



Technical Assistance Report

Project Number: 42144
September 2008

Kingdom of Thailand: Capacity Building and School Networking for Educational Services (e-Learning) in Thailand

(Financed by Republic of Korea e-Asia and Knowledge
Partnership Fund)

CURRENCY EQUIVALENTS

(as of 20 August 2008)

Currency Unit	–	baht (B)
B1.00	=	\$0.0292
\$1.00	=	B34.14

ABBREVIATIONS

ADB	–	Asian Development Bank
ICT	–	information and communication technology
KERIS	–	Korea Education and Research Information Services
LCD	–	liquid crystal display
PC	–	personal computer
TA	–	technical assistance

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Education
Subsector	–	Education sector development
Themes	–	Sustainable economic growth, capacity development
Subthemes	–	Addressing information and communication technology issues; institutional development; client relations, network, and partnership development

NOTE

In this report, "\$" refers to US dollars.

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I. INTRODUCTION

1. The Government of Thailand (the Government) has requested grant financing from the Asian Development Bank (ADB) to support the development of e-learning curricula and a school networking program for education services at the elementary school level. A concept paper for technical assistance on Capacity Building and School Networking for Educational Services (e-Learning) in Thailand was prepared and approved in September 2007. The proposal was then sent to the Government of the Republic of Korea for approval of funding under the Republic of Korea e-Asia and Knowledge Partnership Fund. The technical assistance (TA) was approved for financing of \$500,000 under the fund.

2. Support for developing information technology infrastructure for education will improve the curriculum and expand educational opportunities for Thai children in rural areas and further contribute to Thailand's efforts to improve its economic productivity and competitiveness. Although the TA lies outside the scope of the Country Partnership strategy (CPS),¹ the Government requested that ADB consider this project on an exceptional basis.² This request was made prior to the finalization of the CPS and shortly after the completion of ADB's Higher Education Development Loan.³ The Government turned to ADB to support this priority e-learning initiative because of ADB's long-standing experience in Thailand's education sector and its ability to draw upon expertise and best practices from within the Asia and Pacific Region. The TA is included in the TA pipeline for 2008.⁴ A Fact Finding Mission from ADB Thailand Resident Mission was fielded during 13–16 May 2008 in Bangkok to discuss the scope of assistance and implementation arrangements for the proposed TA with the Government and a key stakeholder. This report reflects the findings of the mission and the understandings reached with the Government on the impact, outcome, outputs, implementation arrangements, cost, financing arrangements, and terms of reference of the TA. The TA design and monitoring framework is in Appendix 1.

II. ISSUES

3. Education is a crucial long-term solution to poverty. The 10th National Economic and Social Development Plan of Thailand emphasizes the importance of strengthening human capital through educational development to achieve and sustain economic growth and social development. The plan includes a target for average test scores at every level of education to be higher than 55%. The average national test score of 55% is already achieved by most privileged elementary and secondary schools in Bangkok. However, there is a big gap among schools in Thailand.⁵ While students in a small number of privileged schools tend to be more successful in education, winning national and international awards, students from underfunded schools in remote areas tend to have much lower national test scores and less enthusiasm or eagerness to learn. Common problems in underfunded schools are the lack of teachers of some subjects and shortages of learning materials, especially those utilizing new media and

¹ ADB. 2007. *Country Partnership Strategy 2007 – 2011: Thailand*. Manila.

² This TA is envisaged to be ADB's last intervention in Thailand's education sector unless ADB support for education becomes a core strategic area of partnership as a result of the midterm review of the existing CPS, or in the course of preparing a new CPS in 2011.

³ ADB. 2006. *Project Completion Report on the Higher Education Development Project in Thailand (Loan 1699-THA)*. Manila.

⁴ The TA first appeared in *ADB Business Opportunities* on 30 July 2008.

⁵ National test results in 2007 for grade 6 students show that the average scores for schools in Bangkok exceeded 55% in mathematics, sciences, and English, while the average for the rest of the country in these subject was lower than 50%.

technology. The study *Guidelines for Managing Education for Best Practices Schools*,⁶ which compared communication technology between privileged schools and others, found very different educational standards in Thailand's schools, which number more than 40,000. Over 80% of the schools need immediate improvement in educational quality. Further support and assistance to strengthen the capacity of these schools is needed to promote equality of access to education for all and to improve the quality of education.

4. The 10th National Plan emphasizes the use of information and communication technology (ICT) in education. Computer technology has become an indispensable aid to education, and government policies have focused on improving ICT infrastructure, developing educational curriculum content, and enabling universal access to the internet. ICT can help deliver high-standard curricula from privileged schools in Bangkok to schools throughout the country by allowing teachers to access the same curricular contents. So far, e-learning courses for elementary education in Thailand exist only in the form of distance learning television broadcasts. Teachers and students in recipient schools cannot actively participate in the teaching and learning process through this type of e-learning. The study mentioned in para. 3 found that teachers in best-practice schools⁷ organize varieties of instructional activities, integrate knowledge from many subjects, and encourage students to think and apply knowledge. On the other hand, many teachers in underfunded schools in remote areas do not have appropriate expertise in subject matter or teaching methodologies to teach the assigned courses, and limited teacher numbers often mean that one teacher has to teach several subjects. Through e-learning, teachers from best-practice schools and other schools can share expertise, knowledge, and teaching methods, and students can learn from different educational innovations. E-learning will also help widen access to training for the teaching professionals and better curricula for students.

5. Thailand has 16 demonstration schools established by universities that offer degrees in education. Apart from being a normal school, a demonstration school serves as a real-life workshop and testing ground for university students wishing to enter the teaching profession. Demonstration schools provide hands-on education to the university's teachers in training. Most demonstration schools are acknowledged as best-practice schools. The demonstration school at Chulalongkorn University, which is acknowledged as one of the top best-practice schools in Thailand, was established in 1958 under the Faculty of Education. The school aims to foster students' intellectual and moral development, as well as encourage creativity, self confidence, and proper self-expression in both Thai and international contexts. ICT training, especially in the basic use of computers and access to information sources via the internet, is an important part of the curriculum at the demonstration school at Chulalongkorn University.

6. The national budget to the education sector has remained fairly constant at the average of 3.9% of gross domestic product, or 23% of the national budget, during 1997–2007. Although this is a generous portion of the budget, it is not enough to help improve the quality of teaching and learning for over 30,000 public primary schools throughout the country. Internet-based e-learning can serve as a low-cost solution to improve the quality of learning and teaching, as schools need only a computer and internet access to hook up with an e-learning system. Since its mission is to be a leader in education research and development, the Chulalongkorn University Demonstration Elementary School has volunteered to develop e-learning initiatives at

⁶ National Research Council of Thailand. 2005. *Guidelines for Managing Education for Best Practices Schools*. Bangkok.

⁷ Best-practice schools are those acknowledged by the education community to have trained their students to be smart consumers, innovative thinkers, socially concerned, and proud to be Thai.

the elementary school level in Thailand to help raise the quality of teaching and learning in remote schools participating in the project.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

7. The impact of the TA is improved national test scores for students in schools participating in the e-learning program, which will lead to greater opportunities for higher education. The TA outcome is the implementation of e-learning courses for three core subjects of the national test—science, mathematics, and English—for grade 6 students.

B. Methodology and Key Activities

8. The TA will have three major outputs: (i) e-learning course content (mathematics, science, and English); (ii) an e-learning system network with a training module; and (iii) a demonstration school network conference. The curriculum for the three subjects will be developed by the task force at the Chulalongkorn University Demonstration Elementary School in collaboration with teachers from the 50 participating schools.⁸ Then the contents of each subject module will be specially designed to fit web pages. The e-learning system architecture will be developed, and the e-content pages will be test run and adjusted. Once the test run is completed, teachers from remote schools will be trained to use the system. Training handbooks will be used for training and serve as manuals for the teachers to continue to actively participate in the e-learning program. Towards the end of the Project, a demonstration school network conference will be conducted with presentations by the project team, an international expert, and representatives from other demonstration schools.

9. The TA will undertake the following activities:

- (i) **Formulate and design e-learning course content.** Through a survey workshop, issues and problems related to the course content of each subject and teaching methodology in the existing curriculum in participating elementary schools in remote areas will be identified. The course content of the three core subjects for grade 6 students will be developed with the aim to better prepare students for the national test. The course content will then be put into digital format suitable for running on web pages.
- (ii) **Implement e-learning system network.** The e-learning system network will be developed and tested. The e-contents of the three subjects that are to be taught through the system will be made available in multimedia format and transferred to databases to be stored in the main server at the Chulalongkorn University Elementary Demonstration School. The information in the database will be used as teaching materials and will be accessible by teachers and students in the 50 participating schools through the internet. A training workshop will be conducted for teachers from 50 schools on how to use the completed system.
- (iii) **Organize the demonstration school network.** To enhance collaboration in teaching development and e-learning, the first conference of the demonstration

⁸ Fifty schools will be selected from every geographical region of Thailand. As part of the selection criteria, these schools will need to have stable internet access (broadband access), teachers with basic IT skills, and a clear commitment to participate and maintain the e-learning program. These selection criteria will also help to mitigate the potential risks of a sustainable e-learning program, including slow data transfer through the internet, teachers with insufficient IT skills, and inadequate budgets for maintaining the schools' computers.

school network will be organized to share the experience of this project with other demonstration schools and to agree on a regular meeting schedule of the demonstration school network and future agenda. Regular trainings and workshops on e-learning for demonstration schools and affiliated schools will be held at the network center after the first conference.

C. Cost and Financing

10. The TA is estimated to cost \$750,000 equivalent, of which ADB will provide \$500,000. The TA will be financed as a grant from the Republic of Korea e-Asia and Knowledge Partnership Fund and administered by ADB. The Government will provide the remaining \$250,000 equivalent in-kind through the provision of a network server, computer equipment, e-learning center space, counterpart staff, and other support. The detailed cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

11. Chulalongkorn University will be the Executing Agency, and Chulalongkorn University Demonstration Elementary School will be the Implementing Agency (IA). A task force comprising teachers and administrative staff has been formed at the Chulalongkorn University Demonstration Elementary School to oversee the formulation of e-learning content; implementation of the whole e-learning system; and organization of the workshop, training, and conference.

12. The ADB project team and the IA will work closely with Korea Education and Research Information Services (KERIS). KERIS has extended an invitation to the e-learning project team to visit KERIS and Korean schools participating in e-learning programs. The TA will finance key members of the task force together with the team leader of the consulting team to visit Republic of Korea. ADB will approve the list and number of members from this task force who will benefit from the TA funding to join the study tour.

13. A team of international and national consultants will be engaged in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). The selection method will be for individual consultants under a lump sum contract. The TA will provide 12.5 person-months of consulting services, 1 international and 11.5 national. The outline terms of reference for consultants are in Appendix 3.

14. The TA will be implemented over the period of 12 months, tentatively from September 2008 to August 2009. A survey will be conducted in the first month to identify the needs of the 50 participating schools. Interim reports for each activity (i) and (ii) will be delivered at the end of month 3. The test-run of the e-learning system will be done during months 4 and 5, with a test run workshop to be organized during the period. An e-learning system training handbook will be prepared during month 5, and an e-learning training workshop will be organized for month 7, by which time the system will be fully functional. The final deliverable by all national consultants is a properly functioning e-learning system, certified by a confirmation letter from the IA to ADB. For the international consultant, the deliverable will be a paper to be presented at the networking conference to be organized in month 10. At the end of the project, the IA will submit to ADB an e-learning program sustainability plan.

15. Equipment will be procured by ADB in accordance with its *Procurement Guidelines* (2007, as amended from time to time). The shopping method is anticipated to be used in procuring the liquid crystal display (LCD) projectors and personal computers (PCs). Only moderate specifications will suffice for the required 50 LCD projectors (to be distributed to 50 remote schools for use in teaching) and 125 PCs (75 at the e-learning center for training and workshops, and 50 to be distributed to 50 remote schools to connect to the e-learning platform). The equipment procured under the TA will be handed over at no cost to the IA and the participating schools.

IV. THE PRESIDENT'S DECISION

16. The President, acting under the authority delegated by the Board, has approved ADB administering technical assistance not exceeding the equivalent of \$750,000 to the Government of Thailand to be financed on a grant basis by the Republic of Korea e-Asia and Knowledge Partnership Fund for Capacity Building and School Networking for Educational Services (e-Learning) in Thailand, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Indicators and/or Targets	Data Sources and/or Reporting Mechanisms	Assumption and Risks
<p>Impact Students in participating schools achieve higher national test scores in English, science, and mathematics.</p>	<p>Grade 6 elementary school students of 50 participating schools achieve national test scores at least 5% better, on average, than in the previous 3 years.</p>	<p>National test scores of participating schools</p>	<p>Assumption</p> <ul style="list-style-type: none"> • Commitment to participate throughout the project from schools in remote areas and all the networking partner schools <p>Risks</p> <ul style="list-style-type: none"> • Poor service from internet service providers in rural areas • Slow data transfer through internet systems in rural areas • Insufficient maintenance budget for personal computers (PCs) and liquid crystal displays (LCDs) provided by schools in remote areas.
<p>Outcome Develop e-learning courses for the selected fundamental subjects—science, mathematics, and English—for which national testing is required of grade 6 students.</p>	<p>At least 1,250 students in remote schools have access to e-learning course contents.</p>	<p>Project reports Asian Development Bank (ADB) review mission report</p>	<p>Assumption</p> <ul style="list-style-type: none"> • The project is sustainable after the pilot phase. <p>Risks</p> <ul style="list-style-type: none"> • Poor services from internet service providers in rural areas • Slow data transfer through internet systems in rural areas • Insufficient budget to maintain PCs and LCDs provided by schools in remote areas. • Frequent relocation of rural e-learning coordinators and teachers
<p>Outputs 1. E-learning courses 2. E-learning system network, including a training module 3. Demonstration school network</p>	<p>30 well-developed e-learning course modules for 3 subjects Good access to the e-learning system</p>	<p>System report Workshop results Conference papers</p>	<p>Assumption</p> <ul style="list-style-type: none"> • The center is well equipped with computer laboratory/ broadband internet facilities

Design Summary	Performance Indicators and/or Targets	Data Sources and/or Reporting Mechanisms	Assumption and Risks
conference	<p>by 50 participating schools</p> <p>Participation in the workshops by at least 100 teachers and teaching interns from remote schools</p> <p>Participation of at least 50 delegates from demonstration schools in the networking conference</p>		<p>Risks</p> <ul style="list-style-type: none"> • Poor services from internet service providers in rural area • Slow data transfer through internet systems in rural areas • Insufficient maintenance budget for PCs and LCDs provided by schools in remote areas • Frequent relocation of rural e-learning coordinators and teachers
<p>Activities with Milestones</p> <p>1.1 Confirm participation by schools in remote areas in the e-learning program (month 1)</p> <p>1.2 Conduct a survey to gather information and needs from participating schools (month 1)</p> <p>1.3 Gather all new and approved educational innovations to be installed in the system (months 1–3)</p> <p>1.4 Design web pages for each module (months 2–3)</p> <p>2.1 Survey and analyze the network, data center and project requirements (month 2)</p> <p>2.2 Design the system structure and overall e-learning architecture (month 3)</p> <p>2.3 Install system and required computer equipment (months 3 and 4)</p> <p>2.4 Conduct the test run of the system and adjust content pages to fit the system (months 4 and 5)</p> <p>2.5 Conduct test-run workshops for the system operator, related personnel, and teachers from 50 participating schools (month 4 or 5)</p> <p>2.6 Prepare a training handbook (month 5 or 6)</p> <p>2.7 Conduct an e-learning training workshop for the system operator, related personnel, and teachers from 50 participating schools (month 7)</p> <p>3.1 Organize a networking conference on e-learning and publish conference proceedings (month 10)</p>			<p>Inputs</p> <ul style="list-style-type: none"> • Technical assistance financing of \$500,000 as a grant from the Republic of Korea e-Asia and Knowledge Partnership Fund, administered by ADB • Government financing through Chulalongkorn University of \$250,000

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COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Total Cost
A. Asian Development Bank Financing^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultant	30.0
ii. National Consultants	50.0
b. International and Local Travel	10.0
c. Reports and Communications	10.0
2. Equipment ^b	150.0
3. Training, Seminars, and Conferences	
a. Facilitators	30.0
b. Training Program	80.0
4. Surveys and Study Tours ^c	55.0
5. Miscellaneous Administration and Support Costs	35.0
6. Contingencies	50.0
Subtotal (A)	500.0
B. Government Financing	
1. Office Accommodation and Transport	30.0
2. Remuneration and Per Diem of Counterpart Staff	70.0
3. Others ^d	150.0
Subtotal (B)	250.0
Total	750.0

^a Financed by the Republic of Korea e-Asia and Knowledge Partnership Fund and administered by the Asian Development Bank.

^b \$150,000 is allocated for procuring personal computers and liquid crystal display projectors. The equipment procured under the technical assistance will be handed over at no cost to the Implementing Agency and participating schools.

^c Includes \$35,000 for a study tour to visit Korea Education and Research Information Services and schools in the Republic of Korea.

^d Includes a network server, computer equipments, and network center space.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Scope

1. The technical assistance (TA) for Capacity Building and School Networking for Educational Services (e-Learning) in Thailand will require 11.5 person-months of national consultancy and 1 person-month of international. The national system integration expert will be the team leader for all tasks under the information technology and multimedia implementation component. The team leader will provide guidance for the timely delivery of high-quality outputs consistent with the terms of reference for the tasks described below, monitor progress and fine-tune the TA as necessary to ensure that the deliverables are achieved as described, and identify all matters that need to be addressed for facilitating TA implementation. The TA deliverables are detailed in para. 14 of the main text of this report.

B. National Consultants

1. System Integration Expert/Team Leader (4 person-months)

2. The consultant should have a minimum of 7 years' experience in project management and communication network system integration including hardware, software, and interfaces. As the team leader, the consultant will be responsible for preparing the interim report for the information technology and multimedia implementation component and the e-learning system handbook, and for ensuring that the e-learning system functions properly. Specifically, the consultant will

- (i) determine the project schedule from evaluation to procurement, installation, test run, and hand over;
- (ii) ensure that the e-learning platform can handle the present and future content load of the e-learning courses;
- (iii) identify staff requirements for system management and administration;
- (iv) propose yearly budget requirements to maintain the e-learning system, including capital and operating expenditure;
- (v) oversee the system installation, test run, and hand over; and
- (vi) conduct the test run workshop and the project completion workshop.

2. E-Learning Content Expert (4 person-months)

3. The consultant should have a degree in technology in education and experience in e-learning. The consultant will perform tasks for both the formulation and design of the e-learning course content component and the multimedia implementation component. The consultant will submit an interim report on the formulation and design of the e-learning course content component. Specifically, the consultant will

- (i) design the colors, typography, illustrations, and interaction of each page of course content to suit the curriculum for its specific academic level and pedagogy (this requires close coordination with the Implementing Agency's task force);
- (ii) review digital content-creating tools currently available to identify the most appropriate for each e-learning objective;
- (iii) test all content pages on the application and modify designs to fit the system; and
- (iv) conduct the survey and the test run workshops focusing on content creation, design, and delivery.

3. Network and Data Center Expert (1.5 person-months)

4. The consultant should have a minimum of 5 years' experience in internet and intranet networking. The consultant will

- (i) survey and analyze the network and data center requirements;
- (ii) design the system structure according to the results of (i); and
- (iii) provide detailed specifications of the end-to-end system including the e-learning center, networking and system hardware and software, and interface protocols.

4. Learning Management System Expert (2 person-months)

5. The consultant should have significant experience in managing learning management systems and in-depth knowledge in e-learning and its applications. The consultant will

- (i) collect and analyze detailed requirements of the project, including the number of users, usage frequency, applications, speed, interconnectivity, physical locations, and other necessary information;
- (ii) review learning management system platforms currently available to identify the most appropriate platform to serve the project's objectives;
- (iii) design the overall e-learning architecture;
- (iv) design the training programs for the system operators and related personnel; and
- (v) conduct the test run workshop and the project completion workshop.

C. International Expert in E-Learning for Basic Education (1 person-month)

6. The international consultant should have extensive experience in planning and implementing e-learning systems for basic education. The consultant will serve as a resource person to the project team, giving advice on the

- (i) design of the digital content,
- (ii) design of the e-learning system architecture,
- (iii) implementation of web-based e-learning solutions, and
- (iv) maintenance of the e-learning infrastructure.

7. The consultant will prepare a paper on e-learning in basic education from an international perspective, to be presented at the networking conference.