Initiating and managing a SchoolNet

CHAPTER 6
In light of the requirements for a successful and sustainable SchoolNet, the key factors involved in initiating a SchoolNet, or managing an existing SchoolNet, are outlined below.

- Prepare the foundation of the SchoolNet
  - Establish goals, objectives, targets and indicators.
  - Set up a co-ordination team.
  - Decide which schools to include in the network.
  - Engage the participation of national governments and foster a conducive policy environment.

- Establish partnerships
  - Partnerships with the government.
  - Partnerships with civil society and the private sector.
  - Partnerships with teacher education institutions.
  - Partnerships between schools and between teachers.

- Acquire funding, ICT tools, digital resources and technical support
  - Obtain funding.
  - Acquire ICT tools: computers, relevant software, connectivity, etc.
  - Access or create appropriate digital learning resources and lesson plans in local languages.
  - Ensure technical maintenance and support.

- Build capacity of teachers in ICT and pedagogy
  - Computer and internet skills.
  - Skills in how to design and prepare teaching and learning materials using ICT.
  - Skills in how to utilize ICT in teaching and learner-centred methodologies.
  - Skills in initiating and implementing telecollaboration activities.

- Initiate SchoolNet activities and telecollaboration

In the following sections, each of the five factors are described in greater detail, using examples and experiences from the UNESCO SchoolNet project and from operational SchoolNets, to illustrate points.
6.1 Prepare the foundation of the SchoolNet

In order to set strong foundations for the SchoolNet and ensure that it functions effectively, it is necessary to establish what the goals, objectives, targets of the SchoolNet are, establish a co-ordination team and focal points at the school level, determine the scope of the SchoolNet and get buy-in from local or national government authorities.

6.1.1 Establish goals, objectives, targets and indicators

It is important to clearly establish what a SchoolNet’s goals and objectives are, and to set targets and develop a system for measuring and monitoring change. This will guide implementation and assist in measuring progress.

Depending on a school or country’s specific needs, a SchoolNet can have one or many goals, including to:
- Channel support for equipping a school with ICT equipment and connectivity.
- Build teachers’ ICT skills and revise their teaching methodologies.
- Link up schools and create national or regional educational communities.
- Gain access to online education materials and share digital resources.
- Improve the skills and learning outcomes of students and enhance the quality of education.

Objectives for setting up a SchoolNet can also vary depending on local conditions. In the case of the UNESCO SchoolNet project each of the participating countries had their own needs and objectives, and therefore benefited from the project in different ways.

For example, participating schools in Thailand focused on equipping classrooms with equipment and connectivity and on assisting teachers to use ICT as a tool in the classroom. In Malaysia, participating schools encouraged teachers to develop learner-centred teaching methodologies and to use ICT to create locally-relevant teaching materials in the national language. Schools in Malaysia also focused on setting up inter-school networks to support sharing of information and teaching materials.

In the cases of Cambodia and Lao PDR, participating schools focused on establishing basic infrastructure and equipping schools with computers. Cambodian schools later turned their attention to training teachers in basic ICT skills, with the help of a mobile team of trainers made up of personnel trained in the region.

Schools in Myanmar focused on designing and developing ICT-based teaching resources and materials. Teachers learned how to use ICT to create lesson plans and how to use ICT-based materials to enhance learning. Teachers also participated in telecollaboration activities, through the SchoolNet “Learning Circles” initiative. Indonesian schools similarly focused on professional development of teachers.

Schools in Viet Nam also focused on training of teachers and on sharing of best practices among teachers at the national level. Likewise, schools in the Philippines focused on training teachers in how to use digital educational resources, and were particularly active in SchoolNet telecollaboration activities.
Connectivity in Cambodia: a case study

In 2002, when the UNESCO SchoolNet project was launched, only 13% of the 698 secondary schools in Cambodia had mains electricity supply, 8% had generators and 4% had solar panels. 75% of the schools did not have power supply at all.

Also, most of the state schools did not have computers. Only 6% of lower-secondary schools and 35% of upper-secondary schools had computers (one or two, used for administrative purposes only). Only eight upper-secondary schools had more than 10 computers. However, many of the private schools had more computers and many of these schools offered computer classes.

Access to computers and the Internet remains limited today, however there have been many donations of computers to schools and Internet cafés are increasingly being established in urban centres and tourist destinations. In 2004, there were over 100 internet cafés in Phnom Penh and several in Siam Reap and Sihanoukville. Computer courses are also becoming popular in the major towns. However, with more than 80% of the population living in rural areas, the majority still have little or no access to the computers or the Internet.

During the project period, Mr. Om Sethy, the national SchoolNet coordinator for Cambodia, and his team focused their resources on equipping the participating schools with computers and establishing Internet connectivity. Once the basic computer and Internet access were provided to the three participating schools in Cambodia, the team turned their focus to the professional development of the teachers in the schools.

An important part of preparing foundations for a SchoolNet is to establish targets, both in the short and long term. For example, the Malaysian SchoolNet’s long-term target was to provide Internet connection to all 10,000 schools in the country. However, their short-term target was to establish connectivity in 220 remote schools and the 87 pilot “Smart Schools.”

Before embarking on any activities towards achieving goals, objectives and targets, it is also necessary to study the existing situation and set benchmarks. A monitoring process also needs to be established, which requires developing indicators – which identify what data to collect and how often. This will enable progress towards goals to be measured.

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26 Chan Foong Mae, 2004
27 UNESCO Bangkok. 2003(i)
6.1.2 Set up a co-ordination team

One of the key lessons learned from the UNESCO SchoolNet project was that a co-ordination team is essential for the success of any attempt to initiate a SchoolNet, instigate improvements, or maintain an existing SchoolNet. Every SchoolNet requires a group of people which manages activities and which maintains and expands the network of schools.

The co-ordination team needs to orchestrate a range of activities to get the SchoolNet established and operating effectively, including facilitating the buy-in of the Ministry of Education and education departments; helping to establish partnerships; ensuring all stakeholders are informed and up-to-date; assisting the schools belonging to the SchoolNet to obtain and utilize the required ICT tools; coordinating the training of teachers and technical staff; and establishing links with training organizations and technical providers.

While the co-ordination team can be made up of teachers or government officials, the team can also be an independent organization, separate from the school and government. The national Namibian SchoolNet, for example, was established by an independent non-governmental organization.

This organization (SchoolNet Namibia) works in co-operation with the Education Ministry, heads of schools, teachers and students to equip schools with equipment, furniture and connectivity, and assists schools to coordinate training for teachers, computer maintenance and trouble-shooting.

In the case of the UNESCO SchoolNet project, UNESCO took on the regional-level coordinating role, aiming to support and develop national SchoolNets and build an ASEAN regional SchoolNet. In addition, a national-level co-ordination team was set up in each participating country.

The effectiveness of the national teams was a determining factor in the level of success of each national SchoolNet. For example, the high commitment and efficiency of the co-ordination team in Myanmar was a key factor in ensuring that Myanmar was consistently one of the exemplary countries in terms of a smoothly-running national SchoolNet. The co-ordination team was located within the Department of Basic Education, under the leadership of Mr. U Tin Nyo. This team organized language and ICT competency courses for teachers, conducted follow-up national workshops after regional training workshops, and oversaw the development of local digital learning resources and materials by teachers. The success of the Myanmar SchoolNet was also facilitated by close and frequent communication among the teachers, between the teachers and the national co-ordination team, and with UNESCO Bangkok.

Likewise, the success of the Philippines SchoolNet was largely due to the effectiveness of the national co-ordination team. The co-ordination team, managed by Ms. Maria Victoria D. Abcede, established strong partnerships with private companies, and localized digital learning resources provided by UNESCO.

“The SchoolNet model is driven by champions from different sectors, locally and internationally.”

Joris Komen, Director, SchoolNet Namibia, 2005
In general, the schools which were less aware of project goals and activities during the project period were in countries in which the co-ordination team was not strong or active. A key lesson therefore, was that co-ordination teams must be committed to the process of establishing a successful SchoolNet, have the required capacity, and be in a position where they can initiate activities, mobilize resources (human, technical and financial), and serve as the driving force behind a process of change.

When surveyed regarding their opinions, the national coordinators participating in the UNESCO SchoolNet project stated “empowerment” and “support” as the most important elements required for effectively managing and implementing a SchoolNet. For instance, the national coordinator in Viet Nam, Dr. Quach Tuan Ngoc, emphasized the need for coordinators to be empowered to make decisions and carry out action plans, to be well-informed on the subjects of ICT integration and telecollaboration, and to have the ability to mobilize the necessary financial and human resources.

All of the national SchoolNet coordinators participating in the UNESCO SchoolNet project were from the national Ministry of Education, in positions ranging from the Director of the ICT unit to the Director-General of the Department of Basic Education. Given their roles, most of them had some manpower support and the capacity to make decisions and carry out planned SchoolNet activities within their respective countries. However, they often lacked the time required to manage all the aspects of the SchoolNet. In addition, although they were often able to source funds from private and non-profit organizations, parent-teacher associations and alumni groups, they sometimes could not gain the level of funding required to implement all that was required.

6.1.3 Identify managers or focal points at the school level

All SchoolNet co-ordination teams require a person or persons to oversee activities at the school level. In the case of the UNESCO SchoolNet project, this role was played by “SchoolNet Managers” who were appointed in each participating country. In some cases, the SchoolNet managers were based in the Ministry of Education. However, in many cases the SchoolNet managers were teachers. This meant that they had first-hand knowledge of the situation in the participating schools and an in-depth understanding of needs of the schools and teachers.

For example, Ms. Khin Aye Cho, the Myanmar SchoolNet Manager, recognized the need for relevant digital resources and was active in facilitating the design and development of local resources by the teachers in her school. She also identified the need for teachers in the Myanmar schools to learn more about telecollaboration, was effective in motivating teachers from all of the participating schools to take part in telecollaboration activities, and was successful in coordinating teachers’ involvement in those activities.

“I believe that any multi-national collaborative project needs a regional coordinator in each country. The SchoolNet managers have been playing this role. It is very noticeable how successful (training) classes were where the SchoolNet manager was very active.”

Gerald Roos, Consultant, SchoolNet South Africa
The role of SchoolNet Manager can be demanding in terms of time and effort. For a SchoolNet Manager to perform his or her roles effectively, she or he requires support from her or his supervisor, and a degree of autonomy to effectively play her or his role.

For example, at Cabancalan High School in Cebu, Philippines, the SchoolNet Manager, Maria Liza Gulbin, was able to succeed in her role due to firm support from the head teacher of her school. With this support, Ms Gulbin was able to organize regular training sessions for teachers in the participating schools in the Philippines and even conducted training classes herself. In addition, she demonstrated to other teachers how digital learning resources could be used in the classroom, and assisted other teachers to modify digital materials to match local needs and languages.

6.1.4 Decide the scope and which schools to include in the network

International SchoolNets are an effective means of establishing regular communication and co-operation among students and teachers in a particular region of the world. However, when the region includes diverse languages and cultures, such as in the Asia-Pacific, there are a number of challenges in establishing an international SchoolNet. In such situations, a local or national focus is advisable to begin with. A local or national focus enables a strong foundation to be established, enables Internet use to become entrenched in education, and prevents language from becoming a barrier to participation by all members in SchoolNet activities. A lack of language barriers not only eases communication, but also allows for teaching and learning materials to be shared, without need for translation, between the networked schools.

In the case of the UNESCO SchoolNet project, the ultimate goal was to build an ASEAN regional SchoolNet. However, recognizing the wisdom of establishing firm foundations at the national level, the project initially concentrated activities on strengthening national SchoolNets. The intention was that as each national SchoolNet developed and expanded, the regional SchoolNet would subsequently grow and gain in strength.

Deciding which schools to include when setting up or strengthening a local or national SchoolNet, involves identifying teachers who are enthusiastic about utilizing ICT to improve teaching and learning, and who have support from school leaders and administrators. This support is crucial in ensuring that teachers have sufficient time to engage in SchoolNet activities, are able to become involved in sourcing any necessary ICT tools and have the authority to mobilize funds. Supportive leadership is also very important in ensuring that teachers have the technical maintenance support and assistance they require for solving technical problems.

One of the schools participating in the UNESCO SchoolNet project, Suankularb Nonthaburi School in Thailand, serves as a good example of a school which had very enthusiastic teachers and administrators. Suankularb Nonthaburi School has the goal “to create a successful knowledge society by developing an ICT-rich environment along with applying local wisdom to improve the standard of education”. The school has a long history of ICT use, beginning in 1975, when, with the support of the parent-teacher association, the first modern ICT tools, 12 eight-bit computers, were introduced. Eighteen years later, in 1993, the school established 16 LAN servers. Then in 1997, with the support of the Thailand National Electronics and Computer Technology Centre (NECTEC), the school gained Internet access. By 2005, the school had 400 networked computers. Suankularb Nonthaburi School participated actively in the UNESCO SchoolNet project, initiating several school-based projects, including a students’ web-based project, a home-page development project, and a digital library project.
Similarly, highly active teachers and support from head teachers and were crucial in the success of Philippines SchoolNet activities. Cabancalan High School, for example, was a particularly active school and focused on the professional development of teachers. This school now offers training to other teachers in their region regarding utilizing ICT in teaching.

Likewise, the three schools from Malaysia that participated in the UNESCO SchoolNet project had enthusiastic support of their school leaders, and also had the support of education policy makers.

In choosing schools to participate in the SchoolNet, it is also necessary to identify schools with adequate infrastructure (electricity and internet connectivity) or which have the potential of getting funding for establishing an affordable electricity supply and internet connection.

In the UNESCO SchoolNet project, all of the schools chosen to participate already had electricity and internet connection. For example, the three Malaysian schools participating in the project were “Smart Schools”\(^{28}\) and were also already equipped with the necessary hardware and software.

However, the need for schools participating in the project to have adequate infrastructure unfortunately meant that in some countries the only schools which could participate were those in urban areas. For example, in Myanmar the three schools selected were in urban and semi-urban locations, because rural schools did not have adequate and affordable electricity and internet connectivity. A similar situation was found in Lao PDR.

Since it is important not to exclude rural schools, when setting up a SchoolNet the co-ordination team should work with teachers and administrators in rural schools to find ways of establishing an electricity supply for computers (for example: solar powered or crank-powered computers)\(^{29}\) and explore various connectivity options (for example, wireless connectivity – WiFi or satellite Internet connections).\(^{30}\) Recognizing this need, the Namibia SchoolNet succeeded in empowering rural schools to build their infrastructure to the level required for participation in a SchoolNet.\(^{31}\)

6.1.5 Engage the participation of national governments and foster a conducive policy environment

For a SchoolNet to succeed and be sustainable, it is important that the Ministry of Education “buys into” the process of establishing and strengthening the SchoolNet, and develops a conducive policy environment and provides ongoing support.

> “Youth need more access to information technology … So let us promote visionary public policies, innovative business models and creative technological solutions that will empower young people and engage them in the global effort to achieve the Millennium Development Goals.”

*Ban Ki-moon, United Nations Secretary-General World Telecommunication and Information Society Day, 2007*

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\(^{28}\) Malaysia “Smart Schools” initiative. [www.ppk.kpm.my/smartschool](http://www.ppk.kpm.my/smartschool)

\(^{29}\) Links to resources about alternative electricity options can be found in the References and Resources section of this publication.

\(^{30}\) Resources about alternative connectivity options can be found in the References and Resources section of this publication.

\(^{31}\) Komen, J, 2005
Education policy makers should be encouraged to become informed on the topic of ICT use in education and to develop national ICT in Education policies and guidelines. Such policies ensure a systematic approach towards the integration of ICT into education and help to optimize resources.32

“…lack of pertinent legislation and regulations could hinder proper implementation of ICT use in education in the future.”

Harina Yuhetty, Ministry of National Education, Indonesia, 2004

However, in the absence of a national policy on the use of ICT in education, the SchoolNet co-ordination team can facilitate harmonization by linking projects initiated by the Ministry of Education (MOE) with those of other Ministries and encouraging co-operation between Ministries and telecommunication companies, commercial suppliers of ICT tools and funding agencies.

6.2 Establish partnerships

Partnerships are a vital part of any successful SchoolNet. Given the wide range of factors that need to be managed in establishing or strengthening a SchoolNet, it is important for co-ordination teams to seek partners who can assist in providing the resources and expertise that are required. Partnerships need to be established and maintained between the co-ordination team and the government, civil society, the private sector, and teacher education institutions, and between schools.

“Providing an affordable and open ICT platform in schools is essential. Getting it used is quite another challenge. It requires commitment from the school and probably the involvement of specialized partners in areas like e-learning or content development. The government has a vital role in this area. Since ICT developments in and around schools often move much faster than ministries can determine policy or standards, it is vital that the various actors communicate effectively and work towards common goals and priorities.”

Peter Ballantyne, 2004

32 Yuhetty, H. 2004
6.2.1 Partnerships with the government

As stated earlier, government support is important for ensuring that a SchoolNet is successful and sustainable in the long term. To synchronise SchoolNet activities with local and national government education initiatives, and build support for the SchoolNet, it is important for partnerships to be formed with relevant government officials and departments. Ultimately such partnerships will encourage the Ministry of Education to take ownership of the concept and internalize it within decision making.

In the UNESCO SchoolNet project, Ministries of Education of the eight participating countries were active partners, and representatives from the Ministries of Education participated in the project from the beginning. For example, the ICT Advocacy and Planning Workshop for Policy Makers and National ICT Coordinators, convened by UNESCO Bangkok in December 2003, provided an opportunity for representatives of the Ministries to come together to discuss plans for initiating or developing their national SchoolNets.

Partnerships were also established at the local-government level. For example, a partnership was established between the UNESCO co-ordination team and the Indonesia Directorate of Secondary Education and Local Education Office (Dinas Pendidikan Propinsi). Under this partnership, the Directorate played an important role in identifying which schools in Indonesia to include in the SchoolNet project.

In some countries, active government participation led to the initiation of extensive web-portals to support the development of SchoolNets. For example, in Indonesia, the Centre for Information and Communication Technology for Education (Pustekkom) of the Department of National Education initiated a portal, E-dukasi.net. As described in Chapter 4 of this publication, the E-dukasi portal contains lesson plans and digital resources, and is a platform for educators to discuss issues they face with regard to using ICT in teaching.

Partnerships with Ministries of Education can also result in decisions by Ministries to initiate or extend professional development programmes and training courses for teachers in the networked schools. In the Philippines, partnership with the Commission of ICT (a government agency) led to the provision of advanced ICT training for teachers. The Commission also developed a dedicated portal for the national SchoolNet and provided technical support. Local governments also assisted participating schools by funding the maintenance of hardware and infrastructure.
In Lao PDR, the national coordinator of the UNESCO SchoolNet project, Mr. Ka Saleumsouk, fostered co-operation between education officers within the Ministry of Education, which resulted in SchoolNet activities being linked to existing national professional development programmes run by the Ministry and donor agencies. A partnership was also formed with the Korean International Co-operation Agency (KOICA) which resulted in the donation of computers to the participating school in the town of Luang Prabang.

During the UNESCO SchoolNet project, for example, partnerships were established between the Thailand national co-ordination team and two key government agencies: the Institute for the Promotion of Teaching Science and Technology (IPST) and the National Electronics and Computer Technology Centre (NECTEC). These organizations played an important role in the training of the teachers participating in the project. The partnership with NECTEC, a science and technology development agency under the Ministry of Science and Technology which conducts research in the areas of electronics, computing, telecommunication and information technologies, enabled the country’s participating schools to benefit from advice, professional development and technical support. NECTEC also became a partner with the UNESCO co-ordination team and assisted in conducting a regional training course in March 2005 for website managers, teachers and SchoolNet technical personnel to facilitate the development and maintenance of national SchoolNets. NECTEC also conducted activities from May to August 2006 regarding SchoolNet maintenance and troubleshooting. In addition, NECTEC prepared a technical guide for Internet connectivity, to assist schools in Thailand to establish Internet connection.

It should be noted that in some countries, Ministries of Education (MOEs) need support in acquiring the technical capacity to set up and manage national SchoolNets. In the countries of Cambodia, Lao PDR, Myanmar and Viet Nam, the UNESCO SchoolNet project donor, JFIT, financed the acquisition of a server to run the national SchoolNet websites initiated by the MOEs, and funded the provision of other technical services for part of the project period.

6.2.2 Partnerships with civil society and the private sector

Many civil society organizations and private companies have considerable expertise in the use of ICT in education and have established long-term ICT in Education initiatives. Partnerships with these organizations can enable teachers and schools to benefit from a significant base of expertise, and can give teachers and schools access to useful information, support, resources and models for informing and implementing internet-based learning activities.

“...acquiring the technologies themselves, (no matter how difficult and expensive the process) may be the easiest and cheapest element in a series of elements that could eventually make these technologies sustainable and beneficial … it is a matter of making it simple for [all the stakeholders] … to cooperate.”

Ministry of Basic Education, Sport and Culture (Namibia), 2005, quoted in Komen, J, 2005
In the UNESCO SchoolNet project, the situation analysis conducted in 2002 found that companies such as Microsoft and Coca-Cola were implementing projects relating to ICT use in education in Southeast Asia. Of the countries in which they were implementing projects, they had greatest presence in the Philippines. Therefore, the national co-ordination team in the Philippines established a partnership with the Microsoft’s Partners-in-Learning project, which involved working together to promote training of teachers to improve ICT skills. In addition to this training support, Microsoft provided financial and technical assistance. The national co-ordination team also partnered with the Intel Teach to the Future project on the training of educators in innovative teaching practices.

The UNESCO co-ordination team established a regional-level partnership with Microsoft to convene the first “Innovative Teachers Conference”, which was held in Singapore from 7 to 9 December 2004. Twelve teachers from the participating schools in Thailand, Viet Nam, Malaysia and Myanmar participated in the conference. The conference provided an opportunity for teachers to discuss innovative practices in using ICT in the classroom, demonstrate best practices, and to share their lesson plans for teaching mathematics, science and English. In addition, the conference was an important opportunity to give the participating teachers recognition for their vital contributions towards improving use of ICT in their schools and supporting the development of national SchoolNets.

In Cambodia, the national SchoolNet coordinator, Mr. Om Sethy, made efforts to establish partnerships with private companies by setting up “twinning” system which would match schools with companies. The intention was to enable schools to benefit from a company’s ICT expertise and resources, while the company would benefit from having a supply of well-trained graduates.

In Indonesia, although there was no formal partnership between the SchoolNet project and non-profit or private organizations, the project team invited representatives from private companies to share their expertise and experiences in a national workshop on ICT-integrated material development.

The Malaysia SchoolNet established agreements with service providers, including with telecommunications companies, Telekom Malaysia and Maxis, to provide discounted connection rates for schools and the Ministry of Education, and to establish phone lines and Internet access for remote schools and communities.

Likewise, the Namibia SchoolNet, following protracted negotiations, established a partnership with Telecom Namibia. Together they established the “XNet Development Alliance Trust”, which brought together members from Namibia’s private and public sectors and civil society, and which has resulted in the provision of wide-area wireless infrastructure and subsidized Internet fees for schools. Similarly, European SchoolNet has developed a number of partnerships with civil society organizations (for example: child protection NGOs) and with private technology companies for specific activities such as surveying young people’s use of technology, developing new technical tools (for example: advanced learning resource repositories) and event organization.
6.2.3 Partnerships with teacher education institutions

In any SchoolNet, teacher training is of paramount importance. It is therefore crucial to develop partnerships with universities and teacher education institutes. Partnerships enable schools to draw upon the professional development experiences and content development expertise of these institutions. These institutions can also provide teacher educators for national training activities, and can provide input on curriculum and teaching approaches. At the same time, partnering with training institutions can help to bring the Internet and innovative teaching practices from schools into the teacher education system.

Partnerships were established with universities in several of the countries participating in the UNESCO SchoolNet project. In Indonesia, for example, the national co-ordination team cooperated with universities to develop digital resources in Bahasa Indonesia. Teacher educators and researchers contributed their expertise in the subject matter and instructional design and developed a range of teaching and learning resources. These resources were then uploaded by Pustekkom to Edukasi.net (www.e-dukasi.net) and made available to all teachers in Indonesia.

Similarly, university staff in the Philippines contributed to the development of digital lesson plans and support materials. In Cambodia, the national co-ordination team partnered with teachers and teacher educators to conduct professional development workshops on how to use ICT as a tool to enhance learning.

In the case of the European SchoolNet, universities often provide their evaluation expertise, while teacher training institutions provide experts in professional development workshops and similar events focusing on pedagogy.

6.2.4 Partnerships between teachers and between schools

The SchoolNet co-ordination team should facilitate partnerships between teachers and between schools so as to encourage sharing of experiences, best practices, and teaching resources.

A community of teachers should be established, if possible via both face to face meetings and online communication. Such a community will enable teachers to discuss issues they face, share their approaches to overcoming challenges and coach each other in ICT-based teaching methods. In addition, keeping in touch via online tools will give teachers an opportunity to regularly practice their ICT skills.

As part of the UNESCO SchoolNet project, teachers at the participating schools were encouraged to develop “communities of practice” and to share their thoughts and approaches to using ICT in the classroom via face-to-face meetings and email. In Myanmar, for example, the national SchoolNet coordinator organized national-level telecollaboration activities for teachers in which they shared experiences, tips, lesson plans and digital resources.

Similarly, teachers in Malaysia engaged in telecollaboration activities to build cohesion and facilitate sharing of teaching resources. In the Philippines, partnerships also emerged between the teachers in participating schools. Local communication and partnership-building was facilitated through use of email, online chats, and discussion boards, in the national language.
In Lao PDR and Cambodia, there was relatively little online collaboration among the participating teachers due to the difficulties in establishing reliable Internet connectivity at the schools. However, with adequate planning and co-ordination, partnerships between the teachers can be established without the use of ICT.

In Europe, the European Commission’s Directorate for Education and Culture has established the large-scale eTwinning initiative as part of its eLearning programme. In this initiative, teachers are invited to use an online portal in order to find potential partner schools and forge long-term school partnerships on pedagogical topics of their choice. These partnerships are principally organised via ICT tools, but some schools go further and apply for funding from Comenius, which offers funding for school partnerships, teacher mobility and exchanges, including face-to-face meetings and visits.

6.3 Acquire funding, ICT tools, technical support and digital resources

As noted earlier, for a SchoolNet to be successful and sustainable, participating schools must have adequate technical infrastructure and a sufficient quantity of ICT tools and digital learning resources. Mechanisms for ensuring sufficient funding, equipment and other resources must therefore be established.

6.3.1 Funding

Given that in most schools in the Asia-Pacific region budgets do not stretch beyond covering the basic infrastructure, furniture and human resources required for providing lessons, SchoolNet co-ordination teams should work with the participating schools and teachers to seek opportunities for funding.

In the case of the UNESCO SchoolNet project, seed funding was provided by the project donor, Japanese Funds-in-Trust, for acquiring equipment for some schools. However, several schools took the initiative and sought additional funding and resources so as to acquire additional ICT tools. For example, schools in Myanmar, Malaysia, and the Philippines were able to acquire funding from alumni associations, parent-teacher associations, and community leaders. Similarly, Chanthabouly Upper Secondary in Lao PDR, was able to acquire additional support from a Korean school, which funded their Internet connection.

6.3.2 ICT tools

For teachers and students to be able to access the Internet and communicate online, it is essential that schools have sufficient ICT tools, and the ability to maintain those tools in the long run. In addition to appropriate furniture for ICT equipment, schools need, at the very minimum, an electricity supply, telephone lines or wireless connection, a server, computers and other hardware, and operating software.

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34 eTwinning website, www.etwinning.net
In the UNESCO SchoolNet project, some participating schools were provided with computers and other ICT tools. For example, each of the three participating schools in Myanmar were provided with LAN servers, four computers and a printer. In addition, the co-ordination team set up a national web server that would connect all three schools to the network and host the Mynarman SchoolNet website.

Equipment was purchased by national coordinating teams with funds provided by the project donor, Japanese Funds-in-Trust. In addition, some schools were provided with free reconditioned second-hand computers, supplied through a Korean Government-funded project.

A difficulty arose, however, in the delivery of the donated computers. Since the schools did not have funding for transporting the computers from the capital city to their rural location, several schools were unable to take possession of the computers. The schools which eventually received the computers were those which raised their own transportation funds, for example through parents’ association fund-raising activities.

An alternative to new computers is to purchase refurbished computers. The Namibia SchoolNet, with funding from the Swedish International Development Co-operation Agency, pioneered a system for supplying schools with refurbished computers. It has set up its own technical service centre in which unemployed youth volunteers refurbish computers and, in return, gain valuable technical skills. Schools are provided with “a new Pentium IV (Intel-inside) server (and) between 5 and 20 refurbished thin-client diskless workstations, with new monitors, mice and keyboards ... These PCs are installed on SchoolNet’s innovative round tabletops, with network cabling, switch and internet service equipment”.

While providing computers and servers is necessary, it is not sufficient; schools also need appropriate operating and applications software. While commercial software is usually more familiar to users, it can often be a drain on a school’s limited ICT budget. Analysis by the Philippines’ Department of Education indicates that payments for software licenses are often a major component of a school’s ICT spending. An alternative to paying licence fees is to install free and open source software (FOSS) in school computers. FOSS of various types and functions can be freely downloaded from the Internet. This option is not necessarily completely free, however, as software sometimes needs to be tailored to specific needs, which requires technical expertise. However, it is generally cheaper than purchasing licensed software. FOSS is believed to also have other advantages over proprietary software, including reliability, performance and security. Using FOSS in schools also discourages software piracy by students, since students become familiar with FOSS and have no need to use illegal copies of proprietary software.

Recognizing the limited ICT budgets of schools in the Asia-Pacific region and the benefits of FOSS in such contexts, the UNESCO SchoolNet project teamed up with another UNESCO capacity building project for teachers and compiled a selection of free and open source software, chosen for their ease of use and installation and their appropriateness for educational contexts. This software was then put onto a CD-ROM for distribution to educators and educational institutions, including all of the schools participating in the UNESCO SchoolNet project. A similar approach was taken in the European SchoolNet’s Xplora project for science education; a range of innovative open-source software for science teaching and learning was distributed to schools.

36 Komen, J. 2005
37 UNDP-APDIP 2004
38 UNDP-APDIP 2004
39 Training and Professional Development of Teachers and Other Facilitators for Effective Use of ICT in Improving Teaching and Learning, www.unescobkk.org/education/ict/teachertraining/project
European SchoolNet also deploys tools online, as connectivity is less of an obstacle in a European context. Teachers and students may use communication and publishing tools (e.g. groupware, blogs) on these websites for free. This avoids the need for schools to install, operate and maintain these tools themselves.

6.3.3 Technical support

Support in setting up, managing, maintaining and repairing ICT tools is vital for the smooth running of any SchoolNet. Without it, teachers and students cannot participate effectively in SchoolNet activities.  

Recognizing the need for ongoing technical support for schools, the UNESCO SchoolNet co-ordination team established contracts with ICT support teams. These teams were responsible for maintenance and repair of computers at participating schools. While this proved to be useful for schools in urban areas, the contracts did not cover travelling from the capital city to rural schools, so schools outside the capital did not have effective technical support. In Lao PDR, for example, support was meant to be provided to all participating schools in the country but the technical support provider was only able to travel to the school in the city of Vientiane. Therefore no technical maintenance and repair services could be provided to the schools in the distant rural provinces (in Luang Prabang and Suvannakhet), which led to the computers in the rural schools no longer being used. This lack of technical support was a major obstacle to the participation by rural schools in online learning and SchoolNet activities. Even in Malaysia, where the ICT coordinators in schools have excellent technical skills, lack of technical support was a problem. Since the only person responsible for ICT support in these schools is the ICT coordinator, this person has quite a heavy workload.

To prevent such problems, it is advisable for co-ordination teams to ensure that technical support providers are situated in rural areas and can provide support via telephone. SchoolNet Namibia has designed an innovative mechanism to address this issue. They provide training in computer skills for youth and, following their training, these young people volunteer to either work on the SchoolNet “help-desk” (a trouble-shooting service accessible to teachers and students by dialling a toll-free number), or to install and maintain equipment in SchoolNet schools while they develop their skills and look for a job.

“Schools lose interest in using the SchoolNet whenever they encounter problems concerning access.”
Chan Foong Mae, Ministry of Education, Malaysia, 2004

“We can use telecollaboration and sharing lessons from students and teachers in the … schools. However we (need to) have the strong technical support team to … get help when we have problems …”
Kadam Vongdeuane, Ministry of Education, Lao PDR

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41 Swedish International Development Cooperation Agency, 2004
42 Chan Foong Mae, 2004
43 Kadam Vongdeuane was formerly the SchoolNet Manager in Lao PDR. He was succeeded by Mr. Xayadeth.
6.3.4 Digital content and learning resources

When using computers and the Internet in education, schools must build a collection of appropriate digital content and resources for use in the classroom. Internet access provides teachers and learners with a wide range of web-based educational materials and learning resources to choose from. However, the vast range of digital resources available online can be overwhelming, and educational software are often expensive and not always of good quality.

Recognizing that educators often lack funds for acquiring good quality online resources and have little time to evaluate digital learning resources, the UNESCO SchoolNet project undertook to assess and select resources that would be useful for teachers in the Asia-Pacific region. In particular, the project identified digital resources that would be applicable to the science, mathematics and language curricula of the ASEAN countries participating in the SchoolNet project.

The digital resources were compiled by consultants Buenafe Abdon, John Henly, Marilyn Jeffrey and Philip Wong. The types of educational software selected included simulations, video clips, quizzes, and animated educational games. In general, the software selected were those which could be used without need for an Internet connection, and which were permitted to be distributed for educational use. The materials were evaluated first by the consultants and then by teachers, and were also tested in schools. When the final selection had been made, the materials were distributed on a CD-ROM, titled “ICT Resources for Teaching and Learning of Science, Mathematics and Language”. Accompanying the CD-ROM was a catalogue and guide for teachers which gives a brief explanation of each of the resources on the CD-ROM.

“… a SchoolNet should seek the best materials in the market, selecting those that reflect the national curriculum and can enrich learning and offer remedial assistance for students who need more help with their learning.”

Chan Foong Mae, Ministry of Education, Malaysia, 2004

While using a CD-ROM as a distribution mechanism for the digital resources was successful, many teachers requested that the resources also be made available online. However, most of the distribution agreements made with the various owners and creators of the software did not permit free re-publishing on the Internet. This highlighted the need to source content and resources covered by a Creative Commons licence so that it can be distributed more freely.

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44 Philip Wong worked with a team from the National Institute of Education in Singapore.
45 Permission was gained from the owners and creators of the educational resources to distribute these digital resources on a CD-ROM.
The CD-ROM proved to be very popular with educators all over the world, as it provides easy access to useful educational software. However, since most of the resources were designed for European or American contexts, some teachers found that the resources were not always appropriate for their curricula or cultural contexts and adjustments were needed. Also, since the educational resources on the CD-ROM were all in the English language and subjects are generally not taught in English in most schools in the Asia-Pacific region, some teachers found that the resources were not always usable. Conversely, in countries such as the Philippines and Malaysia the English-language resources were welcome, as many schools in these countries teach subjects such as mathematics in English, to improve students’ English competency.

Several ASEAN countries, including Indonesia and Malaysia, have compiled substantial databases of digital learning resources which are in local languages. However, in many countries of the region there are relatively few digital educational resources available in local languages. The UNESCO SchoolNet project sought to encourage teachers to create locally-relevant digital content and resources, and convened a number of workshops which trained teachers from the participating schools in how to create such resources. These workshops will be described in the next section of this publication.

European SchoolNet distributes learning resources and content online. Teachers and students can access content (open-licensed) via their web portals, and can download it and use it in the classroom. Content is also distributed via open-licensed CD-ROMs, although these are of lesser importance in terms of uptake and number of users. European SchoolNet is also moving into a new approach, which is also implemented by Education Network Australia, the Australian network of educators, which is to provide federated search tools which enable web visitors to search many educational resource databases simultaneously via one search interface. Federated searching is also a driver for global partnerships. A number of such partnerships are soliciting support from the private sector technology companies to develop interfaces for federated searching of open educational resources (OER).

As part of efforts to promote discussion about the benefits and issues relating to open educational resources – resources which are freely available for educational use – the UNESCO International Institute for Educational Planning (IIEP) has established a Wiki which features information about OER, resources and useful links.

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46 In countries such as the Philippines and Malaysia the English content was welcome, as many schools in these countries teach in English to improve students’ English competency.

47 Education Network Australia, www.edna.edu.au

48 UNESCO IIEP Open Educational Resources Wiki, http://oerwiki.iiep-unesco.org
6.4 Build the capacity of teachers

To be able to utilize the Internet and related ICT tools effectively in the classroom, and implement successful SchoolNet learning activities, teachers need to be skilled in the use of these tools. SchoolNet co-ordination teams therefore need to ensure teachers are adequately trained, and organize or facilitate training where necessary.

“...human resources development constitutes the most strategic policy for developing ICT use in education. Properly trained and sufficiently competent teachers will acquire the right attitude towards ICT and will be able to address several factors that have hindered ICT use in education for the past many years.”

Harina Yuhetty, Ministry of National Education, Indonesia, 2004

Many countries have existing initiatives for professional development in the field of ICT in education; therefore co-ordination teams should examine existing initiatives and utilize them where relevant. When the UNESCO SchoolNet project began in 2003 several countries in the Asia-Pacific region, including Malaysia and Thailand, had already established national plans regarding the use of ICT in education. In addition, governments, NGOs and international agencies had already initiated ICT in Education projects. These initiatives covered a range of factors relating to the use of ICT in education, including: infrastructure and hardware provision, curriculum assessment, and professional development. Examples of such projects include the Smart Schools programme in Malaysia; the Schools Online project in Lao PDR; the ICT in Robip Village initiative in Cambodia; the Intel Teach to the Future initiative, implemented in Thailand, Philippines and Malaysia; the Coca-Cola Internet Education programme, implemented in the Philippines; and the Microsoft Partners-in-Learning project, implemented in several Asia-Pacific countries.

The UNESCO SchoolNet national co-ordination teams monitored these initiatives and many of them drew on these initiatives to support their efforts to provide in-service teachers with ICT skills. For example, the SchoolNet coordinator in the Philippines organized teacher training workshops in co-operation with the Microsoft Partners-in-Learning project and the Intel Teach to the Future project. The former offered ICT competency training and peer coaching courses, while the latter offered courses which also covered training in teaching practices.
6.4.1. Computer and internet skills

For teachers to be able to utilize ICT effectively in the classroom and participate in SchoolNet activities, a key requirement is that they possess basic ICT skills.

Recognizing that some of the teachers participating in the UNESCO SchoolNet project did not possess the required level of computer skills, in March 2004 UNESCO held a training workshop about using computers and the Internet. The workshop was attended by principals and teachers from the participating schools in Cambodia, Lao PDR, Myanmar and Viet Nam. This was followed by another workshop in November 2004 which provided training in how ICT can be used to teach mathematics, science and English in secondary schools. The next workshop, held the following month, covered the same topics and trained teachers from the participating schools in Indonesia, Malaysia, Philippines and Thailand.

Because the workshops were held at the regional level, with participants from several countries, they were conducted in the English language and participants were required to have a good level of English to be eligible to attend. This unfortunately led to some teachers being excluded from training. In some countries, however, attempts were made to provide those teachers with alternative training though in-country partnerships with ICT training providers.

Aware of the need for schools to also have trained technical personnel, in early 2005 the UNESCO SchoolNet project held a workshop for teachers, website managers and technical personnel, which covered topics such as website creation, web-content development, technical troubleshooting and SchoolNet management. ⁴⁹

“Thank you for the many opportunities you provided to be trained in ICT.”

Ivy Joy Leopoldo, Teacher, Philippines

Although most teachers were keen to attend the workshops, some teachers found that the length of the course (five days) meant that they were away from their schools for a significant amount of time. This was a problem for some teachers in Lao PDR, for example, because while they were absent from their classrooms they could not teach the private lessons that supplemented their incomes.

In the European SchoolNet context, there is less of a need for training in basic ICT, since many basic ICT skills are already taught via existing national programmes. However, many European Schoolnet activities nonetheless include informal support to teachers, via a pedagogical support team which can answer queries via email or telephone in each of the twenty-two official languages of the European Union.

6.4.2. Skills in designing and preparing teaching materials using ICT

In addition to being able to utilize computers and the Internet, teachers need to be able to develop appropriate digital teaching materials and web-based learning resources. And in order to facilitate learner access to information and provide greater learning opportunities outside of schools, it is also necessary for teachers to learn how to make educational content available online (in a digital form).

Since many teachers are not aware of the types of digital resources that are available online, and are not aware of the usefulness and relevance of these resources, teachers also need to be shown these resources and given demonstrations in their use before they can make sense of them and use them in their classrooms.

Recognizing this lack of awareness, the Philippines National SchoolNet coordinator, Ms. Maria Victoria D. Abcede, conducted workshops for teachers in Philippines schools to acquaint them with online teaching resources and demonstrate how these resources could be used in the classroom.

Recognizing the need for training in this area, the UNESCO SchoolNet project held a regional workshop to train teachers in the development of digital content and teaching materials. Many of the teachers who participated in the workshop were able to apply their new skills to develop useful digital resources in local languages. The teachers from Indonesia, for example, worked closely with Pustekkom, the Centre for Communication and Information Technology in the Ministry of National Education, and with teacher education institutions, to develop digital resources in Bahasa Indonesia, which were subsequently made available to all via the national portal, E-dukasi.

A second workshop targeted the countries of Cambodia, Lao PDR, Myanmar and Viet Nam. Teachers from the participating schools in these countries gained skills in the design of ICT-based resources relevant to the English, Mathematics and Science curricula in their countries. The teachers prepared digital resources both in English and in their own languages. Together with curriculum developers, the workshop participants also identified entry points in their national curricula, where ICT could be integrated. Following the workshop, several of the participants returned home, developed digital lesson plans and materials, then tested and utilized them in their schools. The participating teachers from Myanmar, for example, used their new skills to prepare 45 ICT-based lesson plans, along with a teacher’s handbook. These lesson plans were compiled on a CD-ROM for distribution to high schools in

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“…there are problems in content management and development due mainly to the scarcity of skilled human resources in the areas of networking and content development”.

Harina Yuhetty, Ministry of National Education, Indonesia, 2004
Myanmar. Later, a second edition of the CD-ROM, featuring the top 10 lesson plans and guidance notes (explaining how to use the lesson plans), was prepared. The lesson plans were also made available on the Internet for all teachers to access. Most teachers found the lesson plans to be useful and effective, particularly because they were based on the curriculum of Myanmar schools and were appropriate for the cultural context and language of Myanmar.

A lack of understanding among teachers who have not participated in training courses highlights the need to prepare clear guidelines for teachers to assist them to create resources, such as lesson plans, that are appropriate to ICT-integrated education. For example, the handbook and guidance notes developed by teachers in Myanmar were innovative solutions to the difficulty faced by their peers (who had not attended training courses) in understanding how to utilize the existing lesson plans effectively, how to adapt existing resources to suit their particular needs, and how to create digital resources on their own.

In Europe, most teachers already have the skills required to create teaching and learning content and materials using presentation and word-processing software. However, for creating more sophisticated content, for example standards-compliant learning objects, training is offered to teachers in the use of authoring tools, and in understanding the use of metadata for classification and tagging of learning content. Such training has also been offered in Australia, New Zealand, Turkey and the USA.

6.4.3. Skills in using learner-centred teaching methodologies

The effective use of ICT in teaching and learning requires and understanding of learner-centred teaching methodologies. Teachers therefore need guidance on ICT-relevant pedagogy, including its applications in specific subject areas.

The UNESCO SchoolNet project held two workshops to train teachers in pedagogical approaches relevant to the use of ICT in education. The first workshop targeted teachers from participating schools in Cambodia, Lao PDR and Viet Nam (teachers from Myanmar unfortunately could not attend), while the second workshop targeted teachers from the participating schools in Indonesia, Malaysia, Philippines and Thailand. In each case the workshop included training in learner-centred approaches, class management, web-supported learning and online learning.

“The capacities required to make effective use of ICTs in schools should not be under-estimated, nor restricted to technical skills. A wider understanding of ICT potentials by teachers and administrators is also essential.”

Peter Ballantyne, 2004

52 Akpınar, Y. and Simsek, H., 2007
Learner-centred pedagogical approaches

Learner-centred pedagogy caters to the needs of the learner rather than the needs of the teacher or the institution and gives learners greater flexibility and control over when, where, what and how they learn. Learner-centred approaches generally bring together three factors: collaboration, constructivism and community building, which are explained below.

- **Collaboration**
  Collaboration and interaction among students are seen as effective methodologies for the transfer of information, and are viewed by many as being more effective in achieving desired learning outcomes than the conventional approach in which information is transmitted only from the teacher to the learners. A collaborative approach is also effective for ensuring equal gender participation in the learning process.

- **Constructivism**
  The constructivist approach to teaching and learning views knowledge as being “not given … but actively constructed by the people engaged in a process of making sense of what they experience.” Through this approach, learners construct their own knowledge, rather than receiving it from a teacher or another person. This kind of learning is inquiry-based and problem-based, which encourages the development of higher-order thinking skills, including critical judgement and evaluation.

- **Community building**
  A group of students or teachers engaged in collaborative learning and exchange of ideas, can be termed a “community of practice”. Such a community can facilitate information sharing between peers in both formal and non-formal learning contexts.

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51 Pulist, S.K., 2001
52 Talamo, A. and Corasaniti, P., 2005
53 Vygotsky, 1978; Talamo and Corasaniti, 2005
54 Talamo and Corasaniti, 2005
55 Wenger, E., McDermott, R. & Snyder, W., 2002; Kim, 2000
In the case of the European regional SchoolNet, learner-centred methodology is not explicitly taught as part of school networking activities. However, learner-centred approaches are embedded in the methodologies, tools and materials provided to teachers by European SchoolNet. So although the teachers are not being trained in learner-centred pedagogy, by engaging in a project such as eTwinning, one is obliged to implement learner-centred pedagogy to fulfil the project conditions. In initiatives such as eTwinning, the training focuses on innovative techniques and transversal skills that are not normally covered in pre- or in-service teacher training, such as international cooperation, intercultural dialogue, innovative technical tools and ethical use of ICT.

### 6.4.4 Skills in implementing telecollaboration activities

The “Learning Circles” concept, developed by Margaret Riel, was selected as the telecollaboration model to be used in the UNESCO SchoolNet project. A Learning Circle is a form of online project-based learning in which several classes (usually from various schools) collaborate to answer questions and investigate topics. During the process, each class sends a question to the other classes in the Learning Circle, the other classes utilize the Internet to find online resources that will answer the question, and send in their responses. The information collected in this way helps each class to investigate a particular topic. At the completion of an investigation, the classes share their findings with the rest of the Learning Circle.

Telecollaboration activities, such as Learning Circles, enhance student motivation to learn about a topic, and also have benefits in terms of improving written expression, developing technical skills, and promoting international understanding and tolerance. Cooperative work between students and teachers on telecollaboration activities can also help to transform their relationship into one of mutual trust and learning.

Designing and implementing telecollaboration activities are challenging even to the most competent teachers, as they require careful planning, time management, skills in the use of computers, and confidence in using the Internet as a research and learning tool. Training in how to organize and implement telecollaboration activities is therefore very important.

The UNESCO SchoolNet project held two workshops, titled the “ASEAN Bridges to Learning workshops” in the period between 28 March and 6 April 2005. These workshops introduced participants to the concept of telecollaboration and provided an opportunity for face-to-face interaction among a diverse group made up of the eight national SchoolNet coordinators and about 70 teachers and ICT personnel from the 24 schools participating in the project. Through discussions and planning sessions at the workshop, the participants developed an action plan for implementing Learning Circle telecollaboration activities in the 24 schools.

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58 Riel, M. 1993
Following the workshops, UNESCO initiated online training in the form of a trial round of Learning Circles telecollaboration, over an eight-week period between June and August 2005. Although the experience was useful for the participating teachers, the teachers recommended that additional training was required before implementing any further telecollaboration activities.

In response to this recommendation, the UNESCO SchoolNet project held the “Facilitating SchoolNet Telecollaboration and Evaluation Activities in Southeast Asia” workshop, from 12 to 16 December 2005, which provided training for 23 participating teachers in how to design and implement telecollaboration activities, focusing particularly on effective pedagogical approaches for telecollaboration, how to facilitate student participation in Learning Circles, and how to monitor the impacts. The workshop was convened with the assistance of workshop facilitator and educational ICT consultant from SchoolNet South Africa, Mr. Gerald Roos.

Workshop participants learned how to take part in Learning Circles and were given opportunities to get involved in a mock Learning Circle. The workshop also provided an opportunity for the teachers to examine various models of telecollaboration activities and localize them for their own countries, as well as to familiarize themselves with the telecollaboration implementation process. Teachers were also given a guide which they could refer to when initiating telecollaboration activities with their classes. Following the training, the number of participants in the Learning Circles activity increased, and the quality of materials produced by students subsequently improved.

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In Europe, teachers are given training in the twinning process at national level (coordinated at the European Union level), tailored for the needs of different types of teachers. For instance, a specific workshop for head teachers was organised in Ireland, focusing on organisational and whole-school issues, while in Estonia the focus was on primary school teachers, covering topics such as the use of animation, computer painting, blogs and wikis.

6.5 Initiate telecollaboration and other online learning activities

Web-based activities such as telecollaboration provide an organized and enjoyable way for teachers and students to utilize Internet resources, engage in online learning, and exchange information with their peers.

Telecollaboration has been one of the most praised aspects of SchoolNets, as it enhances student motivation to learn and builds self-confidence. In addition, when telecollaboration occurs between students in different countries it can promote tolerance of other cultures and beliefs, and create friendships across borders.

Telecollaboration activities can also encourage the development of communities of practice. A community of practice is a sustained social network of individuals who share common sets of core values and knowledge, grounded on common practices. Participation in a community encourages sharing of experiences, ideas, knowledge and materials, as well as encouraging development of supportive relationships between members of the community.

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62 eTwinning website, www.etwinning.ie/pdw.html
64 Wenger, McDermott & Snyder, 2002

“Being one of your trainees, how ... fortunate I am to be given such an opportunity to work collaboratively with (people) ... Once again, thank you very much! The trainings you offered play a significant impact personally and professionally.”

Janeth A. Seno, Cabancalan National High School, Philippines
When designing telecollaboration activities, it is important that the teachers have a clear learning objective in mind and keep the activity in line with the school curriculum. Teachers should also keep the activities simple to engage in and enjoyable, and avoid the activity becoming overly time consuming or technically challenging. Where possible, teachers should also encourage student participation in organizing telecollaboration activities. This encourages students to become engaged in the activity. Teachers should also encourage students to share their ICT skills and help peers and teachers to gain these skills.

While a computer, internet connection and basic ICT skills are required, a telecollaboration activity need not require that the class has access to an entire computer lab or the latest equipment. As Gerald Roos, one of the telecollaboration trainers, has pointed out, “It is possible to participate in a Learning Circle with just one computer in the class/school. I have seen it done often. One teacher used to carry home the desktop computer in order to use her telephone line and the modem - the school had no telephone.”

Teachers who participated in the UNESCO SchoolNet Learning Circles telecollaboration activities were generally very positive and saw it as being beneficial for enhancing learning in their schools. These teachers also found telecollaboration to be an effective way of communicating with peers at the national level and strengthening co-operation. In Malaysia, for example, the teachers of the three participating schools all agreed that they had benefited from the telecollaboration activities and said that they would continue to implement telecollaboration activities in order to improve learning outcomes and to sustain the partnership that had been established between their schools.

“… school activities are necessary for students to be able to interact positively with the Internet. There is also a need to support and implement other parallel programs such as teacher training, school library and Internet integration…”

Network Design and Resource Management Scheme, SchoolNet Thailand

Thank you for giving us a chance to join your “Learning Circle” This activity … enhanced and developed the students’ knowledge in using the computer (for) their school works.

Jhon Kenneth B. Dimalanta, Juan Sumulong High School, Philippines
Feedback from the teachers who participated in the telecollaboration activities indicated that the main difficulties they faced were:

- Language barriers – which hindered full understanding of the Learning Circles activity and which limited communication between the participants in different countries.
- Internet connectivity problems.
- Lack of time to engage in telecollaboration on top of other school activities.
- Lack of support from administrators or supervisors.
- Out-of-date e-mail addresses of participants – which prevented communication.

Given the diversity of languages in the ASEAN region and consequent communication difficulties, teachers preferred national rather than international telecollaboration activities. Such national telecollaboration activities were unique to the ASEAN context as SchoolNet telecollaboration activities in Europe and Africa tend to be international in nature.

Most of the countries had problems with Internet connectivity and time constraints, however teachers found that they could overcome such obstacles if they had sufficient support from school administrators and SchoolNet managers. In the Philippines, for example, the high participation rate in telecollaboration activities of teachers was largely due to the support that these teachers had from the Philippines SchoolNet Manager, Ms. Maria Liza Gulbin. The telecollaboration activities she organized at Cabancalan High School in Cebu and at Juan Sumulong High School in Manila were especially well-received by both teachers and students. The teachers also observed a high and sustained level of motivation to learn among their students.

“Learning Circle, it helped me lot in my studies. I use the ICT to do my projects, assignments, and reports easily.”

Nadia Bartolome, Juan Sumulong High School, Philippines

In Thailand, the SchoolNet manager, Chanarat Kam-On, and the national coordinator Rangsun Wiboon-uppatum, were highly active in initiating and promoting telecollaboration activities. They stimulated learning circles activities among the schools participating in the SchoolNet project and then expanded the network to include more schools in the country.

The high participation of Myanmar teachers in telecollaboration activities was a noteworthy achievement bearing in mind the constraints faced in terms of connectivity, limited ICT skills, and a high teacher-student ratio. As in the case of the Philippines, this high participation was largely due to the encouragement and support teachers received from the national SchoolNet manager, Ms. Khin Aye Cho. She organized the teachers, supported them and coordinated the activities.
In many instances, young people are the driving force behind innovation in the development and use of new technologies.

Ban Ki-moon, United Nations Secretary-General
World Telecommunication and Information Society Day, 2007

It is remarkable how the enthusiasm of teachers has won through. Connectivity problems are a terrible disappointment and it was so hard to see many classes remain silent when you know that the teachers and the students are excited to participate. I have been very impressed with the determination shown by teachers to overcome these issues, especially the Myanmar teachers, but also many others.

Gerald Roos, Consultant, SchoolNet South Africa

In countries with relatively low rates of participation in the telecollaboration activities, such as Cambodia, Indonesia and Lao PDR, teachers at the participating schools noted that further training in telecollaboration was required, preferably in the local languages. They also highlighted a need for training the SchoolNet focal points and providing them with manuals and other tools to assist them in implementing activities.

Connectivity problems limit the extent to which one can deploy telecollaborative activities in some regions. Where connectivity is not an issue and there are fewer obstacles to the use of the Internet in education, teachers and pupils are able to participate in more in-depth activities. For instance, via the eTwinning initiative, school partnerships can be established around a variety of pedagogical topics, and schools can collaboratively publish blogs, websites or other digital resources, using tools such as email, voice over IP, chat, instant messenger tools and discussion forums. In Canada, where Internet access is relatively easy, Canadian Schoolnet was able to develop an online project to create a collaborative magazine, with contributions from children all over Canada. Similarly, the UNICEF Voices of Youth project has enabled young people to collaborate via the Internet. In this project, children can exchange ideas online about key issues, including the Millennium Development Goals and children’s rights.

“In many instances, young people are the driving force behind innovation in the development and use of new technologies”

Ban Ki-moon, United Nations Secretary-General
World Telecommunication and Information Society Day, 2007

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65 UNICEF Voices of Youth website, www.unicef.org/voy