. Furthermore, 64.3 percent of the institutions that had been involved in designing the CTPs (21 vocational colleges, 11 regular colleges and universities, and 4 community colleges) reported that they determined the training schedule, 66.1 percent of them (21 vocational colleges, 10 regular colleges and universities, and 6 community colleges) reported that they determined fields on which their students were be working, and 85.7 percent of them (29 vocational colleges, 11 regular colleges and universities, and 8 community colleges) said that they developed assessment criteria for the CTPs. In addition, a vocational college, two regular type of universities and a community college reported that they determined qualifications for students who were to participate in the CTPs. Finally, there was one vocational college that determined the number of students who were admitted to the CTPs.

A t-test that contrasted between institutions and the organizations in which the students had completed their CTPs on the level of satisfaction with the program revealed that the organizations ($M = 8.40, SD = 1.23$) showed a significantly higher satisfaction than did institutions ($M = 8.21, SD = 1.26$) ($t(148) = -2.75, p = .007$).

Table 25 shows mean scores and the standard deviations for the satisfaction levels of institutions and organizations for vocational colleges, regular colleges and universities, and community colleges. As shown, regular colleges and universities scored slightly lower than
did other institutions for both levels of institutions and organizations; however, a series of ANOVA contrasted those three types of institutions revealed that those differences were not statistically significant (institution: $F(2, 147) = .89, p = .41$; organization: $F(2, 146) = 1.44, p = .24$).

**Dual Vocational Training Program (DVTP).** 50 vocational colleges (39.1 percent of 128 institutions) and 18 community colleges (85.7 percent of 21 institutions) had their students train through the Dual Vocational Training Programs (DVTPs), while only three of the regular colleges and universities (10% of 30 institutions) did. Table 26 and Table 27, and Figure 12 and Figure 13 present business types of the private and public sectors in which students had been trained through their DVTPs.

When asked whether the institution had been involved in designing the DVTPs, nearly a half of the institutions that had the DVTP (29 vocational colleges, 2 regular colleges and universities, and 9 community colleges) answered they had, while the other half of institutions (21 vocational colleges, 1 regular college, and 9 community colleges) answered that they had not been involved. Furthermore, among 40 institutions that had been involved in designing the DVTPs, 31 institutions (21 vocational colleges, 2 regular colleges and universities, and 8 community colleges) reported that they determined training schedules, 30 institutions (21 vocational colleges, 2 regular colleges and universities, and 7 community colleges) determined fields in which the DVTPs were taken place, and 37 institutions (27 vocational colleges, 2 regular colleges and universities, and 8 community colleges) developed assessment criteria for the DVTPs. In addition, a regular university determined qualifications for the applications. Finally, there was one community college that arranged an annual seminar and invited organizations to discuss about the DVTPs.

When asked whether the institutions themselves or the organizations were responsible for selecting students who were to participate in the DVTPs, 53 out of 71 institutions (37 vocational colleges, 2 regular colleges and universities, and 14 community colleges) that had their students work through the DVTPs answered that both the institutions and the organizations had been involved in the decision making processes. 17 Institutions (13 vocational colleges and 4 community colleges) answered that they were fully responsible for the selections. Only one regular university reported that organizations were in charge of selecting students to a full extent.

When asked whether students got paid by the organizations during the DVTPs, most of the institutions that had their students participate in the programs reported that they did (40 vocational colleges, 3 regular colleges and universities, and 17 community colleges). Nine vocational colleges and one community college answered that their students had participated in the unpaid DVTPs.

Among 50 vocational colleges that had their students train through the DVTPs, average of 43.74 ($SD = 35.98$) percent of the students who had participated in the DVTP had been employed by the organizations that they had completed the programs, while average of 52.79 percent ($SD = 34.52$) of the students who completed their programs were employed for 17 community colleges that had students train through the programs. As shown in Figure 14, eight vocational colleges reported that none of their students had been employed after the completion of the DVTPs, while at least 5 percent of the students had been employed after the completion of the programs for community colleges. For a total of three regular colleges and universities that had their students participate in the DVTPs, the percentage of the students who were employed after the completion of the programs were 50 percent, 80 percent and 100 percent.

A t-test that contrasted institutions with organizations that the students had
completed their DVTPs on the level of satisfaction with the program revealed no significant difference between them ($t(70) = -1.70, p = .094$).

A series of t-tests contrasted institutions and organizations on the satisfaction levels separately for vocational colleges and community colleges revealed no significant differences (institution: $t(66) = .351, p = .73$; organization: $t(66) = .60, p = .55$). The regular colleges and universities were not included in the comparisons due to an insufficient group size ($n = 3$).

**Career Placement Center (CPC).** All of the 30 regular colleges and universities and the 21 community colleges had the Career Placement Centers (CPCs), while 80.47 percent ($n = 103$) of the 128 vocational colleges did.

With regard to functions or roles of the CPCs, about 86 percent of the institutions that had the CPCs reported that their CPCs had been providing information on job openings to students (89 vocational colleges, 26 regular colleges and universities, and 16 community colleges), 81 percent of the institutions reported that their CPCs had been assisting students in preparing themselves for obtaining the desired job (84 vocational colleges, 25 regular colleges and universities, and 16 community colleges), and 72 percent of the institutions reported that their CPCs had been assisting students in getting employed in the fields that were relevant to their concentrations (71 vocational colleges, 25 regular colleges and universities, and 15 community colleges) (see Table 28). Only about 42 percent of the institutions that had the CPCs reported that their CPCs had been taking a role as the recruitment agencies (43 vocational colleges, 12 regular colleges and universities, and 9 community colleges). About 34 percent of the institutions that had the CPCs reported that their CPCs assisted students in all of those four roles (34 vocational colleges, 11 regular colleges and universities, and 8 community colleges). In addition, 9 institutions (4 vocational colleges, 2 regular colleges and universities, and 3 community colleges) reported that their CPCs arranged job fairs.

**Information on students’ employment.** Percentages of the students who were employed after the graduation and who pursued the higher education after the graduations out of the total number of graduated students were calculated. 6 institutions (5 vocational colleges and 1 regular college) that reported the number of graduated students to be zero were excluded from the analysis. Table 29 shows mean scores and the standard deviations for each percentage. There were 13 institutions (8 vocational colleges, 2 regular college and university, and 3 community colleges) that had students who graduated but neither obtained jobs nor pursued the higher education.

A series of ANOVAs contrasted the three types of institutions for the percentage of students who were employed and for that of students who pursued the higher education. Significant group differences were detected for both percentages (the percentage of students employed: $F(2, 170) = 11.78, p = .000$; percentage of students pursued the higher education: $F(2, 170) = 11.67, p = .000$). Moreover, Post-hoc Turkey tests revealed that the percentage of students who were employed was significantly higher for regular colleges and universities ($M = 73.82, SD = 14.50$) than for vocational colleges ($M = 49.30, SD = 27.23$) and community colleges ($M = 49.46, SD = 20.15$). On the other hand, the percentage of students who pursued the higher education was significantly lower for the regular colleges and universities ($M = 24.35, SD = 15.48$) than for vocational colleges ($M = 48.91, SD = 27.02$) and community colleges ($M = 45.45, SD = 19.43$).

As shown in Table 30, a half of the students who obtained jobs did in the Northeast region, while 36.3 percent of them did in Bangkok. Furthermore, a series of ANOVA contrasted the three types of institutions for the percentage of students who were employed in
each region revealed significant group differences for the percentage of students employed in the Northeast region ($F(2, 160) = 4.46, p = .013$) and the percentage of students who were employed in Bangkok ($F(2, 144) = 4.20, p = .017$). Moreover, Post-hoc Turkey tests revealed that significantly higher percentage of students at the community colleges ($M = 45.79, SD = 15.12$) obtained jobs in Bangkok than did those at the regular colleges and universities ($M = 27.84, SD = 14.20$), while significantly lower percentage of students at the community colleges ($M = 33.19, SD = 23.43$) obtained jobs in the Northeast region than did those at the vocational colleges ($M = 52.89, SD = 30.09$). Although the percentage of students who obtained jobs in Bangkok at the vocational colleges was higher than that of the regular colleges and universities and lower than that of the community colleges, either difference was not statistically significant. Likewise, the percentage of students who obtained jobs in the Northeast region for the regular colleges and universities was higher than that for the community colleges and lower than that for the vocational colleges, either difference was not statistically significant.

Table 31 and Table 32 present means and standard deviations for percentages of the students obtained jobs in the following 13 fields: governmental public services (e.g., district office, police, or military), manufacturing, retail and wholesale, import and export, agriculture, education institute, utilities and infrastructure services (e.g., electricity or water), tourism and hotel, healthcare service, transportation or communication (e.g., postal service, tour bus, or logistics), medium and entertainment (e.g., newspapers, TV, cinemas), financial institutions, accounting and law firms.

The average time that students spent for job search was 3.34 months for the 178 institutions (127 vocational colleges, 30 regular colleges and universities, and 21 community colleges). A series of ANOVA contrasted the three types of institutions for the length of students’ job search revealed significant group differences: $F(2, 175) = 3.59, p = .030$. Moreover, Post-hoc Turkey tests indicated that students at the regular colleges and universities ($M = 4.20, SD = 2.38$) spent significantly longer time for job search than did vocational college students ($M = 3.08, SD = 2.20$), and marginally longer time than did the community college students ($M = 3.71, SD = 1.62$).

Institutions were asked to rank the following five pervasive sources in terms of effectiveness in obtaining jobs: (a) Career Placement Center (CPC), (b) training programs, (c) medium such as information available on newspapers and the Internet, (d) recruitment agencies, and (e) students’ directly walking in to organizations. Table 33 and Table 34, and Figure 15 and Figure 16 present the results. Surprisingly, less than 40 percent of the institutions ranked the CPCs to be the most or secondary effective sources. Among five sources, the CPCs appeared to be the moderately effective sources. Likewise, less than 20 percent of the institutions ranked the training programs to be the most or the secondary effective sources. More effective sources were the information on medium and students’ directly walking in to the employers. In particular, over 70 percent of regular colleges and universities ranked the medium to be the most or secondary effective sources. Although less than a half of the vocational colleges and the community colleges ranked the medium to be the most or secondary effective sources; however, they ranked them to be more effective than the least effective. Finally, more than 60 percent of the institutions ranked the directly walking in to the employers to be the most or secondary effective way for getting jobs. In particular, more of the vocational and community colleges ranked the directly walking in to be the most or secondary effective (63.28 percent of vocational colleges and 76.19 percent of community colleges) than did for any other sources. For the regular
colleges and universities, however, the directly walking in to employers followed the medium in terms of the effectiveness in obtaining a job.
Table 1  Means and Standard Deviations of the Numbers of Students and Instructors, and the Student-Instructor Ratios.

| Type of criteria       | Vocational  
|                       | (n = 128)  |
|                       | (n = 128)  | 
|                       | (n = 30)   | Community college  
|                       | (n = 21)   | (n = 179)   | F values |
| Number of Students    | 1583.48a   | 6032.97b   | 2246.33a   | 2406.97   | 32.65   |
| Minimum               | (1484.81)  | (5669.38)  | (2078.14)  | (3162.51) | (p=.000) |
| Maximum               | 6631       | 17778      | 473        | 2         |
| Number of Instructors | 57.21a     | 361.10b    | 55.95a     | 31.83     | 8.47    |
| Minimum               | (53.35)    | (902.38)   | (29.52)    | (34.98)   | (p=.000) |
| Maximum               | 238        | 5074       | 132        | 5074      |
| Student-Instructor Ratio | 30.56     | 26.29      | 47.48      | 31.83     | 2.61 n.s. |
| Minimum               | (35.45)    | (15.69)    | (47.35)    | (34.98)   | n.s.    |
| Maximum               | 360.25     | 80.26      | 208.86     | 360.25    |          |

Note: Student-instructor ratio was calculated based on the reported number of students and instructors (= number of students / number of instructors).
### Table 2  
Means and Standard Deviations on the Degree of Perceived Consideration in Developing Teaching Strategies and Curriculum.

| Type of criteria               | Vocational  
|                               | (n = 128) | Regular college and university  
|                               | (n = 30)  | Community college  
|                               | (n = 21)  | All  
|                               | (n = 179) |   |
|-------------------------------|-----------|---------------------------------|-------------|
| Association to existing schema | 8.20<sub>ab</sub>  
|                               | (1.35)    | 7.70<sub>a</sub>  
|                               | (1.18)    | 8.86<sub>b</sub>  
|                               | (1.20)    | 8.19  
|                               | (1.33)    | 4.87  |
| Interactions                  | 8.24  
|                               | (1.38)    | 8.07  
|                               | (1.01)    | 8.67  
|                               | (1.35)    | 8.26  |
|                               |           | 1.32  |
| Positive feelings             | 8.19  
|                               | (1.41)    | 7.93  
|                               | (1.11)    | 8.76  
|                               | (1.30)    | 8.21  |
|                               |           | 2.38  |

Note: Degree of consideration differs from 0 (not at all considered) to 10 (extremely well considered).

### Table 3  

| Type of Criteria | Vocational  
|                 | (n = 128) | Regular college and university  
|                 | (n = 30)  | Community college  
|                 | (n = 21)  | All  
|                 | (n = 179) |   |
|------------------|-----------|---------------------------------|-------------|
| Actual work      | 8.74<sub>b</sub>  
|                 | (1.22)    | 7.93<sub>a</sub>  
|                 | (1.23)    | 9.10<sub>b</sub>  
|                 | (1.41)    | 8.65  |
|                  |           | 6.63  |
| Performing without help | 8.38  
|                 | (1.42)    | 7.97  
|                 | (1.22)    | 8.90  
|                 | (1.30)    | 8.37  |
|                  |           | 2.99  |

Note: Degree of consideration differs from 0 (not at all considered) to 10 (extremely well considered).

### Table 4  
Means and Standard Deviations on the Perceived Level of Students' Autonomous Learning Skills.

| Type of Skill             | Vocational  
|                          | (n = 128) | Regular college and university  
|                          | (n = 30)  | Community college  
|                          | (n = 21)  | All  
|                          | (n = 179) |   |
|--------------------------|-----------|---------------------------------|-------------|
| Autonomous learning skills | 7.66  
|                          | (1.54)    | 7.45  
|                          | (1.50)    | 7.62  |
|                          |           | 7.62  |

Note: Level differs from 0 (poor) to 10 (excellent).
Table 5  Means and Standard Deviations on the Degree of Perceived Levels of Students’ Competitiveness.

<table>
<thead>
<tr>
<th>Type of Skill</th>
<th>Vocational (n = 128)</th>
<th>Regular college and university (n = 30)</th>
<th>Community college (n = 21)</th>
<th>All (n = 179)</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal skill</td>
<td>8.11 (1.17)</td>
<td>7.90 (1.21)</td>
<td>7.71 (1.74)</td>
<td>8.03 (1.26)</td>
<td>.21</td>
</tr>
<tr>
<td>Knowledge and skill in concentration</td>
<td>8.33 (1.19)</td>
<td>7.72 (1.25)</td>
<td>8.10 (1.70)</td>
<td>8.20 (1.28)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Problem solving skill</td>
<td>7.50 (1.46)</td>
<td>7.38 (1.47)</td>
<td>7.29 (1.82)</td>
<td>7.46 (1.50)</td>
<td>.24</td>
</tr>
<tr>
<td>Foreign language skill</td>
<td>5.96 (1.88)</td>
<td>5.83 (1.31)</td>
<td>5.57 (1.12)</td>
<td>5.89 (1.72)</td>
<td>.48</td>
</tr>
<tr>
<td>IT / computer skill</td>
<td>7.82 (1.86)</td>
<td>7.93 (1.36)</td>
<td>7.95 (1.72)</td>
<td>7.86 (1.76)</td>
<td>.08</td>
</tr>
<tr>
<td>Responsibility</td>
<td>8.10 (1.29)</td>
<td>8.28 (.84)</td>
<td>7.71 (1.68)</td>
<td>8.09 (1.28)</td>
<td>1.22</td>
</tr>
<tr>
<td>Leadership</td>
<td>7.55 (1.50)</td>
<td>7.45 (1.09)</td>
<td>7.10 (1.51)</td>
<td>7.48 (1.44)</td>
<td>.91</td>
</tr>
</tbody>
</table>

Note: Degree of consideration differs from 0 (poor) to 10 (excellent).
Table 6: Means and Standard Deviations of the Student-Computer Ratio, Percentage of computers for classroom use, and Percentage of computers with the IT access.

<table>
<thead>
<tr>
<th></th>
<th>Vocational</th>
<th>Regular college and university</th>
<th>Community college</th>
<th>All (n = 177)</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 116)</td>
<td>(n = 30)</td>
<td>(n = 21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student-computer ratio</td>
<td>9.60 (13.96)</td>
<td>8.17 (6.96)</td>
<td>15.76 (21.00)</td>
<td>10.12 (14.20)</td>
<td>2.05</td>
</tr>
<tr>
<td></td>
<td>Minimum</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>n.s.</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>100</td>
<td>30</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Computers for classroom use (%)</td>
<td>82.22b (11.60)</td>
<td>75.92a (11.66)</td>
<td>76.89ab (11.55)</td>
<td>80.42 (11.85)</td>
<td>4.63</td>
</tr>
<tr>
<td></td>
<td>Minimum</td>
<td>38.10</td>
<td>53.33</td>
<td>50.00</td>
<td>38.10</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>100.00</td>
<td>97.37</td>
<td>91.50</td>
<td>100.00</td>
</tr>
<tr>
<td>Computers with IT access (%)</td>
<td>62.73ab (30.90)</td>
<td>81.99b (20.95)</td>
<td>68.38ab (28.60)</td>
<td>29.84 (2.31)</td>
<td>5.25</td>
</tr>
<tr>
<td></td>
<td>Minimum</td>
<td>0.00</td>
<td>25.00</td>
<td>16.67</td>
<td>0.00</td>
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<tr>
<td></td>
<td>Max</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Note: Student-computer ratio was reported by each institution.

Percentage of computers for classroom use was calculated with a reported number of computers for classroom use and the total number of computers (= number of computers for classroom use * 100 / total number of computers).

Percentage of computers with the IT access was calculated with a reported number of computers with the IT access and the total number of computers (= number of computers with the IT access * 100 / total number of computers)
Table 7  Intercorrelations among Variables.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. # students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Student-instructor ratio</td>
<td>.27**</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Student-computer ratio</td>
<td>.05</td>
<td>.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Computers for class (%)</td>
<td>-.10</td>
<td>.06</td>
<td>-.12</td>
<td></td>
</tr>
<tr>
<td>5. Computers with IT (%)</td>
<td>.18*</td>
<td>.00</td>
<td>.00</td>
<td>-.04</td>
</tr>
</tbody>
</table>

Note:  
* $p < .05$, ** $p < .01$. 

**Figure 1** Distributions of the Percentages of Computers with the Internet Access among Vocational Colleges.

Distributions of the Percentages of Computers with the Internet Access among Regular Colleges and Universities.

**Figure 2**

**Figure 3** Distributions of the Percentages of Computers with the Internet Access among Community Colleges.
Computers with the Internet access (%)

Number of institutions

Std. Dev = 28.60
Mean = 68.4
N = 21.00
**Figure 4**  Distributions of the Student-Computer Ratios among Vocational Colleges.

**Figure 5**  Distributions of the Student-Computer Ratios among Community Colleges.

**Figure 6**  Distributions of the Student-Computer Ratios among Community Colleges.
### Table 8  Means and Standard Deviations on Readiness Scores.

<table>
<thead>
<tr>
<th></th>
<th>Vocational (n = 128)</th>
<th>Regular college and university (n = 30)</th>
<th>Community college (n = 21)</th>
<th>All (n = 179)</th>
<th>(F) values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.98 (2.61)</td>
<td>6.87 (2.05)</td>
<td>5.43 (2.20)</td>
<td>6.07 (2.50)</td>
<td>2.33 n.s.</td>
</tr>
<tr>
<td>Software</td>
<td>6.65 (2.67)</td>
<td>6.83 (2.10)</td>
<td>6.14 (2.26)</td>
<td>6.62 (2.53)</td>
<td>.49 n.s.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>5.84 (2.63)</td>
<td>6.20 (2.11)</td>
<td>5.57 (2.29)</td>
<td>5.87 (2.50)</td>
<td>.42 n.s.</td>
</tr>
<tr>
<td>Instructor’s skill</td>
<td>7.31 (2.29)</td>
<td>7.40 (1.71)</td>
<td>6.67 (2.03)</td>
<td>7.25 (2.18)</td>
<td>.88 n.s.</td>
</tr>
<tr>
<td>Instructor’s motivation</td>
<td>7.21 (2.28)</td>
<td>7.40 (1.69)</td>
<td>7.86 (1.93)</td>
<td>7.32 (2.16)</td>
<td>.62 n.s.</td>
</tr>
<tr>
<td>Students’ skill</td>
<td>6.86 (2.54)</td>
<td>7.30 (1.74)</td>
<td>7.29 (1.93)</td>
<td>6.98 (2.36)</td>
<td>.84 n.s.</td>
</tr>
</tbody>
</table>

Note: Level differs from 0 (not at all ready) to 10 (very much ready).
Table 9  Correlations among Variables.

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>.16*</td>
<td>.46**</td>
<td>.27**</td>
<td>-.17*</td>
</tr>
<tr>
<td>Software</td>
<td>.03</td>
<td>.43**</td>
<td>.22**</td>
<td>-.11</td>
</tr>
<tr>
<td>Maintenance</td>
<td>.14</td>
<td>.42**</td>
<td>.29**</td>
<td>-.09</td>
</tr>
<tr>
<td>Instructor’s skill</td>
<td>.00</td>
<td>.34**</td>
<td>.14</td>
<td>-.10</td>
</tr>
<tr>
<td>Instructor’s motivation</td>
<td>-.03</td>
<td>.25**</td>
<td>.16*</td>
<td>-.02</td>
</tr>
<tr>
<td>Students’ skill</td>
<td>.10</td>
<td>.43**</td>
<td>.19*</td>
<td>-.01</td>
</tr>
</tbody>
</table>

Note:  *p < .05, **p < .01.

a: The number of students
b: The percentage of computers for classroom use
c: The percentage of computers with the Internet access
d: Student-computer ratio
Table 10  Intercorrelations among Variables.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hardware</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Software</td>
<td>.79**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Maintenance</td>
<td>.68**</td>
<td>.69**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Instructor’s skill</td>
<td>.58**</td>
<td>.60**</td>
<td>.63**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Instructor’s motivation</td>
<td>.48**</td>
<td>.48**</td>
<td>.50**</td>
<td>.67**</td>
<td></td>
</tr>
<tr>
<td>6. Students’ skill</td>
<td>.60**</td>
<td>.67**</td>
<td>.65**</td>
<td>.65**</td>
<td>.65**</td>
</tr>
</tbody>
</table>

Note:  **p < .01.
Table 11  Means and Standard Deviations for Scores of Students’ IT Tool Skills.

<table>
<thead>
<tr>
<th>Skill</th>
<th>Vocational</th>
<th>Regular college and university (n = 30)</th>
<th>Community college (n = 21)</th>
<th>All</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Office</td>
<td>7.18 (2.29)</td>
<td>7.80 (1.27)</td>
<td>7.90 (1.04)</td>
<td>7.37 (2.05)</td>
<td>1.92 n.s.</td>
</tr>
<tr>
<td>Graphic design</td>
<td>5.45 (2.55)</td>
<td>5.80 (1.92)</td>
<td>5.95 (1.77)</td>
<td>5.57 (2.37)</td>
<td>.58 n.s.</td>
</tr>
<tr>
<td>Architectural drawing</td>
<td>4.53 (2.91)</td>
<td>5.00 (2.33)</td>
<td>4.86 (2.06)</td>
<td>4.65 (2.72)</td>
<td>.42 n.s.</td>
</tr>
<tr>
<td>Multimedia</td>
<td>5.56 (2.70)</td>
<td>6.40 (1.52)</td>
<td>6.24 (2.23)</td>
<td>5.79 (2.50)</td>
<td>.18 n.s.</td>
</tr>
<tr>
<td>Accounting</td>
<td>5.37 (3.12)</td>
<td>6.13 (1.81)</td>
<td>6.10 (2.36)</td>
<td>5.59 (2.85)</td>
<td>1.24 n.s.</td>
</tr>
<tr>
<td>Human resources management</td>
<td>4.52 (3.06)</td>
<td>5.77 (1.66)</td>
<td>4.57 (2.58)</td>
<td>4.75 (2.85)</td>
<td>2.37 n.s.</td>
</tr>
<tr>
<td>Inventory and warehouse</td>
<td>3.96a (3.12)</td>
<td>5.57b (1.63)</td>
<td>4.86ab (2.67)</td>
<td>4.35 (2.92)</td>
<td>4.15 p = .017</td>
</tr>
<tr>
<td>Software development</td>
<td>4.69 (2.90)</td>
<td>5.87 (1.66)</td>
<td>5.43 (2.80)</td>
<td>4.98 (2.74)</td>
<td>2.59 n.s.</td>
</tr>
<tr>
<td>Web design</td>
<td>5.75 (2.76)</td>
<td>6.53 (1.74)</td>
<td>6.71 (2.43)</td>
<td>6.01 (2.59)</td>
<td>2.01 n.s.</td>
</tr>
</tbody>
</table>

Note: Level differs from 0 (poor) to 10 (excellent). Number of responses for vocational colleges varied: 126 for Microsoft Office, 123 for graphic design, and 122 for the rests. Total number differed in accordance with the number of responses for vocational colleges: 177 for Microsoft Office, 174 for graphic design, and 173 for the rests.
### Table 12  Correlations between Students’ IT Skills and the Environmental Factors
(Number of Students, Percentage of Computers used for Class, Percentage of Computers with
the IT Access, and Student-Computer Ratio).

<table>
<thead>
<tr>
<th>Skill</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Office</td>
<td>.26**</td>
<td>.41**</td>
<td>.16*</td>
<td>.02</td>
</tr>
<tr>
<td>Graphic design</td>
<td>.20**</td>
<td>.35**</td>
<td>.20**</td>
<td>-.03</td>
</tr>
<tr>
<td>Architectural drawing</td>
<td>.23**</td>
<td>.26**</td>
<td>.26**</td>
<td>.00</td>
</tr>
<tr>
<td>Multimedia</td>
<td>.21**</td>
<td>.35**</td>
<td>.23**</td>
<td>-.08</td>
</tr>
<tr>
<td>Accounting</td>
<td>.14</td>
<td>.27**</td>
<td>.13</td>
<td>.00</td>
</tr>
<tr>
<td>Human resources</td>
<td>.13</td>
<td>.25**</td>
<td>.15</td>
<td>-.09</td>
</tr>
<tr>
<td>management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory and warehouse</td>
<td>.15*</td>
<td>.22**</td>
<td>.13</td>
<td>-.07</td>
</tr>
<tr>
<td>Software development</td>
<td>.17*</td>
<td>.28**</td>
<td>.11</td>
<td>-.13</td>
</tr>
<tr>
<td>Web design</td>
<td>.20**</td>
<td>.31**</td>
<td>.25**</td>
<td>-.03</td>
</tr>
</tbody>
</table>

Note:  
* p < .05, ** p < .01.  
a: Number of Students  
b: The percentage of computers for classroom use  
c: The percentage of computers with the Internet access  
d: Student-computer ratio
<table>
<thead>
<tr>
<th>Skill</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Office</td>
<td>.36**</td>
<td>.40**</td>
<td>.42**</td>
<td>.25**</td>
<td>.24**</td>
<td>.46**</td>
</tr>
<tr>
<td>Graphic design</td>
<td>.40**</td>
<td>.37**</td>
<td>.43**</td>
<td>.36**</td>
<td>.35**</td>
<td>.44**</td>
</tr>
<tr>
<td>Architectural drawing</td>
<td>.31**</td>
<td>.17*</td>
<td>.34**</td>
<td>.21**</td>
<td>.23**</td>
<td>.24**</td>
</tr>
<tr>
<td>Multimedia</td>
<td>.38**</td>
<td>.35**</td>
<td>.48**</td>
<td>.31**</td>
<td>.24**</td>
<td>.42**</td>
</tr>
<tr>
<td>Accounting</td>
<td>.33**</td>
<td>.31**</td>
<td>.33**</td>
<td>.18*</td>
<td>.25**</td>
<td>.35**</td>
</tr>
<tr>
<td>Human resources management</td>
<td>.24**</td>
<td>.20**</td>
<td>.30**</td>
<td>.15</td>
<td>.19*</td>
<td>.24**</td>
</tr>
<tr>
<td>Inventory and warehouse</td>
<td>.25**</td>
<td>.21**</td>
<td>.24**</td>
<td>.10</td>
<td>.27**</td>
<td>.28**</td>
</tr>
<tr>
<td>Software development</td>
<td>.37**</td>
<td>.33**</td>
<td>.38**</td>
<td>.35**</td>
<td>.35**</td>
<td>.38**</td>
</tr>
<tr>
<td>Web design</td>
<td>.38**</td>
<td>.40**</td>
<td>.49**</td>
<td>.34**</td>
<td>.34**</td>
<td>.48**</td>
</tr>
</tbody>
</table>

Note: *p < .05, **p < .01.

Readiness in:
a: Hardware
b: Software
c: Maintenance
d: Instructors’ skills
e: Instructors’ motivation
f: Students’ skills
Table 14  Correlations between the Criterion Variable (Total Score of Students’ IT Skills) and the Predictor Variables (the Number of Students, Percentage of Computers Used in Class, Percentage of Computers with the IT Access, and Student-Computer Ratios0, and Intercorrelations among the Predictor Variables.

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Percentage of computers for class</td>
<td>.047</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Percentage of computers with the IT access</td>
<td>.191**</td>
<td>.091</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Student-computer ratio</td>
<td>.067</td>
<td>.037</td>
<td>.013</td>
<td></td>
</tr>
<tr>
<td>5. Total score of IT skills</td>
<td>.234**</td>
<td>.394**</td>
<td>.234**</td>
<td>-.076</td>
</tr>
</tbody>
</table>

Note:  **p < .01.

Table 15  Role of Environmental Factors in Predicting Students’ IT Skills.

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students</td>
<td>.001</td>
<td>.000</td>
<td>.192</td>
<td>2.781</td>
<td>.006</td>
</tr>
<tr>
<td>Percentage of computers for class</td>
<td>.350</td>
<td>.064</td>
<td>.374</td>
<td>5.504</td>
<td>.000</td>
</tr>
<tr>
<td>Percentage of computers with the IT access</td>
<td>.095</td>
<td>.040</td>
<td>.165</td>
<td>2.389</td>
<td>.018</td>
</tr>
<tr>
<td>Student-computer ratio</td>
<td>-.132</td>
<td>.085</td>
<td>-.105</td>
<td>-1.552</td>
<td>n.s.</td>
</tr>
</tbody>
</table>
Table 16  Correlations between the Criterion Variable (Total Score of Students’ IT Skills) and the Predictor Variables (Readiness in Hardware, Software, Maintenance, Instructors’ Skills, Instructors’ Motivation, Students’ Overall IT Skills), and Intercorrelations among the Predictor Variables.

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hardware</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Software</td>
<td>.77**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Maintenance</td>
<td>.66**</td>
<td>.65**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Instructor’s skill</td>
<td>.53**</td>
<td>.55**</td>
<td>.59**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Instructor’s motivation</td>
<td>.42**</td>
<td>.41**</td>
<td>.44**</td>
<td>.60**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Students’ skill</td>
<td>.57**</td>
<td>.64**</td>
<td>.64**</td>
<td>.59**</td>
<td>.57**</td>
<td></td>
</tr>
<tr>
<td>7. Total score of IT skills</td>
<td>.44**</td>
<td>.39**</td>
<td>.49**</td>
<td>.32**</td>
<td>.36**</td>
<td>.47**</td>
</tr>
</tbody>
</table>

Note:  **p < .01.

Table 17  Role of Perceived Readiness in Predicting Students’ IT Skills.

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hardware</td>
<td>1.299</td>
<td>.799</td>
<td>.174</td>
<td>1.626</td>
<td>n.s.</td>
</tr>
<tr>
<td>2. Software</td>
<td>-.455</td>
<td>.823</td>
<td>-.062</td>
<td>-.553</td>
<td>n.s.</td>
</tr>
<tr>
<td>3. Maintenance</td>
<td>2.077</td>
<td>.731</td>
<td>.278</td>
<td>2.841</td>
<td>.005</td>
</tr>
<tr>
<td>4. Instructor’s skill</td>
<td>-.978</td>
<td>.839</td>
<td>-.109</td>
<td>-1.166</td>
<td>n.s.</td>
</tr>
<tr>
<td>5. Instructor’s motivation</td>
<td>1.114</td>
<td>.791</td>
<td>.121</td>
<td>1.408</td>
<td>n.s.</td>
</tr>
<tr>
<td>6. Students’ skill</td>
<td>1.921</td>
<td>.803</td>
<td>.235</td>
<td>2.392</td>
<td>.018</td>
</tr>
</tbody>
</table>
Figure 7  Institutions that Had Currently Offered E-Learning Courses; Not Had Offered but Had a Plan; and Not Had Offered and Had No Plan.

All institutions

Regular colleges and universities

Community colleges

Skills and Competitiveness for Poverty Reduction in Northeast:
Prepared by Haruko Uchida PhD.
Table 18  Full and Partial E-Learning Courses.

<table>
<thead>
<tr>
<th>Concentration</th>
<th># of courses</th>
<th>Full</th>
<th>Partial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Marketing</td>
<td>32</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Automotive</td>
<td>26</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Multimedia</td>
<td>25</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Economics/ finance and banking</td>
<td>23</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Webpage design</td>
<td>20</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Automotive body repair</td>
<td>19</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Computer database</td>
<td>19</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry</td>
<td>18</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Animation</td>
<td>13</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Dress making</td>
<td>11</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Human resources management</td>
<td>10</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>168</td>
<td>28</td>
<td>45</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>394</strong></td>
<td><strong>64</strong></td>
<td><strong>74</strong></td>
</tr>
</tbody>
</table>

Note:  
1: Vocational colleges  
2: Regular colleges and universities  
3: Community colleges  
Others: include 71 concentrations offered less than 10 courses for each.
Table 19  Numbers and Percentages of Institutions on Sources of the E-learning courses.

<table>
<thead>
<tr>
<th>Having e-learning courses developed by</th>
<th>Vocational (n = 69)</th>
<th>Regular college and university (n = 28)</th>
<th>Community college (n = 12)</th>
<th>All (n = 109)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The course instructors</td>
<td>52 (75.36%)</td>
<td>23 (82.14%)</td>
<td>8 (66.67%)</td>
<td>83 (76.15%)</td>
</tr>
<tr>
<td>The course instructor supported by the IT staffs</td>
<td>21 (30.43%)</td>
<td>16 (57.14%)</td>
<td>4 (33.33%)</td>
<td>41 (37.61%)</td>
</tr>
<tr>
<td>The course instructor cooperated with instructors from other institutions</td>
<td>13 (18.84%)</td>
<td>9 (32.14%)</td>
<td>6 (50.00%)</td>
<td>28 (25.69%)</td>
</tr>
<tr>
<td>Other organizations based on the content designed by the course instructor</td>
<td>1 (1.45%)</td>
<td>0</td>
<td>0</td>
<td>1 (0.92%)</td>
</tr>
<tr>
<td>Purchasing the off-the-shelf courses</td>
<td>39 (56.52%)</td>
<td>11 (39.29%)</td>
<td>8 (66.67%)</td>
<td>58 (53.21%)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (2.90%)</td>
<td>0</td>
<td>0</td>
<td>2 (1.83%)</td>
</tr>
</tbody>
</table>
**Figure 8** Sources of E-Learning Courses.

<table>
<thead>
<tr>
<th>Source of Courses</th>
<th>Institutions (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor</td>
<td>76.15</td>
</tr>
<tr>
<td>Instructor &amp; IT staff</td>
<td>37.61</td>
</tr>
<tr>
<td>Off-the-shelf course</td>
<td>53.21</td>
</tr>
<tr>
<td>Instructors across organizations</td>
<td>25.69</td>
</tr>
<tr>
<td>Other organization</td>
<td>0.92</td>
</tr>
<tr>
<td>Other</td>
<td>1.83</td>
</tr>
</tbody>
</table>

Note: (from bottom)
- Instructors fully developed courses.
- Instructors and IT staff developed courses.
- Instructors purchased off-the-shelf courses.
- Instructors at the institution and from other institutions developed courses.
- Used courses developed by other organizations.
- Other.
Figure 9 (Continued.) Sources of E-Learning Courses.

**Table 20** Factors of Difficulties in Offering the E-learning Courses.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Offering E-learning Courses</th>
<th>Vocational $(n = 128)$</th>
<th>Regular college and university $(n = 30)$</th>
<th>Community college $(n = 21)$</th>
<th>All $(n = 179)$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Insufficient facility and equipments</td>
<td>42</td>
<td>21</td>
<td>14</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Lack of Students’ IT skills</td>
<td>35</td>
<td>26</td>
<td>7</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lack of Instructors’ IT skills</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 21  Means and Standard Deviations on Sufficiency in Offering the E-learning Courses.

<table>
<thead>
<tr>
<th></th>
<th>Vocational (n = 128)</th>
<th>Regular college and university (n = 30)</th>
<th>Community college (n = 21)</th>
<th>All (n = 179)</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>4.73 (2.82)</td>
<td>5.87 (2.10)</td>
<td>5.62 (2.52)</td>
<td>5.02 (2.70)</td>
<td>2.79 n.s.</td>
</tr>
<tr>
<td>Hardware</td>
<td>5.41 (2.81)</td>
<td>6.33 (2.37)</td>
<td>6.43 (2.56)</td>
<td>5.69 (2.73)</td>
<td>2.29 n.s.</td>
</tr>
<tr>
<td>Internet Access</td>
<td>6.25 (2.81)</td>
<td>7.20 (2.16)</td>
<td>6.67 (2.85)</td>
<td>6.46 (2.72)</td>
<td>1.56 n.s.</td>
</tr>
<tr>
<td>Instructors’ Willingness</td>
<td>6.05 (2.44)</td>
<td>6.17 (2.15)</td>
<td>6.43 (2.38)</td>
<td>6.12 (2.38)</td>
<td>.23 n.s.</td>
</tr>
<tr>
<td>Instructors’ Skills</td>
<td>5.85 (2.40)</td>
<td>6.20 (2.19)</td>
<td>5.52 (1.69)</td>
<td>5.87 (2.29)</td>
<td>.55 n.s.</td>
</tr>
<tr>
<td>Students’ Skills</td>
<td>5.85 (2.57)</td>
<td>6.13 (2.01)</td>
<td>6.10 (2.28)</td>
<td>5.93 (2.44)</td>
<td>.22 n.s.</td>
</tr>
</tbody>
</table>

Note: Level differs from 0 (poor) to 10 (excellent).
Table 22  Means and Standard Deviations on Sufficiency in Offering the E-learning Courses for Institutions that currently offered E-learning courses, those that did not but had plans for offering, and those had no plans.

<table>
<thead>
<tr>
<th>Currently offered E-learning</th>
<th>1 (n = 109)</th>
<th>2 (n = 52)</th>
<th>3 (n = 18)</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>5.70&lt;sup&gt;c&lt;/sup&gt; (2.25)</td>
<td>4.54&lt;sup&gt;b&lt;/sup&gt; (2.89)</td>
<td>2.33&lt;sup&gt;a&lt;/sup&gt; (2.85)</td>
<td>15.22 &lt;i&gt;p = .000&lt;/i&gt;</td>
</tr>
<tr>
<td>Hardware</td>
<td>6.28&lt;sup&gt;b&lt;/sup&gt; (2.27)</td>
<td>5.58&lt;sup&gt;b&lt;/sup&gt; (2.77)</td>
<td>2.39&lt;sup&gt;a&lt;/sup&gt; (2.93)</td>
<td>18.94 &lt;i&gt;p = .000&lt;/i&gt;</td>
</tr>
<tr>
<td>Internet access</td>
<td>7.17&lt;sup&gt;b&lt;/sup&gt; (2.16)</td>
<td>6.23&lt;sup&gt;b&lt;/sup&gt; (2.61)</td>
<td>2.78&lt;sup&gt;a&lt;/sup&gt; (3.14)</td>
<td>26.14 &lt;i&gt;p = .000&lt;/i&gt;</td>
</tr>
<tr>
<td>Instructors’ willingness</td>
<td>6.30&lt;sup&gt;b&lt;/sup&gt; (2.13)</td>
<td>6.63&lt;sup&gt;b&lt;/sup&gt; (2.14)</td>
<td>3.50&lt;sup&gt;a&lt;/sup&gt; (2.87)</td>
<td>14.37 &lt;i&gt;p = .000&lt;/i&gt;</td>
</tr>
<tr>
<td>Instructors’ skills</td>
<td>6.26&lt;sup&gt;b&lt;/sup&gt; (2.05)</td>
<td>6.04&lt;sup&gt;b&lt;/sup&gt; (1.98)</td>
<td>3.06&lt;sup&gt;a&lt;/sup&gt; (2.69)</td>
<td>18.19 &lt;i&gt;p = .000&lt;/i&gt;</td>
</tr>
<tr>
<td>Students’ skills</td>
<td>6.45&lt;sup&gt;b&lt;/sup&gt; (1.96)</td>
<td>6.04&lt;sup&gt;b&lt;/sup&gt; (2.18)</td>
<td>2.44&lt;sup&gt;a&lt;/sup&gt; (2.97)</td>
<td>27.02 &lt;i&gt;p = .000&lt;/i&gt;</td>
</tr>
</tbody>
</table>

Note: Level differs from 0 (poor) to 10 (excellent).
1: Institutions that currently offered e-learning courses.
2: Institutions that currently did not offer e-learning courses but had plans for having them.
3: Institutions that currently did not offer e-learning courses and had no plans for having them.
**Table 23** Types of CTP participating organizations for vocational colleges, regular colleges and universities, and community colleges (Private sectors).

<table>
<thead>
<tr>
<th>Type of the private sectors</th>
<th>Vocational (n = 100)</th>
<th>Regular college and university (n = 30)</th>
<th>Community college (n = 21)</th>
<th>All (n = 151)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial bank</td>
<td>51</td>
<td>14</td>
<td>11</td>
<td>76</td>
</tr>
<tr>
<td>Department store</td>
<td>50</td>
<td>14</td>
<td>11</td>
<td>75</td>
</tr>
<tr>
<td>Hyper-market</td>
<td>47</td>
<td>16</td>
<td>12</td>
<td>75</td>
</tr>
<tr>
<td>Convenient store</td>
<td>27</td>
<td>9</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Wholesale stores</td>
<td>36</td>
<td>11</td>
<td>10</td>
<td>57</td>
</tr>
<tr>
<td>Retail store</td>
<td>33</td>
<td>8</td>
<td>10</td>
<td>51</td>
</tr>
<tr>
<td>Warehouse</td>
<td>18</td>
<td>10</td>
<td>6</td>
<td>34</td>
</tr>
<tr>
<td>Accounting firm</td>
<td>61</td>
<td>18</td>
<td>13</td>
<td>92</td>
</tr>
<tr>
<td>Private hospital</td>
<td>40</td>
<td>16</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>Clinic</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Car dealer</td>
<td>79</td>
<td>14</td>
<td>15</td>
<td>108</td>
</tr>
<tr>
<td>Used car dealer</td>
<td>12</td>
<td>5</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Hotel / resort</td>
<td>51</td>
<td>22</td>
<td>9</td>
<td>82</td>
</tr>
<tr>
<td>Import-export firm</td>
<td>8</td>
<td>11</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>Construction firm</td>
<td>52</td>
<td>16</td>
<td>9</td>
<td>77</td>
</tr>
<tr>
<td>Garage</td>
<td>72</td>
<td>9</td>
<td>19</td>
<td>100</td>
</tr>
<tr>
<td>Private farming/ agricultural product processing</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Industrial school/factory/lathe/textile</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Others</td>
<td>13</td>
<td>16</td>
<td>3</td>
<td>32</td>
</tr>
</tbody>
</table>

**Note:** Each number refers to the number of institutions that reported having had the corresponding type of organization participate in their CTP program.
Figure 10 Types of CTP participating organizations for vocational colleges, regular colleges and universities, and community colleges (Private sectors).

Note: 101: Commercial bank
102: Department store
103: Hyper-market
104: Convenient store
105: Wholesale stores
106: Retail store
107: Warehouse
108: Accounting firm
109: Private hospital
110: Clinic
111: Car dealer
112: Used car dealer
113: Hotel / resort
114: Import-export firm
115: Construction firm
116: Garage
120: Private farming/ agricultural product processing
126: Industrial school/factory/lathe/textile
Table 24  Types of CTP participating organizations for vocational colleges, regular colleges and universities, and community colleges (public sectors).

<table>
<thead>
<tr>
<th>Type of the public sectors</th>
<th>Vocational (n = 100)</th>
<th>Regular college and university (n = 30)</th>
<th>Community college (n = 21)</th>
<th>All (n = 151)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State bank</td>
<td>69</td>
<td>18</td>
<td>18</td>
<td>105</td>
</tr>
<tr>
<td>State hospital</td>
<td>75</td>
<td>21</td>
<td>17</td>
<td>113</td>
</tr>
<tr>
<td>Public health care</td>
<td>27</td>
<td>11</td>
<td>8</td>
<td>46</td>
</tr>
<tr>
<td>Cooperative store</td>
<td>70</td>
<td>17</td>
<td>18</td>
<td>105</td>
</tr>
<tr>
<td>City hall</td>
<td>71</td>
<td>23</td>
<td>14</td>
<td>108</td>
</tr>
<tr>
<td>Court</td>
<td>51</td>
<td>15</td>
<td>10</td>
<td>76</td>
</tr>
<tr>
<td>District office</td>
<td>70</td>
<td>20</td>
<td>18</td>
<td>108</td>
</tr>
<tr>
<td>Local administrative office</td>
<td>80</td>
<td>22</td>
<td>16</td>
<td>118</td>
</tr>
<tr>
<td>Electrical generator authority</td>
<td>53</td>
<td>15</td>
<td>6</td>
<td>74</td>
</tr>
<tr>
<td>Provincial electrical authority</td>
<td>78</td>
<td>20</td>
<td>19</td>
<td>117</td>
</tr>
<tr>
<td>Provincial water authority</td>
<td>64</td>
<td>14</td>
<td>13</td>
<td>91</td>
</tr>
<tr>
<td>Telephone Organization of Thailand</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>State Educational Institution</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>Others</td>
<td>30</td>
<td>9</td>
<td>8</td>
<td>47</td>
</tr>
</tbody>
</table>

Note: Each number refers to the number of institutions that reported having had the corresponding type of organization participate in their CTP program.
Figure 11 Types of CTP participating organizations for vocational colleges, regular colleges and universities, and community colleges (Public sectors).

Note: 201: State bank
202: State hospital
203: Public health care
204: Cooperative store
205: City hall
206: Court
207: District office
208: Local administrative office
209: Electrical generator authority
210: Provincial electrical authority
211: Provincial water authority
212: Telephone organization of Thailand
214: State educational institution
Table 25  Means and Standard Deviations on CTP Satisfactory Levels.

<table>
<thead>
<tr>
<th></th>
<th>Vocational Institution (n = 30)</th>
<th>Regular college and university (n = 21)</th>
<th>Community college (n = 21)</th>
<th>All (n = 72)</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutions</td>
<td>8.28 (1.20)</td>
<td>7.63 (1.33)</td>
<td>8.10 (1.61)</td>
<td>8.21 (1.26)</td>
<td>.89 n.s.</td>
</tr>
<tr>
<td>Organizations</td>
<td>8.51 (1.16)</td>
<td>8.07 (1.31)</td>
<td>8.33 (1.46)</td>
<td>8.40 (1.23)</td>
<td>1.44 n.s.</td>
</tr>
</tbody>
</table>

Note: The total number of the vocational colleges for institutions and organizations are 100 and 99, respectively.

Table 26  Types of DVTP participating organizations for vocational colleges, regular colleges and universities, and community colleges (Private sectors).

<table>
<thead>
<tr>
<th>Type of the private sectors</th>
<th>Vocational (n = 50)</th>
<th>Regular college and university (n = 3)</th>
<th>Community college (n = 17)</th>
<th>All (n = 70)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial bank</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Department store</td>
<td>9</td>
<td>0</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Hyper-market</td>
<td>10</td>
<td>1</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Convenient store</td>
<td>9</td>
<td>0</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Wholesale stores</td>
<td>9</td>
<td>1</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Retail store</td>
<td>6</td>
<td>0</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Warehouse</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Accounting firm</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Private hospital</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Car dealer</td>
<td>22</td>
<td>1</td>
<td>13</td>
<td>36</td>
</tr>
<tr>
<td>Used car dealer</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Hotel / resort</td>
<td>19</td>
<td>3</td>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td>Construction firm</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Garage</td>
<td>32</td>
<td>0</td>
<td>12</td>
<td>44</td>
</tr>
<tr>
<td>Private farming/ agricultural product processing</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Industrial school/factory/lathe/textile</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Others</td>
<td>11</td>
<td>0</td>
<td>4</td>
<td>15</td>
</tr>
</tbody>
</table>

Note: Each number refers to the number of institutions that reported having had the corresponding type of organization participate in their DVTP program.
Figure 12 Types of DVTP participating organizations for vocational colleges, regular colleges and universities, and community colleges (Private sectors).

![Diagram showing types of DVTP participating organizations](image)

Note: 101: Commercial bank
102: Department store
103: Hyper-market
104: Convenient store
105: Wholesale stores
106: Retail store
107: Warehouse
108: Accounting firm
109: Private hospital
111: Car dealer
112: Used car dealer
113: Hotel / resort
115: Construction firm
116: Garage
120: Private farming/ agricultural product processing
126: Industrial school/factory/lathe/textile
### Table 27  
Types of DVTP participating organizations for vocational colleges, regular colleges and universities, and community colleges (public sectors).

<table>
<thead>
<tr>
<th>Type of the public sectors</th>
<th>Vocational $(n = 50)$</th>
<th>Regular college and university $(n = 3)$</th>
<th>Community college $(n = 17)$</th>
<th>All $(n = 70)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>State bank</td>
<td>8</td>
<td>1</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>State hospital</td>
<td>11</td>
<td>1</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Cooperative store</td>
<td>8</td>
<td>1</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>City hall</td>
<td>8</td>
<td>0</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Court</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>District office</td>
<td>12</td>
<td>2</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Local administrative office</td>
<td>11</td>
<td>1</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Electrical generator authority</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Provincial electrical authority</td>
<td>17</td>
<td>0</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>Provincial water authority</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
<td>0</td>
<td>7</td>
<td>17</td>
</tr>
</tbody>
</table>

Note: Each number refers to the number of institutions that reported having had the corresponding type of organization participate in their DVTP program.

### Figure 13  
Types of DVTP participating organizations for vocational colleges, regular colleges and universities, and community colleges (public sectors).

Note: 201: State bank  
202: State hospital  
204: Cooperative store  
205: City hall  
206: Court  
207: District office  
208: Local administrative office  
209: Electrical generator authority  
210: Provincial electrical authority  
211: Provincial water authority
Figure 14  Percentages of Employment through the DVTP Programs.

Vocational colleges (n = 50)

DVTP job obtained (%)
Table 28  Roles of the CPC at Institutions.

<table>
<thead>
<tr>
<th>Roles of CPC</th>
<th>Vocational</th>
<th>Regular college and university</th>
<th>Community college</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>103 (n = 103)</td>
<td>30 (n = 30)</td>
<td>21 (n = 21)</td>
<td>154 (n = 154)</td>
</tr>
<tr>
<td>Assisting students in preparing themselves for obtaining the desired jobs</td>
<td>84 (81.55%)</td>
<td>25 (83.33%)</td>
<td>16 (76.19%)</td>
<td>125 (81.17%)</td>
</tr>
<tr>
<td>Assisting students in finding jobs that were related to their concentrations</td>
<td>71 (68.93%)</td>
<td>25 (83.33%)</td>
<td>15 (71.43%)</td>
<td>111 (72.08%)</td>
</tr>
<tr>
<td>Acting as a recruitment agency</td>
<td>43 (41.75%)</td>
<td>12 (40.00%)</td>
<td>9 (42.86%)</td>
<td>64 (41.56%)</td>
</tr>
<tr>
<td>Providing information on job openings</td>
<td>89 (86.41%)</td>
<td>26 (86.67%)</td>
<td>18 (85.71%)</td>
<td>133 (86.36%)</td>
</tr>
<tr>
<td>Arranging job fairs</td>
<td>4 (3.88%)</td>
<td>2 (6.67%)</td>
<td>3 (14.29%)</td>
<td>9 (5.84%)</td>
</tr>
<tr>
<td>Others</td>
<td>7 (6.80%)</td>
<td>9 (20.00%)</td>
<td>1 (4.76%)</td>
<td>14 (9.09%)</td>
</tr>
</tbody>
</table>

Note: Each number refers to the number of institutions. Each number inside the paleness presents the percentage of the institutions out of the total number of the corresponding type of institutions (i.e., 103 vocational colleges, 30 regular colleges and universities, or 21 community colleges) that had the CPC.
Table 29  Means and Standard Deviations of Students Obtained Jobs and Those Pursued the Higher Education.

<table>
<thead>
<tr>
<th></th>
<th>Vocational (n = 123)</th>
<th>Regular college and university (n = 29)</th>
<th>Community college (n = 21)</th>
<th>All (n = 173)</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students obtained jobs (%)</td>
<td>49.30&lt;sup&gt;a&lt;/sup&gt; (27.23)</td>
<td>73.82&lt;sup&gt;b&lt;/sup&gt; (14.50)</td>
<td>49.46&lt;sup&gt;a&lt;/sup&gt; (20.15)</td>
<td>53.43 (26.30)</td>
<td>11.78 (p = .000)</td>
</tr>
<tr>
<td>Students pursued the higher education (%)</td>
<td>48.91&lt;sup&gt;b&lt;/sup&gt; (27.02)</td>
<td>24.35&lt;sup&gt;a&lt;/sup&gt; (15.48)</td>
<td>45.45&lt;sup&gt;b&lt;/sup&gt; (19.43)</td>
<td>44.38 (26.14)</td>
<td>11.67 (p = .000)</td>
</tr>
</tbody>
</table>

Note: Each number was the percentage of students out of total students graduated annually.
Table 30 Means and Standard Deviations of Students Obtained Jobs and Those Pursued the Higher Education.

<table>
<thead>
<tr>
<th>Obtained jobs in:</th>
<th>Vocational</th>
<th>Regular college and university</th>
<th>Community college</th>
<th>All</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>52.89b</td>
<td>51.23ab (20.28)</td>
<td>33.19a (23.43)</td>
<td>50.07 (28.47)</td>
<td>4.46 (p = .013)</td>
</tr>
<tr>
<td>Bangkok</td>
<td>36.77ab</td>
<td>27.84a (14.20)</td>
<td>45.79b (15.12)</td>
<td>36.30 (21.35)</td>
<td>4.20 (p = .017)</td>
</tr>
<tr>
<td>Other places</td>
<td>24.68 (19.98)</td>
<td>22.95 (14.82)</td>
<td>33.31 (14.26)</td>
<td>25.40 (18.63)</td>
<td>1.75 n.s.</td>
</tr>
</tbody>
</table>

Note: Each number was the percentage of students out of total students employed. The total number of the institutions responded to items regarding the percentage of students obtained jobs in (1) Northeast, (2) Bangkok, and (3) other places were as follows:

Vocational colleges: (1) 114, (2) 101, and (3) 91;
Regular colleges and universities: (1) 28, (2) 27, and (3) 25; and
Community colleges: (1) 21, (2) 19, (3) 16.
Table 31  Means and Standard Deviations of Students Obtained Jobs in the fields.

<table>
<thead>
<tr>
<th>Obtained jobs in:</th>
<th>Vocational</th>
<th>Regular college and university</th>
<th>Community college</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>41.13 (25.78)</td>
<td>31.57 (23.58)</td>
<td>54.33 (18.46)</td>
<td>41.40 (25.21)</td>
</tr>
<tr>
<td></td>
<td>n = 98</td>
<td>n = 21</td>
<td>n = 18</td>
<td>n = 137</td>
</tr>
<tr>
<td>Governmental public service (district offices/police/military)</td>
<td>17.93 (15.79)</td>
<td>24.44 (14.10)</td>
<td>13.29 (13.95)</td>
<td>18.61 (15.49)</td>
</tr>
<tr>
<td></td>
<td>n = 90</td>
<td>n = 26</td>
<td>n = 17</td>
<td>n = 133</td>
</tr>
<tr>
<td>Agriculture</td>
<td>18.83 (23.68)</td>
<td>8.00 (3.50)</td>
<td>4.83 (0.98)</td>
<td>14.56 (19.85)</td>
</tr>
<tr>
<td></td>
<td>n = 29</td>
<td>n = 10</td>
<td>n = 6</td>
<td>n = 45</td>
</tr>
<tr>
<td>Retail / wholesale</td>
<td>13.16 (13.00)</td>
<td>8.67 (6.11)</td>
<td>15.00 (11.25)</td>
<td>12.72 (12.03)</td>
</tr>
<tr>
<td></td>
<td>n = 71</td>
<td>n = 15</td>
<td>n = 13</td>
<td>n = 99</td>
</tr>
<tr>
<td>Healthcare service</td>
<td>10.66 (17.24)</td>
<td>11.67 (11.18)</td>
<td>5.67 (2.66)</td>
<td>10.24 (15.18)</td>
</tr>
<tr>
<td></td>
<td>n = 35</td>
<td>n = 9</td>
<td>n = 6</td>
<td>n = 50</td>
</tr>
<tr>
<td>Educational institutions</td>
<td>8.13 (5.89)</td>
<td>12.22 (6.91)</td>
<td>6.67 (3.50)</td>
<td>8.86 (6.14)</td>
</tr>
<tr>
<td></td>
<td>n = 56</td>
<td>n = 18</td>
<td>n = 9</td>
<td>n = 83</td>
</tr>
<tr>
<td>Tourism / hotel</td>
<td>9.44 (7.93)</td>
<td>7.00 (3.38)</td>
<td>6.33 (2.92)</td>
<td>8.63 (6.94)</td>
</tr>
<tr>
<td></td>
<td>n = 62</td>
<td>n = 18</td>
<td>n = 9</td>
<td>n = 89</td>
</tr>
<tr>
<td>Import / export</td>
<td>9.96 (10.91)</td>
<td>4.75 (.71)</td>
<td>7.00 (3.46)</td>
<td>8.51 (9.14)</td>
</tr>
<tr>
<td></td>
<td>n = 27</td>
<td>n = 8</td>
<td>n = 6</td>
<td>n = 41</td>
</tr>
<tr>
<td>Accounting / law firm</td>
<td>7.96 (7.14)</td>
<td>7.31 (4.99)</td>
<td>8.50 (12.83)</td>
<td>7.88 (7.43)</td>
</tr>
<tr>
<td></td>
<td>n = 50</td>
<td>n = 16</td>
<td>n = 8</td>
<td>n = 74</td>
</tr>
</tbody>
</table>

Note: Each number was the percentage of students who obtained jobs in the corresponding field, which was provided by the institutions.

Table 32 (continued.)  Means and Standard Deviations of Students Obtained Jobs in the fields.

<table>
<thead>
<tr>
<th>Obtained jobs in:</th>
<th>Vocational</th>
<th>Regular college and university</th>
<th>Community college</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilities service / infrastructure service (electricity / water)</td>
<td>7.51 (5.04)</td>
<td>7.24 (3.21)</td>
<td>10.17 (9.69)</td>
<td>7.83 (5.65)</td>
</tr>
<tr>
<td></td>
<td>n = 55</td>
<td>n = 17</td>
<td>n = 12</td>
<td>n = 84</td>
</tr>
<tr>
<td>Financial institutions</td>
<td>5.92 (4.04)</td>
<td>6.14 (2.51)</td>
<td>10.00 (11.18)</td>
<td>6.33 (4.74)</td>
</tr>
<tr>
<td></td>
<td>n = 38</td>
<td>n = 14</td>
<td>n = 5</td>
<td>n = 57</td>
</tr>
<tr>
<td>Media/entertainment (newspaper/TV/cinemas)</td>
<td>5.91 (5.27)</td>
<td>4.91 (2.12)</td>
<td>7.50 (3.54)</td>
<td>5.69 (4.42)</td>
</tr>
<tr>
<td></td>
<td>n = 23</td>
<td>n = 11</td>
<td>n = 2</td>
<td>n = 36</td>
</tr>
<tr>
<td>Transportation/communication (postal/tour bus/logistics)</td>
<td>5.95 (3.45)</td>
<td>5.14 (2.61)</td>
<td>4.00 (2.00)</td>
<td>5.68 (3.26)</td>
</tr>
<tr>
<td></td>
<td>n = 39</td>
<td>n = 7</td>
<td>n = 4</td>
<td>n = 50</td>
</tr>
</tbody>
</table>
### Table 33  Effectiveness of the Pervasive Sources.

<table>
<thead>
<tr>
<th>Roles of CPC</th>
<th>Vocational ( (n = 128) )</th>
<th>Regular college and University ( (n = 30) )</th>
<th>Community college ( (n = 21) )</th>
<th>All ( (n = 179) )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPC 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>24 (18.75%)</td>
<td>3 (10.00%)</td>
<td>4 (19.05%)</td>
<td>31 (17.32%)</td>
</tr>
<tr>
<td>2</td>
<td>22 (17.19%)</td>
<td>4 (13.33%)</td>
<td>3 (14.29%)</td>
<td>29 (16.20%)</td>
</tr>
<tr>
<td>3</td>
<td>25 (19.53%)</td>
<td>8 (26.67%)</td>
<td>9 (42.86%)</td>
<td>42 (23.46%)</td>
</tr>
<tr>
<td>4</td>
<td>22 (17.19%)</td>
<td>8 (26.67%)</td>
<td>2 (9.52%)</td>
<td>32 (17.88%)</td>
</tr>
<tr>
<td>5</td>
<td>19 (14.84%)</td>
<td>5 (16.67%)</td>
<td>2 (9.52%)</td>
<td>26 (14.53%)</td>
</tr>
<tr>
<td><strong>Training programs 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>13 (10.16%)</td>
<td>1 (3.33%)</td>
<td>0 (0.00%)</td>
<td>14 (7.82%)</td>
</tr>
<tr>
<td>2</td>
<td>10 (7.81%)</td>
<td>2 (6.67%)</td>
<td>2 (9.52%)</td>
<td>14 (7.82%)</td>
</tr>
<tr>
<td>3</td>
<td>17 (13.28%)</td>
<td>5 (16.67%)</td>
<td>1 (4.76%)</td>
<td>23 (12.85%)</td>
</tr>
<tr>
<td>4</td>
<td>32 (25.00%)</td>
<td>12 (40.00%)</td>
<td>9 (42.86%)</td>
<td>53 (29.61%)</td>
</tr>
<tr>
<td>5</td>
<td>33 (25.78%)</td>
<td>8 (26.67%)</td>
<td>7 (33.33%)</td>
<td>48 (26.82%)</td>
</tr>
<tr>
<td><strong>Media (newspapers, Internet) 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>15 (11.72%)</td>
<td>11 (36.67%)</td>
<td>1 (4.76%)</td>
<td>27 (15.08%)</td>
</tr>
<tr>
<td>2</td>
<td>33 (25.78%)</td>
<td>10 (33.33%)</td>
<td>8 (38.10%)</td>
<td>51 (28.49%)</td>
</tr>
<tr>
<td>3</td>
<td>32 (25.00%)</td>
<td>6 (20.00%)</td>
<td>4 (19.05%)</td>
<td>42 (23.46%)</td>
</tr>
<tr>
<td>4</td>
<td>23 (17.97%)</td>
<td>5 (3.33%)</td>
<td>1 (3.33%)</td>
<td>29 (16.20%)</td>
</tr>
<tr>
<td>5</td>
<td>8 (6.25%)</td>
<td>0 (0.00%)</td>
<td>2 (9.52%)</td>
<td>10 (5.59%)</td>
</tr>
</tbody>
</table>
Table 34 (continued.) Effectiveness of the Pervasive Sources.

<table>
<thead>
<tr>
<th>Roles of CPC</th>
<th>Vocational (n = 128)</th>
<th>Regular college and University (n = 30)</th>
<th>Community college (n = 21)</th>
<th>All (n = 179)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment Agency 1</td>
<td>3 (2.34%)</td>
<td>2 (6.67%)</td>
<td>1 (4.76%)</td>
<td>6 (3.35%)</td>
</tr>
<tr>
<td>2</td>
<td>11 (8.59%)</td>
<td>0 (0.00%)</td>
<td>1 (4.76%)</td>
<td>12 (6.70%)</td>
</tr>
<tr>
<td>3</td>
<td>19 (14.84%)</td>
<td>3 (10.00%)</td>
<td>4 (19.05%)</td>
<td>26 (14.53%)</td>
</tr>
<tr>
<td>4</td>
<td>16 (12.50%)</td>
<td>4 (13.33%)</td>
<td>3 (14.29%)</td>
<td>23 (12.85%)</td>
</tr>
<tr>
<td>5</td>
<td>38 (29.69%)</td>
<td>10 (33.33%)</td>
<td>6 (28.57%)</td>
<td>52 (30.17%)</td>
</tr>
<tr>
<td>Directly (walk-in) 1</td>
<td>49 (38.28%)</td>
<td>12 (40.00%)</td>
<td>10 (47.62%)</td>
<td>71 (39.66%)</td>
</tr>
<tr>
<td>2</td>
<td>32 (25.00%)</td>
<td>7 (23.33%)</td>
<td>6 (28.57%)</td>
<td>45 (25.14%)</td>
</tr>
<tr>
<td>3</td>
<td>18 (14.06%)</td>
<td>4 (13.33%)</td>
<td>2 (9.52%)</td>
<td>24 (13.41%)</td>
</tr>
<tr>
<td>4</td>
<td>12 (9.38%)</td>
<td>1 (3.33%)</td>
<td>1 (4.76%)</td>
<td>14 (7.82%)</td>
</tr>
<tr>
<td>5</td>
<td>4 (3.13%)</td>
<td>4 (13.33%)</td>
<td>2 (9.52%)</td>
<td>10 (5.59%)</td>
</tr>
</tbody>
</table>

Note: Each number refers to the number of institutions that ranked the corresponding source to be 1 (the most effective) to 5 (the least effective). Each number inside the paleness presents the percentage of the institutions out of the total number of the corresponding type of institutions (i.e., 128 vocational colleges, 30 regular colleges and universities, or 21 community colleges).
Figure 15  Effectiveness of the Pervasive Sources.

Note: Effectiveness are ranked from 1 (the most effective) to 5 (the least effective).
Figure 16 (continued.) Effectiveness of the Pervasive Sources.

Note: Effectiveness are ranked from 1 (the most effective) to 5 (the least effective).
EMPLOYER SURVEY

Method

Participants

A total of 60 organizations were selected for the survey. Criteria of the selection were: (a) locating either one of 19 provinces in the Northeast region of Thailand, and (b) at least 90 percent of employees had finalized their education in the Northeast region of Thailand. A half of the participated organizations were private sectors ($n = 32$), and the other half consisted of government sectors ($n = 14$) and state enterprises ($n = 14$). Table 35 lists the type of business or services that the participated organizations provided. Table 36 shows the average numbers of employees and employees who had finalized their education in the Northeast region for each type of organizations.

Instruments

The present study was additional to the institution survey. It was suggested by the World Bank that information on organizations that located in the target region should be collected, including requirements and expectations of the organizations for their current and future applicants, which could help educational institutions as well as their students in the target region prepare to enhance opportunities for employment (see the interim report by the component 1 for more details). The questionnaire was developed by the survey team with suggestions provided by the PIU and the World Bank in order to obtain information that was to strengthen findings from the institution survey.

Demographic information. An organization’s demographic information including name, type of business (i.e., government sector, state enterprise, or private sector), industry type (e.g., government public service, manufacturing, retail and wholesale, import and export, agriculture, educational institute, utilities service, tourism or hotel, healthcare service, transportation or communication, media or entertainment, financial institution, accounting or law firm, and other), contact information, number of employees, percentage of the employees completed the final education in the Northeast region was collected.

Education level of the current employees. Participants were asked to provide percentages of their employees whose highest education levels were: primary level or less, secondary level, high school level vocational certificate, vocational diploma, completing bachelor degree, and other.

Current and future requirement for the employment. Participants were first asked to list all concentrations that they had currently required applicants to major. Second, participants were asked to specify type of gender (i.e., male only, female only, or both) for each of the concentrations that they have listed. Finally, participants were requested to list education levels (i.e., primary level or less, secondary level, vocational certificate, vocational diploma, completing bachelor degree, and other) that their applicant had to have completed for each of the specified concentrations. The same questions were provided regarding the organization’s plan for employment in the future in order to examine changes in the requirements.

Required level of competitiveness in general skills. Participants were asked to provide the minimum level of competitiveness that they required for their employees regarding the following skills on a scale varied from 0 (poor) to 10 (excellent): (a) interpersonal skill, (b) knowledge and skills related to one’s own concentration, (c) problem solving skill (i.e., skill of effectively finding a solution(s) when given an ill-defined problem), (d) foreign language skill, (e) IT and computer skills, (f) responsibility for completing one’s assignments or duties, and (g) leadership.

Procedure
Prior to the survey, the survey team visited the selected organizations to explain the purposes and significance of the survey and requested for their participations. At the same time the PIU sent the official letters to those organizations requesting for the participation. On an agreement with the sectors, the team arranged times and dates for the interview. Prior to the interview, the team provided the questionnaire form to the organizations so that they could prepare for it by locating information that their responses were build upon and filling a part of the questionnaire that requested the numerical responses. A trained stuff visited each organization on the appointment date and interviewed the representative of the organization (see the interim report by the component 1 for more details). Numerical responses on the survey forms completed by the representative were first entered onto the excel files by the PIU coordinator and then transferred to the SPSS files for the analysis by the author of the present report.
Results

Education Level of the Current Employees

Table 37 and Figure 17 show the average education levels of employers working for government sectors, state enterprises, and private sectors. As shown, for the government sectors, employees with the vocational diploma level had the largest portion (28.67%), followed by those with the bachelor degree (27.5%), high school level (24.79%), and secondary level (21.7%). Employees with the primary level or lower were 10 percent, which was lower than the other types of sectors (i.e., 16.2 percent for state enterprises and 24.1 percent for private sectors). For the state enterprises, employees with the secondary level had the largest portion (30.3%), followed by those with the high school level (21.4%), vocational certificate (21%), bachelor degree (19.6%), and vocational diploma (19.3%). For the private sectors, Employees with the bachelor degree had the largest portion (27.3%), followed by those with the primary level or lower (24.1%), secondary level (22.8%), vocational diploma (19.6%) and certificate (18.8%), and high school level (15.4%).

Current and Future Requirement for the Employment

Concentrations. Table 38 thru Table 40 (for government sectors), Table 41 thru Table 42 (for state enterprises), and Table 43 thru Table 45 (for private sectors) show the required concentrations, numbers of sectors which: (a) listed a particular concentration as its requirement; (b) chose a certain gender type (i.e., applicants must be male, female, or either); and (c) admitted that it would consider its applicant to be qualified candidate if he or she had obtained the corresponding education level.

Comparisons between current and future requirements showed a number of consistencies as well as differences for each type of sectors. First, concentrations that were most frequently chose as the current requirement continued being popular for the future requirement (e.g., library science, accounting, computer for business for government sectors; computer for business and accounting for state enterprises, accounting, marketing, and computer business for private sectors). It was consistently shown among three types of sectors.

Gender. For the current requirements of the government sectors, nearly half of the requirements targeted both gender (49%), while there were more requirements that limited their candidates to males (32%) than those limited to females (19%) (see Table 40 and Figure 18). For the future requirements, those for both gender continued to take a half of the all requirements (54%), while requirements for males dropped down to share the same portion with those for females (23%).

For the current requirements of the state enterprises, 46% of them were opened for both males and females (see Table 42 and Figure 18). For the rest, the amount of requirements limited to males (40%) exceeded that for females (14%). For the future requirements, those that were limited to females further dropped to have only 4.5% of the entire requirements, while there was a slight decrease in the requirements limited to males (32%). On the other hand, the requirements that were opened for both males and females increased to be 59%.

As shown in Table 45 and Figure 18, the current requirements of the private sectors were similar to those of the other two types of sectors (i.e., government sectors and state enterprises), with nearly a half was opened to both males and females (47%). Likewise, similar to the other two types of sectors, for requirements that were limited to either males or females, more were for males (36%) than for females (19%). Unlike the other two types, this pattern would be less likely to change in the future, except for a slight increase in the requirements that were opened for both males and females (53%) and a slight decrease in
those that were limited to males (32%) and females (18%).

**Education level.** For the government sectors, among all the responses that specified concentrations that they currently required for their candidates to complete, over 60% of the concentrations required the candidates to obtain bachelor degrees (62.7%), while nearly 30% was for those who either obtained the vocational certificates (12%) or the vocational diplomas (17%). Requirement for others (i.e., mostly masters or doctoral degrees) was only 10%. These portions would be consistently kept in the future, with slight decreases in the bachelor degree (56.3%), vocational certificate (10.4%), and other (6.3%), and a slight increase in vocational diploma (22.9%).

Similar to the government sectors, over 60% of the concentrations for the state enterprises currently required the bachelor degrees (61.9%), while nearly 30% of the concentrations were for vocational levels (14.3% for each certificate and diploma). Likewise, the requirement for others remained to be nearly 10%.

Unlike the government sectors, these requirements for the state enterprises would be drastically changed in the future. Requirements for completing degrees higher than the vocational level increased (i.e., 77.3% for bachelor degree, 18.2% for other), while those for vocational level dropped down for both certificate and diploma (2.3% for each).

Although the private sectors currently accepted a few candidates whose education levels were secondary or less (1.7%) and high school graduate (3.4%), these education levels would not be accepted in the future. Despite their relatively higher portion for the vocational diploma (35.9%) and the similar portion for the vocational certificate (9.4%), there was the heavy demand for bachelor degree (62.4%) as were the other two types of sectors. In addition, the demand for the graduate level was much lower than those for the other two types (1.7%).

Like for the private sectors, a demand for the higher degree in the future was observed for the private sectors, with an increase in the bachelor degree (74.7%) and decreases in the vocational levels (27.4% for diploma and 6.3% for certificate). Requirements for the graduate levels slightly increased as well (3.0%).

**Required Level of Competitiveness in General Skills**

Table 46 shows the mean scores for the level of the skills. In order to examine whether each type of sectors would differ one another in the level of requirement, a series of ANOVAs was conducted on the following variables of interest with the sectors type as the independent variables: (a) interpersonal skill, (b) knowledge and skills related to one’s own concentration, (c) problem solving skill (i.e., skills for effectively finding a solution(s) when given an ill-defined problem), (d) foreign language skill, (e) IT and computer skills, (f) responsibility for completing one’s assignments or duties, and (g) leadership. None of the ANOVAs revealed significant differences among the three types of sectors.
Table 35  Industry Types of the Participate Organizations.

<table>
<thead>
<tr>
<th>Industry type</th>
<th>Government sector (n = 14)</th>
<th>State enterprise (n = 14)</th>
<th>Private sector (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public service (district office / police / military)</td>
<td>10</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>--</td>
<td>--</td>
<td>3</td>
</tr>
<tr>
<td>Retail / wholesale</td>
<td>--</td>
<td>--</td>
<td>12</td>
</tr>
<tr>
<td>Educational institution</td>
<td>--</td>
<td>--</td>
<td>2</td>
</tr>
<tr>
<td>Utility / infrastructure Service (electricity / water)</td>
<td>--</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Tourism / hotel</td>
<td>--</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td>Healthcare service</td>
<td>3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Transportation / communication (postal / tour bus / logistics)</td>
<td>1</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>Financial institution</td>
<td>--</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Accounting / law firm</td>
<td>--</td>
<td>--</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>--</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 36  Total Number of Employees (Mean), Employees from the Northeast Region of Thailand (Mean), and Percentage of Employees from the Northeast Region out of the Entire Employees for Each Sector.

<table>
<thead>
<tr>
<th>Industry type</th>
<th>Government sector (n = 14)</th>
<th>State enterprise (n = 14)</th>
<th>Private sector (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total employees</td>
<td>258.6 (96.3%)</td>
<td>86.9 (94.4%)</td>
<td>144.4 (93.2%)</td>
</tr>
<tr>
<td>Employees from northeast</td>
<td>249.0 (96.3%)</td>
<td>82.0 (94.4%)</td>
<td>134.6 (93.2%)</td>
</tr>
<tr>
<td>Education</td>
<td>Government sector (mean %)</td>
<td>State enterprise (mean %)</td>
<td>Private sector (mean %)</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------</td>
<td>---------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Primary level or less</td>
<td>10.11</td>
<td>16.23</td>
<td>24.11</td>
</tr>
<tr>
<td>Secondary level</td>
<td>21.68</td>
<td>30.27</td>
<td>22.82</td>
</tr>
<tr>
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<td>3.00</td>
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</table>

Note: Each organization was asked to provide the estimated percentages of their employees who had finalized each level of the education. Each score in the table is a mean of those estimated percentages provided by the organizations.
Figure 17  Employees’ Education Level for Each Sector Type (%).

![Graph showing employees' education level for each sector type (%).](image_url)
### Table 38  Current (upper) and Future (lower) Requirements for Employment (Government Sectors).

<table>
<thead>
<tr>
<th>Concentration</th>
<th>N</th>
<th>Male</th>
<th>Female</th>
<th>Both</th>
<th>Required Degree</th>
</tr>
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</tr>
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<td>Female only</td>
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### Table 40 (continued). Current (upper) and Future (lower) Requirements for Employment (Government Sectors).

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<th>N</th>
<th>Gender</th>
<th>Required Degree</th>
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</tr>
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<td>Forensic Science</td>
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<td>0</td>
</tr>
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</table>

**Note:**
- **N**: number of sectors that chose the corresponding concentration as a requirement.
- **Gender**: number of sectors that reported the corresponding concentration to be male only, female only, or both gender. Required degree: number of sectors that chose one or more educational levels for the corresponding concentration.
- **Educational level**: 4 (vocational certificate), 5 (vocational diploma), 6 (bachelor degree), 7 (other).
- **TOTAL**: Total responses (=accumulation of N)

% = Total counts for each category * 100 / total responses
Table 41  Current (upper) and Future (lower) Requirements for Employment (State Enterprises).

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<th>Concentration</th>
<th>N</th>
<th>Male only</th>
<th>Female only</th>
<th>Both</th>
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<th>7</th>
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### Table 42 (continued). Current (upper) and Future (lower) Requirements for Employment (State Enterprises).

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Note: N: number of sectors that chose the corresponding concentration as a requirement. Gender: number of sectors that reported the corresponding concentration to be male only, female only, or both gender. Required degree: number of sectors that chose one or more educational levels for the corresponding concentration. Educational level: 4 (vocational certificate), 5 (vocational diploma), 6 (bachelor degree), 7 (other). TOTAL: Total responses (=accumulation of N)

\[
\text{\%} = \frac{\text{Total counts for each category} \times 100}{\text{total responses}}
\]
### Table 43
Current (upper) and Future (lower) Requirements for Employment (Private Sectors).

<table>
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<th>Female only</th>
<th>Both</th>
<th>Required Degree</th>
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Table 44 (continued). Current (upper) and Future (lower) Requirements for Employment (Private Sectors).

<table>
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<th>N</th>
<th>Gender</th>
<th>Required Degree</th>
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<td>0</td>
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<td>Food Science</td>
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<td></td>
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<td>0</td>
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<td>Secretarial</td>
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<tr>
<td>Environmental Engineering</td>
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<tr>
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</tr>
<tr>
<td></td>
<td>1</td>
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</tr>
</tbody>
</table>
Table 45 (continued). Current (upper) and Future (lower) Requirements for Employment (Private Sectors).

<table>
<thead>
<tr>
<th>Concentration (Private Sectors)</th>
<th>N</th>
<th>Male only</th>
<th>Female only</th>
<th>Both</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociology and History</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Chemistry</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Maintenance/Electrical Appliances</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>Agricultural science</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Architecture/Urban Planning</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Environmental</td>
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<td>0</td>
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<td>Engineering</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1</td>
<td>42</td>
<td>22</td>
<td>55</td>
<td>2</td>
<td>4</td>
<td>11</td>
<td>42</td>
<td>73</td>
<td>2</td>
</tr>
<tr>
<td>(%)</td>
<td>(36.0)</td>
<td>(18.8)</td>
<td>(47.0)</td>
<td>(1.7)</td>
<td>(3.4)</td>
<td>(9.4)</td>
<td>(35.9)</td>
<td>(62.4)</td>
<td>(1.7)</td>
<td></td>
</tr>
</tbody>
</table>

Note:  
N: number of sectors that chose the corresponding concentration as a requirement.  
Gender: number of sectors that reported the corresponding concentration to be male only, female only, or both gender. Required degree: number of sectors that chose one or more educational levels for the corresponding concentration.  
Educational level: 4 (vocational certificate), 5 (vocational diploma), 6 (bachelor degree), 7 (other).  
TOTAL: Total responses (=accumulation of N)  
% = Total counts for each category *100 / total responses
Figure 18  Comparison between current (left) and Future (right) Requirements for Gender.

Current Requirement: Gender (Government Sectors)

Future Requirement: Gender (Government Sectors)

Current Requirement: Gender (State Enterprises)

Future Requirement: Gender (State Enterprises)

Current Requirement: Gender (Private Sectors)

Future Requirement: Gender (Private Sectors)
Figure 19: Comparison between current (left) and Future (right) Requirements for Education Levels.
Figure 20 (Continued). Comparison between current (left) and Future (right) Requirements for Education Levels.

Current Requirement: Education (Private Sectors)

Future Requirement: Education (Private Sectors)
Table 46 Comparisons between Employers and Educational Institutions on the Levels of Important Skills.

<table>
<thead>
<tr>
<th>Type of skill and trait</th>
<th>Mean [Employer] N = 60</th>
<th>Mean [Institution] N = 177</th>
<th>Mean difference</th>
<th>t Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal skill</td>
<td>8.97 (1.43)</td>
<td>8.04 (1.26)</td>
<td>.93</td>
<td>4.48</td>
</tr>
<tr>
<td>Knowledge and skill in concentration</td>
<td>8.50 (1.53)</td>
<td>8.21 (1.28)</td>
<td>.29</td>
<td>n.s.</td>
</tr>
<tr>
<td>Problem solving skill</td>
<td>8.60 (1.54)</td>
<td>7.47 (1.50)</td>
<td>1.13</td>
<td>5.00</td>
</tr>
<tr>
<td>Foreign language skill</td>
<td>6.90 (2.30)</td>
<td>5.90 (1.72)</td>
<td>1.00</td>
<td>3.10</td>
</tr>
<tr>
<td>IT / computer skill</td>
<td>8.37 (1.67)</td>
<td>7.86 (1.76)</td>
<td>.51</td>
<td>n.s.</td>
</tr>
<tr>
<td>Responsibility</td>
<td>9.27 (1.22)</td>
<td>8.10 (1.29)</td>
<td>1.17</td>
<td>6.50</td>
</tr>
<tr>
<td>Leadership</td>
<td>8.85 (1.26)</td>
<td>7.49 (1.44)</td>
<td>1.36</td>
<td>7.00</td>
</tr>
</tbody>
</table>

Note: Degree of requirement differs from 0 (Poor) to 10 (Excellent). Means (upper) and standard deviations (lower) are shown for employers and institutions.
STUDENT SURVEY

Method

Participants

A total of 200 students studying at either one of the educational institutions that participated in the institution survey responded to the present survey. Among those 200 students, 136 (68%) were from vocational colleges, 42 (21%) were from regular colleges and universities, and the rest of 22 (11%) were from community colleges.

Instruments

The questionnaire was developed by the survey team with suggestions provided by the PIU and the World Bank in order to obtain information that were contrasted with findings from the institution and employer surveys, including perceptions of the students with regard to their current and future competitiveness (see the interim report by the component 1 for more details).

Demographic information. Student's demographic information including the institution’s name and type that the student currently enrolled, name, age, gender, and contact information was collected.

Reasons of enrolment. Participants were asked to indicate the reasons for enrolling in their institutions by selecting all that applied among the following options: (a) the institution was well known, (b) the institution offered concentration that the student was interested in, (c) overall quality of teaching was good, (d) the quality of instructors was high, (e) the institution offered the modern approaches in teaching, (f) the institution's facilities and equipment were satisfactory, (g) the institution offered practical training programs, (h) the institution could provide good opportunities for finding the desired jobs, (i) the location was located close to home, and (j) the tuition was reasonable.

Level of autonomous learning skills. Participants were asked to report a level of autonomous learning skill that they expected to achieve by the time of completion of the current education on a scale varied from 0 (poor) to 10 (excellent).

Competitiveness in critical skills. Participants were asked to indicate the level of competitiveness of the following skills that they would be achieved by the time of completion of the current education on a scale varied from 0 (poor) to 10 (excellent): (a) interpersonal skill, (b) knowledge and skills related to one’s own concentration, (c) problem solving skill (i.e., skills for effectively finding a solution(s) when given an ill-defined problem), (d) foreign language skill, (e) IT and computer skills, (f) responsibility for completing one’s assignments or duties, and (g) leadership.

Frequencies of using computer and the Internet. Participants were asked to report frequencies of using the computer and the Internet by choosing among the following: everyday, two or three times per week, once a week, two or three times per month, once a month, and do not use.

Competitiveness in utilizing Information Technology. Participants were asked to indicate how competitive they were in utilizing the following IT tools on a scale varied between 0 (poor) to 10 (excellent): (a) Microsoft Office software (b) graphic design tools, (c) architectural drawing tools, (d) multimedia, (e) accounting, (f) human resources management tools, (g) inventory and warehouse, (h) software development, and (i) web design.

Procedure

As already described, the present data was collected at the same educational institution that an interviewer visited for the institution survey. After completing the interview with the representative at the institution, the interviewer conducted another interview with a student arranged by the representative (see the interim report by the component 1 for more details). Numerical responses on the survey forms completed by the representative and the student were first entered onto the excel files by the PIU coordinator.
and then transferred to the SPSS files for the analysis by the author of the present report.
Results

Reasons of Enrolment

As shown in Table 47 and Figure 21, the reason chosen by the highest percentage of students (about 80 percent of all) was that the institution offered concentration that the students were interested in, followed by the overall quality of teaching (about 67 percent of all) and the modern approaches in teaching (about 62 percent of all). Although lower than the reasons related to the quality of teaching, convenience in location (about 61 percent of all) and tuition (about 55 percent) were also important for the students. On the other hand, except for community college students (about 68 percent of them chose), whether the institution offered practical training programs or not did not matter for students (only 47 percent of all). Likewise, whether the institution could provide opportunities for getting the desired job was the least important for the students (only about 28 percent of all).

Level of Autonomous Learning Skills

Overall the students expected relatively high level ($M = 8.28$, $SD = 1.32$). Furthermore, a series of ANOVAs that contrasted students from the different types of institutions found no statistically significant group difference ($F(2, 197) = 2.12, p = .12$).

Competitiveness in Critical Skills

A series of ANOVAs was conducted on the following variables of interest with the school type as the independent variable: (a) interpersonal skill, (b) knowledge and skills related to one’s own concentration, (c) problem solving skill (i.e., skills for effectively finding a solution(s) when given an ill-defined problem), (d) foreign language skill, (e) IT and computer skills, (f) responsibility for completing one’s assignments or duties, and (g) leadership. As shown in Table 48, statistically significant group differences were found for the interpersonal and leadership skills. Furthermore, Post-hoc Turkey tests revealed that students from community colleges ($M = 9.09$, $SD = 1.57$) estimated the level of their achievement in the leadership skill significantly higher than did those from vocational colleges ($M = 8.08$, $SD = 1.68$). Students from regular colleges and universities ($M = 8.36$, $SD = 1.56$) were intermediate between the other groups, however, the differences were not statistically significant. Although a significant group difference was detected for the interpersonal skill, none of the groups was found to differ from one another.

Comparison among Institutions, Employers, and Students: Competitiveness in Autonomous Learning Skill and other Critical Skill

In order to examine whether institutions, employers, and students differ one another in levels of the competitiveness, a series of ANOVAs was conducted on the following variables of interest with type of participants (i.e., institutions, employers, or students) as the independent variable: (a) autonomous learning skill, (b) interpersonal skill, (c) knowledge and skills related to one’s own concentration, (d) problem solving skill (i.e., skills for effectively finding a solution(s) when given an ill-defined problem), (e) foreign language skill, (f) IT and computer skills, (g) responsibility for completing one’s assignments or duties, and (h) leadership. As shown in Table 49, statistically significant group differences were found for all but knowledge and skills related to one’s own concentration and IT and computer skills. Furthermore, Post-hoc Turkey tests revealed differences in the levels among groups. For the interpersonal skill, the current competitiveness of students reported by the institutions ($M = 8.04$, $SD = 1.26$) was similar to what the students expected to achieve ($M = 8.97$, $SD = 1.43$), however, they were much lower than what the employers required ($M = 8.97$, $SD = 1.43$). For the skills of problem solving, responsibility, and leadership, the students (problem solving: $M = 7.95$, $SD = 1.53$; responsibility: $M = 8.57$, $SD = 1.43$; leadership: $M = 8.25$, $SD = 1.66$) expected to achieve significantly higher than the current
levels reported by the institutions (problem solving: $M = 7.47$, $SD = 1.50$; responsibility: $M = 8.10$, $SD = 1.29$; leadership: $M = 7.49$, $SD = 1.44$), however, they were significantly lower than what the employers required (problem solving: $M = 8.60$, $SD = 1.53$; responsibility: $M = 9.28$, $SD = 1.21$; leadership: $M = 8.85$, $SD = 1.26$). For the autonomous learning skill and foreign language skill, the levels that the students (autonomous learning skill: $M = 8.28$, $SD = 1.32$; foreign language skill: $M = 6.67$, $SD = 2.12$) expected to achieve was similar to what the employers required (autonomous learning skill: $M = 8.75$, $SD = 1.43$; foreign language skill: $M = 6.90$, $SD = 2.30$), and both were significantly higher than the current level reported by the institutions (autonomous learning skill: $M = 7.63$, $SD = 1.55$; foreign language skill: $M = 5.90$, $SD = 1.72$).

**Computer and the Internet Use**

As shown in Table 50 and Figure 22, a half of the students from regular college and universities (21 out of 42 students) and about 41 percent of the community college students (9 out of 22 students) reported that they were using the computer on an everyday basis, while only about 37 percent of the vocational college students (50 out of 134 students) used the computer every day. Nearly half of the students from each type of institutions used the computer not every day but twice or three times per week. For the students from regular colleges and universities and the community colleges reported to use the computer at least once a week, while about 10 percent of the vocational college students (11 out of 134 students) reported to use the computer less frequently, including 2 students who did not use the computer.

For the Internet, nearly half of the students from the regular colleges and universities (20 out of 42 students) and vocational colleges (66 out of 134 students) and about 63 percent of the community college students (14 out of 22 students) used it not on an everyday basis, but two or three times per week (see Table 51 and Figure 23). Only about 17 percent of the vocational college students (23 out of 134 students), 24 percent of the students from the regular colleges and universities (10 out of 42 students), and 14 percent of the community college students (3 out of 22 students) reported to use the Internet on an everyday basis. The community college students used the Internet at least once a week, while about 23 percent of the vocational college students (31 out of 134 students) and about 7 percent of the students from the regular colleges and universities (3 out of 42 students) reported to use the Internet less frequently, including 11 vocational college students who did not use the Internet.

**Level of competitiveness of using the IT tools**

As shown in Table 52, mean scores for all of the IT skills were relatively low. The highest was for the Microsoft Office skill ($M = 6.67$, $SD = 2.37$) and the lowest was for the skill of architecture design ($M = 3.68$, $SD = 3.23$). A series of ANOVAs was performed with the institution type as the independent variable on the above nice skills and the total score of these skills. The findings showed no group differences for either of the skills.

In order to examine whether a level of competitiveness of students’ using the IT tools reported by the students would differ from that was estimated by the institutions, a series of t-tests contrasted the students and educational institutions on their mean scores of skills of using the following IT tools: (a) Microsoft Office software (b) graphic design tools, (c) architectural drawing tools, (d) multimedia, (e) accounting, (f) human resources management tools, (g) inventory and warehouse, (h) software development, and (i) web design. As shown in Table 53, the students rated the level of their competitiveness significantly lower than did the institutions for all except for skills of using human resources management tool and inventory and warehouse tool.
### Table 47

Number and Percentage of students Who Chose Each Reason for Enrolling in Institutions.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Vocational (n = 136)</th>
<th>Regular college and university (n = 42)</th>
<th>Community college (n = 22)</th>
<th>All (n = 200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>76 (55.88)</td>
<td>21 (50.00)</td>
<td>12 (54.55)</td>
<td>109 (54.50)</td>
</tr>
<tr>
<td>2</td>
<td>107 (78.68)</td>
<td>34 (80.95)</td>
<td>18 (81.82)</td>
<td>159 (79.50)</td>
</tr>
<tr>
<td>3</td>
<td>91 (66.91)</td>
<td>25 (59.52)</td>
<td>18 (81.82)</td>
<td>134 (67.00)</td>
</tr>
<tr>
<td>4</td>
<td>77 (56.62)</td>
<td>18 (42.86)</td>
<td>15 (68.18)</td>
<td>110 (55.00)</td>
</tr>
<tr>
<td>5</td>
<td>88 (64.71)</td>
<td>18 (42.86)</td>
<td>17 (68.18)</td>
<td>123 (61.50)</td>
</tr>
<tr>
<td>6</td>
<td>62 (45.59)</td>
<td>16 (38.10)</td>
<td>9 (40.91)</td>
<td>87 (43.50)</td>
</tr>
<tr>
<td>7</td>
<td>65 (47.79)</td>
<td>13 (33.33)</td>
<td>10 (68.18)</td>
<td>88 (47.00)</td>
</tr>
<tr>
<td>8</td>
<td>42 (30.88)</td>
<td>6 (14.29)</td>
<td>7 (31.82)</td>
<td>55 (27.50)</td>
</tr>
<tr>
<td>9</td>
<td>83 (61.03)</td>
<td>24 (57.14)</td>
<td>15 (68.18)</td>
<td>122 (61.00)</td>
</tr>
<tr>
<td>10</td>
<td>73 (53.68)</td>
<td>20 (47.62)</td>
<td>17 (77.27)</td>
<td>110 (55.00)</td>
</tr>
</tbody>
</table>

Note: More than 1 reason could be selected by the students.
1. The institution was well known,
2. The institution offered concentration that the student was interested in,
3. Overall quality of teaching was good,
4. The quality of instructors was high,
5. The institution offered the modern approaches in teaching,
6. The institution’s facilities and equipment were satisfactory,
7. The institution offered practical training programs,
8. The institution could provide good opportunities for finding the desired jobs,
9. The location was located close to home, and
10. The tuition was reasonable.
**Figure 21** Percentage of students Who Chose Each Reason for Enrolling in Institutions.

Note: More than 1 reason could be selected by the students.

1. The institution was well known,
2. The institution offered concentration that the student was interested in,
3. Overall quality of teaching was good,
4. The quality of instructors was high,
5. The institution offered the modern approaches in teaching,
6. The institution’s facilities and equipment were satisfactory,
7. The institution offered practical training programs,
8. The institution could provide good opportunities for finding the desired jobs,
9. The location was located close to home, and
10. The tuition was reasonable.
### Table 48  Means and Standard Deviations on the Degree of Perceived Levels of Students’ Competitiveness.

<table>
<thead>
<tr>
<th>Type of Skill</th>
<th>Vocational ($n = 136$)</th>
<th>Regular college and university ($n = 42$)</th>
<th>Community college ($n = 22$)</th>
<th>All ($n = 200$)</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal skill</td>
<td>7.63 (1.76)</td>
<td>8.33 (1.52)</td>
<td>8.14 (1.81)</td>
<td>7.83 (1.74)</td>
<td>3.12</td>
</tr>
<tr>
<td>Knowledge and skill in concentration</td>
<td>7.91 (1.67)</td>
<td>8.26 (1.42)</td>
<td>8.27 (1.86)</td>
<td>8.03 (1.64)</td>
<td>1.01 n.s.</td>
</tr>
<tr>
<td>Problem solving skill</td>
<td>7.83 (1.56)</td>
<td>7.83 (1.56)</td>
<td>8.23 (1.77)</td>
<td>7.95 (1.53)</td>
<td>.48 n.s.</td>
</tr>
<tr>
<td>Foreign language skill</td>
<td>6.62 (1.99)</td>
<td>6.62 (1.99)</td>
<td>7.00 (2.49)</td>
<td>6.67 (2.12)</td>
<td>.29 n.s.</td>
</tr>
<tr>
<td>IT / computer skill</td>
<td>7.76 (1.68)</td>
<td>7.60 (2.11)</td>
<td>8.14 (1.83)</td>
<td>7.77 (1.79)</td>
<td>.66 n.s.</td>
</tr>
<tr>
<td>Responsibility</td>
<td>8.60 (1.41)</td>
<td>8.50 (1.49)</td>
<td>8.55 (1.53)</td>
<td>8.57 (1.43)</td>
<td>.07 n.s.</td>
</tr>
<tr>
<td>Leadership</td>
<td>8.08a (1.68)</td>
<td>8.36ab (1.56)</td>
<td>9.09b (1.57)</td>
<td>8.25 (1.66)</td>
<td>3.69</td>
</tr>
</tbody>
</table>

Note:  Degree of consideration differs from 0 (poor) to 10 (excellent).
Table 49  Comparisons of Means and Standard Deviations on the Degree of Perceived Levels of Students’ Competitiveness.

<table>
<thead>
<tr>
<th>Type of Skill</th>
<th>Institutions (n = 179)</th>
<th>Employers (n = 60)</th>
<th>Students (n = 200)</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomous learning skill</td>
<td>7.62&lt;sub&gt;a&lt;/sub&gt; (1.54)</td>
<td>8.75&lt;sub&gt;b&lt;/sub&gt; (1.43)</td>
<td>8.28&lt;sub&gt;b&lt;/sub&gt; (1.32)</td>
<td>17.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p = .000</td>
</tr>
<tr>
<td>Interpersonal skill</td>
<td>8.03&lt;sub&gt;a&lt;/sub&gt; (1.26)</td>
<td>8.97&lt;sub&gt;b&lt;/sub&gt; (1.43)</td>
<td>7.83&lt;sub&gt;b&lt;/sub&gt; (1.74)</td>
<td>12.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p = .000</td>
</tr>
<tr>
<td>Knowledge and skill in concentration</td>
<td>8.20 (1.28)</td>
<td>8.50 (1.53)</td>
<td>8.03 (1.64)</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>n.s.</td>
</tr>
<tr>
<td>Problem solving skill</td>
<td>7.46&lt;sub&gt;a&lt;/sub&gt; (1.50)</td>
<td>8.60&lt;sub&gt;c&lt;/sub&gt; (1.54)</td>
<td>7.95&lt;sub&gt;b&lt;/sub&gt; (1.53)</td>
<td>13.36</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p = .000</td>
</tr>
<tr>
<td>Foreign language skill</td>
<td>5.89&lt;sub&gt;a&lt;/sub&gt; (1.72)</td>
<td>6.90&lt;sub&gt;b&lt;/sub&gt; (2.30)</td>
<td>6.67&lt;sub&gt;b&lt;/sub&gt; (2.12)</td>
<td>9.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p = .000</td>
</tr>
<tr>
<td>IT / computer skill</td>
<td>7.86 (1.76)</td>
<td>8.37 (1.67)</td>
<td>7.77 (1.79)</td>
<td>2.72</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>n.s.</td>
</tr>
<tr>
<td>Responsibility</td>
<td>8.09&lt;sub&gt;a&lt;/sub&gt; (1.28)</td>
<td>9.27&lt;sub&gt;c&lt;/sub&gt; (1.22)</td>
<td>8.57&lt;sub&gt;b&lt;/sub&gt; (1.43)</td>
<td>18.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p = .000</td>
</tr>
<tr>
<td>Leadership</td>
<td>7.48&lt;sub&gt;a&lt;/sub&gt; (1.44)</td>
<td>8.85&lt;sub&gt;c&lt;/sub&gt; (1.26)</td>
<td>8.25&lt;sub&gt;b&lt;/sub&gt; (1.66)</td>
<td>21.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p = .000</td>
</tr>
</tbody>
</table>

Note: Degree of consideration differs from 0 (poor) to 10 (excellent).
### Table 50
Numbers and Percentages of students using the computer.

<table>
<thead>
<tr>
<th>Use computer:</th>
<th>Vocational $(n = 136)$</th>
<th>Regular college and university $(n = 42)$</th>
<th>Community college $(n = 22)$</th>
<th>All $(n = 200)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every day</td>
<td>50 (37.31)</td>
<td>21 (50.00)</td>
<td>9 (40.91)</td>
<td>80 (40.40)</td>
</tr>
<tr>
<td>2 to 3 times a week</td>
<td>59 (44.03)</td>
<td>19 (45.24)</td>
<td>11 (50.00)</td>
<td>89 (44.95)</td>
</tr>
<tr>
<td>Once a week</td>
<td>14 (10.45)</td>
<td>2 (2.76)</td>
<td>2 (9.09)</td>
<td>18 (9.09)</td>
</tr>
<tr>
<td>2 to 3 times a month</td>
<td>9 (6.72)</td>
<td>0</td>
<td>0</td>
<td>9 (4.55)</td>
</tr>
<tr>
<td>Do not use</td>
<td>2 (1.49)</td>
<td>0</td>
<td>0</td>
<td>2 (1.01)</td>
</tr>
</tbody>
</table>

Note: Percentage refers to that of students out of those from the corresponding type of institution.

### Table 51
Numbers and Percentages of students using the Internet.

<table>
<thead>
<tr>
<th>Use the Internet:</th>
<th>Vocational $(n = 136)$</th>
<th>Regular college and university $(n = 42)$</th>
<th>Community college $(n = 22)$</th>
<th>All $(n = 200)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every day</td>
<td>23 (17.16)</td>
<td>10 (23.81)</td>
<td>3 (13.64)</td>
<td>36 (18.18)</td>
</tr>
<tr>
<td>2 to 3 times a week</td>
<td>66 (49.25)</td>
<td>20 (47.62)</td>
<td>14 (63.64)</td>
<td>100 (50.51)</td>
</tr>
<tr>
<td>Once a week</td>
<td>14 (10.45)</td>
<td>9 (21.43)</td>
<td>5 (22.73)</td>
<td>28 (14.14)</td>
</tr>
<tr>
<td>2 to 3 times a month</td>
<td>12 (8.96)</td>
<td>1 (2.38)</td>
<td>0</td>
<td>13 (6.57)</td>
</tr>
<tr>
<td>Once a month</td>
<td>8 (5.97)</td>
<td>2 (4.76)</td>
<td>0</td>
<td>10 (5.05)</td>
</tr>
<tr>
<td>Do not use</td>
<td>11 (8.21)</td>
<td>0</td>
<td>0</td>
<td>11 (5.56)</td>
</tr>
</tbody>
</table>

Note: Percentage refers to that of students out of those from the corresponding type of institution.
Figure 22  Percentage of students using the computer.

Vocational colleges (computer use)

- 6.72% everyday
- 37.31% 2 or 3 times per week
- 10.45% once a week
- 44.03% 2 or 3 times per month
- 1.49% don't use

Regular colleges and universities (computer use)

- 45.24% everyday
- 50.00% 2 or 3 times per week
- 4.76% once a week

Community colleges (computer use)

- 50.00% everyday
- 40.91% 2 or 3 times per week
- 9.09% once a week

Figure 23  Percentage of students using the Internet.
Table 52  Means and Standard Deviations for Scores of Students’ IT Tool Skills.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Vocational (n = 134)</th>
<th>Regular college and university (n = 42)</th>
<th>Community college (n = 22)</th>
<th>All (n = 198)</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Office</td>
<td>6.51 (2.52)</td>
<td>7.05 (1.91)</td>
<td>6.91 (2.18)</td>
<td>6.67 (2.37)</td>
<td>.96 n.s.</td>
</tr>
<tr>
<td>Graphic design</td>
<td>4.41 (2.88)</td>
<td>4.76 (2.78)</td>
<td>5.64 (2.32)</td>
<td>4.62 (2.82)</td>
<td>1.87 n.s.</td>
</tr>
<tr>
<td>Architectural drawing</td>
<td>3.75 (3.17)</td>
<td>3.33 (3.48)</td>
<td>3.91 (3.16)</td>
<td>3.68 (3.23)</td>
<td>.32 n.s.</td>
</tr>
<tr>
<td>Multimedia</td>
<td>4.35 (3.01)</td>
<td>5.14 (2.95)</td>
<td>4.77 (3.02)</td>
<td>4.56 (3.00)</td>
<td>1.19 n.s.</td>
</tr>
<tr>
<td>Accounting</td>
<td>4.87 (3.36)</td>
<td>4.33 (2.98)</td>
<td>5.91 (2.79)</td>
<td>4.87 (3.24)</td>
<td>1.72 n.s.</td>
</tr>
<tr>
<td>Human resources management</td>
<td>4.25 (3.31)</td>
<td>4.45 (3.13)</td>
<td>4.50 (3.56)</td>
<td>4.32 (3.28)</td>
<td>.09 n.s.</td>
</tr>
<tr>
<td>Inventory and warehouse</td>
<td>4.04 (3.45)</td>
<td>4.48 (3.18)</td>
<td>4.95 (3.32)</td>
<td>4.23 (3.38)</td>
<td>.83 n.s.</td>
</tr>
<tr>
<td>Software development</td>
<td>3.98 (3.18)</td>
<td>4.67 (2.89)</td>
<td>4.50 (3.43)</td>
<td>4.18 (3.15)</td>
<td>.89 n.s.</td>
</tr>
<tr>
<td>Web design</td>
<td>4.15 (3.33)</td>
<td>4.45 (3.07)</td>
<td>5.64 (3.29)</td>
<td>4.38 (3.29)</td>
<td>1.96 n.s.</td>
</tr>
</tbody>
</table>

Note: Level differs from 0 (poor) to 10 (excellent).
Table 53  Comparisons of Means and Standard Deviations for Scores of Students’ IT Tool Skills: Institutions and Students.

<table>
<thead>
<tr>
<th>Skill</th>
<th>Institutions Mean</th>
<th>Students Mean</th>
<th>t values</th>
<th>p values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 22)</td>
<td>(22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microsoft Office</td>
<td>7.37 (2.05)</td>
<td>6.67 (2.37)</td>
<td>3.09</td>
<td>.002</td>
</tr>
<tr>
<td>Graphic design</td>
<td>5.57 (2.37)</td>
<td>4.62 (2.82)</td>
<td>3.53</td>
<td>.000</td>
</tr>
<tr>
<td>Architectural drawing</td>
<td>4.65 (2.72)</td>
<td>3.68 (3.23)</td>
<td>3.16</td>
<td>.002</td>
</tr>
<tr>
<td>Multimedia</td>
<td>5.79 (2.50)</td>
<td>4.56 (3.00)</td>
<td>4.28</td>
<td>.000</td>
</tr>
<tr>
<td>Accounting</td>
<td>5.59 (2.85)</td>
<td>4.87 (3.24)</td>
<td>2.28</td>
<td>.023</td>
</tr>
<tr>
<td>Human resources management</td>
<td>4.75 (2.85)</td>
<td>4.32 (3.28)</td>
<td>1.33</td>
<td>n.s.</td>
</tr>
<tr>
<td>Inventory and warehouse</td>
<td>4.35 (2.92)</td>
<td>4.23 (3.38)</td>
<td>.35</td>
<td>n.s.</td>
</tr>
<tr>
<td>Software development</td>
<td>4.98 (2.74)</td>
<td>4.18 (3.15)</td>
<td>4.62</td>
<td>.009</td>
</tr>
<tr>
<td>Web design</td>
<td>6.01 (2.59)</td>
<td>4.38 (3.29)</td>
<td>5.33</td>
<td>.000</td>
</tr>
</tbody>
</table>

Note: Level differs from 0 (poor) to 10 (excellent). Number of responses for the institutions varied: 177 for Microsoft Office, 174 for graphic design, and 173 for the rests.
RESPONSES TO OPEN-ENDED QUESTIONS

Each response is presented with its frequencies in the parenthesis.

INSTITUTION SURVEY

Q: How those methods impact student’s performance?

1. Lecture
   ● Gain better understanding in cause lessons and implementation (65).
   ● Being in direct contact with instructors provides students the better understanding in lecturing and assignment/have the opportunity to ask questions if needed (59).
   ● Students receive updated information and knowledge (45).
   ● Learn to express themselves/to give opinions/to make decision/to be a leader (38).
   ● Develop a nice bonded teacher-student relationship/warm relationship (36).
   ● Allow student to gain practical experience from real situation (16).
   ● Help develop and improve students' skills (11).
   ● Students become more attentive to classes (10).
   ● Allow students to apply the knowledge to use at work (7).
   ● Allow students to become more updated of new technology (4).
   ● Improve problem solving and analytical skills (4).
   ● Improve teamwork skills and effectiveness (4).
   ● Improve thinking process/working process (3).
   ● Create the bonding among classmates and friendship with other students (3).
   ● Become more enthusiastic in self learning (3).
   ● Improve the concentration (2).
   ● Improve problem solving skills (2).
   ● Improve self-discipline/punctuality/accountability/patience (2).
   ● Allow students to learn more in depth about class lessons (2).
   ● Get ready for class (2).
   ● Students cannot envision the whole picture from class lesson alone and are not encouraged to use creativity (2).
   ● Help broaden students' points of view (1).
   ● Allow students to learn at the predetermined schedule (1).
   ● Encourage students to be more conscious about ethics and morality (1).
   ● Develop positive attitude toward the courses taken eg, English class/E-learning (1).
   ● Allow students to learn, recognize and grasp the key ideas (1).
   ● Allow students to learn in order of the difficulty level (1).
   ● Students become less motivated in the learning subject (1).
   ● Students do not gain the practical knowledge because they do not have the opportunity to practice (1).
   ● Students pay respect to instructors according to Thai culture (1).

2. Case study
   ● Improve teamwork skills and effectiveness (51).
   ● Allow student to gain practical experience from real situation (38).
   ● Improve problem solving skills (38).
   ● Improve planning skills in education and work/learn to transfer knowledge to others in a systematic way (18).
   ● Learn to express themselves/to give opinions/to make decision/to be a leader (14).
   ● Gain better understanding in cause lessons and implementation (13).
   ● Become more enthusiastic in self learning (12).
Help develop and improve students' skills (12).
Improve problem solving and analytical skills (12).
Improve thinking process / working process (9).
Allow students to apply the knowledge to use at work (9).
Students receive updated information and knowledge (10).
Increase work performance and efficiency (4).
Put knowledge into practice (3).
Allow students to become more updated of new technology (2).
Improve self assessment and self control skills (2).
Improve self-discipline / punctuality / accountability / patience (2).
Allow students to learn about new technologies and how to use them in researching (2).
Less time consuming (2).
Know the source of information (1).
Offer students more choices in learning (1).
Allow students to understand the downsides and upsides and make decisions. (1).
Help broaden students' points of view (1).
Bring the lessons learnt from practical training to improve the future training programs (1).
Allow students to learn about the subject in depth (1).
Allow students to interact with community (1).

3. Self-study

Become more enthusiastic in self learning (102).
Students become motivated in further learning (31).
Students receive updated information and knowledge (29).
Improve problem solving and analytical skills (14).
Improve self-discipline / punctuality / accountability / patience (12).
Learn to express themselves / to give opinions / to make decision / to be a leader (9).
Help develop and improve students' skills (8).
Allow student to gain practical experience from real situation (7).
Help broaden students' points of view (7).
Put time into effective use and make contribution to community (7).
Improve thinking process / working process (6).
Allow students to become more updated of new technology (6).
Gain better understanding in cause lessons and implementation (5).
Improve problem solving skills (4).
Improve planning skills in education and work /learn to transfer knowledge to others in a systematic way (4).
Allow students to learn at anytime / from anywhere / without having to attend classes (3).
Allow students to apply the knowledge to use at work (3).
Allow students to learn about new technologies and how to use them in researching (2).
Improve self assessment and self control skills (2).
Students become less active in learning and thus achieve poor grades. (1).
Offer students more choices in learning (1).
Allow students to fully apply knowledge learnt from class (1).
Put knowledge into practice (1).
Allow students to work with parents and instructors which encourages the sharing of experience (1).
Improve social skills / teamwork skills / learn to live with each others (1).

4. E-learning

Allow students to learn at anytime / from anywhere / without having to attend classes (40).
Help develop and improve students' skills (32).
Become more enthusiastic in self learning (29).
5. Distance learning via satellite TV
   - Allow students to learn about new technologies and how to use them in researching (14).
   - Allow students to become more updated of new technology (10).
   - Students receive updated information and knowledge (9).
   - Students become more attentive to classes (6).
   - Gain better understanding in cause lessons and implementation (6).
   - Help broaden students' points of view (4).
   - Offer students more choices in learning (3).
   - Decrease the expenses (2).
   - Improve problem solving skills (2).
   - Learn to express themselves / to give opinions / to make decision / to be a leader (2).
   - Improve self assessment and self control skills (2).
   - Improve self-discipline / punctuality / accountability / patience (2).
   - Students become motivated in further learning (1).
   - Allow students to develop their own course contents (1).
   - Allow students and instructors to interact on a real-time basis through TV conference (1).
   - Develop positive attitude toward the courses taken eg, English class / E-learning (1).
   - Allow student to recognize the difference of class lessons and practicality (1).
   - Allow students need not to see instructors as long as they regularly keep in touch with instructors (1).
   - Improve planning skills in education and work / learn to transfer knowledge to others in a systematic way (1).
   - Less time consuming (1).
   - Allow student to gain practical experience from real situation (1).

6. Practical Training
   - Allow student to gain practical experience from real situation (12).
   - Improve social skills / teamwork skills / learn to live with each others (10).
   - Improve problem solving skills (7).
   - Help develop and improve students' skills (5).
   - Gain better understanding in cause lessons and implementation (4).
   - Increase work performance and efficiency (2).
   - Students receive updated information and knowledge (2).
   - Allow students to apply the knowledge to use at work (2).
   - Learn to express themselves / to give opinions / to make decision / to be a leader (1).
   - Improve self-discipline / punctuality / accountability / patience (1).
   - Develop passion in the career (1).

7. Seminar
- Improve teamwork skills and effectiveness (5).
- Help broaden students' points of view (3).
- Learn to express themselves / to give opinions / to make decision / to be a leader (1).

8. Project Assignments
- Improve teamwork skills and effectiveness (1).
- Learn to express themselves / to give opinions / to make decision / to be a leader (1).
- Allow students to apply the knowledge to use at work (1).
- Allow student to gain practical experience from real situation (1).
- Help develop and improve students' skills (1).

9. Additional trainings such as personality training or leadership training
- Improve social skills / teamwork skills / learn to live with each others (1).
- Develop good personality (1).
- Learn to express themselves / to give opinions / to make decision / to be a leader (1).

10. Inviting experts outside the institution to be a visiting instructor
- Students receive updated information and knowledge (1).
- Allow students to become more updated of new technology (1).
- Learn to express themselves / to give opinions / to make decision / to be a leader (1).

11. Participation in Community activities such as cleaning
- Improve social skills / teamwork skills / learn to live with each others (1).
- Put time into effective use and make contribution to community (1).

12. Student Self Center approach
- Become more enthusiastic in self learning (1).

13. Ethical Training
- Encourage students to be more conscious about ethics and morality (1).

Q: (CTP) From the institution’s point of view. What should the following parties do to improve the CTP’s efficiency?

1. Institution
- Instructors should regularly follow up on students and provide advice as necessary (26).
- Provide an orientation training to get students prepared before going out for the training program (17).
- Adjust the curriculum to suit the local employment market (15).
- Provide students more of technical as well as practical knowledge (12).
- Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems (12).
- Expand the training duration (11).
- Ask Government to financially support the training program (9).
- The training duration should be practical (7).
- Provide students trainings about how to use new office equipments (6).
- Use the lessons learnt for the training program improvement (6).
- Institutions should provide a list of organizations in case students cannot find the training place on their own (5).
- Students should complete all basic courses before placing on the training (5).
- Students should be allowed to participate in developing the training program (5).
- Legislation should force all the organizations accept student trainees (4).
Shorten the training duration to reduce pressure on students and to let students come back to classes (4).
3rd year students of vocational colleges should have an opportunity to join the training program at the first semester (3).
Provide students the guidance about the organization before commencing the training (3).
Students should be offered the training with well known and qualified Organizations (3).
The curriculum should consistently be implemented and seriously focus on hand on practice (2).
Improve the quality of the curriculum (2).
Define clear scope of the training (2).
Students should be trained about the socialization skills and obey the rules at work place (2).
Participate in the assessment / establish clear assessment criteria, provide an assessment after the training (2).
The program is already good (2).
Adjust the curriculum such that some classes should be taught at the organization instead of the class room (2).
Develop the full scale of coeducation (2).
Improve professional ethics and personal moral in students before sending students to train (2).
Instructors should be more qualified and better educate students (2).
Allow students to choose the training place (2).
Provide students reasonable compensation and benefits such as wage, OT, transportations, accommodation, lunch, etc (1).
Do research to study the problems and feedback from the student training program (1).
Students should take the training seriously as if they were the organization employees (1).
Establish and maintain IT database to manage information collected from student training program (1).
There should be designated instructors regularly stationing at the training program center (1).
An associations should be established to help coordinate and share experience in training and employment seeking between the alumni and the students (1).
The program should be designed to have any student to rotate in all departments of the organization (1).
Students should be given the fair opportunity despite the different background (1).
The assessment of student training should be grading basis as opposed to pass/fail basis (1).
Institution should recognize the organization owner contribution to the program by giving out a certificate or appointing him/her as an honorary teacher (1).
The program should suit the status of Institutions (1).
 Improve the leadership of supervisors at the training places (1).
Need to closely monitor students’ performance during training (1).
Prequalify students based on personality, class performance, and behavior (1).
Provide updated equipments and ensure the adequacy (1).
Students should be allowed to get trained at more than one place- upcountry or abroad. (1).
Hold a discussion seminar or exhibition to share experience with others after the training (1).
Students should be allowed to see instructors on every Monday/Friday to get feedback for further improvement (1).
Accommodation, working environment, work place should be pre-qualified before sending students to train (1).
Keep the training program updated (1).
Organizations should understand and be educated of the training program and its scope before admitting the students (1).

2. Organization
• Provide designated staff to assist student trainees with welfares and questions (41).
• Provide students reasonable compensation and benefits such as wage, OT, transportations, accommodation, lunch, etc (34).
• Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems (33).
• Treat students as if they were Organization employees (14).
• Students should be allowed to participate in developing the training program (13).
• Establish clear procedures and well defined scope of work and objectives before transferring the students to the training places (10).
• Recruit more students / Offer more training spots (9).
• Provide students more of technical as well as practical knowledge (8).
• Organizations should specify the number of openings and the fields offered for the training (5).
• Legislation should force all the organizations accept student trainees (4).
• Participate in the assessment / establish clear assessment criteria, provide an assessment after the training (3).
• Provide updated equipments and ensure the adequacy (3).
• Expand the training duration (2).
• Organizations should continue hiring student trainees after the training completion (2).
• Organization should treat students with warmth and friendship to create a good working environment (2).
• Rotate student trainees to train in multiple departments (2).
• The program is already good (2).
• Organizations should not have prejudice against some institutions and treat all student trainees fairly (2).
• Give priority to the training program (2).
• Organizations should understand and be educated of the training program and its scope before admitting the students (2).
• Students should be offered the training with well known and qualified Organizations (1).
• Students should be allocated more time for classes (1).
• Organizations should be given tax deductions for training students (1).
• Organization employees should do more study and researching to keep themselves updated of new technology to train the student trainees (1).
• Improve professional ethics and personal moral in students before sending students to train (1).
• Help motivate and give mental support to student trainees (1).
• Students should be trained in the area according to their concentration and aptitude (1).
• Students should improve in work ethics and accountability (1).
• Students should work during proper work hours such as 8 to 5 (1).
• Students should improve in work ethics and accountability (1).
• Provide protective equipments and insurance for student trainees in case of accident (1).
• Prequalify students based on personality, class performance, and behavior (1).
• Organizations should specify the number of openings and the fields offered for the training (1).
• The executive should hold a meeting with departmental managers to setup a plan to make the student training effective (1).
• The training should focus on only some specific fields (1).
• Update the technology to be near with that of Institutions
• Define clear scope of the training
• Hire personnel to handle documentation and coordination (1).
• Seriously aim to develop career path for students (1).
• Students should be given the fair opportunity despite the different background (1).
• Institution should recognize the organization owner contribution to the program by giving
out a certificate or appointing him/her as an honorary teacher (1).

3. Student
   ● Students should improve in work ethics and accountability (56).
   ● Students should be more patient, loyal, and reliable (51).
   ● Provide students more of technical as well as practical knowledge (37).
   ● Students should be trained about the socialization skills and obey the rules at work place (37).
   ● Students should improve in work ethics and accountability (9).
   ● When countering problems at work, seek consultation with the expert in the organization (9).
   ● Hold a discussion seminar or exhibition to share experience with others after the training (7).
   ● Students should not be afraid to express their opinion and make decisions (5).
   ● Students should be trained in the area according to their concentration and aptitude (4).
   ● Students should take the training seriously as if they were the organization employees (4).
   ● Students should be trained in the area according to their concentration and aptitude (3).
   ● Provide an orientation training to get students prepared before going out for the training program (3).
   ● Provide students trainings about how to use new office equipments (3).
   ● Students should keep daily record of assignments and comments (3).
   ● Improve professional ethics and personal moral in students before sending students to train (3).
   ● Students should bring the knowledge and work skills to help improve community or organizations (3).
   ● Love affair between student trainees and organization staff must be avoided (3).
   ● Students should be more patient, loyal, and reliable (2).
   ● Give priority to the training program (2).
   ● Improve the leadership of supervisors at the training places (2).
   ● Treat students as if they were Organization employees (2).
   ● Provide designated staff to assist student trainees with welfares and questions (2).
   ● Students should first get the training at Institution before going out to Organizations (2).
   ● Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems (2).
   ● Students should discuss the objectives of DVTP and the training organization. (1).
   ● Students should be allocated more time for classes (1).
   ● The program is already good (1).
   ● Rotate student trainees to train in multiple departments (1).
   ● Adjust the curriculum to suit the local employment market (1).
   ● Students should improve in self confidence (1).
   ● Allow students to choose the training place (1).
   ● Student should focus more on learning than earning the money (1).
   ● Maintain good reputation of institutions for the next generations of students (1).
   ● Students should be physically healthy for work (1).
   ● It should be made aware that the training should begin from the most fundamental task then proceed to the more advanced ones (1).
   ● Students must learn to analyze the problems during training (1).
   ● The assessment of student training should also take the performance into consideration (1).
   ● Improve the program to strictly follow the rules (1).

Q: From the institution’s point of view, what should the following parties do to improve the DVTP’s efficiency?

1. Institution
• Students should complete all basic courses before placing on the training (8).
• Ask Government to financially support the training program (7).
• Provide students more of technical as well as practical knowledge (6).
• Adjust the curriculum to suit the local employment market (6).
• Shorten the training duration to reduce pressure on students and to let students come back to classes (6).
• Instructors should regularly follow up on students and provide advice as necessary (4).
• Expand more disciplines at school (3).
• Institutions should provide a list of organizations in case students cannot find the training place on their own (2).
• Provide students reasonable compensation and benefits such as wage, OT, transportations, accommodation, lunch, etc (2).
• Provide an orientation training to get students prepared before going out for the training program (2).
• Legislation should force all the organizations accept student trainees (2).
• Recruit more students / Offer more training spots (2).
• Publicize the training program to encourage students to apply for the program (2).
• The training duration should be practical (1).
• Students should be trained in the area according to their concentration and aptitude (1).
• Students should improve in work ethics and accountability (1).
• Students should be allowed to participate in developing the training program (1).
• Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems. (1).
• Participate in the assessment / establish clear assessment criteria, provide an assessment after the training (1).
• Prequalify students based on personality, class performance, and behavior (1).
• The program is already good (1).
• Hire personnel to handle documentation and coordination (1).
• Provide an orientation training to get students prepared before going out for the training program (1).
• Provide students trainings about how to use new office equipments (1).
• Be open minded to new ideas (1).
• Organizations should be given tax deductions for training students (1).
• Arrange special training course such as English communication (1).
• Use the lessons learnt for the training program improvement (1).
• Coordination should be done promptly (1).
• Establish and maintain IT database to manage information collected from student training program (1).
• Arrange CTP and DVTP students to train at the same organization to relieve the teacher's responsibility from having to go out and see students at too many places (1).
• DVPT should only be available for high vocational students (1).
• Students should not have to learn courses which are not necessary for the skill training program (1).
• Train the instructors about skill development planning and teaching techniques (1).
• Set up the activities to establish and maintain a good relationship between Institutions and Organizations (1).
• Institution should recognize the organization owner contribution to the program by giving out a certificate or appointing him/her as an honorary teacher (1).
• The program should suit the status of Institutions (1).

2. Organization
   • Provide designated staff to assist student trainees with welfares and questions (21).
- Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems (8).
- Treat students as if they were Organization employees (8).
- Recruit more students / Offer more training spots (5).
- Students should be allowed to participate in developing the training program (5).
- Provide students trainings about how to use new office equipments (4).
- Provide students more of technical as well as practical knowledge (2).
- Establish clear procedures and well defined scope of work and objectives before transferring the students to the training places (2).
- Organizations should be prepared in all aspects for the student training (2).
- Participate in the assessment / establish clear assessment criteria, provide an assessment after the training (2).
- The program is already good (2).
- Prequalify students based on personality, class performance, and behavior (2).
- Organizations should send their employees to further the study at the institutions (2).
- Students should be offered the training with well known and qualified Organizations (2).
- Students should be allocated more time for classes (1).
- Improve professional ethics and personal moral in students before sending students to train (1).
- Do not assign student trainees too much workload or responsibilities (1).
- Students should improve in work ethics and accountability (1).
- Organization employees should do more study and researching to keep themselves updated of new technology to train the student trainees (1).
- Provide updated equipments and ensure the adequacy (1).
- Rotate student trainees to train in multiple departments (1).
- Provide protective equipments and insurance for student trainees in case of accident (1).
- Provide students reasonable compensation and benefits such as wage, OT, transportations, accommodation, lunch, etc (1).
- Provide an orientation training to get students prepared before going out for the training program (1).
- Organization should treat students with warmth and friendship to create a good working environment (1).
- Legislation should force all the organizations accept student trainees (1).
- Organizations should specify the number of openings and the fields offered for the training (1).
- Expand the training duration (1).
- Hire personnel to handle documentation and coordination (1).
- The curriculum should be developed with the participation of career advisers (1).
- Students should be given the fair opportunity despite the different background (1).
- Students should be trained in all disciplines indicated in the training program (1).

3. Student
- Students should be more patient, loyal, and reliable (26).
- Students should improve in work ethics and accountability (22).
- Provide students more of technical as well as practical knowledge (11).
- Students should be trained about the socialization skills and obey the rules at work place (10).
- Students should take the training seriously as if they were the organization employees (5).
- When countering problems at work, seek consultation with the expert in the organization (4).
- Improve professional ethics and personal moral in students before sending students to train (4).
- Students should be allocate more time for classes (3).
- Hold a discussion seminar or exhibition to share experience with others after the training (3).
● Student should focus more on learning than earning the money (3).
● Students should be trained in the area according to their concentration and aptitude (2).
● Arrange special training course such as English communication (2).
● Students should not be afraid to express their opinion and make decisions (2).
● Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems (1).
● Provide an orientation training to get students prepared before going out for the training program (1).
● Provide students trainings about how to use new office equipments (1).
● Give priority to the training program (1).
● Be open minded to new ideas (1).
● Treat students as if they were Organization employees (1).
● Students should discuss the objectives of DVTP and the training organization (1).
● Adjust the curriculum to suit the local employment market (1).
● Students should bring the knowledge and work skills to help improve community or organizations (1).
● Students should be allowed to participate in developing the training program (1).
● Use the lessons learnt for the training program improvement (1).
● Students should be physically healthy for work (1).
● Students should take more extra care when operating the equipments at work (1).

Q: Who does the CPC need supports from and what are those supports?

1. Department of Employment / Ministry of Labor
   ● Set up and maintain database on job openings and employers for students (89).
   ● Provide trainings on labor laws and employee rights such as minimum wages, welfares, benefits, etc (19).
   ● Finding sources of employment for students (14).
   ● Provide recruitment experts for career counseling for students (12).
   ● Updates on news and movement in the industries i.e. finance and banking, investment, new business, employment market (9).
   ● Provide advice on career planning, business, investment such as starting small industrial factory (6).
   ● Job fairs and careers counseling for students (3).
   ● Increase number of students joining the training program (2).
   ● Offer part-time jobs or temporary positions for students (2).
   ● Updates and application process for furthering study in different programs (1).
   ● Company profiles for students to learn about the company and its business (1).
   ● Professional skill development trainings (1).

2. Governmental Organizations
   ● Finding sources of employment for students (9).
   ● Scholarship and activities sponsorship (3).
   ● Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (2).
   ● Set up and maintain database on job openings and employers for students (2).
   ● Trainings on job application and recruitment (1).
   ● Provide funding support and career development training such as fixing electronic appliances, printing, etc. (1).
   ● Provide recruitment experts for career counseling for students (1).
   ● Academic assistance i.e. program development (1).
   ● Allow CPC to post the advertisement at the organization (1).
   ● Customize the training program to locally suit each area (1).
3. Department of Skill Development / Professional Development Division
   - Professional skill development trainings (3).
   - Provide recruitment experts for career counseling for students (2).
   - Set up and maintain database on job openings and employers for students (2).
   - Provide funding support and career development training such as fixing electronic appliances, printing, etc. (1).
   - Updates and application process for furthering study in different programs (1).
   - Provide recruitment experts for career counseling for students (1).
   - Academic assistance i.e. program development (1).
   - Finding sources of employment for students (1).
   Set up and maintain database on job openings and employers for students (1).

4. Federation of Thai Industries
   - Set up and maintain database on job openings and employers for students (9).
   - Provide advice on career planning, business, investment such as starting small industrial factory (2).
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).
   - Provide recruitment experts for career counseling for students (1).
   - Academic assistance i.e. program development (1).
   - Finding sources of employment for students (1).

5. Ministry of Education/ Public Educational Institution
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (3).
   - Provide funding support and career development training such as fixing electronic appliances, printing, etc. (2).
   - Scholarship and activities sponsorship (1).
   - Provide advice on career planning, business, investment such as starting small industrial factory (1).
   - Set up and maintain database on job openings and employers for students (1).

6. Ministry of Industry/Department of Industrial Promotion
   - Set up and maintain database on job openings and employers for students (2).
   - Provide funding support and career development training such as fixing electronic appliances, printing, etc. (1).

7. Ministry of Information Communication and Technology
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).
   - Provide recruitment experts for career counseling for students (1).

8. Ministry of Agriculture and Cooperatives
   - Set up and maintain database on job openings and employers for students (2).

9. Ministry of Culture
   - Provide recruitment experts for career counseling for students (1).

10. Department of Health
    - The compensation should be in accordance with the market rate of education qualification (1).
11. Community Development Department
   - Provide funding support and career development training such as fixing electronic appliances, printing, etc. (1).

12. Educational Service Area Office
   - Updates on news and movement in the industries i.e. finance and banking, investment, new business, employment market (3).
   - Provide recruitment experts for career counseling for students (3).
   - Updates and application process for furthering study in different programs (1).
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).
   - Scholarship and activities sponsorship (1).
   - Set up and maintain database on job openings and employers for students (1).
   - Finding sources of employment for students (1).
   - The compensation should be in accordance with the market rate of education qualification (1).

13. Vocational Education Commission
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (3).
   - Provide training personnel to help with training / provide personnel in the areas in need (1).
   - Provide funding support and career development training such as fixing electronic appliances, printing, etc. (1).
   - Provide recruitment experts for career counseling for students (1).
   - Set up and maintain database on job openings and employers for students (1).

14. Foreign Universities/ Colleges
   - Scholarship and activities sponsorship (2).
   - Updates and application process for furthering study in different programs (2).
   - Set up and maintain database on job openings and employers for students (1).

15. Private and Public Educational Institutions
   - Updates on news and movement in the industries i.e. finance and banking, investment, new business, employment market (1).
   - Share the knowledge among the institutions (1).
   - Arrange activities which are helpful to community (1).
   - Allow CPC to post the advertisement at the organization (1).
   - Provide advice on career planning, business, investment such as starting small industrial factory (1).

16. Personnel Development Institution
   - Academic assistance i.e. program development (1).
   - Finding sources of employment for students (1).
   - Updates and application process for furthering study in different programs (1).

17. Isan Rajamangala Institute of Technology
   - Updates and application process for furthering study in different programs (3).
   - Share the knowledge among the institutions (2).
   - Arrange activities which are helpful to community (2).
   - Admission of students for undergraduate and graduate programs (1).
   - Assistance and cooperation in doing researches (1).

18. Mahasarakham University
19. Rajabhat Universities in Northeastern region
- Updates and application process for furthering study in different programs (4).
- Admission of students for undergraduate and graduate programs (3).
- Assistance and cooperation in doing researches (2).
- Academic assistance i.e. program development (1).
- Arrange activities which are helpful to community (2).

20. Rajamangala Institute of Technology Alumni
- Need alumni to help provide information about the job opening at his or her organization for CPC to put on the database (1).

21. School Network in Northeastern region
- Updates on news and movement in the industries i.e. finance and banking, investment, new business, employment market (1).
- Share the knowledge among the institutions (1).
- Arrange activities which are helpful to community (1).
- Updates and application process for furthering study in different programs (1).

22. Alumni Associations of students who have been trained in an organization
- Finding sources of employment for students (1).
- Set up and maintain database on job openings and employers for students (1).

23. Recruitment Agency
- Set up and maintain database on job openings and employers for students (2).
- Finding sources of employment for students (1).

24. Student Loan
- Financial loans for small business investment, tuition, stationery (2).
- Scholarship and activities sponsorship (1).

25. Local Administrative Office
- Finding sources of employment for students (5).
- Offer part-time jobs or temporary positions for students (4).
- Set up and maintain database on job openings and employers for students (3).
- Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (2).
- Increase number of students joining the training program (1).
- Provide training personnel to help with training / provide personnel in the areas in need (1).
- Provide recruitment experts for career counseling for students (1).
- Job fairs and careers counseling for students (1).

26. Provincial Chamber of Commerce/ The Thai Chamber of Commerce/Board of Trade of Thailand
- Set up and maintain database on job openings and employers for students (5).
- Finding sources of employment for students (2).
- Job fairs and careers counseling for students (1).
- Provide recruitment experts for career counseling for students (1).
- Provide trainings on labor laws and employee rights such as minimum wages, welfares, benefits, etc (1).

27. Provincial Electricity Authority/Electricity Generating Authority of Thailand
- Finding sources of employment for students (3).
- Set up and maintain database on job openings and employers for students (1).
- The organization should employ local students (1).
- Updates and application process for furthering study in different programs (1).
- Scholarship and activities sponsorship (1).

28. Provincial Public Relations Department
- Set up and maintain database on job openings and employers for students (3).
- Publicize the institution's educational activities (1).

29. Provincial Waterworks Authority
- Set up and maintain database on job openings and employers for students (1).

30. Telephone Organization of Thailand
- Finding sources of employment for students (2).
- The compensation should be in accordance with the market rate of education qualification (1).
- The organization should employ local students (1).

31. Petroleum Authority of Thailand
- Finding sources of employment for students (1).
- Set up and maintain database on job openings and employers for students (1).

32. Computer Producers/ Distributors
- Low price computers (1).

33. Construction Company
- Set up and maintain database on job openings and employers for students (1).
- Offer part-time jobs or temporary positions for students (1).

34. Social Security Office
- Provide recruitment experts for career counseling for students (2).
- Provide trainings on labor laws and employee rights such as minimum wages, welfares, benefits, etc (1).
- Updates on news and movement in the industries i.e. finance and banking, investment, new business, employment market (1).

35. City Halls
- Set up and maintain database on job openings and employers for students (4).
- Finding sources of employment for students (2).
- Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).

36. Office of Commercial Affairs
- Provide advice on career planning, business, investment such as starting small industrial factory (2).
- Assistance in finding the distribution channels of products made by students (1).

37. Office of the Civil Service Commission
- Set up and maintain database on job openings and employers for students (2).
- Provide recruitment experts for career counseling for students (1).

- State Banks / Bank of Agriculture and Agricultural Cooperatives / Government Savings Bank / Krungthai Bank
• Scholarship and activities sponsorship (4).
• Finding sources of employment for students (4).
• Provide advice on career planning, business, investment such as starting small industrial factory (3).
• Increase number of students joining the training program (1).
• Set up and maintain database on job openings and employers for students (1).
• Provide funding support and career development training such as fixing electronic appliances, printing, etc. (1).
• Financial loans for small business investment, tuition, stationery (1).
• Updates on news and movement in the industries i.e. finance and banking, investment, new business, employment market (1).

38. SME Bank
• Provide advice on career planning, business, investment such as starting small industrial factory (23).
• Provide recruitment experts for career counseling for students (4).
• Updates on news and movement in the industries i.e. finance and banking, investment, new business, employment market (2).
• Financial loans for small business investment, tuition, stationery (1).

39. Private and Public Banks
• Allow students to have hand-on experience under close supervision (1).

40. Foundations
• Provide recruitment experts for career counseling for students (1).
• Scholarship and activities sponsorship (1).

41. Government Lottery Office
• Scholarship and activities sponsorship (1).

42. Home Electric Appliances Manufacturer
• Scholarship and activities sponsorship (1).
• Donations of equipment and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).
• Finding sources of employment for students (1).

43. Automotive manufacturers
• Finding sources of employment for students (9).
• Donations of equipment and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (6).
• Scholarship and activities sponsorship (5).
• Trainings on job application and recruitment (1).
• Increase number of students joining the training program (1).
• Set up and maintain database on job openings and employers for students (1).
• Provide advice on career planning, business, investment such as starting small industrial factory (1).
• Provide recruitment experts for career counseling for students (1).

44. Automotive mechanical and electronic companies
• Scholarship and activities sponsorship (1).
• Finding sources of employment for students (1).
• Donations of equipment and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).
45. Private companies
- Finding sources of employment for students (7).
- Scholarship and activities sponsorship (4).
- Provide recruitment experts for career counseling for students (3).
- The compensation should be in accordance with the market rate of education qualification (2).
- Trainings on job application and recruitment (1).
- Company profiles for students to learn about the company and its business (1).
- Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).

46. Sermthai department store
- Finding sources of employment for students (1).
- Scholarship and activities sponsorship (1).

47. Soon Heng Department Store
- Finding sources of employment for students (2).
- Set up and maintain database on job openings and employers for students (1).
- Tracking report of students status (1).
- Job fairs and careers counseling for students (1).
- Scholarship and activities sponsorship (1).
- Increase number of students joining the training program (1).

48. O-Peng-Hong Department Store
- Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).

49. Surin Plaza Group
- Finding sources of employment for students (2).
- Offer part-time jobs or temporary positions for students (1).

50. Siam Cement Thai group
- Finding sources of employment for students (1).
- Scholarship and activities sponsorship (1).
- Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).

51. Nevada Group
- Finding sources of employment for students (4).
- Set up and maintain database on job openings and employers for students (2).
- Scholarship and activities sponsorship (1).
- Provide recruitment experts for career counseling for students (1).

52. Phetchakasem Plaza Group
- Scholarship and activities sponsorship (1).
- Finding sources of employment for students (1).

53. E-Hong group
- Finding sources of employment for students (1).

54. Jureemas Group
- Finding sources of employment for students (1).
- Updates on news and movement in the industries i.e. finance and banking, investment, new business, employment market (1).
- Scholarship and activities sponsorship (1).

55. Taweekit group
- Finding sources of employment for students (2).
- Offer part-time jobs or temporary positions for students (1).

56. Phyathai Hospital 1 and 2
- Trainings on job application and recruitment (1).

57. Private hospitals such as Khon kaen Hospital, Vechaprasit Hospital
- Finding sources of employment for students (1).

58. Tourism Authority of Thailand
- Offer part-time jobs or temporary positions for students (1).

59. Hotels / Resorts
- Set up and maintain database on job openings and employers for students (1).
- Finding sources of employment for students (1).

60. Mai Thai Hotel
- Finding sources of employment for students (1).

61. Travel Agency
- Finding sources of employment for students (1).

62. Charoenthani Princess Hotel
- Finding sources of employment for students (1).

63. Advance industrial group
- Finding sources of employment for students (2).
- Provide recruitment experts for career counseling for students (2).
- Scholarship and activities sponsorship (1).

64. Private farms in Northeastern region
- Finding sources of employment for students (1).

65. Sriviroj Farm
- Finding sources of employment for students (1).

66. Chaiyuth Farm
- Finding sources of employment for students (1).

67. Wholesale Store such as Lotus, Big C, Macro
- Finding sources of employment for students (10).
- Offer part-time jobs or temporary positions for students (6).
- Provide recruitment experts for career counseling for students (1).
- Scholarship and activities sponsorship (1).
- Set up and maintain database on job openings and employers for students (1).
- Allow CPC to post the advertisement at the organization (1).

68. Kalasin Business Associations
69. Industrial factories
   - Set up and maintain database on job openings and employers for students (5).
   - Offer part-time jobs or temporary positions for students (1).
   - Finding sources of employment for students (1).

70. Information Technology companies i.e. AIS
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).

71. Khon kaen Brewery
   - Scholarship and activities sponsorship (2).
   - Finding sources of employment for students (1).
   - Increase number of students joining the training program (1).

72. Khon Kaen Finishing Net Factory
   - Finding sources of employment for students (1).
   - Increase number of students joining the training program (1).
   - Scholarship and activities sponsorship (1).

73. Khon kaen rice mill
   - Increase number of students joining the training program (1).
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).

74. Law Firm
   - Trainings on job application and recruitment (1).

75. Muengphol Ua- Tek- Tai
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).
   - Finding sources of employment for students (1).

76. Phoenix Paper Manufacturing
   - Set up and maintain database on job openings and employers for students (1).

77. Meechai Center
   - Provide funding support and career development training such as fixing electronic appliances, printing, etc. (1).
   - Provide advice on career planning, business, investment such as starting small industrial factory (1).

78. Pornprasert Company Ltd
   - Finding sources of employment for students (1).

79. Quality Co. Ltd. (AA)
   - Finding sources of employment for students (1).

80. Singer Co., Ltd.
   - Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).
81. Thai Asahi Glass
   ● Finding sources of employment for students (1).
   ● Scholarship and activities sponsorship (1).

82. Thaishibaura Densu
   ● Finding sources of employment for students.

83. Yamaha
   ● Donation of equipments and tools for trainings such as engines, computers, electronic testing equipments, electrician tools, etc. (1).
   ● Increase number of students joining the training program (1).

84. Wattajak Newspaper
   ● Set up and maintain database on job openings and employers for students (1).

85. Charoen Pokphand / CP
   ● Finding sources of employment for students (6).
   ● Scholarship and activities sponsorship (4).
   ● Set up and maintain database on job openings and employers for students (1).
   ● Provide recruitment experts for career counseling for students (1).
EMPLOYER SURVEY

Q: Specify problems found in Northeastern employees in terms of their job related performance.

- Lack of adaptation to new technology / lack of creativities (12).
- Always take leaves during local religious holidays and harvesting seasons (9).
- Low responsibility / lack of accountability at work (6).
- Slow development in learning to work effectively at an international standard. (6).
- Lack of self-discipline and punctuality (6).
- Lack of enthusiasm (4).
- Poor efficiency at work (2).
- Prone to error while working e.g., when corresponding governmental letters. (2).
- Foreign language skills (2).
- Lack of patience (2).
- Bearing sole financial responsibility in the large family (2).
- Absence from work without advance notice (1).
- Insolvency problem with financial and non-financial institutions (1).
- Students have no self-confidence and can't express themselves / can't make a decision (1).
- Live in suburb and high cost of traveling to work (1).
- Difficult to instruct the local employee to perform well due to many relatives in the same organization (1).
- Difficult to coordinate work with local people in the area where a few dialects are used (1).
- Employees' education background doesn't meet with job requirements; this prevents effectiveness of job instruction and communication (1).
- Personal issue with co-workers (1).
- Traveling to work at nightshift is troublesome as employee lives far out (1).

- No problem (21).

Q: Specify strengths of Northeastern employees.

- Patient / Hard working / determined / politeness (40).
- Local employees can speak local dialects and understand more local culture (21).
- Integrity (12).
- Good interpersonality skills (10).
- Good responsibility towards work (10).
- Care and support each other / good teamwork spirit (10).
- Love local community / feel attached to the organization and don't want to move to work in other provinces (8).
- Obedient / Listening to supervisors (6).
- Determined and enthusiastic at work / eager to learn / brave to speak out and to ask questions (4).
- Have an economical and easy lifestyle and can live sufficiently on received salary (3).
- Dedicated to work ( not concerned about returning to home upcountry) (3).
- Strong work ethics / punctuality at work (2).
- Able to apply knowledge learnt from schools towards job duties (2).
- Strong work ethics / punctuality at work (1).
- Experienced in work (1).
Q: Specify weakness of Northeastern employees.

- Lack of creativity, motivation, and prudence (32).
- Lack of working skills in customer service, technology, English, problem solving, etc. (20).
- Poor responsibility / lack of initiatives and always be a follower / unable to provide good advice or new ideas (18).
- Lack of visionary leadership / Hesitant to make a decision (13).
- Bad manner / no respect / disobedient to supervisors / improper dressing (3).
- Lack of organization loyalty. Always plan to move to work in Bangkok after a short working period (3).
- Employees are too old (1).
- Prefer to work alone and don't like to work with others (1).
- Lack of care in the organization's common properties (1).
- Not protect his or her own rights (1).
- Get involved with politicians and therefore create mafia support system in the community (1).

Q: (Practical Training Program) Specify the differences between the trained student’s and other new employee’s performance.

- Trained students are able to know the work system and direction immediately (20).
- Trained students can blend in and get along with co-workers and supervisors faster than total new employees (11).
- Training students know company's policies better than total new employees (4).
- Trained students are more patient (4).
- Trained students are more brave to ask for advice or to express opinions than new untrained employees (2).
- Total new employees have more new ideas (1).
- Trained students know how to use equipment better (1).
- Trained students know more about the company products than total new employees (1).
- Trained students have more work principle and prudence than total new employees (1).
- Trained students can solve problems better (1).

Q: (Practical Training Program) Specify the benefit from participating in the PTP.

- Get help with no charge (34).
- Advertise about the organization (9).
- Establish the relationship between Institution and Organization (8).
- Obtain qualified personnel for hiring (6).
- Increase the work input (6).
- Gain more knowledge (4).
- Gain more recognition from community/organizations/institutions/and society (2).
- Institutions become more popular among students (1).
- Develop coaching skills for instructors and staff / employers improve the potential of their staff (1).
- Students are taught by those who are experts in the field (1).
- Develop creativity in students (1).
- Organizations can bring the lessons learnt from student trainees to improve the work procedures for future student trainees (1).

- None (2).

Q: (Practical Training Program) Specify the problem encountered in participating in the PTP.
• Students are undisciplined / not punctual / don't follow organization's codes of conduct / impolite dressing / lack of honesty (21).

• Students may not have adequate knowledge to understand work at Organizations (7).
• Organization employees are deprived of work hours when they have to coach student trainees (6).
• The issue of inappropriate work affair between student trainees and organization staff (3).
• Students, if not receiving proper coaching from organizations, may feel discouraged and show poor work performance (2).

• Traveling to organization may be far, time consuming, and difficult to get transportation to the area (1).
• Students cannot blend in with coworkers / coworkers give them hard time / bad relationship with co-workers (1).
• The training period may improperly short for the student skills development (1).
• The knowledge gained from the training may not be complete as indicated in the curriculum (1).
• Organizations incur more expenses for students such as orientation, training, food, accommodation, etc. (1).
• Instructors do not evaluate or follow up on students who are out for training (1).
• Most student trainees are male and drink alcohol (1).
• Organizations have the issues with the disclosure of confidential information to others (1).
• None (13).

Q: (Practical Training Program) From the organization's point of view, what should the following parties do to improve the PTP’s efficiency?

1. Organization
   • Provide designated staff to assist student trainees with welfares and questions (6).
   • Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems (3).
   • Provide students reasonable compensation and benefits such as wage, OT, transportations, accommodation, lunch, etc. (2).
   • Provide an orientation training to get students prepared before going out for the training program (2).
   • Expand the training duration (2).
   • Establish clear procedures and well defined scope of work and objectives before transferring the students to the training places (2).
   • Organizations should specify the number of openings and the fields offered for the training (2).
   • Participate in the assessment / establish clear assessment criteria, provide an assessment after the training (2).
   • Provide students more of technical as well as practical knowledge (1).
   • Students should be trained about the socialization skills and obey the rules at work place (1).
   • Treat students as if they were Organization employees (1).
   • Instructors should regularly follow up on students and provide advice as necessary (1).
   • Organization employees should do more study and researching to keep themselves updated of new technology to train the student trainees (1).
   • Prequalify students based on personality, class performance, and behavior (1).
   • Provide updated equipments and ensure the adequacy (1).
   • Provide professional working environment such as designated working space with enough room, equipment, and good air ventilation (1).
   • Students should bring the knowledge and work skills to help improve community or
organizations (1).
- Students should be allowed to participate in developing the training program (1).
- Inform institutions that students may only be given assignments with some level of responsibilities (1).
- The training program should be practical (1).
- Develop the capability in improving discipline in students (1).
- None (20).

2. Institution
- Provide an orientation training to get students prepared before going out for the training program (15).
- Students should improve in work ethics and accountability (7).
- Provide students more of technical as well as practical knowledge (7).
- Instructors should regularly follow up on students and provide advice as necessary (5).
- Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems (3).
- Students should be more patient, loyal, and reliable (2).
- The curriculum should consistently be implemented and seriously focus on hand on practice (2).
- Help motivate and give mental support to student trainees (2).
- Prequalify students based on personality, class performance, and behavior (2).
- Improve professional ethics and personal moral in students before sending students to train (2).
- Provide students trainings about how to use new office equipments (1).
- Need to closely monitor students performance during training (1).
- Students should first get the training at Institution before going out to Organizations (1).
- Organizations should specify the number of openings and the fields offered for the training (1).
- Take the distance or the traveling time to the training organization into consideration (1).
- Should fully understand administrative and interpersonal principles in organizations (1).
- Expand more disciplines at school (1).
- Coordination should be done promptly (1).
- Define clear scope of the training (1).
- None (8).

3. Student.
- Students should improve in work ethics and accountability (16).
- Students should be more patient, loyal, and reliable (14).
- Provide students more of technical as well as practical knowledge (8).
- Students should be trained about the socialization skills and obey the rules at work place (8).
- When countering problems at work, seek consultation with the expert in the organization (5).
- Love affair between student trainees and organization staff must be avoided (5).
- Improve the leadership of supervisors at the training places (2).
- Students should be allocate more time for classes (1).
- Students should be trained in the area according to their concentration and aptitude (1).
- Institutions should discuss with Organizations how to monitor and assess the student training program and arisen problems (1).
- Provide students trainings about how to use new office equipments (1).
- Students should not be afraid to express their opinion and make decisions (1).
- Students should first get the training at Institution before going out to Organizations (1).
- Students have to admit that the training may not be as good as expected (1).
• Improve professional ethics and personal moral in students before sending students to train (1).

• None (6).
STUDENT SURVEY

Q: Specify the benefit from attending the PTP.

- Gain more knowledge (119).
- Students can bring the experience from training to further use (87).
- Students learn to adjust themselves / socialize with others (84).
- Students through practical training learn to be more punctual, persistent, and responsible (44).
- Better understand in working system and develop organizational skills (29).
- Students develop planning and problem solving skills (25).
- Develop self confidence in students (9).
- Understand the management style, change, flaws of the organization (5).
- Allow students to learn in classes and practice before seeking for employment (5).
- Students can earn money just like a company employee (4).
- Develop creativity in students (3).
- Students after graduation may get employed from the organizations where they have practical training (2).
- Students can improve their personality in various aspects (2).
- Institutions become more popular among students (1).
- Develop coaching skills for instructors and staff / employers improve the potential of their staff (1).
- Students obtain a degree after graduation and increase the opportunity to further their study and or even earn higher salary (1).
- Students learn their own weaknesses during training program (1).
- None (3).

Q: Specify the problem student encountered from attending the PTP.

- Students cannot blend in with coworkers / coworkers give them hard time / bad relationship with co-workers (41).
- Students may not have adequate knowledge to understand work at Organizations (34).
- The knowledge gained from the training may not be complete as indicated in the curriculum (23).
- Traveling to organization may be far, time consuming, and difficult to get transportation to the area (18).
- Students, if not receiving proper coaching from organizations, may feel discouraged and show poor work performance (14).
- Some organizations are running below the standard such as inadequate room or equipment (9).
- Students are not trusted with responsibilities (7).
- Students have to adapt to the organization culture and work procedures (6).
- Students are afraid of not getting the assignment completed within deadline (6).
- Students are overwhelmed by excessive work loads by organizations (5).
- Students are incompetent in using office equipments such as fax, computer, copier, etc. (5).
- Students are undisciplined / not punctual / don't follow organization's codes of conduct / impolite dressing / lack of honesty (3).
- The training period may improperly short for the student skills development (3).
- Students are not paid as agreed (3).
- Students, if not much of responsibilities assigned, may not achieve the required training goals (2).
- Organization customers may take the frustration out onto student trainees (2).
- Students get reprimanded when committing errors (2).
- Accommodation provided are not well up-kept / damaged / a lot of mosquitoes (2).
- Students have to wear students uniforms at work which may be inappropriate for certain work types (1).
● Students may not have enough class attendance if they have been away for the training program for long period of time (1).
● Handling some customers can be difficult (1).
● Not knowing the names of personnel and organization can be time consuming to contact (1).
● Students are inappropriately pried onto personal matters by organization staff (1).
● Work assignment may subject to weather condition (1).
● Students may have an accident at work (1).
● Obsolete equipments (1).
● Organizations have the issues with the disclosure of confidential information to others (1).
● What students learn from organizations are not consistent with what students are taught in classroom (1).
● Organizations do not have adequate staff to coach or mentor students (1).
● Factory can cause stress due to dusty and hot working environment (1).
● Some students are too selfish (1).
● Inadequate water supply for consumption and cleaning (1).
● None (37).

Q: Specify problem areas and describe the problem.

1. Curriculum
   ● Unable to understand the subject content / subject content is difficult to understand e.g., Maths, Accounting, Programming (42).
   ● Unable to understand the content as instructors don't explain in details / just a few teaching tools (7).
   ● Inadequate course hours in comparison with the large amount of subject content (3).
   ● Not enough educational books / limited quantity of books in the library and insufficient sources for research (2).
   ● Unskillful in practical courses e.g., Hair design (2).
   ● Too many course hours (1).
   ● Out-of-date subject content (1).
   ● Too much homework from instructors (1).
   ● Receive low grades on the major subjects (which are not computer related) (1).
   ● Inappropriate learning environment for lecture-based courses due to loud noise (1).

2. Computer Skills
   ● Lack of computer skills (44).
   ● There are too much detail in computers for us to memorize and fully practice (12).
   ● Superficial learning on each computer program (3).
   ● Unable to fix problems related to programs/ computers (3).
   ● No computer course in the participating education field (1).
   ● Instructors hardly pay attention in teaching (1).

3. Financial Issues
   ● In some months, students don't have enough money to pay educational expenses e.g., tuition fee, training tools (47).
   ● Miscellaneous costs are increasing every year (7).
   ● Loan money is not received on time to pay for the tuition fee (2).
   ● This is a curriculum for guides so there is a rule that students will have to travel to accumulate mileage and pay for some associated cost (1).
   ● Receive low amount of educational fund (1).
4. Foreign Language Skills
   - Not good in English & Japanese speaking / lack of conversation skills / not good with grammars (98).
   - Insufficient language background (32).
   - Don't understand what instructors teach / subject contents are too difficult (17).
   - Instructors focus too much on vocabulary / subject content consists mostly of vocabulary (3).
   - Instructors are not serious with their teaching / so little communication / no mother-tongue instructors (3).
   - Lack of specialized lab room for foreign language (2).

5. Instructor
   - Insufficient instructors / instructors can't look after all students (3).
   - Instructors don't come to class on time (1).

6. Class distraction
   - Unable to study well because classmates talk so loud and instructors can't control the situation (1).

7. Competitiveness
   - Students are unable to compete with others because they work slowly, are not skillful, often make mistakes, have no confidence, never study, and have no one to help (10).

8. Course materials
   - Insufficient course materials (1).

9. Initiatives
   - Not enough educational books/ few computer rooms (3).
   - Learn and understand new things slowly e.g., new programs, new technologies (4).
   - Unable to solve problems when confronting with more difficult problems (1).
   - Not much new things to learn (1).

10. Practical Training Program
    - Lack of hand-on skills / unable to perform well (7).
    - Unable to follow instructors during exercise / fall behind friends (3).
    - For some practical training, even attended, students still can't do well, e.g., cow breeding (3).
    - Not enough course hours for practical training (2).
    - Students don't understand some subjects because instructors ask them to do homework by themselves (2).

11. Training Equipment
    - Insufficient equipment (e.g., computers, electrical type writers, digging tools, agricultural tools, cow milk containers, cow milk pumps, printer ink) in proportion to the number of students (84).
    - Training equipment breaks down often e.g., type writer, computer, light-checking screw driver, meter (24).
    - Out-of-date teaching tools e.g., engines, computers, lathes (19).
    - There are a few computers with Internet access / Not enough programs (2).
    - It is troublesome and time-consuming to record all lent equipment and training tools (1).
    - No Internet access (1).

12. Training Facilities
    - Inadequate training facilities / tight space (17).
    - Low air circulation at the practical training location / little wind / air condition breaks down /
not enough light (5).
- Old and dirty facilities (1).
- Facilities are located far away (1).
- Disturbing noise occurs because a lot of training programs are arranged in the same building (1).
- It is not convenient to organize practical training programs on the tall building with only 2 lifts; a lot of people will want to use them (1).

13. Workshop
- Computer rooms are not sufficient for the number of students (10).
- Limited hours to use computer room / allowed to use only in the class hours (5).
- Computer room is not in order / narrow space (4).
- Equipment in the computer room is not in the good condition e.g. broken headset / not enough programs (3).
- Lack of knowledge on how to use equipment in computer room (2).

14. Voice Announcement
- No PR / no announcement to keep us updated on the institution's news (1).

Q: Specify the problem student encountered in using computer and accessing the Internet.
- Old models and low specs of computers cause slow response, slow loading, stored data damage, data storage not allowed, slow Internet connectivity, etc. (114).
- Insufficient Internet network system for students' high demand (61).
- Computers break down and fail often. VIRUS is found often (52).
- Lack of computer skills, e.g., unable to send e-mail / slow typing / not good with a foreign language (14).
- Frequent Internet failure (6).
- Inadequate computers at institutions and no required programs for use (5).
- Increase in expenses e.g., Electricity cost, equipment rental cost, Internet cost (5).
- Insufficient sources of information. Difficult to search for desired information / Limited data choices (4).
- No Internet / No Internet network (2).
- Long approval process for new equipment (1).
- Data being stolen (1).
- None (28).

Q: Specify the problem student has encountered in studying via E-learning.

1. Instructor
- Instructors can't clearly explain subject content (8).
- Instructors have so little experience in teaching E-learning (4).
- Inability to interact with instructors makes students lose interest in E-learning (1).
- Instructors, very strict, cause pressure to students (1).

2. Student
- No skills in IT / E-Learning (12).
- No knowledge in some English technical terms (2).
- Lack of understanding in E-learning contents (1).
- Unable to learn more information due to lack of their own computers (1).
- Students don't use E-learning that much so they don't see the point using it (1).
- Students are irresponsible, e.g., They can't finish homework on time (1).
3. E-Learning Program
   - Incomplete content / all subject content is not covered / outdated content (15).
   - E-learning program still has some bugs and need to be improved (6).
   - E-learning programs are different from various websites so it is hard to understand (4).
   - Some subjects have limited learning time, only 3 hours per week (1).
   - Insufficient budget from Government for E-learning development (1).
   - Inability to seek clarification in dept on subject content (1).

4. Learning Facility / Tools
   - Insufficient tools / tools are out of order (14).
   - E-learning infrastructure is still not ready; there is some interruption (8).
   - Computers are old / outdated / unable to support Internet (3).
   - Not fully utilized equipment by instructors (e.g., video and multimedia) (1).
   - Image displayed on the Internet doesn't look like the real one (1).
   - Lack of budget to purchase some expensive equipment (1).
   - Difficult to access computer program / unable to access program (1).

5. E-learning Infrastructure
   - Computers and Internet used to support E-learning fail quite often (4).
   - Slow system / E-learning infrastructure of the institution is not ready (3).

6. Friend
   - Friends in the same group work slowly and cause a delay in submitting an assignment (1).

7. Fundamental test
   - Unable to finish a test on time as timing is too short (1).
### ANNEX B: Syllabus Templates

#### E-learning Training

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Format</th>
<th>Assessment Type</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introductio n to E-learning tools</strong></td>
<td>Provides an overview of each major E-learning tool’s features.</td>
<td>None</td>
<td>Instructor-led with lectures and website exploration</td>
<td>Multiple choice and open-ended questions</td>
<td>2 hours</td>
</tr>
<tr>
<td><strong>Effective design of E-learning courses</strong></td>
<td>Discuss strengths and weaknesses of existing online courses and design their own content in a group.</td>
<td>Successful completion of the previous course is required.</td>
<td>Group work assisted by instructor</td>
<td>Syllabus of the subject-specific online course (group work)</td>
<td>3 hours</td>
</tr>
</tbody>
</table>
### Content Management Systems (CMS) by Using Moodle

#### Course List

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Format</th>
<th>Materials</th>
<th>Training Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moodle Essentials</td>
<td>Provides an overview of Moodle’s capabilities and features.</td>
<td>None</td>
<td>Instructor-led with lectures and website exploration</td>
<td>Handouts provided by the trainer (details will be discussed with the trainer)</td>
<td>Power Point slides included a link(s) to online course(s) developed on Moodle, which allows learners to log in as guests</td>
</tr>
<tr>
<td>Working with Moodle</td>
<td>Provides hands-on exercises on using fundamental features of Moodle.</td>
<td>Successful completion of the Moodle Essentials course is required.</td>
<td>Instructor-led with lectures and hands-on exercises</td>
<td>Handouts provided by the trainer and a Moodle manual (details will be discussed with the trainer),</td>
<td>Power Point slides, Moodle</td>
</tr>
<tr>
<td>Moodle Advanced</td>
<td>Facilitates learners in developing, organizing, and managing their online content on Moodle.</td>
<td>Successful completion of the Moodle Fundamental course is required.</td>
<td>Self-paced training assisted by the instructor</td>
<td>Handouts provided by the trainer (details will be discussed with the trainer),</td>
<td>Moodle</td>
</tr>
</tbody>
</table>

Skills and Competitiveness for Poverty Reduction in Northeast: Prepared by Haruko Uchida PhD.
<table>
<thead>
<tr>
<th>Title</th>
<th>Assessment Type</th>
<th>Grading Policy</th>
<th>Duration</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moodle Essentials</td>
<td>Multiple choice and essay questions</td>
<td>Multiple Choice: 70% Essay: 100%</td>
<td>Half a day</td>
<td>(1) Moodle website (<a href="http://www.moodle.org">www.moodle.org</a>) (2) online course website(s) will be discussed with the trainer</td>
</tr>
<tr>
<td>Working with Moodle</td>
<td>Demonstration on tasks</td>
<td>Mastery (100%) completion of the tasks is required</td>
<td>1 day</td>
<td>(1) Moodle website (<a href="http://www.moodle.org">www.moodle.org</a>) (2) Other websites for identifying Moodle features to be included in the exercises will be discussed with the trainer</td>
</tr>
<tr>
<td>Moodle Advanced</td>
<td>A completion of online content on Moodle</td>
<td>Determined by peer review</td>
<td>1 day</td>
<td>(1) Moodle website (<a href="http://www.moodle.org">www.moodle.org</a>) (2) Other websites that provide information on developing, organizing, and managing online content on Moodle will be discussed with the trainer</td>
</tr>
</tbody>
</table>
ANNEX C: Learning Guidebook Outline

**Task Sheets (E-learning)**

**Required skills and traits of the instructor**

In order for the course to achieve its goals, it is necessary that the instructor is capable for:

- Facilitating discussions
- Monitoring each student working on the computer and scaffolding when she/he has a difficulty or problem

**The purposes of using the task sheets are:**

- To enhance the learner’s motivation for learning the course through explorations,
- To have the learner practice on website explorations, and,
- To provide instructor with information about each learner in terms of her/his current skill of searching on the Internet.

**Directions of using the tasks**

- Each task can be assigned to each individual learner or to a small group (not more than six people).

- Before the task: distribute the task sheets to each student or group and ask her/him or group to search on the Internet and provide the answer within the time limit.

- During the task: the instructor will circulate and facilitate those who have difficulties in working on the Internet.

- After the task: assign some learners or groups to provide their answers, and then synthesize each answer.

- Before moving to the next task, make sure each learner feels efficacious about their capability of explaining each term to their own students.

**Examples and references (helpful links) for Tasks 1 to 6 are shown in the E-Learning Training Guide.**

**Introductory Tasks (30 min)**

**Directions**

Use at the beginning of the introduction to E-learning Tools course. Before having the learners start working on the sheet, the instructor will inform them that those who have successfully completed the introductory tasks within the time limit will get (inexpensive but attractive) rewards (e.g., Banana chips).

**Task 1. (optional) (10 min)**

There are a number of definitions of e-learning. For example, when you search the term e-learning on the free online encyclopedia, Wikipedia, you will see its definition as ______(1)_________. In the similar sense, the Post-16 E-learning Strategy Task Force defines e-learning as ______(2)_________ in their report, ‘Get on With IT’ (2002).
Among the following definitions of e-learning, choose the one that fits each of (1) and (2).

a. the delivery of a learning, training or education program by electronic means
b. learning facilitated and supported through the use of information and communication technologies
c. the use of network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere
d. computer-based training which incorporates technologies that support interactivity beyond that which would be provided by a single computer
e. the convergence of the Internet and learning, or Internet-enabled learning

Task 2. (20 min)
The following terms (a) – (d) are important to our understanding of the use of technology in education.

(1) Find sites (at least two sites for each term) that provide the definition of each term and write down the link to each site.

(2) Based on the definitions that you have found on the Internet, describe the definition of each term in such a way as your students can understand.

a. Information Technology (IT)
b. Information and Communications Technology (ICT)
c. Information and Learning Technology (ILT)
d. E-learning

I. What is E-learning (20 min)

Task 3. (20 min)
There are many agencies and institutions that are using E-learning. Corporations, government agencies, and educational institutions are examples that use E-learning the most.

For each of them, fill in the table below: (1) what the purpose(s) of using e-learning is, (2) if used effectively, what features of e-learning can be used to help the learners attain the purpose, and (3) an example of a website(s) that shows the use of e-learning.

<table>
<thead>
<tr>
<th></th>
<th>Corporations</th>
<th>Government Agencies</th>
<th>Educational Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Purpose of using e-learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Features of e-learning that can be beneficial to each agent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Example (website)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

II. Benefits of E-learning over Traditional Training Methods (20 min)
Task 4. (20 min)
What are the benefits of using E-learning tools over traditional training methods? Fill in the table below that contrasts the use of the E-learning tools and the traditional training methods.

<table>
<thead>
<tr>
<th></th>
<th>Traditional Teaching Methods</th>
<th>The use of E-learning tools</th>
<th>Benefits of the use of the Internet over traditional teaching methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary type of teaching/learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary type of materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(if any)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(if any)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III. Features of major types of E-learning tools (60 min)

Task 5. (20 min)
In the broader definition, E-learning refers to “any type of learning using electronic means of any kind” (Arafeh, 2004, p. 10), such as TV, radio, CD-ROM, DVD, cell phone, personal organizer, and Internet.

Describe benefits and limitations for each of the following e-learning tools.

<table>
<thead>
<tr>
<th>E-learning tools</th>
<th>Benefits</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Videotapes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-ROMs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computers (without Internet connection)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Task 6. (20 min)
In the narrower definition, E-learning refers to “teaching or/and learning that takes place with the Internet” (Capper, 2001). Here are a quite number of different types of E-learning tools, such as e-mail communication, chat rooms, discussion boards, news boards, conferencing, threaded discussion forums, self-test centres, on-line counseling centres, student support services forums, and virtual classrooms.

Describe benefits and limitations for each of the following e-learning tools.

<table>
<thead>
<tr>
<th>E-learning tools</th>
<th>Benefits</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-mail communication</td>
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<tr>
<td>Chat rooms</td>
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<tr>
<td>Video conference</td>
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<tr>
<td>Electronic notice board</td>
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<td></td>
</tr>
</tbody>
</table>
### Task 7. (20 min)
1. Find a virtual classroom and report its feature.

<table>
<thead>
<tr>
<th>Title</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(http://)</td>
<td></td>
</tr>
</tbody>
</table>

| Institution's name |  |
| Location |  |
| Subject(s) |  |
| Learner's age/grade |  |

2. Imagine that you are a student who is about to learn through this virtual classroom. As a student, examine the page and list its strengths and weaknesses.

| Strengths |  |
| Weaknesses |  |
Guidelines for Moodle Essentials Course

This course guide is aimed at listing components that the Moodle Essentials course needs to address, and providing sources that the trainer can refer. With an advice of a Moodle specialist, the training team will further need to: (1) refer to the sources and add detail information, and (2) add more sources that are helpful for teachers in Thailand.

Major course components
1. What is Moodle?
   - What Moodle is and what it is used for
   - Origin of the name, Background
   - Deployment and development
   - System requirements
   - Features
   See Wikipedia ‘Moodle’ for more details http://en.wikipedia.org/wiki/Moodle

2. What Moodle’s courses look like?
   - See some online courses developed in the Moodle environments
     Examples:
     - Learning how to use Moodle course … Moodle school NZ http://www.moodle.school.nz/
     - University Mathematics course (single)… The University of Illinois Urbana-Champaign http://cm.math.uiuc.edu/moodle/
     - University courses (multiple) … Earlham School of Religion Online Courses http://moodle.esr.earlham.edu/login/index.php (log in as a guest to see the courses)
     - Courses developed in Thailand (to be listed by the trainers)

3. How Moodle’s features support teachers to design online course?
   - Main Page
   - Forums
   - Content managing (Resources)
   - Quizzes with different kinds of questions
   - Activity modules
   - …
   Trainers will consult with a Moodle specialist and determine which of the Moodle’s features should be taught in this course.

Useful references:
- Explains what each feature (activities, resources, and blocks) does … go to Moodle school NZ http://www.moodle.school.nz/ choose Orientation for First Time User ➔ choose Moodle Features ➔ choose Teachers documentation http://docs.moodle.org/en/Teacher_documentation
• Explains benefits of the Moodle’s features … … go to Moodle school NZ
  http://writing.berkeley.edu/TESL-EJ/ej30/m2.html

4. Websites that support Moodle users
• Moodle Site … http://moodle.org/
  o Supports … Main Menu»Free Support
  o Moodle Community … Course categories » Community Discussion (in other languages) » Moodle in Thailand

Trainers will consult with a Moodle specialist to know more supportive websites for Moodle users, especially for those in Thailand.
Guidelines for Working with Moodle Course

This course guide has identified what the training needs to address in order for the learners to be able to develop and maintain online course contents with Moodle. The training team will need to consult with a Moodle specialist and find the most efficient strategies for each of the identified processes.

The trainer needs to provide each learner with a clear view of: (1) installing Moodle and other necessary software onto the school’s server, (2) creating and uploading a course content, (3) managing (adding, updating, deleting) a course content, and (4) upgrading Moodle. For (2) and (3), necessary skills are identified and sequenced referring to an online Moodle course: Moodle School New Zealand (http://moodle.school.nz/) – Moodle for Teachers.

1. Installing Moodle and other necessary software onto the school’s server
   - System requirements
   - Necessary software in addition to Moodle
   - Installing Moodle and other software

2. Creating and uploading a course content

3. Managing a course content (2, 3, together)
   - Navigating on the Main Page
     - Logging in
     - Clicking on a resource link
     - Clicking on a course
   - Viewing the particular course
     - Navigating across resources for the course
       - Courses
       - People
       - Activities
       - Administration
     - Simple navigation on Moodle (using the menu bar)
   - Updating profile and password
     - Editing profile
       - Types and options
       - Uploading a photo
       - Seeing updated profile
     - Changing a password
   - Creating a course
     - Specifying the course settings
       - Learning options and types of format, enrolment, group, and accessibility to the course
       - Editing the settings and viewing the changes on the main page
     - Creating a topic summary
       - Learning what information the topic summary provides to a student
       - Creating and changing the summary
     - File and folder management
       - Creating and organizing folders
       - Uploading and moving files into a folder
     - Creating resources for the course
       - Creating a link to a file and display it in a pop-up window
       - Creating a link to a website and display it in a pop-up window
       - Creating a text page and display it in a pop-up window
       - Creating a web page and display it in a new window
• Inserting texts, tables, links to websites, graphics as shown in a model
  ▪ Creating a directory folder
  ▪ Creating a label
  ▪ Inserting a table
  ▪ Inserting texts, a logo, and a link to a file within the table

  o Creating activities for the course
  ▪ Creating quiz tests
    ▪ Creating different types of questions
    ▪ Creating feedback
    ▪ Importing/exporting questions from/to a file
    ▪ Grading
  ▪ Creating lessons
    ▪ Differentiating two modes (Flashcard/Presentation)
    ▪ Creating different types of questions
    ▪ Creating feedback
    ▪ Importing/exporting questions from/to a file
    ▪ Grading
  ▪ Creating assignments
    ▪ Differentiating types of assignments (online activity/upload & review/upload a single file)
    ▪ Using assignment features (custom scores/return marked assignment)
  ▪ Creating a journal assignment
    ▪ Setting up directions, due, and grade
    ▪ Logging in as a student and submitting a journal
    ▪ Logging in as a teacher and sending a feedback to a submitted journal
  ▪ Creating a Wiki page
    ▪ Setting up the type of Wiki (teacher/group/student)
    ▪ Creating a teacher's/group's/student's Wiki page
    ▪ Viewing the Wiki page

  o Managing course participants
  ▪ Managing students of the course
    ▪ Setting up the enrolment period
    ▪ Enrolling and unenrolling students
  ▪ Managing a teacher of the course
    ▪ Adding / removing a teacher
    ▪ Hiding a teacher (e.g., for a teacher who does not teach but needs to get an access to the course contents)

  o Communicating with participants
  ▪ Creating a forum
    ▪ Differentiating the three types of forum (single simple discussion/each person posts one discussion/standard forum for general use)
    ▪ Setting up the forum attributes
    ▪ Typing the directions and posting the forum
    ▪ Logging in as a student and submitting a discussion message
    ▪ Logging in as a teacher and: (1) replying to the student's message, or (2) deleting the submitted message
  ▪ Creating a chat session
• Typing the directions
• Setting up the chat session attributes
• Opening the chat session and typing messages
• Getting out from the chat session

  ▪ Creating a choice
    • Typing a question that asks a student’s opinion
    • Typing options (choices)
    • Setting up the choice attributes
    • Viewing the result

  ▪ Creating a survey
    • Typing directions
    • Setting up the survey attributes
    • Viewing the result

  ○ Organizing groups
    ▪ Creating student groups
      • Adding/Removing groups
      • Adding/removing students to/from a group
      • Creating the group profile

    ▪ Changing the group settings
      • Editing the group settings throughout the course
        ○ When multiple instructors teach the same course in different classes...separating groups
      • Creating group forums
        ○ Setting the group type for a forum
          ▪ No group
          ▪ Limiting the visibility of a forum to group members
          ▪ Allowing other group members to view the forum
        ○ Separating groups for the forum
        ○ Typing directions for a particular group forum

  ○ Using other Moodle’s features
    Add more features that the learners need to use.

4. Upgrading Moodle.

  ○ Monitoring the current version of Moodle
  ○ Upgrading the Moodle
Skills and Competitiveness for Poverty Reduction in Northeast:

Prepared by Haruko Uchida PhD.

Guidelines of the Assessment

The assessment is aimed at evaluating each learner’s (a) comprehension of the contents, (b) quality of the assigned product, and (c) opinions and attitude towards the workshops.

<table>
<thead>
<tr>
<th>At the end of</th>
<th>Target of Assessment</th>
<th>Type of Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Learning Training</td>
<td>Introduction to E-learning Tools</td>
<td>Learner’s comprehension</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short answer quiz on Moodle</td>
</tr>
<tr>
<td></td>
<td>Effective design of E-learning courses</td>
<td>Learner’s product (online course syllabus)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Learner’s: (a) demographic information and (b) opinions about the E-learning training</td>
</tr>
<tr>
<td>CMS Training</td>
<td>Moodle Essentials</td>
<td>Learner’s comprehension</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short answer quiz on Moodle</td>
</tr>
<tr>
<td></td>
<td>Working with Moodle</td>
<td>No specific assessment will be administrated.</td>
</tr>
<tr>
<td></td>
<td>Moodle Advanced</td>
<td>Learner’s product (online course content)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Learner’s opinion about the CMS training</td>
</tr>
</tbody>
</table>

1. The learner’s comprehension of the course contents

Questions that are to assess the learner’s comprehension of the contents will be developed and administered on Moodle. The purposes of using the Moodle are: (1) to provide a feedback immediately after the learner answers to each question, so that she/he will be able to monitor and improve her/his understanding; (2) to have the learner continue until she/he successfully completes each item instead of passing or failing her/him depending on the result; (3) to provide the learner with an opportunity to learn in the Moodle environment. The learners will be asked to create and use the identical accounts throughout the workshops.

The assessment consists of multiple choice, true/false, and short answer question items. Each of the multiple choice and true/false question items provides a feedback as the learner chooses the answer. Then learners who correctly answer will be led to the next question, while those who choose the incorrect answer will work on the same question.

Answers to the short answer items will be submitted to the trainers online. The trainers will immediately respond to each learner, providing a feedback to the answer. In addition to the feedback provided online, the trainers will meet and assist the learner if it is necessary.

After the completion, the Learner is able to view her/his performance on Moodle, including the time she/he has spent on the assessment and the number of trial for each question.

This type of assessment will be administrated at the end of the following two courses:
2. Product Evaluations

At the end of the Effective design of E-learning Course (the final course in the E-learning Training), the learners will create the syllabus of the online course and submit to the trainer. The trainer will examine whether the syllabus satisfies each item on the usability checklist (see E-learning Training 2: Effective Design of E-learning Course guide). If the syllabus does not satisfy any items on the checklist, the trainer will let the learners know what the problems is and what they need to do to overcome the problems. The learners will be asked to update and resubmit the syllabus.

At the end of the Moodle Advance Course (the final course in the CMS training), the learners will develop online content on Moodle. The trainer will examine whether each component of the online course works properly.

3. Questionnaires (Opinions and attitudes toward the courses)

Questionnaires that are to assess the learner’s opinions and confidence levels after the completion of the courses will be developed and administered on Moodle. The learners will be asked to use the same account that they have created.

Learners’ levels of satisfaction and confidence, as well as suggestions will be reported and considered for the further improvement.

Each questionnaire will be administrated at the end of the following two courses: Effective Design of E-learning Courses (the final course of the E-learning training, see E-learning Questionnaire Items), and Moodle Advanced (the final course of the CMS training, see CMS Questionnaire Items).
Sample Assessment: E-Learning Training Comprehension (English version)

I. What is E-learning
Objectives: Being able to identify: (a) features of e-learning in general; and (b) benefits of using e-learning for corporations, government, and educational institutions.

Which of the following users can E-learning be beneficial? Choose all.

a. Slower learners who need the extensive remediation
b. Fast learners who want to speed through the course, unencumbered by their classmates
c. Learners who are “technology challenged”
d. Learners who are high in self-directedness.

Answer: a. b. d.

Feedback statements
a. Correct! ☺ E-learning can be used to individualize the instruction, so that each student can learn on his/her pace.
b. Correct! ☺ E-learning can be used to individualize the instruction, so that each student can learn on his/her pace.
c. Incorrect. Students who have difficulties in using the computer may not be able to take advantage of the use of e-learning.
d. Correct! ☺ Since E-learning depends highly on each learner’s self-learning, the learner needs to be able to regulate him/herself in order to successfully complete the course.

To those who have chosen less than three correct answers and try to go on to the next question: There is (are) more type(s) of users that E-learning can be beneficial.

Which of the following is NOT one of the characteristics of distance learning?

a. Place, time, or both separates instructor and learner
b. Interaction between instructor and learner is conducted through one or more media.
c. Use of the Internet is not necessary required.
d. All participants attend training at the same time.

Answer: d

Feedback statements
a. Both place and time that separate instructor and learner are one of the characteristics of distance learning. You must choose the one that is NOT the characteristics of distance learning.
b. In distance learning, instructor and learner interacts at least one media. Choose the one that is NOT the characteristics of distance learning.
c. Distance learning is not limited to online course. There are a number of other types of distance learning that do not require the Internet, such as TV or radio programs. You must choose the one that is NOT the characteristics of distance learning.
d. Correct! ☺ Unlike the instructor-led instruction, distance learners can take the lesson at their convenient place and time.
In which of the following examples is e-learning the most effective mode of training?

a. Teaching prerequisite materials  
b. Teaching psychomotor skills  
c. Stimulating interpersonal exchanges  
d. Teaching learners with low self-directedness

Answer: a

Feedback statements
a. Correct! E-learning can be an effective tool for teaching prerequisite material. For example, instructor can require students to take a prerequisite course and pass the pretest before coming to the classroom.

b. Incorrect. E-learning can be a difficult medium when facilitating classes where face-to-face practice is critical element of learning.

c. Incorrect. E-learning can be a difficult medium when facilitating classes where face-to-face practice is critical element of learning.

d. Incorrect. E-learning should not be used if learner’s self-directedness is low. A lack of self-direction is one reason that self-instruction media, such as CD-ROMs and web-based training (WBT), have failed.

Benefits of E-learning over Traditional Training Methods
Objective: Being able to identify benefits of using e-learning tools over traditional training methods.

Each of the following is the advantage of technology-based learning over traditional learning. Is that correct?

The cost of distributing technology-based learning programs is often lower than those for instructor-led courses because:

a. More people can be trained more often with different online courses.  
b. Travel costs can be reduced.  
c. Costs for development courses can be reduced.

Answer: a: T  b: T  c: F

Feedback statements
a-T: Correct!  ☺

b-F: Incorrect. Once online programs are developed and implemented properly, more people can take training more often with different online courses.

b-T: Correct!  ☺

c-F: Incorrect. Costs for developing online courses often higher than those for instructor-led courses.

c-T: Correct!  ☺

II. Features of Major Types of E-learning Tools
Objectives:

a. Being able to list benefits and limitations of e-learning tools such as radio, TV, videotapes, CD-ROMs, computers (without the Internet connection), and the Internet.
b. Being able to list benefits and limitations of e-learning tools such as e-mail communication, chat rooms, video conference, electronic notice board, and visual classrooms.

Choose the e-learning tool that corresponds to (a) – (d).
Both (a) and (b) have a long history of providing educational programs for distant learners who may not have skilled teachers in specific subjects. (a) provides both visual and auditorial information, while (b) can carry out only auditorial information. Compared to (c), (d), and (e), both (a) and (b) may require lower cost and less constraints, however, interactions between the learner and the program are limited. Although interactivity is limited to (d) as well, a number of software applications are available that are intended at enhancing interactivity. (c) is highly interactive, and thus capable for facilitating collaborative learning. One of the major difficulties of using (c) and (d) in education is that both tools require technical support and user training.

Options: TV, Videotapes, Radio, Computers (without the Internet connection), Internet

Answer: (a) TV (b) Radio (c) Internet (d) Computer (without the Internet connection)

Feedback statements
a. TV: Correct! ☺
   Internet: Incorrect. Internet does not have a long history as a distant learning tool compared to TV or Radio programs.
   Computer: Incorrect. Computer does not have a long history as a distant learning tool compared to TV or Radio programs.

b. TV: Incorrect. TV can carry out both visual and auditorial information.
   Radio: Correct! ☺
   Internet: Incorrect. Internet does not have a long history as a distant learning tool compared to TV or Radio programs.
   Computer: Incorrect. Computer does not have a long history as a distant learning tool compared to TV or Radio programs.

c. TV: Incorrect. TV is limited in interactivity.
   Radio: Incorrect. Radio is limited in interactivity.
   Internet: Correct! ☺
   Computer: Incorrect. Computer without the connection to the Internet is limited in interactivity.

d. TV: Incorrect. TV is not used with software applications.
   Radio: Incorrect. Radio is not used with software applications.
   Internet: Incorrect. Internet is highly interactive.
   Computer: Correct! ☺

The e-mail tool enables you to send emails to: (choose all)

a. All groups
b. All users
   c. Selected unit leaders/students
   d. No-one. You can only receive e-mail in Blackboard.

Correct answers: a. b. c.

Feedback statements
a. Correct! ☺ You can distribute information to all groups via an e-mail.
b. Correct! ☺ You can distribute information to all users via an e-mail.
c. Correct! ☺ You can choose people that you want to send the message to and distribute information to them.
d. Incorrect. The e-mail tool enables you not only to receive but also to send a message.

To those who have chosen less than three correct answers and try to go on to the next question: There is (are) more type(s) of recipients that you can send emails to.

Which of the following is also called a threaded discussion and is the computer equivalent of a public note board where messages can be posted for viewing by other users?

a. Browser
b. Chat room
c. EPSS
d. Electronic bulletin board

Answer: d

Feedback statements
a. Incorrect. Browser is a software program for finding and viewing information on the Internet, such as Internet Explorer and Netscape Navigator.
b. Incorrect. Chat rooms are a synchronous process in which the instructor and learners are online at the same time.
c. Incorrect. EPSS (Electronic Performance Support System) is a computer application that is linked directly to another application to train or guide workers through completing a task in a target application.
d. Correct! ☺

Which of the following is a key constraint to consider before adding a bulletin board to an e-learning program?

a. Scheduling of learners’ and instructors’ real-time interaction
b. Learner time to view information on the board
c. Learner time to post questions on the board
d. Instructor time required to monitor the board

Answer: d

Feedback statements
a. Incorrect. Interaction between the learners and instructor on the board can be asynchronous.
b. Incorrect. Once instructor posts the information on the bulletin board, learners can view it at any time.
c. Incorrect. Learners can view and respond regarding the information that the instructor has posted on the board at any time.
d. Correct! ☺ A bulletin board requires instructor substantial time to monitor.

When you make a plan for using an e-learning tool for your class, which of the following tools do you want to choose? (choose one)
a. e-mail communications
b. chat rooms
c. video conference
d. electronic notice board
e. virtual classroom

Answer: there is no correct or incorrect answer.

Regarding your selected e-learning tool, what feature(s) do you think you can use to enhance the effectiveness of your instruction?

Answer: opened-ended. The answer should be based on the appropriate feature of the e-learning tool that the examinee has selected.

Reference
Sample Assessment: CMS Training Comprehension (English version)

III. What is Moodle
Objective: Being able to identify the features of Moodle.

What “Moodle” stands for?

a. Modular Object-Oriented Dynamic Learning Environment
b. Massachusetts Oracle Openly Distributed Learning Environment
c. Martin’s Online Open Distributed Learning Environment
d. Manufactured Online Open Demonstrated Learning Environment

Answer: a

Feedback statements
a. Correct! 😊
b. Incorrect.
c. Incorrect.
d. Incorrect

The advantage of Moodle over other course management systems such as WebCT and Blackboard is that it is an open-source system. Which of the following correctly characterizes the open-source system?

a. No license fee is required.
b. License fee is required but is relatively lower.
c. Distribution is free for educational institutions.
d. No platform is required.
e. Moodle is not copyrighted.

Answer: a.

Feedback statements

e. Correct! 😊 Open-source system allows distributions and redistributions of the system free of charge.
f. Incorrect. Open-source system allows distributions and redistributions of the system free of charge.
g. Incorrect. Free distribution is not limited only to educational institutions but to anyone.
h. Incorrect. For using Moodle, you need to install a platform with Apache, PHP and a database system such as MySQL.
i. Incorrect. Moodles is copyrighted.

Moodle has been developed based on the social constructionist philosophy. Does each of the following statement correctly describe the constructionist philosophy or approach?

d. Knowledge is constructed in the learner's mind.
e. The primary role of teachers is to organize the information that their students need to know.
f. Teachers should create a student-centered environment that teachers are to help students build upon their existing skills and knowledge.
g. Learning occurs particularly well in a collaborative environment that everyone builds together.

Answer: a: T b: F c: T d: T

Feedback statements
a-T: Correct! ☺
a-F: Incorrect. The social constructivist philosophy emphasizes that knowledge is constructed in the learner’s mind, not transmitted in an unchanged form from books or teachers.
b-T: Incorrect. According to the social constructivist philosophy the critical role of teachers is to help students construct knowledge.
b-F: Correct! ☻
c-T: Correct! ☺
c-F: Incorrect. The social constructivist philosophy emphasizes the importance of a student-centered environment that learners can construct knowledge and skills with a help of teachers upon those that are already in them.
d-T: Correct! ☺
d-F: Incorrect. Collaborative learning is what the social constructivist philosophers recognize and emphasize as effective style of learning.

Which of the following is one of the essential differences between Moodle and WebCT or Blackboard regarding the creation of the layout?

e. Specific sections can be hidden when required.
f. All course elements are presented in a "flat view".
g. There can be many "Chinese boxes" with content inside folders at various levels.
h. All elements on the page can be modified, repositioned or deleted.
Answer: b

Feedback statements
e. Incorrect. This is not only true for Moodle. However, with Moodle, teachers can easily hide the specific sections when is necessary.
f. Correct! ☻ This feature helps students find where to go to get the necessary information.
g. Incorrect. Chinese boxes require learners to take more time to locate information that they need, and that what are not what Moodle is aimed at.
h. Incorrect. This is not only true for Moodle. However, with Moodle, teachers can easily modify, reposition or delete elements on the page.

Which of the following correctly describes the Moodle’s features? Choose all.

a. Moodle is suitable for 100% online classes, but not as supplementing face-to-face learning.
b. Moodle can be installed on almost any platform that supports PHP.
c. Moodle requires only one database.
d. One Moodle site can support maximum up ten courses.
e. If a student needs to take more than one courses on Moodle, she/he needs to have multiple user accounts.

Feedback statements
a. Incorrect. Moodle is suitable for both 100% online and blended classes.
b. Correct! ☺
c. Correct! ☺
d. Incorrect. One Moodle site can support thousands of courses.
e. Incorrect. Each person requires only one account for the whole server.

To those who have chosen less than two correct answers and try to go on to the next question: There is (are) more item(s) that correctly describe Moodle’s feature.

**What and how does Moodle’s feature(s) support teachers to design online course?**

Answer: opened-ended. The answer should be based on the appropriate feature of the Moodle.
Sample Questionnaire: Demographic Survey (English version)

Demographic Survey

Please provide the following information:

Age:  

Gender:  
- female ▼ (female, male)

Occupation:  
- teacher ▼ (teacher, school administrator, local government officer, ...add more categories if necessary...other)

If it is other, please indicate your occupation: ______________________

If you are a teacher or school administrator, please indicate the type of school
- kinder garden ▼ (kinder garden, elementary, middle, high school, junior college, college or university, occupational school, prep school, other)

If it is other, please indicate the type of your school: _______________

In a typical week, how many hours do you spend working on a computer?
- Less than 1 hour ▼ (1 to 4 hours, 5 to10 hours, 11 to 20 hours, 21 to 30 hours, 31 hours or more)

In a typical week, how many hours do you spend working online?
- Less than 1 hour ▼ (1 to 4 hours, 5 to10 hours, 11 to 20 hours, 21 to 30 hours, 31 hours or more)

Choose all that apply to you.

I use a computer for:
- teaching in class
- preparing for teaching outside class
- working on the administrative stuff
- others … please indicate the purpose: ______________________
- none... I do not use a computer.

I use the Internet for:
- teaching in class
- searching for the information that can be used in class
- communicating with other teachers
- communicating with administrative staffs
- communicating with students
- communicating with students’ parents
- others … please indicate the purpose: ______________________
- none... I do not use the Internet.

Please indicate your current level of confidence in the following skills:

<table>
<thead>
<tr>
<th></th>
<th>Very confident</th>
<th>Moderately confident</th>
<th>Not very confident</th>
<th>Not at all confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>To create a text document by using a word processing software (Word, add those that are commonly used in Thailand)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>To create a presentation material by using PowerPoint</td>
<td>○</td>
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<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Maybe</td>
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<tr>
<td>To send an e-mail message</td>
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<tr>
<td>To attach a file and send it via an e-mail</td>
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<tr>
<td>To use online search engine (such as Yahoo, google, add those that are commonly used in Thailand)</td>
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<tr>
<td>To create a website</td>
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<tr>
<td>To create an online course content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Sample Questionnaire: E-Learning Training Evaluation (English version)

<table>
<thead>
<tr>
<th>Question</th>
<th>Excellent</th>
<th>Good</th>
<th>Adequate</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How well did the overall course meet the objectives?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to E-learning Tools Course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How knowledgeable and effective was the instructor?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. How appropriate was the method of presentation?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What was the quality of the course materials?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. What was your overall rating of the course?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please indicate your level of confidence in the following skills:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. To explain what E-learning is to your students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. To explain features of some major E-learning tools to your students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. To evaluate strengths and weaknesses of existing online courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. To design a syllabus of an online course that is to effectively support learning in your subject area</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Sample Questionnaire: CMS Training Evaluation (English version)

<table>
<thead>
<tr>
<th></th>
<th>How well did the overall course meet the objectives?</th>
<th>Excellent</th>
<th>Good</th>
<th>Adequate</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Moodle Essentials Course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>How knowledgeable and effective was the instructor?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>How appropriate was the method of presentation?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>What was the quality of the course materials?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>What was your overall rating of the course?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Please indicate your level of confidence in the following skills:</td>
<td>Very confident</td>
<td>Moderately confident</td>
<td>Not very confident</td>
<td>Not at all confident</td>
</tr>
<tr>
<td>6</td>
<td>To create the Moodle environment by downloading and installing Moodle and necessary software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>To create the online course with Moodle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>To manage the online content that you have made with Moodle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>To visit Moodle communities to obtain helpful information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Annex D: Inception Report and Monthly Summary Reports

Inception Report

1 Understanding of Project’s needs
The primary purpose of the capacity building using E-learning project is to support capacity building of education institutions, firms, and policy makers to utilize the ICT solution and to utilize e-learning as a method to promote integration in the target area (i.e., Northeast Thailand). In particular, an e-learning program (i.e., capacity building program) will be designed and developed in order to fulfill needs and gaps that have been identified by the survey-based assessment. Moreover, in order to communicate the necessary skills for the target groups, the project will prepare the local trainers to make effective use of e-learning tools.

2 Proposed Framework

2.1 Platform of the program
The E-learning program will be developed on an open source e-learning platform named Moodle. Since Moodle is free software, the program will be developed, modified, and distributed free of charge. More details about Moodle can be found at http://moodle.org.

2.2 System specification and Database
Since the project will be developed on Moodle, any systems that support PHP can be utilized. In the program, data will be stored in a single database: XXX (NEED TO KNOW THE TYPE OF DATABASE).

3 Approach & Deliverables

3.1 Analysis of the Research Findings
The e-learning consultant will analyze the findings of the research conducted in the Northeast in order to:
- summarize the current skills of the local human capital;
- identify skills that are required on the local business community;
- define the target group(s) of the capacity building program; and
- find out the capacity building needs of the stakeholder groups involved in the program.

3.2 Planning of the Capacity Building Program
The e-learning consultant will develop a program overview that includes the followings:
- needs for the target group(s),
- objectives of the program,
- methods and activities that are to accomplish the objectives, formative and summative assessments, and
- financing plans
Moreover, the consultant will provide guidelines to the stakeholders and participants of the program. The guidelines are to: (a) help the stakeholders to perform their roles accurately and effectively, and (b) provide the target group(s) with a step by step instruction on how to participate in e-learning courses.

Finally, the consultant will specify the learning paths of the workshops and online courses. That is to determine the methods on how to communicate the target skills and knowledge, and schedules of the workshops and courses.
3.3 Design and Development of the Program

The consultant will design the outline and templates for the followings:

- workshop syllabus for the civil society organizations, the government officials, and the local trainers, and
- online course syllabus for the target group(s)

In addition, the consultant will design:

- tools to measure effectiveness of the program, and
- templates for the appropriate teaching materials of each workshop and online course.

Finally, the consultant will identify the costs for the above workshops and online courses.

3.4 Implementation of the Program

The consultant will conduct two kinds of workshops. The first type of workshop is to provide knowledge and skills for using the database portal to civil society organizations and government officials. The second type is to provide the best practice standards to the local trainers and help them to make effective use of the e-learning tools and to prepare the target group(s) with the prerequisite English and IT skills.

In addition, the consultant will:

- manage the budget allocation for the capacity building program;
- facilitate communication among stakeholders in order to improve efficiency and effectiveness of the information dissemination; and
- enhance the integrity and role of each stakeholder.

3.5 Following up on the Effectiveness of the Program

The consultant will monitor the entire process of the program by assessing the progress of the workshops and online courses. In particular, the consultant will:

- evaluate performance of the local trainers and provide feedback to them;
- obtain feedback from the target group(s); and
- develop a road map based on the outcomes of the program, which is to be utilized in the future of the program.

4 Scheduling

E-Learning Specialist Work Plan

<table>
<thead>
<tr>
<th>Task</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commence Work</td>
<td></td>
<td>26-Dec-05</td>
<td>26-Apr-06</td>
</tr>
<tr>
<td>Inception Report</td>
<td>5 days</td>
<td>26-Dec-05</td>
<td>30-Dec-05</td>
</tr>
<tr>
<td>Planning of the Capacity Building Program</td>
<td>10 days</td>
<td>2-Jan-06</td>
<td>13-Jan-06</td>
</tr>
<tr>
<td>- Develop a program overview</td>
<td>6</td>
<td>4-Jan-06</td>
<td>11-Jan-06</td>
</tr>
<tr>
<td>- Clearly specify the learning path of the</td>
<td>2</td>
<td>12-Jan-06</td>
<td>13-Jan-06</td>
</tr>
<tr>
<td>workshops and online courses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design and Development of the Capacity</td>
<td>34 days</td>
<td>16-Jan-06</td>
<td>3-Mar-06</td>
</tr>
<tr>
<td>Building Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- NE visit and Moodle review</td>
<td>3</td>
<td>16-Jan-06</td>
<td>18-Jan-06</td>
</tr>
<tr>
<td>- Design the outline and template of the</td>
<td>12</td>
<td>19-Jan-06</td>
<td>3-Feb-06</td>
</tr>
<tr>
<td>workshop syllabus and the online course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>syllabus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Design the templates for the appropriate</td>
<td>20</td>
<td>6-Feb-06</td>
<td>3-Mar-06</td>
</tr>
<tr>
<td>teaching materials of each workshop and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>online course, as well as identify their</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtain Portal Training</td>
<td>2</td>
<td>23-Feb-06</td>
<td>24-Feb-06</td>
</tr>
<tr>
<td>Implement the Capacity Building Program</td>
<td>5 days</td>
<td>6-Mar-06</td>
<td>24-Mar-06</td>
</tr>
</tbody>
</table>
• Conduct workshops on how to use the database portal  
  |   | 2   | 6-Mar-06 | 24-Mar-06 |
• Conduct workshops and communicates best practice standards to the local trainers on how to make use of e-learning tools  
  |   | 3   | 8-Mar-06 | 10-Mar-06 |
| Follow up on the effectiveness of the implemented program | 5 days | 13-Mar-06 | 17-Apr-06 |
• Review the effectiveness of the program by evaluating the performance of the local trainers and provide constructive feedback  
  |   | 2   | 13-Mar-06 | 14-Mar-06 |
• Prepare improvements to the program what are the lessons learned, and develop a road map for the future of the program  
  |   | 3   | 15-Mar-06 | 17-Mar-06 |
Create a Guidebook about program policies | 12 days | 20-Mar-06 | 4-Apr-06 |
Submit Interim Report I | 1 day | 31-Jan-06 | 31-Jan-06 |
Submit Interim Report II | 1 day | 28-Feb-06 | 28-Feb-06 |
Submit Interim Report III | 1 day | 31-Mar-06 | 31-Mar-06 |
Submit Final Report I | 1 day | 4-Apr-06 | 4-Apr-06 |

5 Assumptions
For the better communications with the civil society organization, government officials, and the local trainers, local personals will provide information and translations to the consultant.

6 Wrap Up
The involvement of a consultant in this project can provide the following benefits. First, effective design of the Capacity Building Program based on the analysis of the research is necessary for accomplishment of the primary purpose of the project, which is to fulfill necessary skills and knowledge of the target group(s). Second, formative and summative assessments will monitor and improve the effectiveness of the program. Third, by providing the guidelines, the consultant can facilitate the stakeholders to perform their roles accurately and effectively. Finally, conduct of workshops and online courses will provide the civil society organization and government officials, and the local trainers with necessary skills and knowledge for effective use of the program.
Progress Report 1 (February 6, 2006)

Scope of work

(1) Submit the inception report
(2) Planning of the Capacity Building Program
   (a) Develop a program overview.
   (b) Clearly specify the learning path of the workshops and online courses.
(3) Design and Development of the Capacity Building Program
   (a) NE visit and Moodle review.
   (b) Design the outline and template of the workshop syllabus and the online course syllabus.
   (c) Design the templates for the appropriate teaching materials of each workshop and online course, as well as identify their costs.
(4) Obtain Portal Training
(5) Implement the Capacity Building Program
   (a) Conduct workshops on how to use the database portal
   (b) Conduct workshops and communicates best practice standards to the local trainers on how to make use of e-learning tools
(6) Follow up on the effectiveness of the implemented program
   (a) Review the effectiveness of the program by evaluating the performance of the local trainers and provide constructive feedback
   (b) Prepare improvements to the program what are the lessons learned, and develop a road map for the future of the program
(7) Create a Guidebook about program policies
(8) Submit Interim Report I – III
(9) Submit Final Report I
Completed activities

- Activities for the month of December 26, 2005 thru February 03, 2006

<table>
<thead>
<tr>
<th>Activities</th>
<th>Completed Date</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit the Inception Report</td>
<td>Jan 02, 06</td>
<td>Inception report reflected the updated time table and thus showed the scope of work more precisely.</td>
</tr>
<tr>
<td>(1) Planning of the Capacity Building Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Develop a program overview.</td>
<td>Jan 23, 06</td>
<td>Three types of training were identified and sequenced: E-learning training, Content Management Systems (CMS) by Using Moodle training, and Portal training. Furthermore, the learning goal for each type of training except for the portal was clearly stated.</td>
</tr>
<tr>
<td>(b) Clearly specify the learning path of the workshops and online courses</td>
<td>Jan 23, 06</td>
<td>Necessary courses for each type of training except for the portal were identified and sequenced.</td>
</tr>
<tr>
<td>(2) Design and Development of the Capacity Building Program</td>
<td>Feb 02, 06</td>
<td>More details for each course (except for the portal), including learning outcomes, prerequisites, lesson format, materials, training tools, assessment type, grading policy, duration, and necessary references were identified.</td>
</tr>
</tbody>
</table>

Barrier
1. Design of the portal training has been pending until the completion of the project 2.

Recommendation
1. For the design of the portal training, it will be helpful if I could obtain: (1) the URL of the site when it is completed, and (2) a list of its features (or a site map).
### Work for next phase and expected outcomes

- Activities for the month of Feb 03 thru March 03, 2006

<table>
<thead>
<tr>
<th>Activities</th>
<th>Completed Date (planned)</th>
<th>Expected Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-(c) Design the templates for the appropriate teaching materials of each workshop and online course, as well as identify their costs.</td>
<td>Mar 03</td>
<td>Templates of the materials for each course will be designed. Each template will clearly show the following information about the material: format, overall contents, and sources of information.</td>
</tr>
<tr>
<td>2-(a) Develop a program overview for the portal training</td>
<td></td>
<td>Learning objectives for the portal training will be identified.</td>
</tr>
<tr>
<td>2-(b) Clearly specify the learning path for the portal training</td>
<td></td>
<td>Courses for the portal training will be listed and sequenced.</td>
</tr>
<tr>
<td>3-(b) Design the syllabus of the portal training</td>
<td></td>
<td>Features of the portal training, including learning outcomes, prerequisites, lesson format, materials, training tools, assessment type, grading policy, duration, and necessary references will be identified.</td>
</tr>
</tbody>
</table>
Conclusion

Although the planning phase, which is the first phase of this project, had been planned to finalize on January 4, 2006, it was actually completed on January 23, 2006. This slip was due to delay in starting working on the project, which was resulted from problems with setting up my work environment (e.g., acquisition of the Internet connection at the work place). However, this slip has been overcome with regard to the second task (i.e., designing outlines and syllabus) in the second phase (i.e., design and development phase) for the following two types of training: E-learning training and Content Management Systems (CMS) by Using Moodle training. The second phase for the third type of training (i.e., the Portal training) has been pended due to delay in completion of the portal. As soon as the portal has established, and thus the necessary information has been released, the second phase for the portal training will begin.

I have currently working on the first (i.e., reviewing Moodle) and the third tasks (designing materials for E-learning training and CMS training) in the second phase. The first task will be finalized when I obtain all the necessary information for designing the template of the CMS training material. Finally, the third task is planned to complete in advance, considering the need to compensate the slip with regard to the portal training.
Progress Report 2 (March 03, 2006)

Scope of work

(10) Submit the inception report
(11) Planning of the Capacity Building Program
   (a) Develop a program overview.
   (b) Clearly specify the learning path of the workshops and online courses.
(12) Design and Development of the Capacity Building Program
   (a) NE visit and Moodle review.
   (b) Design the outline and template of the workshop syllabus and the online course syllabus.
   (c) Design the templates for the appropriate teaching materials of each workshop and online course, as well as identify their costs.
(13) Obtain Portal Training
(14) Implement the Capacity Building Program
   (a) Conduct workshops on how to use the database portal
   (b) Conduct workshops and communicate best practice standards to the local trainers on how to make use of e-learning tools
(15) Follow up on the effectiveness of the implemented program
   (a) Review the effectiveness of the program by evaluating the performance of the local trainers and provide constructive feedback
   (b) Prepare improvements to the program what are the lessons learned, and develop a road map for the future of the program
(16) Create a Guidebook about program policies
(17) Submit Interim Report I – III
(18) Submit Final Report I
### Completed activities

- **Activities for the month of Feb 03 thru March 03, 2006**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Completed Date</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit the Inception Report</td>
<td>Jan 02, 06</td>
<td>Inception report reflected the updated time table and thus showed the scope of work more precisely.</td>
</tr>
<tr>
<td>(1) Planning of the Capacity Building Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Develop a program overview.</td>
<td>Jan 23, 06</td>
<td>Three types of training were identified and sequenced: E-learning training, Content Management Systems (CMS) by Using Moodle training, and Portal training. Furthermore, the learning goal for each type of training except for the portal was clearly stated.</td>
</tr>
<tr>
<td>(b) Clearly specify the learning path of the workshops and online courses</td>
<td>Jan 23, 06</td>
<td>Necessary courses for each type of training except for the portal were identified and sequenced.</td>
</tr>
<tr>
<td>(2) Design and Development of the Capacity Building Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Design the outline and template of the workshop syllabus and the online course syllabus.</td>
<td>Feb 02, 06</td>
<td>More details for each course (except for the portal), including learning outcomes, prerequisites, lesson format, materials, training tools, assessment type, grading policy, duration, and necessary references were identified.</td>
</tr>
<tr>
<td>(c) Design the templates for the appropriate teaching materials of each workshop and online course, as well as identify their costs.</td>
<td>Feb 17, 06</td>
<td>Templates of the materials for each course except for the portal training were designed. Each template clearly shows the following information about the material: format, overall contents, and sources of information.</td>
</tr>
<tr>
<td>(d) Develop assessment materials.</td>
<td>Mar 03, 06</td>
<td>Tools to measure the effectiveness of the workshops and trainings except for the portal training, including instruction, materials, learner’s comprehension, quality of the products that the learners’ produced through the workshops were designed.</td>
</tr>
</tbody>
</table>

### Barrier

2. Design of the portal training has been pending until the completion of the project 2.

### Recommendation

2. For the design of the portal training, it will be helpful if I could obtain: (1) the URL of the site when it is completed, and (2) a list of its features (or a site map).
### Work for next phase and expected outcomes

- Activities for the month of March 04 thru March 30, 2006

<table>
<thead>
<tr>
<th>Activities</th>
<th>Completed Date (planned)</th>
<th>Expected Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-(c) Conduct workshops and communicates best practice standards to the local trainers on how to make use of e-learning tools.</td>
<td>Mar 08</td>
<td>The local trainers will develop their understanding of e-learning tools, and will be able to utilize Moodle to create online course contents.</td>
</tr>
<tr>
<td>3-(a) Conduct workshops on how to use the database portal.</td>
<td>Mar 10</td>
<td>Trainees will be able to obtain information on the database portal to find solutions to their problems.</td>
</tr>
<tr>
<td>Develop a program overview</td>
<td>Mat 17</td>
<td>Entire vision and scope of the program will be documented for review and future improvement.</td>
</tr>
<tr>
<td>- The needs &amp; requirements for the program development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Objectives, justification and detail description of activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Methodology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Action plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The expected impact to target group(s), short &amp; long term impact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financing needs and uses.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create a Guidebook about program policies.</td>
<td>Mar 30</td>
<td>Program policies will be documented for the future use.</td>
</tr>
</tbody>
</table>
The Capacity Building Program (CBP)

**Project Timeline**

1. **Planning Phase**
   - Overview
   - Learning Paths

2. **Design and Development Phase**
   - Moodle Review
   - Design outlines and syllabus
   - Design materials

3. **Implementation Phase**
   - Workshops
   - Training courses

4. **Evaluation Phase**
   - Assessment Improvements

5. **Documentation Phase**
   - Guidebook
   - Reports

**Timeline:**
- Early Feb
- Early March
- Mid March
- Early April
- Mid April
Conclusion

Although the planning phase, which is the first phase of this project, had been planned to finalize on January 4, 2006, it was actually completed on January 23, 2006. This slip was due to delay in starting working on the project, which was resulted from problems with setting up my work environment (e.g., acquisition of the Internet connection at the work place). However, this slip has been overcome with regard to the second task (i.e., designing outlines and syllabus) in the second phase (i.e., design and development phase) for the following two types of training: E-learning training and Content Management Systems (CMS) by Using Moodle training.

The first (i.e., reviewing Moodle) and the third tasks (designing materials for E-learning training and CMS training) in the second phase have completed on time. Moreover, an assessment plan for each course except for the portal raining has been developed.

The second phase for the third type of training (i.e., the Portal training) has been pended due to delay in completion of the portal. As soon as the portal has established, and thus the necessary information has been released, the second phase for the portal training will begin.
Scope of work

(19) Submit the inception report
(20) Planning of the Capacity Building Program
   (a) Develop a program overview.
   (b) Clearly specify the learning path of the workshops and online courses.
(21) Design and Development of the Capacity Building Program
   (a) NE visit and Moodle review.
   (b) Design the outline and template of the workshop syllabus and the online course syllabus.
   (c) Design the templates for the appropriate teaching materials of each workshop and online course, as well as identify their costs.
(22) Obtain Portal Training
(23) Implement the Capacity Building Program
   (a) Conduct workshops on how to use the database portal
   (b) Conduct workshops and communicates best practice standards to the local trainers on how to make use of e-learning tools
(24) Follow up on the effectiveness of the implemented program
   (a) Review the effectiveness of the program by evaluating the performance of the local trainers and provide constructive feedback
   (b) Prepare improvements to the program what are the lessons learned, and develop a road map for the future of the program
(25) Create a Guidebook about program policies
(26) Submit Interim Report I – III
(27) Submit Final Report I
### Completed activities

- **Activities for the month of Jan 02 thru April 30, 2006**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Completed Date</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit the Inception Report</td>
<td>Jan 02, 06</td>
<td>Inception report reflected the updated time table and thus showed the scope of work more precisely.</td>
</tr>
</tbody>
</table>

1. **Planning of the Capacity Building Program**
   - (a) Develop a program overview. | Jan 23, 06 | Three types of training were identified and sequenced: E-learning training, Content Management Systems (CMS) by Using Moodle training, and Portal training. Furthermore, the learning goal for each type of training except for the portal was clearly stated. |
   - (b) Clearly specify the learning path of the workshops and online courses | Jan 23, 06 | Necessary courses for each type of training except for the portal were identified and sequenced. |

2. **Design and Development of the Capacity Building Program**
   - (b) Design the outline and template of the workshop syllabus and the online course syllabus. | Feb 02, 06 | More details for each course (except for the portal), including learning outcomes, prerequisites, lesson format, materials, training tools, assessment type, grading policy, duration, and necessary references were identified. |
   - (c) Design the templates for the appropriate teaching materials of each workshop and online course, as well as identify their costs. | Feb 17, 06 | Templates of the materials for each course except for the portal training were designed. Each template clearly shows the following information about the material: format, overall contents, and sources of information. |
   - (d) Develop assessment materials. | Mar 03, 06 | Tools to measure the effectiveness of the workshops and trainings except for the portal training, including instruction, materials, learner’s comprehension, quality of the products that the learners’ produced through the workshops were designed. |

Analyzed survey data on employers in the Northeast region of Thailand collected by the Project 1 team. | April 11, 06 | Numerical data on employers was summarized and reported. |

3. **Implement the Capacity Building Program**
   - (b) Conduct workshops and communicates best practice standards to the local trainers on how to make use of e-learning tools | April 20, 06 | Attended at and monitored the first workshop held in Khon Kean from April 17 to 20. |
<table>
<thead>
<tr>
<th>Activities (contd.)</th>
<th>Completed Date</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(6) Follow up on the effectiveness of the implemented program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Review the effectiveness of the program by evaluating the performance of the local trainers and provide constructive feedback</td>
<td>April 30, 06</td>
<td>Results of evaluation on the effectiveness of the workshop and suggestions for improvements for the future training were documented.</td>
</tr>
<tr>
<td>(b) Prepare improvements to the program what are the lessons learned, and develop a road map for the future of the program</td>
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</table>

**Barrier**

3. Design of the portal training has been pending until the completion of the project 2.
4. Unable to complete data analyses on all three agents (employers, educational institutions, and students) that was carried over from the project 2 due to technical problems within the data and a conflict with the current work.

**Recommendation**

3. For the design of the portal training, it will be helpful if I could obtain: (1) the URL of the site when it is completed, and (2) a list of its features (or a site map).
4. A doctoral student was hired to complete the data analyses. However, the technical problems remained within the data. For the future project, the processes of designing and development of the questionnaires, data collections, data analyses, and discussing the results must be conducted by a single project team with a professional(s) in the field of education.
### Work for next phase and expected outcomes

- Activities for the month of May 01 thru May 31, 2006

<table>
<thead>
<tr>
<th>Activities</th>
<th>Completed Date (planned)</th>
<th>Expected Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop a program overview</td>
<td>May 31</td>
<td>Entire vision and scope of the program will be documented for review and future improvement.</td>
</tr>
<tr>
<td>▪ The needs &amp; requirements for the program development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Objectives, justification and detail description of activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Methodology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Action plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ The expected impact to target group(s), short &amp; long term impact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Financing needs and uses.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create a Guidebook about program policies.</td>
<td>May 31</td>
<td>Program policies will be documented for the future use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Capacity Building Program (CBP)

1. Planning Phase
   - Overview
   - Learning Paths

2. Design and Development Phase
   - Moodle Review
   - Design outlines and syllabus
   - Design materials

3. Implementation Phase
   - Workshops
   - Training courses

4. Evaluation Phase
   - Assessment
   - Improvements

5. Documentation Phase
   - Guidebook
   - Reports

Project Timeline

- Early Feb
- Early March
- Mid March
- Early April
- Mid April
Conclusion

The first workshop was from April 17 to 20 and evaluated on its effectiveness. As stated in the evaluation report submitted on April 30, 06, finding from the workshop indicated not only the effectiveness of the training per se, but also a need for more training for improving competitiveness of teachers in the Northeast region of Thailand, which was also one of the objectives of this overall project. This important finding will be included in the succeeding document on the program review.

It has been expected that findings of the survey on employers, educational institutions, and students in the Northeast region will provide an answer to the following questions: what the employers required for their potential employees, and what improvement would be necessary for the educational institutions in order to prepare students to improve their competitiveness. However, due to technical problems that have been documented in the assessment report submitted on April 11, 06, it is questionable that the findings of the collected data can provide the expected answers to the questions. Suggestions for the future program that is to find the answers to the questions will be included in the program review.
Scope of work

(28) Submit the inception report
(29) Planning of the Capacity Building Program
   (a) Develop a program overview.
   (b) Clearly specify the learning path of the workshops and online courses.
(30) Design and Development of the Capacity Building Program
   (a) NE visit and Moodle review.
   (b) Design the outline and template of the workshop syllabus and the online course syllabus.
   (c) Design the templates for the appropriate teaching materials of each workshop and online course, as well as identify their costs.
(31) Obtain Portal Training
(32) Implement the Capacity Building Program
   (a) Conduct workshops on how to use the database portal
   (b) Conduct workshops and communicates best practice standards to the local trainers on how to make use of e-learning tools
(33) Follow up on the effectiveness of the implemented program
   (a) Review the effectiveness of the program by evaluating the performance of the local trainers and provide constructive feedback
   (b) Prepare improvements to the program what are the lessons learned, and develop a road map for the future of the program
(34) Create a Guidebook about program policies
(35) Submit Interim Report I – III
(36) Submit Final Report I
### Completed activities

- Activities for the month of Jan 02 thru June 30, 2006

<table>
<thead>
<tr>
<th>Activities</th>
<th>Completed Date</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit the Inception Report</td>
<td>Jan 02, 06</td>
<td>Inception report reflected the updated time table and thus showed the scope of work more precisely.</td>
</tr>
<tr>
<td>(1) Planning of the Capacity Building Program</td>
<td></td>
<td><strong>Date</strong></td>
</tr>
<tr>
<td>(a) Develop a program overview.</td>
<td>Jan 23, 06</td>
<td>Three types of training were identified and sequenced: E-learning training, Content Management Systems (CMS) by Using Moodle training, and Portal training. Furthermore, the learning goal for each type of training except for the portal was clearly stated.</td>
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<td><strong>Date</strong></td>
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<tr>
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<td>April 11, 06</td>
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</tr>
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<td>(5) Implement the Capacity Building Program</td>
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<td>Attended at and monitored the first workshop held in Khon Kean from April 17 to 20.</td>
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<tr>
<td>(7) Create a Guidebook about program policies</td>
<td>June 25, 06</td>
<td>Documented policies and guidelines that are to be followed by the future projects to improve results of the workshop training project by the team 2 and the research project by the team 1.</td>
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* Activities for the month of June 01 thru June 30, 2006

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<tr>
<td>Create a Guidebook about program policies.</td>
<td>June 25</td>
<td>Program policies were documented for the future use.</td>
</tr>
<tr>
<td>• Suggestions for the future training project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Suggestions for the future research project</td>
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   - Guidebook
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- Early Feb
- Early March
- Mid March
- Mid June
- Mid April
Conclusion

Based on the review on the workshop trainings provided from April 17 to May 31, guidelines were provided that the future training projects should follow in order to provide more effective trainings to teachers in the Northeast region of Thailand. Likewise, suggestions were proposed regarding the future research project that is to pursue the questions that the current project