Chapter 1
History and Development of Thai Education

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Abstract This chapter begins by examining the indigenous Thai concept of education. It then provides an overview of the historical evolution of Thai education. This section describes education in the old days when monks were the teachers and temples were the schools. Then it discusses the visionary reforms of King Rama V or King Chulalongkorn the Great, my great-grandfather, to modernize and secularize Thai education and to extend education to the provinces. It also describes how His Majesty was far ahead of his times in terms of taking two extended trips to Europe and visiting other parts of Asia such as India and Indonesia to learn from other systems of education and cultures. This chapter touches on many aspects of education to stimulate further reading and discussion, especially with respect to comparative perspectives on educational development. More elaborate details on these various topics are provided in subsequent chapters of the book. In the latter part of the chapter, there is information on various special projects which I have launched in the past 37 years to improve access to Thai education for all and to raise its quality such as education for various disadvantaged groups, science schools for the gifted, and education for disaster victims. This chapter should provide readers with a historical introduction to Thai education about which they can read in other chapters to learn more in detail about contemporary Thai education and the many challenges it currently faces.

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1.1 History

*1.1.1 The Thai Concept of Education (Šueksa) (*ศึกษา*)*

The word "education" is "*kansueksa*" (การศึกษา) in Thai. *Šueksa* (or *šuksa*) is derived from Sanskrit (*siksa*) (ศิกษา) or (*sikkha*) in Pali, and "*kan*" (การ) is a Thai prefix to make the word a noun. The root word is "*śak*," meaning "to be capable." "*Sueksa*" means "to want to be capable." So education is the process of learning to make a person more capable and competent. In Pali, a person in the process of learning is called "*sekkha*" or "*sekha*," from the root word "*sikkha*." The enlightened ones who have attained *nirvana* are called "*asekkha*," meaning those who have finished studying and need no further instruction. This means that at its roots the Thai word for education means the process of developing wisdom and capability. All must have education if they want to be more capable and productive. Therefore, formal education is for developing a child holistically in all aspects, including knowledge, skills, psychomotor, character, and moral values. It also prepares students for self and family support with social responsibility.

1.1.2 Ancient and Early Forms of Education

For most of its long history, a formal school system did not exist in Siam. Knowledge was transferred informally in the family, from fathers and mothers to sons and daughters. This was essentially informal vocational education in which fathers taught their sons a trade or craft such as rice planting, carving, carpentry, painting, construction, or even governmental administration. Mothers taught subjects such as weaving and cooking. In the palaces and among rich families, education was more formally provided for their boys and girls. The Buddhist temples not only performed religious functions, but they were also sources of knowledge and everyday expertise. Apart from those opportunities, ordinary people, mostly boys, who wished to study music, arts, and crafts, had to seek out masters of knowledge and became their students. Once one was accepted as a student, the master would then teach such pupils on a one-to-one basis. Obedience, service, respect, and gratitude were expected from the students in return.

Education has been highly valued in Thai society since antiquity, but it was often limited to boys. The teachers were generally monks and the educational venues were usually temples (see Fig. 1.1). A Dutch eyewitness described monastic education in seventeenth-century Siam as:

> Till their fifth or sixth year the children are allowed to run about the house; then they are sent to the priests to learn to read and write and to acquire other useful arts. Those who serve the priests in public worship (novices) go very seldom home. When they can read and write properly they are sent to learn a trade or take up some other employment. Frequently, however, the cleverest of them are allowed to pursue their studies, on account of the greater talent which they display. Instruction secular as well as religious is given solely by the

Fig. 1.1 Picture of a monk teaching a student in the old days (Cover of the book, *Buddhism and Education*, by Phra Rajavaramuni 1987)

> priests till they are qualified to fill public positions and offices. They then discard their yellow robes, but many intelligent and talented pupils remain in the monasteries in order to become heads of temples and schools, or priests. (Schouten 1889, p. 15)

Watson (1980) notes that this description accurately describes Siamese monastic education 200 years before and after the seventeenth century indicating an impressive historical continuity. He also argues that this system served the Siamese well for around 600 years and in many ways was outstanding (p. 74).

Here are some statements translated from a few old Thai poems or proverbs that I learned when I was little, reflecting the importance of education in traditional Siamese society:

> "You should learn when you are young,
> to be able to earn money when you grow up."
> (An ancient Thai proverb, Suphasit Phra Ruang)

> "When there is an opportunity to learn,
> you should learn as much as you can."
> (Francois Touvenet Hilaire (1881–1968), a French missionary; the author of the famous Thai textbook, *Darunsueksa*; and the headmaster of Assumption College, 1901–1968)

> "If you are in any trouble,
> only knowledge can help you."
> (Francois Touvenet Hilaire)

> "If you have even one kind of knowledge,
> and if you know it well,
> it will give yourself much benefit."
> (Francois Touvenet Hilaire)

> "You should not think you are from a noble family,
> for life is not certain. There can be big changes anytime."
> (Kamchai Thonglorm, 1906–1985, a Thai language expert)

1.1.3 Westernization and Modernization

As mentioned above, the Siamese valued education highly. We have had our own alphabet, created by King Ramkhamhaeng the Great of the Sukhothai Period, since 1283. Even though the alphabet today is quite different from the original one, we can still trace it back to its origins long ago in the thirteenth century, created through the vision of a great king. In the seventeenth century, around the end of the Ayutthaya Period (1351–1767), Western knowledge and technology were introduced to Siamese society. Building construction, astronomy, military technology, and maritime trade were among the Western technologies and fields coming into Siam at that time. This coincided with the age of science and technology in the West, and the waves of Western technological influx into Siam increased steadily over time.

Since the early nineteenth century, ship building, medicine, and education were introduced. The monarchy in Siam was open to allow missionaries to enter the country to pursue both their religious and secular activities. In 1848 during the reign of King Rama IV, Wang Lang School was established by Presbyterian missionaries. This school later became the Wattana Wittaya Academy, one of the nation's most successful girls' schools. In 1852, there was an establishment of a second private school, the Bangkok Christian College, for boys only also set up by Protestant missionaries.

Many Western missionaries came to Siam in the nineteenth century. Probably the most famous was Dr. Dan Beach Bradley who served in the country from 1835 to 1873, for a total of 38 years (Bradley 2004; Bradley 1984; Lord 1969; Thai Khadi Research Institute 1985). His most profound influence was the establishment of a printing press using Siamese script, which had important implications for the development of Siamese education as well as intellectual and cultural life.

The eighteenth century was the age of enlightenment in the West. It was the golden age of scientific and technological discoveries, resulting in the industrial revolution. It was also the time at which Western imperialism and colonization spread across the globe, including Southeast Asia.

Siam was no exception and was vulnerable to such powerful colonial Western forces. During the reigns of King Rama III (1824–1851) and King Rama IV (1851–1868), imperialism and colonization were a major growing threat. There was an urgent need for Siam to modernize the country, and at that time, there was little choice but to become modernized according to Western standards as a strategy to avoid colonialization. This called for modernization of education to prepare highly skilled human resources, and a Western education system was, thus, introduced at that time.

1.1.4 *Education Reform in the Reign of King Chulalongkorn the Great (King Rama V)*

The first systematic reform of Siamese education took place in the reign of King Rama V, my great-grandfather (1868–1910) (Sirindhorn 1978). He introduced not only an education reform and change of the education system, but it was the building of a totally new foundation of Siamese education, which included the development of new curricula, educational standards and regulations, administrative structure, and faculty, staff, and administrator development. For King Rama V, education was not only for training people to serve in the government, but his vision went well beyond that. He also advocated *education for all* to enhance better living and good citizenship. In the earlier part of his reign, education was still closely connected to religion, with a strong emphasis on moral education. Monks were the teachers and temples were the schools.

Early in his reign, King Rama V established a Siamese language school and a year later an English language school in the palace. Those were schools in the modern sense. That is, there were school buildings, timetables, curricula, and lay teachers. Despite his idea and vision of a new system of education, he still supported traditional education in the temples as well as a few new Western schools established by both Protestant and Catholic missionaries. The latter came to be known as *rongrian farang* (โรงเรียนฝรั่ง) (Western schools), schools normally considered as highly prestigious. One such school is Assumption College, whose headmaster from 1901 to 1968 was the French missionary, Francois Touvenet Hilaire ("the Sage of Assumption"), quoted above and who became so talented in Thai that he produced the famous Thai textbook, *Darunsueksa*, still used today.

For girls, King Rama V set up a girls' school, Sunanthalai, in 1880, but soon after it was closed until much later on when women's education became more popular. He also founded specialized schools, such as the Military School, the Royal Pages School, and the Cartography School. Later on the Military School was turned into a general school, after which the graduates could continue their studies in specialized schools.

King Rama V also modernized the country by reforming the government and its administrative structure. There were ten ministries at that time. The Department of Education that had been founded in 1887 became the Ministry of Education in 1892 as part of this reform (MOE 1994). In 1898, the first educational plan was launched. The most significant part of the plan was the educational organization that covered preprimary, primary, secondary, and technical education up to higher education. The first university, Chulalongkorn, in Siam was formally established in 1917 during King Rama VI's reign, and four years later in 1921, the Compulsory Primary Education Act was proclaimed (Manich 1951).

King Rama V realized that education was the most important factor for development. However, it took a long time to develop human resources to respond to the challenging task of modernization. So he had to hire many experts from abroad, for

example, medical doctors, lawyers, train and road engineers, and engineers in other fields to facilitate the modernization process.

Unusual for a leader at his time, King Rama V made two major extensive trips to Europe, one in 1897 and the other in 1907. He also visited Java three times, Singapore, Malaya, and India. During his trips to Europe, he visited 14 countries and was there for a total of 15 months. Through such travel, he not only developed extensive knowledge of other countries and cultures but demonstrated a true talent for diplomacy, building good relations with many other important and influential nations such as England, Russia, France, and Germany. This certainly helped Siam avoid colonization.

Partially as the result of such travels, he developed the visionary policy of supporting bright intelligent Siamese (mostly boys) including his own sons to study primarily in Europe but also the USA and Japan (see Chunlachakkraphong 1958). The King was a fervent supporter of European education. The "King's Scholarships" were initiated at that time. This model of study abroad inspired Thai parents later over the decades to send their children abroad for study. Some officials were also sent abroad, for example, to Switzerland, the USA, Egypt, India, and Japan, to study and learn from their educational systems.

The first government school to offer education to all was established by King Rama V in 1884. It was located on the grounds of Maharnabaram Temple, a royal temple in Bangkok. Later on many other schools opened, both governmental and private. He supervised writing the new textbooks for these schools and commented on each book himself. Similar schools were built in other provinces outside Bangkok. In short, from the beginning, King Rama V visualized education as an urgent need for *all people*, boys and girls, and it was no longer limited to those from the royal or noble families.

To develop higher education, he founded a number of small specialized schools, like the Royal Pages School, the School of Engineering, the School of Law, and the School of Medicine. Early in his reign, King Rama VI founded Siam's first university, Chulalongkorn University, in 1917 by merging existing schools and adding some new faculties. In the beginning, the purpose of the university was to train high-level human resources for positions in many newly established governmental organizations. Later on, the university was also open to those who chose to work outside the government. Tej Bunnag (1970) provides an excellent overview of the evolution of Siamese education from monastic education to a modern system with a university during the era, 1824–1921.

King Chulalongkorn the Great is, therefore, regarded as the founder of modern education in Thailand. His strategy was to develop education for the military group first, and then he extended it to civilians. He laid the foundation for education by studying the education systems in other countries and selected what was best for Siam. He was deeply concerned about how to modernize the country and yet to be able to maintain important Siamese traditions at the same time. Looking back, one can see how difficult it was to save the country from being colonized, and Siam was the only country in the Southeast Asian region that actually was never colonized. In concluding his insightful study of education reform during the reign of King Rama V, Cornell historian David Wyatt (1969, p. 385) aptly notes King Chulalongkorn's special place in world history:

> If there is a single thread running consistently through this long period, it is the insistent presence of the king, who was his country's most devastating critic, its gadfly prophet, its guiding spirit through a revolutionary epoch in world history. He was in Sidney Hook's phrase, an 'event-making man,' who took his generation and his country by the ear and flung them outside into the world. His rare understanding of both what it meant to be Thai and the skill with which he manipulated the power at his command meant for his country the preservation of its independence and the creative shaping of its modern identity. Many kings have been remembered for less: few could be thanked by their country for more.

1.2 Thai Education in the Modern Era

1.2.1 Educational Changes After the 1932 Revolution (Change to a Constitutional Monarchy)

The new constitution enacted as the result of this major political transformation mandated that all Thais should complete four years of primary school (Article 56). In 1935 the primary Education Act of 1921 was enforced nationwide. It was the government's responsibility to develop and support education (Article 63). In 1933, a number of key principles were announced, namely, educational opportunity should be expanded, literacy education was to be developed, and higher education was to be developed. Thammasat University was established in 1934. After World War II, a new National Education Plan was introduced in 1960. The structure of Thai education changed to a 4-3-3-2 system.

1.2.2 Greater Unity in Education

During 1973–1976, an education reform initiative emerged emphasizing several important themes (ONEC 1976). At the time, four different ministries were involved in education. Rural primary education (*rongrian prachaban*) (โรงเรียนประชาบาล) and local municipal education were managed by the Ministry of Interior. The Ministry of Education handled secondary education, vocational education, teacher training, private education, and adult education. The Ministry of University Affairs handled higher education. The National Education Commission, responsible for educational policy and planning, was under the Office of the Prime Minister. As part of this reform, primary education was moved to be part of the Ministry of Education in 1980. This was to have significant implications for improving access to lower secondary education. Many primary schools became "schools for expanded opportunity" (*rongrian khayai ogat*) (โรงเรียนขยายโอกาส) adding three years of lower secondary education at these schools, greatly enhancing access to secondary education in remote rural areas.

1.2.3 Call for Greater Equality and Equity in Education

There was a concern about serious educational inequalities and disparities. Various policy-oriented research studies were sponsored to identify major problems in these areas and to introduce policies to improve educational equality and equity and social justice. There was also an emphasis on more data-driven decision-making (OEC 2006).

1.2.4 Structural Changes and Enhanced Support for Nonformal Education (See Chap. 8)

The reform committee proposed a change in structure from 4-3-3-2 to 7-3-2, and finally to 6-3-3, primarily because many, especially those in remote rural areas, were finishing only four years of primary schooling. This change in structure was formally adopted in 1977. Under the new structure, the expectation was that all children would complete six years of compulsory schooling. There was also an emphasis on accelerating and providing greater support for nonformal education and a call for the greater decentralization of education.

1.2.5 The 1999 National Education Act

Since the important reforms of King Rama V, the major most significant education reform occurred in the year 1999, when the legislature passed the 1999 National Education Act (NEA). The call for a major reform was from both within and without education circles. The declining quality of education in a rapidly advancing information technology society had provoked the rethinking of Thai education, the focus of this book. We are now still in the process of implementing the reform according to this 1999 law, which articulated the following key progressive principles and policies:

- Equal right and opportunity of 12 years of basic education for all including 12 years of free schooling (later expanded to 15 years in March 2009 to include three years of kindergarten)
- Student-centered teaching and learning to develop all children to their highest potential
- Decentralization of educational administration
- Lifelong education and continual learning
- Standards and professional development of teachers and educational personnel
- Quality assurance
- Government's commitment of budgetary support
- Participation of all sectors in educational resource development (*All for education and education for all*)

1.3 The Current Educational System in Thailand

As noted above, in 1977, the educational system in Thailand was changed from a 4-3-3-2 to a 6-3-3 structure, in which 6 years of compulsory primary education was followed by three years of lower secondary education (or secondary I) and then another three years of upper secondary education (high school or secondary II). At the upper secondary level, students may choose to go to general or vocational schools. At present the ratio of those continuing in general education to those in vocational is approximately 60%:40%. The 6-3-3 system is still in use today, but the compulsory education was raised from six to nine years as part of the 1999 education reform. The education from primary to upper secondary is 12-year basic education (see Chap. 4), which includes a figure showing the basic structure of Thai education from preschool to graduate education.

At present, education in Thailand is based on the framework articulated in the 1999 National Education Act. According to the Office of the Education Council, the average years of schooling of the 15–59 age group population increased from 8.1 years in 2003 to 8.7 in 2007 and to 8.9 in 2013.

Beyond basic education is higher education which is provided in public or private universities, colleges, or other types of institutions. As of 2017, there were 157 degree-granting universities/colleges under the Office of the Higher Education Commission (OHEC), Ministry of Education, in Thailand. 82 of them are public institutions, and 75 are private institutions. These do not include a few specialized universities/colleges in other ministries (such as health colleges administered by the Ministry of Public Health) and the 19 degree-granting technical institutions under the Office of the Vocational Education Commission, Ministry of Education. The lower-than-degree or diploma level is offered by state and private colleges and institutions, vocational colleges, community colleges, as well as colleges of physical education, dramatic arts, and fine arts. The majority of courses offered are related to vocational or technical education which normally requires 2 or 3 years of study.

The college degree programs require at least 2 additional years of study for students who have completed diploma courses and 4–6 years for those finishing secondary or equivalent courses. Generally, a master's degree program requires 2 years of study following a bachelor's degree, and a doctorate is awarded after about 3 or 4 years of study following a master's degree.

Formal education is also provided by special and welfare education, vocational education, special vocational education, education for ecclesiastics, specialized education, and international education in international schools (see Chap. 11).

There are also nonformal education services provided by both public and private bodies to those outside the formal school system (see Chap. 8). These services can be both general and vocational education. The 1999 Educational Act also permits and encourages informal education in which learners learn by themselves according to their interests, potential, readiness, and opportunities available from individuals, society, environment, media, or other sources of knowledge. It is provided by

libraries, museums, and science/technology centers, as well as by mass media and community learning networks. All ministries are involved in providing informal education to promote lifelong learning (see Chap. 8).

1.4 Educational Administration and Management

In accordance with the 1999 National Education Act and the 2003 Bureaucratic Reform Bill, the administration and management at the central level is under the responsibility of the following five main bodies of the Ministry of Education:

- The Office of the Permanent Secretary
- The Office of the Education Council
- The Office of the Basic Education Commission
- The Office of the Higher Education Commission
- The Office of the Vocational Education Commission

The 175 educational service areas in 76 provinces were established in 2003 under the jurisdiction of the Basic Education Commission in response to the mandate for decentralization of authority for educational administration, with 172 areas in the provinces and 3 areas in Bangkok. Each educational service area is responsible for approximately 200 educational institutions in which there are around 300,000–500,000 students. In 2008, 10 additional educational service areas were approved by the cabinet following the advice of the Office of the Education Council, Ministry of Education, bringing the number of the educational service areas (ESAs) to 185. Then the 3 former areas in Bangkok were merged into 1, bringing the total number currently to 183, and in addition, there are 42 secondary educational service areas. Currently there are now 225 ESAs.

Also in accordance with the National Education Act, local administration organizations can provide education at any or all levels of education according to their readiness, suitability, and the requirements and special needs of the local areas. Private educational institutions can provide education at all levels and of all types. Before the Act, the Bangkok Metropolitan Administration (BMA) had already successfully managed over 400 schools in Bangkok. More and more other local administrations are applying for the transfer of the schools in their localities from the Ministry of Education to be under their local administrations, as more and more government budget is allocated to them according to the 1997 Constitution. This is part of the decentralization process.

The Office of the Non-formal and Informal Education is under the Office of the Permanent Secretary. It provides adult education and education for both children and adults of diverse ethnic groups in remote areas (see Chap. 15). It also serves special cases, such as prison inmates and chronically ill children in hospitals.

1.5 Examples of Special Educational Development Projects Which I Have Launched

1.5.1 Education in the Remote Areas

In 1980, I started my first health and nutrition project in three schools. All of these were border patrol police schools. They were established over 60 years ago by the border patrol police of the Police Department to educate children in remote villages along the borders of Thailand. The remote areas here mean the places that are difficult to access and are far from the normal services provided by the Ministry of Education. In such areas, it was difficult for civilian teachers to serve. At first the border patrol police had informally taught pupils how to read and write on a voluntary basis. Now the schools are registered institutions for formal education, mostly at the primary education level.

I chose the three schools because I had worked with the border patrol police and knew that they could help me serve children in these kinds of schools. The schools were not the most remote and not so difficult for me to work on as the first project of my own. My primary aim was to feed the children, and I paid for the project by myself. I had to think hard about how to do the most in a cost-effective way and how to make it sustainable. I asked the schools to start with the "Agriculture for School Lunch" project. They did and it worked well. First, we could feed the students only once a week and then two lunches a week. We could finally do it every school day. Later on in the case of the boarding students, we could feed them three times a day every day.

From the single aim of feeding the children, I encountered many more unforeseen problems existing in such remote areas, both directly and indirectly related to education for these disadvantaged students. The direct problems were the need to train teachers in pedagogy; lack of teachers in specific subjects, especially science, mathematics, and languages; and inadequate educational media and other resources. The indirect problems were more serious, and some of them had to be taken care of first. They were unhygienic living conditions leading to ill health and diseases, inadequate public utilities like water supply, malnourishment, environmental deterioration, and language barriers due to ethnic differences.

The project has given me a special opportunity to learn by doing and to gain skills in action research. I have continually taken notes, studied, asked for help from experts in different fields and also from government authorities, followed up, and then assessed the project. Each problem is analyzed and solved. As of 2016, this project covered 814 schools and learning centers. The schools in this project include 204 border patrol police schools under the National Police Office; 208 public and 16 private schools under the Ministry of Education, including madrasas under the Ministry's Office of the Private Education Commission; 25 schools under the Bangkok Metropolitan Administration; 39 schools/centers under local administrations; and 69 schools for Buddhist novices under the Buddhism Promotion Office, the Ministry of the Office of the Prime Minister. The rest are the "community learn-

ing centers" under the Office of Non-formal and Informal Education of the Office of the Permanent Secretary, Ministry of Education. They provide basic education to the people, both adults and children, through the nonformal and informal education system (see Chap. 8). They are very helpful in small communities in extremely remote places where transportation and communication are very limited. Some learning centers have only about 30 children, and they learn in a mixed class including pupils from kindergarten to grade six with only one or two teachers.

All these years I have learned that education is far more complex than it seems. Each school, or even each individual, is different, and one size cannot possibly fit all. We may think of and talk about education looking at the big picture, like education for national development, but in practice we have to take care of so many different details to respond effectively to diverse and pressing needs at the local level. Education, however, can work at the microlevel. It is the goal for all humans to develop and to realize their full potential, and at the end, the child becomes an effective human resource, not only as a good and capable individual but also as a true citizen who can contribute to the community, the society, and the world as a whole. Over time, there have been favorable results from this project for which we are proud. Some students coming from the remote schools can continue their education up to higher education. Those who do not go on can have good jobs or even create their own. Now we have graduates in engineering, computer science, nursing, medicine, and other prestigious fields. Some have master's degrees, and in the future, there may be even some doctorates.

In helping the schools in this way not only do we educate the children, but we also help develop their communities. Schools can act as "village centers" by providing the people in the villages with knowledge and also services from school facilities such as computers to provide access to information and knowledge they need for community development and marketing their local goods and products.

1.5.2 Government and Private Schools

1.5.2.1 Active and Innovative Teaching and Learning in Science and Mathematics

Besides the remote schools, there are a few government and private schools in the cities where I have implemented some special education projects. For example, in 1999 there were five secondary schools in which I tried out active teaching and learning innovations in science and mathematics with the cooperation of the Graduate School of Education at the University of Pennsylvania. Before the implementation, a group of 13 teachers and principals had been trained at the University of Pennsylvania in innovative teaching methods. The pilot project lasted 3 years, and now this method has been implemented in hundreds of schools all over Thailand, with the support of the Ministry of Science and Technology, the Institute for the Promotion of Teaching Science and Technology (IPST), and the Ministry of

Fig. 1.2 Little Scientists' House project (photo courtesy of Her Royal Highness Princess Maha Chakri Sirindhorn's Personal Affairs Division)

Education. In fact, such innovative methods for teaching and learning are effective for almost all subjects.

In 2010, I started the active teaching and learning of science at the preschool level in the "the Little Scientists' House" project, following the German model "Haus der kleinen Forscher." Now it is being implemented in about 14,000 schools and is expanding to the primary school level, by many public and private organizations (see Chap. 17) (see Fig. 1.2).

1.5.2.2 Science and Mathematics Programs for the Blind

Several years ago, I started a small project to support a few blind students graduating from lower secondary schools to study in the high school science program of a famous private school, St. Gabriel's College. This is a Catholic K–12 school that has agreed to help me in this project. There is an advantage of working with private schools. In this case, we requested the school to help admit special students. Without their helpful cooperation, the blind would not have had a chance to study in the science program. This was quite unacceptable among the Thai schools in general.

I started this project as an experiment. With the help of the Association for the Blind, we obtained needed teachers and tutors. We had to design the Braille system of scientific symbols. The project has been quite successful. A few students can get into science and engineering programs of the universities, mostly computer science, and in the future, they can pursue scientific careers just like others.

1.5.2.3 School Botanical Gardens

I started the School Botanical Gardens project in 1994, and it has been implemented in schools throughout the country ever since. This project aims at conserving and studying local plant biodiversity and their uses by promoting and supporting the schools to develop their own botanical gardens. This is a good learning resource where students can learn to love nature and how to integrate many subjects, including science, mathematics, arts, physical education, social sciences, music, and languages, as they grow, tend, and study plants.

1.5.3 General and Vocational Education

Chitralada School was first founded as a private school in 1955 by His Majesty King Bhumibol Adulyadej at the Amborn Sathan Villa, Dusit Palace. Later on it was moved to Chitralada Villa, the palace residence of their majesties and the royal family. The purpose was to educate his children, but it has also been admitting other students. His Majesty would like to supervise the schools himself to make sure that his children would be treated like other students and would not get any privilege over others. I studied in this school for 15 years.

After I graduated from the university, I have been taking care of Chitralada School on behalf of His Majesty. This school has taught me much about different types and problems of education and educational management. Within the compound of Chitralada Villa, there are many ongoing experiments of His Majesty, in which the students can experience hands-on activities related to agriculture, biodiversity, agronomy, arts, and handicrafts, for example. I think it is extremely important for students to learn both theory and practice. One without the other would not be good education. I have also learned about education for children with special needs, such as those with autism, learning disabilities, psychological problems, and dyslexia.

The upper secondary education of Chitralada School provides general education. In Thailand most students from lower secondary schools enter general education high schools. Less than 40% of the students go to vocational high schools (see Chap. 7). This has been the trend for many years, because most Thai students aspire to enter famous academic universities, and also there are not enough good vocational schools and teachers. Vocational education is viewed as an inferior track of choice, even though some may be talented in the vocational and technical area.

Recently I have established a vocational branch of Chitralada School. I think that students who do not perform well in academic subjects should be trained in vocational education to enhance their future job opportunities. Moreover, those who are talented in vocational and technical skills should have an opportunity to develop their skills to higher levels in good vocational schools. I hope to make the Chitralada Vocational School a good choice of education for students graduating from lower secondary schools. In fact, some can even pursue their further study in many univer-

sities of technology. In 2014 a foundation that I chair established Chitralada Technology College, a private college, for offering technology education at the bachelor's degree level.

A developing country like Thailand needs high-quality human resources with vocational and technical skills. I hope to see more development and promotion of vocational education in the future (see Chap. 7) to achieve a better balance between these two basic tracks of education.

1.5.4 Education for Disaster Victims

In 2004 there was a disastrous tsunami hitting the west coast of southern Thailand. About 5000 people were killed. This was the worst natural disaster that ever happened to Thailand resulting in huge casualties. Besides the immediate relief and rehabilitation for the victims' families, a more long-lasting effect was on the surviving children of the local victims. We had to construct many new houses and schools to replace the old ones destroyed by the tsunami. We had to give them the tools they needed to have to earn their income. The more difficult part was to heal the minds of those who had witnessed firsthand this dreadful and tragic disaster (see Weber 2005).

Many nongovernmental organizations in Thailand and from abroad as well as individual volunteers rendered their helping hands. One good example is the project of the Children's World Academy Foundation, the chair of which is German. They built a new school for orphans created by the tsunami. This is in Phang Nga province in southern Thailand. It is a boarding school run by a few full-time Thai teachers and a number of international volunteers and supported by generous donations. The school was envisioned as a self-support school, by growing plenty of orchards and building an international guest house at the school. These activities are incorporated into the curriculum, and the children are trained in both academic and vocational skills. The school is also both the children's home and workplace at the same time. This is an innovative model of schooling.

1.5.5 Government Welfare Schools

I have mentioned the border patrol police schools. Those are one kind of government welfare school for disadvantaged children. There are many other welfare schools all over Thailand, under the Special Education Division of the Office of the Basic Education Commission, the Ministry of Education. The Suksasongkroh (welfare) schools were established to provide free education and boarding for many types of disadvantaged children. They were mostly impoverished children, deserted children, orphans, and children of diverse ethnic groups. The schools also accept children affected adversely by HIV/AIDS and narcotic drugs.

There are also Rajaprachanukroh welfare schools. Historically Rajaprachanukroh schools were founded by His Majesty King Bhumibol Adulyadej in the 12 southern provinces badly hit by a devastating typhoon in 1962. The worst damage was at the Talumpuk Cape of Nakhon Si Thammarat, where the first welfare school was built. The Rajaprachanukroh Foundation, founded initially by His Majesty with funds from the donations left from this disaster relief, has helped establish many more Rajaprachanukroh schools in other parts of Thailand, admitting disadvantaged students and providing room and board for some of them. Besides supporting these schools, the foundation takes care of the victims of both natural and human-made disasters, such as fires, floods, and soil erosion.

Currently there is no clear-cut difference between Suksasongkroh and Rajaprachanukroh welfare schools. There are also many other kinds of welfare schools, both governmental and private. Besides the schools for special education, the Office of Basic Education Commission encourages regular public schools to also admit disadvantaged students and become the so-called inclusive schools. According to a report of the Office of Education Council, in 2015 there are 51 welfare schools under the Office of the Basic Education Commission, with special vocational training for future employment in their localities (OEC 2015).

In 2006 the government welfare schools, excluding the border patrol police schools, took care of about 40,000 disadvantaged students, about 30,000 of whom are boarders. The border patrol police schools enrolled about 28,000 students, mostly children from ethnically diverse groups (OEC 2007a).

1.5.6 Schools for Students with Disabilities

Formal education for children with disabilities is provided in welfare schools, special schools, and inclusive schools. Srisangwal School, a private school named after my grandmother and supported by the Foundation for Helping the Disabled under the patronage of the late Princess Mother, is well-known for its expertise in education for disabled children. There are also special schools for children with specific types of disabilities, such as schools for the deaf and for the blind. I have worked with disability cases in many schools in Bangkok and provincial areas depending on which schools are most convenient for the disabled children and their families.

I myself have revived a school in the compound of the Grand Palace, Phra Tamnak Suan Kularb School. It was an old school, in fact the first school established by King Rama V. Besides educating children of the personnel in the Grand Palace, I set up a center for the education of deaf students in this school. One deaf girl, Ms. Jakrada Attarataya, an alumna of this school, graduated with honors from the Faculty of Science, Chulalongkorn University, and won a government scholarship to study abroad, committed to work at the National Synchrotron Center upon her return to Thailand. She earned her Ph.D. in protein crystallography from the University of Bristol in the UK and is now a scientist at the Synchrotron Center.

In 1999 I set up a special ICT Fund to promote the use of ICT to help persons with disabilities in their education and daily activities. I use this ICT Fund to purchase assistive devices and equipment from abroad and asked the working group to do research to produce personalized equipment and devices for them.

The ICT Fund is used to provide computer facilities in selected schools and homes of the disabled. Assistive technologies such as switch or trackball mice, intellitools, communication devices, special educational software, and computers were also provided. We trained the teachers and the caregivers to use such equipment and devices. The classrooms were also arranged in such a way that the children with disabilities could use the ICT and assistive technologies properly and easily.

We worked on many case studies with different types and levels of disabilities. Each case needs a different kind of assistive technology. We followed up the progress of those cases for many years and found favorable results. Young students developed their motor skills and learned the lessons better. A few disabled students who graduated from high school were employed in a computer maintenance center.

1.5.7 Education for Prison Inmates

I started a project for prison inmates in 1997. In my opinion, vocational skill development, coupled with moral education, can be effective to rehabilitate them. If they are trained in the skills that are in high demand such as computer skills, they will have a good chance of getting jobs and consequently become good and responsible citizens after they are freed.

In fact, there are training programs in arts and crafts for prison inmates in Thailand already. The products are sold at the prison's annual fairs, and the inmates get some share of the profit. They can also study in the nonformal education system, from primary education up to bachelor's degree level. Some inmates have earned several degrees even though they still have several years left in jail.

My project adds computer skills to their training. I provided computer facilities to four "pilot" jails where various computer lessons have been provided to inmates. They can choose to enroll in courses from basic to advanced computing, computer repair and maintenance, graphic design, and desktop publishing. Such skills have enabled those inmates to earn some money from word processing or graphic design even while in prison.

Aside from learning basic computing skills, a group of female inmates at the Central Correctional Facility were trained in the skills needed to produce a multimedia book called *DAISY* (Digital Accessible Information System), developed for persons who have reading impairments, such as the blind. The project is a collaborative effort between my ICT project, the Thai Association of the Blind, and the Central Women's Correctional Facility. I provided funding to provide six sets of computers

for the Central Women's Correctional Facility. Individuals from Japan kindly came to provide training on *DAISY* book production for inmates.

The Thai Association of the Blind has hired the inmates trained in the program to convert a number of popular books into *DAISY* books for the library collection of the association. Members of the library can check out these books for personal use. This project not only helps make good books available for people with disabilities, but it has also enhanced the self-esteem of the inmates resulting in their feeling good and proud about themselves (Sirindhorn 2004).

1.5.8 Education for the Gifted and the Talented

1.5.8.1 Science Schools for the Gifted

Most of my work has been to help average children and disadvantaged groups such as the disabled, prison inmates, and those in remote areas. But I think education of the gifted and the talented is also particularly important for the future of our country. They can be a "disadvantaged" group in regular schools, as they learn faster than the pace with which their teachers can cope, and educational resources of regular schools may not be sufficient to meet their high capacity for learning, which can lead to their serious frustration.

So in 1991, I supported Mahidol University and the Ministry of Education to establish the first science high school in Thailand, Mahidol Wittayanusorn School. The school became autonomous in management by a special law in the year 2000. It admits 240 highly gifted students, both boys and girls, from all over the country each year. It is a boarding school and every student receives a full government scholarship.

Although the goal is to produce capable researchers in science and technology for the future, I urge that the students also be trained well in subjects like arts, culture, social sciences, and humanities. Besides Thai, they are required to study English and one other language such as Chinese, Japanese, Vietnamese, Russian, German, or French. They engage in sports, school service, and community service. I think gifted students should be trained in a holistic way to be compassionate individuals dedicated to working for the common good.

At present the school is helping 12 Chulabhorn Rajavidhayalai Science Schools located in 12 provinces to develop their gifted programs in mathematics and science. Mahidol Wittayanusorn School's curriculum, teaching methodology, learning process, and management system are available for other schools to study and apply to their schools to improve education. The process of gifted education is, therefore, an important strategy to improve schools at large.

1.5.8.2 Gifted and Talented Program in the Arts

Another example of the programs for the gifted and talented is the project I have initiated to produce a number of top researchers in languages and arts. This is a scholarship program for high school students selected on the basis of their talents in any area(s) of arts and languages. It involves cooperation between the prestigious Triam Udom Suksa High School in Bangkok and the Faculty of Arts, Chulalongkorn University. About ten students per year receive scholarships to study arts programs from the high school to Ph.D. levels.

1.5.8.3 International Olympiads and Other Competitions

The academic Olympiads and other national/international competitions serve as a means to stimulate the schools to improve the quality of their education. The late Princess Galayani Vadhana, my aunt, founded a special foundation in 2002 to promote the International Mathematics and Science Olympiads. Behind these Olympiads, initiative was her determination to improve science and mathematics teaching and learning in Thai schools. The Olympiads were just a tool to that important end.

At present each year there are almost 3,000 gifted students in secondary schools who are selected to join the mathematics and science camps organized by the leading universities in a concerted action around the country. A by-product of the promotion of the Olympiads promotion has been the production of good science and mathematics textbooks and educational media, teacher development, and cooperation among science and mathematics faculties, as examples. This is the biggest enrichment program for gifted students all over the country. Through preparation for the Olympiads, I have succeeded my aunt in promoting gifted students in science and mathematics and upgrading science education in schools.

There are many other competitions, in which students compete from the local to national and then international levels. The winners receive prestigious awards and high recognition from the public. To cite a few examples, there are competitions of science projects, innovations, inventions, mathematics problem-solving, and robots. These competitions are especially good for identifying students having diverse and exceptional talents. Due to the publicity involved, we are able to generate excellent cooperation and financial support from both governmental and private organizations.

1.5.8.4 International Activities

Since 2002, I have selected two university students each year to attend the Summer Student Program at the DESY Institute or the German Electron Synchrotron Institute in Hamburg, Germany. The students have an opportunity to work on cutting-edge

research with outstanding scientists, especially in the field of particle physics, both theoretical and experimental.

The year 2008 was the first time I sent three graduate students in science to participate in the Lindau Conference at Lindau, Germany, in which many Nobel Laureates gather annually to meet young scientists and gifted students from all over the world. The inspiration the students receive from meeting those outstanding scientists is very important for them in pursuing research careers with pride and confidence in the future.

Another example is a project for high school students and physics teachers to go to the European Organization for Nuclear Research (CERN) in Geneva, to attend CERN summer programs. This program has been taking place annually since 2009. We also collaborate in research on particle physics.

Two more examples are activities at GYSS and LLNL. Each year since 2013, five young Thai researchers and students participate in the international conference called GYSS or Global Young Scientists Summit sponsored by the government of Singapore, and from 2014 to 2016, two high school physics teachers are selected to join special training at Lawrence Livermore National Laboratory (LLNL) in the USA.

These are examples of international cooperation to provide opportunities for talented Thai students to collaborate with similar students abroad and to learn from leading scientists of the world.

1.5.9 Science, Technology, and ICT in Education

1.5.9.1 Science and Technology and ICT in Rural Schools

Science and technology, including ICT, are extremely important tools for educational development (Sirindhorn 2006). About 15 years ago, I initiated a project called "Science in Rural Schools" to improve science in such remote schools. Currently young people in these schools enjoy working on their innovative and creative science projects related to problems in their localities. They can produce good scientific work. So, I have no doubt that it is possible to build up scientific and technological capacities if we provide good science education related to local content and contexts. The students who engaged in these science projects are good at presenting their works in science exhibitions and conferences where they can meet with other young people around the country. Some can also even exhibit their work abroad.

I am happy to see good progress in many rural schools. Quite a few teachers and students have received various awards in science and ICT competitions at provincial, regional, and national levels each year. Also, we have seen more graduates from our schools studying in science and ICT programs in the universities. A student from one of our schools won a medal in an Olympiad. For those who cannot get into the universities, their ICT skills can still help them to find good jobs. Those

who have had opportunities to go to the universities have become professionals in various fields.

1.5.9.2 Educational Websites for Schools

In 1996, when Thailand celebrated the 50th anniversary (Golden Jubilee) of the accession to the throne of His Majesty King Bhumibol Adulyadej, the Kanchanapisek website was created. This website has two parts: the first is about the biography and the works of His Majesty King Bhumibol Adulyadej, and the second is aimed at distributing knowledge of various fields to all Thais, especially children and youth.

Two years later, the project initiated the SchoolNet to link the website directly with the schools. Later on this became the SchoolNet system of the Ministry of Education connecting the websites of all member schools. This creates the biggest educational network among Thai schools. Not only students and teachers can access those websites, but everyone can also learn from them.

We are in the process of creating, collecting, and organizing digital educational programs in a systematic and user-friendly way for each level of education and making them available online or offline. In the near future, teaching and learning of every lesson, especially those of difficult topics or the subjects that lack adequate numbers of qualified teachers such as science or mathematics, can be easily accessed online from the Kanchanapisek website and others in the network.

1.5.9.3 ICT Center and E-Library

The rural schools equipped with computers and the Internet can become village ICT centers. Each school can provide service to local people when they wish to be trained or to obtain some information related to modern agricultural practices or to seek markets for their local products. We can provide a conventional, e-library, or digital library.

Through these facilities, the government agencies can reach the people no matter how remote they are. Local citizens can also obtain good knowledge related to food, health, agriculture, and labor wherever they live.

1.5.9.4 Education for E-Commerce/E-Business

Another important initiative is to train students and villagers how to plan their own e-commerce and e-companies, once they have access to ICT. One example I have seen was in a small rural village with many malnutrition problems, where I had worked on the problems before. I had not been back to the area for a long time, and when I did return, I learned that the women's group which sold handicrafts was using e-commerce to sell their products to neighboring countries. Before, if people have higher education, they would not be able to return home, because there were

Fig. 1.3 IT for teacher training (Photo courtesy of Her Royal Highness Princess Maha Chakri Sirindhorn's Personal Affairs Division)

no jobs for them in the rural environment. With the help of ICT, they can now use their knowledge to create their own small and medium-sized enterprises (SMEs) and develop innovative businesses in local areas.

1.5.9.5 ICT for Distance Education

Another project is the interactive ICT for distance education. We can use this system to provide improved access to higher levels of education. Where ICT is not available, we can still use the old methods of distance education, like satellite TV, radio, tape recordings, diskettes, CDs, newspapers, or even regular mail. All these methods have been used in my projects (Sirindhorn 2008). Many teachers, both monks and lay persons, have obtained bachelor's degrees and master's degrees by distance education.

1.5.9.6 ICT for Databases

Databases are necessary in the information and knowledge age, and ICT is particularly useful to create and maintain good databases. We have been quite successful with plant genetic resources or germplasm databases, linking genetic resources of agencies in the country and, later on, to the botanical gardens of various schools. The Kanchanapisek website and SchoolNet are also valuable educational databases.

However, the databases are meaningless if they are not actively used. I am deeply concerned about the issue of information literacy. We may be successful in creating databases and providing the schools with modern ICT equipment, but if teachers and students do not use them effectively, it is a waste of time and money (see Fig. 1.3).

Another major issue relates to language proficiency. To be able to use data and information more effectively, teachers and students have to be proficient in lan-

guages, especially their native language and English. They are the tools to search and to make use of information in the databases.

1.5.10 Libraries

One of the most important infrastructures of education are libraries. Even though we may have ICT available to facilitate searches for knowledge and information, I think hard copies of books are still exceedingly important. H.R.H. Prince Damrong Rajanuphap played an instrumental role in creating the National Library of Thailand.

I am an advisor for the *Thai Encyclopaedia for Children and Youth Project*, initiated in 1978, according to His Majesty King Bhumibol Adulyadej's wishes. We have provided schools with hard copies of this important encyclopedia. As of 2010, 35 volumes and 2.4 million copies have been published. According to His Majesty King Bhumibol Adulyadej, the encyclopedia should be written clearly and divided into three levels of difficulty for three different age groups. The encyclopedia is a valuable source of information for children to learn by themselves. It also gives them the idea that all subjects are interrelated. This important project was ably directed by Professor Khunying Maenmas Chavalit, former director of the National Library of Thailand.

I think good books are important for successful education. The late Dr. Kowit Varapipatana, "the father of nonformal education in Thailand," promoted village reading centers (see Chap. 8). In 1972, M.L. Manich Jumsai initiated the Annual Book Fair, which has now become a major event, attracting thousands of visitors. We also have developed several Thailand Knowledge Parks (TK Parks) which creatively integrate both electronic learning and the actual use of books and magazines.

1.5.11 Education for Women

My grandmother, H.R.H. Princess Srinagarindra, was among the first Thai women to have had a chance to study abroad. She was among very few ladies who earned a scholarship to study nursing in the USA, and later on she played an important role in nursing education in Thailand.

Since then more and more women have gone to school and later on had highly successful careers (NCWA 1993). Currently we can say that there are no significant gender differences in educational opportunity in Thailand. In the past there were a few disciplines, such as engineering and medicine, dominated by males. At present such gaps have been narrowed and now in many fields women dominate. However, there are still certain professions in which gender plays some role. For example, forest rangers and airline pilots are mostly men, while nurses are still mostly women.

This is true not only in Thailand but across the globe and is explained by the theory of segmented labor markets (Piore 1972; Reich 2008).

1.5.12 Education of the Armed Forces

I was a faculty member of the History Department, Academic Division of the Chulachomklao Royal Military Academy, from 1980 to 2015 (my retirement year). I have been directly involved in the education of the Thai Armed Forces for many years. In my opinion, soldiers, like civilians, should study to be well-rounded. Besides the military subjects, they should have good concepts and knowledge of history, civilization, science, engineering, and technology. They too should learn how to learn and how to adapt themselves in their careers in a rapidly changing world.

1.5.13 Language Education

The foundation of education is the ability to read, write, and communicate well. So language education is the first and the foremost important subject. Presently we need to study more than one language, especially English. In the current rapidly globalizing intercultural era and regionally the start of the ASEAN Economic Community, educated Thais should be knowledgeable of at least one Western language such as English and at least one Asian language such as Chinese or Vietnamese. It is the knowledge of languages which opens up access to vast amounts of information. Those who lack a command of languages deprive themselves of access to much valuable information and opportunities.

1.6 International Schools and Bilingual Programs

The number of international schools in Thailand increased from 91 schools in 2004 to 108 schools in 2007 to 139 in 2013 and now 176 (see Chap. 11) (ISAT 2017). Among these, 106 are located in Bangkok. With the inception of the AEC at the end of 2015, the international school market is expected to strengthen further. They are all private schools, and fees and tuitions are generally much higher than those of other public and private schools, where the instruction is mainly in Thai. International schools in Thailand are regarded as high-quality schools. Due to their high costs, the schools are usually limited to families of higher socioeconomic status.

A number of Thai schools, both private and public, have developed special curricula called English or bilingual program for students who have chosen to enroll in and are qualified for this kind of program in which the instruction is totally or mostly

in English, while the schools' regular program is taught in Thai for the majority of students. Special programs like this usually cost more, and the students have to bear the extra cost. In the past, there had been Chinese schools in Thailand, using Chinese language as the means of instruction. The schools were prohibited for a while. Now there are Chinese schools teaching in Chinese, Thai, and English. They are increasingly popular as Chinese economic influence increases globally and regionally.

The high demand for quality education as seen in the popularity of international schools and international education is an issue that Thai educators should consider seriously in the age of free trade of any commodities or services including education in the new AEC era.

1.7 Education in the Globalized World: Benchmarking Issues

As the world becomes borderless, benchmarking and standardization are inevitable. We should not develop education without looking comparatively at what happens in other countries. International benchmarking tools like the Scientific Olympiads, the TIMSS tests, the PISA tests, and the IMD's annual study of competiveness may inspire participating countries to improve their efforts.

Thailand in 2011 participated in the international testing known as TIMSS (Trends in International Mathematics and Science Studies) organized by the International Education Association (IEA). From the results for 2011 in mathematics and science (4th and 8th grades), the performance of Thai students was substantially below the international average at the 4th grade level but actually slighter higher than the international average at the 8th grade level and higher than Germany, France, the USA, and Norway (Mullis et al. 2012; Martin et al. 2012; TIMSS 2011).

Thailand has been cooperating with IEA for decades dating back to the vision of Dr. Chancha Suvannathat, who played a major leadership role in developing the International Institute for Child Study at Srinakharinwirot University (in collaboration with UNESCO).

Thailand has also participated in the PISA international examinations since the first survey in the year 2000. PISA stands for Programme for International Student Assessment. It is a program of OECD (the Organisation for Economic Co-operation and Development) to assess students in science literacy, competency in mathematics, proficiency in reading, and problem-solving. The testing is done every 3 years.

For example, the latest PISA 2015 focused on assessing the four areas just mentioned. The 34 OECD member countries and 38 partner countries and economies participated in PISA 2015. The results came from testing samples of approximately 540,000 students between the ages of 15 years 3 months and 16 years 2 months in the countries and partner countries and economies completing the assessment in 2015, representing about 29 million 15-year-olds in the schools of the 72 participating countries and economies. The OECD average was 492 points, and the Southeast

Asian nation, Singapore, had the highest overall average score among the countries where students are tested (OECD 2016). Though Thailand is not an OECD country, we have participated in these assessments. In the most recent 2015 tests, Thailand's scores were below the average OECD scores. Analyzing Thailand's performance, some schools could score as high as the highest scoring groups of the 72 countries, while others had very low scores, thus bringing the average down. We need to analyze these results in detail to pinpoint the weaknesses and the reasons behind them. Interestingly, the reading test results followed a similar pattern to science and mathematics, indicating that the competencies in these three subjects are highly correlated. Chapter 6 of this book provides a more detailed analysis of the latest PISA results for Thailand.

In the 2015 International Institute for Management Development (IMD) report on world competitiveness, among 61 countries, Thailand ranked 30th in the overall competitiveness scores, and the USA ranked first. Among the 13 Asian countries, Thailand ranked 8th in the competitiveness scores (*IMD World Competitiveness Yearbook* 2015). For the talent competitiveness scores, Thailand ranked 34th. The following are the key IMD indicators of education as reported in the *IMD World Talent Report* 2014b by the IMD World Competitiveness Center:

- Total public expenditure on education (%)
- Total public expenditure on education per pupil
- Pupil-teacher ratio (primary education)
- Pupil-teacher ratio (secondary education)
- Apprenticeship
- Employee training
- Female labor force (%)
- Cost-of-living index
- Attracting and retaining talents
- Worker motivation
- Brain drain
- Quality of life
- International high-skilled people
- Labor force growth
- Skilled labor
- Finance skills
- International experience
- Competent senior managers
- Educational system
- Science in schools
- University education
- Management education
- Language skills

We can compare the score of each indicator with that of other countries to get some idea of where we stand. However, there are no fixed universal standards in education. It is amazing how humans can always develop and extend beyond their limits.

We have to encourage students always to try to develop to the next level by competing with their own selves, aiming at breaking their own records, and achieving their full potential.

Benchmarking in education can be effectively done in many domains. However, in some areas education cannot be benchmarked. There are some arenas in which differences are not an issue. Thai students, for example, are among the happiest in the world (UNESCO 2014). Education should promote diversity as well as high achievement.

1.8 Social Enterprises and Social Entrepreneurs

In the twenty-first century, we are facing many new dilemmas, threats, and hardships at both local and global levels such as climate change, pervasive and growing inequalities, an energy crisis, clean water shortages, violent disasters, and dangerous new diseases (e.g., Ebola). Despite this highly competitive atmosphere, it is inevitable that everyone must learn to become more socially responsible, to care more, and to share more. Social enterprises will become increasingly important as group's goals make more sense than selfish individual undertakings. Businesses have to demonstrate more social responsibility and invest more in intangible domains and nonprofit entities focusing on cultural preservation, education, human security, social welfare, and local wisdom.

Young generations have to learn about social enterprises and to know how to balance them with other for-profit entities. Bringing *young people together from all over the world to live and to learn* together, to appreciate differences as much as similarities, and to think about necessary social enterprises in the global village of their time should be the trend of education in the twenty-first century.

1.9 Concluding Reflections

As seen in the description of my various educational initiatives, my own work has been concentrated on nutrition and education for people in the remote and disadvantaged areas. Without these first steps, any sophisticated development idea is useless. Currently we regard education as the important tool for the people to improve their socioeconomic conditions, and in turn, they can help develop the country. Education for development has many purposes and ideals:

- Education enables the person to read and write, to acquire more knowledge, and to communicate better with others.
- Education provides vocational training for a person to have better vocational or professional skills to improve the person's well-being.
- Education makes a human a good and mindful person who values human dignity and does the right things.

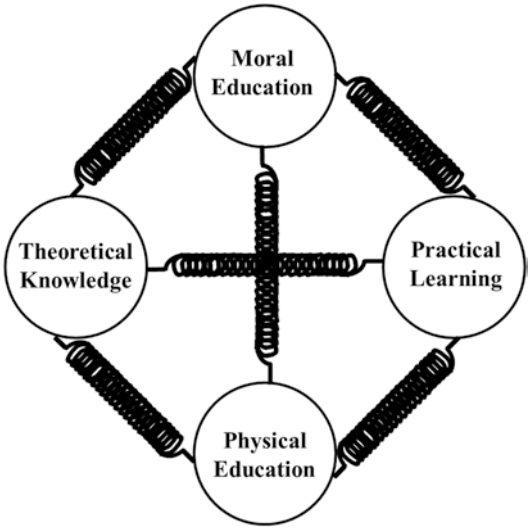

Fig. 1.4 Tetrahedron model of Thai traditional holistic education

- Education makes a person a responsible well-disciplined member of the society, who lives by the society's laws and regulations and contributes to the society.
- Education makes peace the only choice when a person encounters conflicts in life and in the society.
- Education grows awareness and caring in a person about the environment and natural resources.

In conclusion, education is a unique process of mankind. Everyone says that education is very important, but in practice, there are usually more urgent issues and priorities. The fact is that children cannot wait. Their formative years are quite short. In my work, I often emphasize the four domains of traditional Thai education, namely, *phuthisueksa* (พุทธิศึกษา) (theoretical knowledge), *hathasueksa* (หัตถศึกษา) (practical learning), *chariyasueksa* (จริยศึกษา) (moral education), and *phalasueksa* (physical education) (พลศึกษา) (see Fig. 1.4). Teaching and learning based on all four domains will make education complete and help develop the whole individual.

Lastly, as educators, we should expect the following outcomes from our work:

- Education fulfills curiosity and creates even more curiosity. The great Chinese philosopher, Lin Yutang (1955), stated that we must never lose the heart of the child.
- Education should make a person a capable, productive, and responsible citizen.
- Education is for understanding and caring for oneself and other beings.
- Education brings people together to create and innovate for the betterment of mankind.
- Education is to love nature and to promote peace.

In short, education should make the human a better person and the earth a better place to live.

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