Introduction

In recent years, the Institute for the Promotion of Teaching Science and Technology (IPST), an autonomous body within the Ministry of Education of Thailand, has developed a Teacher Professional Development (TPD) programme in support of educational reform.

The TPD contains a component that aims to improve the skills of teachers in the use of information and communication technologies (ICT) and enable teachers to utilize ICT effectively as tools for teaching. The ultimate goal of IPST in terms of in-service teacher training is to improve students' learning outcomes, particularly in science and mathematics, to reach international standards.

The IPST has adopted the Lead-Teacher Model as a vehicle for developing professional development through partnership and collaboration between schools and organizations such as universities.

ICT Education in Schools in Thailand

Since the enactment of the National Education Act in 1999, the education system in Thailand has undergone reforms and has been decentralized so that it now operates on the basis of Education Service Areas (ESA). School education is mainly under the control of the Office of the Basic Education Commission (OBEC). During the transition period the OBEC still has direct influence on an ESA's schools in terms of funding and authorities. The structure of the educational system is depicted in Figure 1.

Figure 1: Thai educational system structure

IPST has been committed to the development of school science, mathematics, and technology education in Thailand since the 1970’s. IPST’s major responsibilities involve curriculum development, teacher training, and science talent promotion and development.

The information and communication (ICT) policies and practices for basic education follow the National IT 2000/2010 Strategic Plan which aims to promote innovation, build human capacity, and strengthen the information infrastructure and industries to transform Thai society into a knowledge-based society. The MOE regards the use of ICT as an important tool for driving educational reform and sets the policies and standards for ICT in Education to maximize the uses of ICT in educational management and administration, and teaching and learning across subjects. The policies focus on ICT accessibility and preventive action on internet safety, digital resources development, ICT professional development, and community involvement.\(^{72}\)

The first phase of ICT use in education in Thai schools began in 1984, when computer courses were first delivered to school students, in order to provide students with the basic skills in operating and applying ICT. The courses were compulsory within the mathematics subject cluster. Revisions were made in 1990 and 1997 to cope with rapid technological advancements. Lower secondary courses included: Introduction to Computers and Information Technology, Introduction to Computer Applications, Introduction to Database Management, Introduction to Programming Concepts, Graphics and Computer Presentation, and Computer Creativity. Upper secondary courses included: Computer and Information Technology, Electronic Spreadsheet, Database Management, Computer Applications and Word Processing, Advanced Computer Technology, Multimedia Presentation, Programming I, Programming II, Introduction to Computer Architecture, Data Communications and Computer Network, and Computer Projects. These courses were offered to students according to their preferences and each course earned students two units (comprising four periods of instruction per week per semester).

In response to the enactment of the Education Act 1999, in 2001 the Ministry of Education (MoE) established the National Curriculum Standards for all key learning areas in order to drive reform of school education. Standards for core subjects, including ICT curriculum standards, were developed for students at all 12 grade levels. Technology education included not only ICT but also Design and Technology (D&T) courses. Both D&T and ICT courses have been offered to students within the cluster of Technology and Career subjects.

Various initiatives were undertaken to facilitated the development of ICT skills in all students, including training of teachers and provision of hardware and software. In many cases, however, efforts were stymied by the lack of resources, computer personnel, equipment, and funding.\(^{73}\)

The second phase of ICT use in education in Thai schools was influenced by the findings by studies that the students’ achievements in the core subjects at primary and secondary grade levels in recent years were below the international average.\(^{74}\) These results led to the development of a sense of urgency regarding the need for education reform.

In response, the National ICT for Education Master Plan 2001-2005 and the MOE Education Reform Roadmap (2005-2008) mandated the use of learning technologies to improve the quality of education and training in Thailand.\(^{75}\)

\(^{72}\) Thai Ministry of Education, 2007  
\(^{73}\) Pelgrum & Anderson, 1999  
\(^{74}\) OBEC, 2007; Klainin & Soydhurum, 2004; Klainin & et al, 2007  
\(^{75}\) OEC, 2006
The Lead-Teacher Model

The IPST Teacher Professional Development Programme was established in 1995 with the goal of building the capacity of ICT teachers nationwide. This programme was funded by the government and by other donors.

The primary objectives of the programme were to:

- Develop, support and empower lead trainers for in-service teacher training in the uses of ICT tools, particularly in mathematics and science subjects.
- Design and disseminate ICT-relevant training materials for in-service teachers.
- Utilize distance learning technologies to provide services to both trainers and teachers.
- Develop networks with local authorities and organizations to facilitate the work of teacher trainers across schools in remote areas.

In the early years of integrating ICT into education in schools, most of the training programmes were designed to build the capacity of teachers who were assigned to teach computer courses. These teachers had different subject backgrounds and demanded intensive training to be able to teach the courses.

IPST, in collaboration with university partners, began a series of train-the-trainer workshops. Well-skilled ICT teachers from schools all over the country were recruited to be IPST lead trainers. These teacher trainers provided training to other teachers both in their own and other schools in their area. By 1995, there was a lead teacher trainer in each province (76).

In 1999, IPST by requested the Provincial Education Authorities to recommend potential ICT teachers from secondary schools in their areas to be lead teachers. The total number of ICT teacher trainers rose to 325. In 2005, 230 additional ICT teachers from 168 schools joined the programme. Currently, there are 555 lead trainers who provide training services to other teachers, both ICT and non-ICT, all over the country. These trainers provide training for in-service teachers at 20 training centres in the Education Service Areas, training approximately 1,000 teachers each year.

The ICT training courses were frequently revised and updated with respect to content, pedagogical practices and assessment, in accordance with the ICT curriculum standards implementation guide. 76

The courses include the following components:

- Fundamental Concepts of Information Technology: Basic knowledge and understanding of data, data processing, basic applications of computers and operating systems.
- Computer Assisted Task Creation: Application of word processing, graphical and presentation software to real life tasks.
- Assessment Tools: Knowledge and understanding of spreadsheet software and its applications for assessing student's learning. Managing and practicing learning activities using spreadsheet software.
- Internet and Web Creation: Basic knowledge and skills development for communicating via the Internet. Basic webpage creation using HTML.

76 IPST, 2002
• Algorithm and Problem Solving Tools: Identifying problems and problem-solving. Implementing problem solving plans, testing, verification and improvement.

Additional courses requested by the trainers included “how to” courses such as ICT School Curriculum Development, Web Resources Construction, Test Item Construction, and Assessment Strategies. Theses courses were designed for both ICT and non-ICT teachers.

In the 10 years since the implementation of the ICT TPD programme, these ICT lead trainers become valuable resource persons for IPST, the MoE, and other ICT in Education projects. They are charged with reviewing digital materials, and with creating resources and training course materials. The trainers have played a major roles in building the capacity of both ICT and non-ICT teachers and have created a technology-friendly culture in their schools. In addition to providing training to teachers in their own school and neighbouring schools, the lead teachers have been involved in various activities, including:
• Providing distance training (12,207 teachers from 1,514 schools were registered for six training courses).
• Providing training for ICT teachers of the IPST Special Project, the “Development of High Calibre Science and Mathematics Teachers”.
• Providing training customized for teachers in schools located in remote areas.
• Organizing outreach programmes for youth, to develop their ICT skills. For example: Computer Youth Camp and Robot Control Programming.
• Developing teaching packages for ICT-integrated project-based learning.
• Developing websites to provide on-line digital resources for teachers (www.krumontri.com) and students (www.thaigoodview.com).

Factors influencing the effectiveness of the TPD

Over the course of implementing the TPD programme, a number of factors were identified as being important for its success. Several of these factors are described below.

• Continual development of lead trainers
In addition to regular training workshops based on new practices these trainers are encouraged to participate in conferences and to attend special training courses and seminars which enabled them to keep up-to-date with changes in technologies. Developing these lead trainers’ skills and knowledge not only benefited the teachers but also the learners in the areas within which they work.

• Sharing knowledge and skills
There are 20 school clusters in Thailand. Within each cluster, trainers provide teacher training with regard to their expertise and teachers’ needs. ICT teachers pass on what they have learned to other teachers in their schools and coach them to utilize ICT in other subjects. In this way, non-ICT teachers gain confidence in using ICT tools in their classrooms. For example, mathematics and science teachers learn to use tools such as the Internet for classroom activities.

• Collaboration and partnerships
The TPD programme led to the formation of partnerships among teachers, trainers, university instructors, education supervisors, and personnel from the private sector. These collaborative networks facilitated interaction and sharing of experiences and common interests, leading to further improvement in the use of ICT in classrooms.
Support from school principals and administrators

Formal and informal support from school principals is vital for the integration of technology into classroom teaching. For example, it is important for principals to understand that computer laboratories can be used for teaching other subjects as well as ICT and to support such use. Likewise, it is important for principals and administrators to provide a supportive environment for teachers; one that enables them to apply and integrate technology into the curriculum and engage students in various ICT-enhanced learning projects. Similarly, it is necessary for principals and administrators to recognize that professional development of teachers requires time, and teachers must be encouraged to invest time in improving their skills in using ICT in education. Principals and administrators should also be flexible in terms of allowing teachers to adjust the school time-table, where necessary, to allow them to make better use of ICT tools.

Conclusion

Building the capacity of teachers in the uses of ICT for education requires long-term continuous development of the lead trainers, sharing of knowledge among teachers, partnerships and collaboration among educators and organizations, and support from principals and administrators. These factors must be in place in order for ICT use to bring about change in the classroom.

To be able to lead, both teachers and trainers require ongoing support and opportunities to experiment with new skills and strategies over time. A professional development programme should also include provision of leadership skills, such as decision making, team building, communicating, and problem solving.

Although the TPD programme has been a success, there remain a number of challenges. A key challenge is the need to scale-up the TPD programme to provide training opportunities for a larger number of teachers. Another challenge is to coordinate various components of the system to provide sufficient support to teachers to assist them to change their practices. A further challenge is quality control. It is necessary to monitor and evaluate the work of trainers and monitoring and evaluation mechanisms should be integrated into the TPD programme. An additional challenging area is in determining the extent to which the teacher training programme has had an impact on the students' learning outcomes. These challenges are areas which the IPST will focus on in the future.

References


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