COMPUTER SYSTEM SUSTAINABILITY TOOLKIT

UNIT 6:

Creating Your Sustainability Plan



[A Testament to the Toolkit's Effectiveness]

"I really appreciate the program on achieving sustainability. This opened my eyes about how to handle the computer lab and seeing many potentialities of the computer lab for school and to promote community outreach. Previously, my school had problems even for covering basic expenses, now we have resolved this through an effective management cycle—planning, implementing, and controlling. By having the SSTC [Student Support Technicians Club] in my school, maintenance is no longer an issue. We are able to maintain the computer lab almost for free which is done through mutual collaboration among the IT teachers and students. The students are also excited because they have more time to learn IT.

I am involved in this program basically by controlling the implementation of the sustainability plan. After agreeing on our sustainability plan in our faculty meeting and the PTA regular meeting, I asked the small team to pay attention seriously in implementing the plan. All problems related to finance and other resources are solved through agreed meetings and good communication. Thank you for assisting my school in establishing our sustainability plan."



-Sutamto, Principal of SMAN 1 Rebang Tangkas Public School in Southern Sumatra, Indonesia Deciding on the future direction of your computer system is not an easy task, and will require deliberate thought and the input from members of the school's community. This unit will help you move toward sustainability by effectively involving community members in strengthening your school and creatively reducing costs.

What do we want our computer system to become over the next five years?

Knowing the status of your school's computer system and how teachers, students, and others use the current system is only part of what you need to prepare an effective CSS plan. You also need to have some idea of the characteristics of the future computer system your teachers, students, and community members want to create. If people just want the current computer system to be maintained, then the school's plan will be much different from that of a school where the community wants the computer system to grow so students' and teachers' access to computers and the Internet is increased.

How can we learn what community members want our computer system to become in the future?

One way to help you understand what community members want the school's computer system to become in the future is to carry out a series of focus group meetings where a similar set of questions is discussed with different groups of people at the school. We recommend that you hold focus group discussion (FGD) meetings with the following groups:

• the SPT;

- a group of school staff comprising teachers and administrative staff (not members of the SPT);
- two to three groups of students from different grades;
- a group of parents who have students in different grades in the school; and
- a group of community members who are not parents.

An effective focus group should meet the following characteristics:

- Each focus group should have an equal number of male and female participants.
- Include no more than 12 people and no fewer than six people in any focus group.
- Hold the focus group meeting in a comfortable and quiet room.
- In advance, distribute to the school community information about the purpose of the focus group meetings, the topics that will be discussed, and how the participants are selected.
- The focus group should last from one to two hours.
- Develop four to eight primary questions and/or topics for each focus group discussion. These questions should remain consistent for all groups.

- If possible, the school should arrange for someone who is not associated with the school to facilitate the focus group meeting and discussion.
- Another person, who will not participate in the discussion, should take notes during the meeting so information from each focus group can be collected, compared, and compiled into a report.
- The focus group facilitator should engage the members of the focus group in an open and dynamic discussion about the focus group questions. The facilitator should ask follow-up questions during the discussion to encourage participants to provide detailed responses rather than just "yes" or "no" answers.
- The facilitator should also ensure that all members of the group participate in the discussion by asking each one to respond to different aspects of the discussion. For cultural reasons, you may need to divide men and women into different groups for the question session so women will feel freer to talk about their interests. (The Focus Group Discussion Guide with tips for organizing and running an effective focus group discussion is found in the Annex.)

What questions and/or topics should be part of a Focus Group Discussion?

The focus group topics and questions should focus on what members of the school's community want their computer system to become over the next five years. The discussion should not focus on the current system except to establish what the status of the system is today. The participants should get the Computer System Status Report to read before the Focus Group Discussion so they all have a similar understanding of the current system. Below are some possible questions for the SPT to consider asking. The SPT can use these sample questions to create a set of questions that specifically meets your school's needs. You should also modify these questions so they reflect the situation at your school.

- What aspects of education at the school should the future computer system support, enhance, enable, and improve? Why?
- How much time should each student spend using computers during the school day in a typical week? Why?
- Should students use computers only in a lab, or should they be able to use them in other classrooms as well?
- Should the school's computers be available to others in the school's community during non-school times such as evenings and weekends?
- Should the school organize fee-based activities that would enable it to generate income from the use of its computer system? If, so, what kinds of rules should be put in place to manage such a system?
- What do you think will be the most important challenges the school will face with respect to its computer system over the next five years? What might be some possible solutions to these problems?
- If you were part of a school committee that makes decisions about how to spend school funds to improve the school's computer system each year, what would your spending priorities be? [To help participants discuss this question, the facilitator may want to have them consider aspects of a computer system, such as adding computers, printers, Internet connectivity, maintenance, security, training

of teachers, community members' use of the system, software, integrating computers into routine subjects, controlling use to keep students from accessing inappropriate content, etc.]

- What percentage of the budget do you think should be dedicated to maintaining and expanding the school's computer system? Why?
- If you believe that the amount of money the school spends on the computer system should be increased, what can the school do over the next five years to raise these funds? [If participants have a difficult time with this question, the facilitator may want to mention different possible sources of funds. Such sources might include increasing student school fees, organizing special fundraising events, using the computer system to generate revenue, charging fees for special after-school activities for students, seeking grants from different sources, establishing partnerships with private companies near the school to sponsor improvements in the computer system, etc.]

During a FGD, it is common for participants to get very involved, which may lead the group's discussion going off topic. The facilitator needs to use his or her judgment about whether to allow the group to take the discussion away from the topic.

How should the SPT use the results from the Focus Group Discussions?

The SPT should select a sub-team to summarize focus group members' priorities for the school's computer system over the next five year and translate them into a "wish list." Based on how often different groups mentioned items/perspectives, the focus group team should arrange the summary list in order of priority, from the most important (the most commonly mentioned) to the least. The sub-team can then present this list of priorities to the full SPT for discussion.

In addition to ordering the most commonly mentioned items/perspectives (from most common to least), the focus group team should try to organize the list according to which items on the list they think can be acted on and achieved. Some of the items in the list probably can be addressed fairly quickly and at little or no cost (for example, encouraging students to turn off the computers when they are not being used). Other elements will likely take longer to be implemented and involve more money (for example, establishing Internet connectivity with a suitable amount of bandwidth to meet your school's needs). Some elements probably will require ongoing and continuous attention by the school as the quality of the computer system improves.

The FGD process will expose many important points that the SPT will want to use to create critical goals and objectives for the CSS plan. It is critical that elements of the plan come from members of the community so these individuals will want to support the plan and help the SPT raise the funds needed to implement it.

The focus group process probably will expose misunderstandings or misinformation about the school's computer system, the budget, policies, or the purpose of the CSS planning process. If this happens, the school director and the SPT must provide explanations and additional information to improve understanding and ensure that members of the school community have precise information and a consistent understanding.

How much money is the school currently spending to buy computer equipment, provide Internet connectivity, and operate and maintain our computers?

Knowing how much money your school is spending on the computer system and as the sources of these funds, is essential to developing a viable plan to sustain the current system, to improve and grow it. To address this need, the SPT should ask the school accountant or finance officer to prepare a financial report covering the last three years (or however long the school has had computers) that shows how much money was spent on different aspects of the computer system.

The first part of the computer system financial report, the **Expense (or Computer System Costs) Report**, should answer the following questions:

- How much money is spent annually to purchase different types of equipment, including computers, printers, scanners, and other hardware?
- How much money is spent annually to buy software?
- How much money is spent annually for salaries of employees who spend at least 50 percent of their time managing and running the school's computer system?
- How much money is spent annually to pay consultants to provide different services to support the school's computer system?
- How much money is spent annually to repair computer equipment?
- How much money is spent annually for Internet connectivity?
- How much money is spent annually for other computer system consumables, including ink or toner for printing, disks and CDs, and paper?

- How much money is spent annually for electricity (or diesel for the generator) to operate the computer lab?
- How much money is spent annually on training staff to use the computers?

Not all schools will spend money in each of these categories. However, the report should include all expense categories during the last year. The finance officer may only be able to provide estimates for some of the answers. Where only estimates can be provided, the SPT may want to ask the finance officer to modify the school's accounting system to allow more accurate information in the computer system's annual financial report in the future.

How much money do we collect annually to support our school's computer system?

The second part of the computer system financial report, the **Income and Revenue Report**, should present information on the different sources of money used to cover the cost of the school's computer system. Below is a list of possible categories for this part of the financial report.

- Monthly computer use fees, if any, that all students pay.
- Monthly computer system use fees that only some students pay for extracurricular activities, if any, that involve the use of the school's computer system.
- The portion of the school's regular student fees all students pay each month that is allocated to support the school's computer system.
- Funds from special school fundraising activities to support the computer system that are not related to routine school fees.
- Funds received from the District, Provincial, or National education offices

specifically to support the school's computer system.

- Special grant funds received by the school in response to a grant request or proposal to support the school's computer system.
- Income generated through the use of the computer facility on a fee basis by people outside the school.
- Funds or the value of in-kind support from foundations, mosques, churches, local companies, individuals, or groups to support the school's computer system.
- Funds or in-kind support from the PTA to support the school's computer system.

Not all schools receive funding or in-kind support under each income category, so you can leave some categories empty. However, it is important to include all of these possible income categories in your financial report even if the value is zero, since this may change in the future. Also, the total amounts reported on both the expense and income reports may not be the same. The school may be spending more to support the computer system than it collects. If this happens, the school's accountant or finance officer should explain the difference in the amount of money spent on the computer system and the money collected to cover these costs.

The accountant and the school principal may also want to place the totals on this financial report into context by comparing the expenses and income for the computer system to the overall school budget and specific component budgets.

The SPT will want to discuss this financial report, especially where expense and/ or income categories have no associated values. Also, if the totals on the two parts of the report are not equal, it is important to understand why. In addition, the SPT may wish to discuss the following questions:

- Is the budget for buying new computer equipment sufficient to meet the school's needs?
- What area of the budget do members of the SPT feel is most important to achieving sustainability
- Can members of the SPT identify any links between the report describing the current state of the school's computer system and the amount of money budgeted to support the different parts of such a system?
- Is income from school fees allocated to support the computer system sufficient to meet needs?
- Does the school have a capital improvement budget that could be used to increase the number of computers at the school, repair existing computers, or provide all teachers with training in using computers to improve teaching and learning?

How can we maintain our valuable computers without spending a lot of money?

While depending on companies or consultants to provide maintenance and support services for all the needs of a school's computer system is usually too expensive for public schools, not maintaining and repairing the computers can be even more expensive. There also may be no local sources of computer technical support or repair services for rural schools and schools in small towns in some countries. This factor, along with the high cost of computer maintenance and repair, often causes schools to neglect routine maintenance. This can lead to increased failure rates as poorly maintained computers break down. Then, when the computers

stop working, schools often do not have sufficient funds to buy expensive parts, pay technicians to repair the computers, or replace them with new ones if they cannot be repaired. Even when schools have staff with the skills to repair computers when they fail, there is still the problem of providing ongoing preventive maintenance. For the vast majority of public schools, depending on external sources for maintenance and repair is not a viable solution for enabling schools to keep their computer systems running well.

One solution to this problem that has been implemented successfully in the six Indonesian schools that participated in the Qualcomm Wireless Reach[™] pilot project and elsewhere in the world is to establish Student Support Technician Clubs (SSTCs). This approach has three main advantages. First, it establishes a self-sustaining means of providing daily maintenance and diagnosis for the school's computers. Second, the students who join SSTCs gain valuable ICT and employability skills that will be beneficial after they graduate. Third, it provides teachers, who want to use the school's computers with their students, access to a "computer aide" who can provide immediate technical support during a lesson.

What is an SSTC?

An SSTC is a club comprising students in the upper grades of the school who, after going through a simple orientation program, take on the responsibility of daily maintenance for the school's computers. Each SSTC has two teacher-sponsors who are responsible for establishing and running the club. These teacher-sponsors do not need to be computer experts, but a school's information technology (IT) teacher and/or the lab technician is often one of these sponsors.



An SSTC from one of the five rural schools in Southern Sumatra that participated in the Wireless Reach pilot project.

It is important that at least one of the SSTC teacher-sponsors is a regular subject teacher.

How can you establish an SSTC?

Starting an SSTC at your school is not difficult. The first step is to recruit the two teacher-sponsors who will be responsible for starting and running the club." The school principal must also decide that having an SSTC in the school is a priority to ensure that these teacher-sponsors and the students who join the club take their responsibilities seriously. Once the teacher-sponsors have been identified, they need to use the **SSTC** Background document, which can be found in the Toolkit's Annex and on the CD, to create a version of this information sheet about the SSTC that teacher-sponsors can distribute to other teachers and to the students who want to join the club.

The teacher-sponsors also will need to create a localized copy of a poster and/or handout using the SSTC Club Announcement in the Annex and on the CD. This will enable them to recruit about 12 students from one of the upper grades at the school to form the first core membership of the SSTC. We recommend that the school recruit the first group of students from either the second-tolast or the third-to-last grade. For example, in the case of a middle school (grades 7-9), the students should be recruited from the 8th grade. In the case of a primary school (grades K-6), consider recruiting students from the 5th grade. If the school has both boys and girls, it is important to recruit an equal number of each to the SSTC. The teacher-sponsors should seek some of the best and brightest students in the school to be core members of the SSTC.



This is the SSTC identify card that club members in all Macedonian schools use.

What are some features of a successful SSTC?

No two SSTCs are identical. Each school and each pair of sponsors, along with the members of the club, will create a unique SSTC that meets the needs of the school and reflects the school community. While all SSTCs will be different in some ways, SSTCs in different countries share characteristics that contribute to their success. Some of the more important characteristics of success include:

- The principal, teachers, and parents actively support the SSTC.
- The school creates a flexible schedule to enable members of the SSTC to arrive early or stay late so they can carry out routine maintenance on the school's computers.
- The school provides the members of the SSTC with some kind of identifying feature. This may include a T-shirt, as shown in the pictures of SSTCs in Indonesia, an ID badge as shown in the picture of an SSTC in Macedonia, or a combination of these.
- At least half of the students initially recruited to join the SSTC are girls.

Over time, the ratio of girls to boys may change. In fact, in some schools, more girls remain active participants than boys, and in others the reverse is true. This evolution in the makeup of the SSTC is natural; the goal is to make sure that students know the school wants girls and boys to have an equal opportunity to participate.

- The teacher-sponsors and the students in the club organize to develop the rules for their club and to elect members to lead it. The students must believe that the club is theirs and that they play an important role in running it.
- SSTC teacher-sponsors organize training and orientation sessions for the SSTC members on their functions as members of the SSTC and on the school's computer system.
- SSTC teacher-sponsors organize the IT Technical Support training/orientation for SSTC members. The school should ask its computer technician and/or IT teacher to lead these training sessions. An overview of basic technical support skills, provided in the **SSTC** Background document in the Toolkit's Annex and on the CD, can be used to help the students gain basic technical support capacity. If the school does not have a resident computer technician or an IT teacher, the principal should try to identify someone in the school community or from a neighboring school who can lead the members of the SSTC through these training and orientation sessions. Experience at other SSTCs shows that, through a process of discovery, SSTC students quickly learn much about maintaining, trouble-



This is the back of the shirt that one of the schools in Indonesia had made for their SSTC members.

shooting, and fixing computers on their own once they have a set of basic skills.

• Teachers and principals in the school call on SSTC members to help teachers use the school's computer facilities. In addition to having club members carry out routine maintenance on the computers, these students can help teachers with their classes in the computer lab. In some schools, when teachers want to take their classes to the lab for an activity, they contact one of the SSTC teacher-sponsors or the student leader of the SSTC to ask to have an SSTC member join the class in the lab to provide technical support. The teacher-sponsors or the SSTC leader selects a member who has permission to leave his or her class to provide technical support. This is one reason why the SSTC sponsors should try to recruit high-performing students to join the SSTC.

What kinds of maintenance and technical support do SSTC members carry out?

While SSTC members are all students with no formal training in maintaining and repairing computers (beyond the basic overview provided by the document in the Annex), they are very capable of learning and carrying out basic computer maintenance and technical support services. Also, experience with SSTC students in different countries shows that their natural curiosity, eagerness to learn, desire to help, and innate lack of fear of making mistakes give them a perfect foundation for learning how to maintain computers and provide technical support to their peers, teachers, and others. The following is a brief list of some of the main tasks SSTC members carry out:

CLEANING: One of the most important causes of computer failure in schools

in many countries is overheating of components, such as the hard drive and power supply, caused by excess dust covering parts that generate heat when the computer is operating. As a computer is used, the fans that draw air through the computer to keep it cool also pull in dust. This dust gradually accumulates over many parts inside the computer creating a blanket of insulation that prevents the different components from radiating heat as they operate. Over time, as the insulation layer of dust grows thicker, the temperature in the different components increases and they eventually fail. When this happens to hard drives, you usually need to replace the drive, which is expensive, and then requires a significant amount of time to reinstall the computer's operating system, software, and all of the original files.

Solving this problem is simple. The SSTC members simply have to periodically open up the cases and blow out the dust. This allows components to radiate heat efficiently and keeps the computer running cooler. The SSTC team also makes sure that the computers are situated to allow a free flow of air into and around the case to improve cooling. In addition to cleaning inside the computers, keeping the outside of the case, the monitor, mouse, and keyboard clean is another important SSCT team function. Keeping the lab environment clean helps minimize the accumulation of grit and dust, which also helps prevent problems from occurring and keeps the lab looking good.

POWER MANAGEMENT: Another common problem with maintaining computers in many countries is damage caused to different components, especially the computer's power supply, by fluctuating electricity and power outages and surges. Some schools have purchased expensive

uninterruptible power supplies (UPSs) and lower-cost surge protectors to help protect their systems (see Unit 3), but the problems persist. One simple solution the SSTC team can implement is to manually turn off the power to the computer room, and turn off all computers after the power failure occurs, and/or unplug all computers when the electricity goes off. Then, the power surge that usually occurs when the power is restored cannot damage the computer's power supply or other expensive components. A few minutes after the power is restored to the school and is stable, the SSTC team can turn on power to the lab and then plug all of the computers back in and restart each one. While this process is not always quick, the few minutes that it takes to do this saves having to spend money to replace power supplies and motherboards. In addition to the out-of-pocket costs, the school suffers educational costs since the damaged computers cannot be used until the damaged parts are replaced.

ANTIVIRUS: As students, staff, and others use computers, especially if they are connected to the Internet. it is common for viruses, spyware, and other types of malware to be installed on the systems. Viruses can also be transferred to school computers when users plug in their USB flash drives or connect their MP3 players. Infections can slow down the system and lead to a loss of files, damage the whole system, and/or lead to additional Internet charges. If the school has access to the Internet, the SSTC team can carry out routine, often daily, updates of antivirus and antispyware software to keep out the newest viruses. They also will periodically scan each computer, weekly or monthly, to catch and clean out any viruses or other malware that may have infected it. In doing this periodic check, the SSTC team can also clean off extra files, images,

and other digital garbage that accumulates as people use the system. This keeps the computers running smoothly and prevents any downtime or the need to pay for specialized repair services.

CHECKING PARTS: As a computer is used, some of the parts inside the case can become loose, which eventually may cause failure. SSTC team members can solve this problem by routinely detaching and reattaching parts so they remain tightly fixed.

DIAGNOSING PROBLEMS: A final activity SSTC members carry out is to diagnose problems. Many such problems can be prevented and solved as described above. However, when a more serious problem occurs, the cost of the repair can often be much lower by having the SSTC team first determine what the problem might be and what solutions might be needed. Experience in schools with SSTCs shows that this diagnostic work can make it possible to quickly buy the needed parts, which the SSTC students then install under the guidance of the school's IT instructor or technician.

How is the SSTC sustained over time?

Schools need ongoing computer maintenance and technical support. Only one semester or year of support is not very useful. It is essential that the SSTC is sustained over time so the school's computers are maintained consistently and the effort and expense of establishing the SSTC is not lost. Initially, the leadership of the school must focus energy, attention, and resources to keep the SSTC operating. Eventually, the SSTC will be woven into the fabric of the school and the community, and sustaining it will become much easier.

One feature of the SSTC approach is designed to help the school sustain the club.

Toward the end of the first year of operation, approximately two months before the school closes for the year, SSTC members recruit new members from a grade or two below them. These new members will become Junior Technicians, and the initial members will become Senior Technicians.

The Senior Technicians will be responsible for training the Junior Technicians in the roles and responsibilities of the SSTC. Each Senior Technician will be paired with one or more Junior Technicians as a mentor and will work with these new technicians so they learn their responsibilities quickly. At the start of the new school year, the expanded SSTC will be ready to perform essential services. Then, when the Senior Technicians approach their graduation, the Junior Technicians will be ready to become Senior Technicians and recruit a new group of Junior Technicians. In this way, the SSTC becomes a self-sustaining computer support program.

One reason for doing this is that students in their last year of school often have additional responsibilities linked to graduating, so the time they have available for their SSTC roles may become limited. The Junior Technicians will be able to take on greater responsibilities as the Senior Technicians become



increasingly busy with other activities. Then, at the end of year two, the Junior Technicians become Senior Technicians, and they recruit new members to the Club to become Junior Technicians. The sponsors of the club are not responsible for sustaining the Club, the students are. The sponsors only need to monitor this process and make sure it happens at the best time in the school year.

Another feature of the SSTC that contributes to its sustainability is making the leadership of the club part of the SPT. The SSTC lead-



ership (elected by the members), along with their sponsors, should participate in SPT meetings and present reports on the status of the school's computer system to the team and the school principal. Having this role on the SPT will contribute to efforts to sustain the SSTC.

How can the SSTC help support our school's efforts to integrate the use of computers into all subjects?

A computer system is a costly asset for a school to buy and even more costly to maintain and grow over time. It is essential, therefore, to make the best possible use of your system to improve teaching and learning across the whole academic program. Doing this is challenging. One of the most difficult challenges to overcome is encouraging teachers, many of whom may be unfamiliar with computers, to use them regularly in their course(s). SSTCs are helping some schools address this challenge by enabling one or more of their members to accompany teachers into the computer lab when teachers want to use the computers in their program. SSTC members make sure that all the computers are prepared for the teacher's lesson and assist students who might be having problems with technical aspects of the activity so the teacher can focus on teaching his or her lesson. If problems with connectivity or equipment occur, the SSTC member can also work to solve the problem, again leaving the teacher free to focus on the lesson. When teachers know they don't have to be computer experts, and there is someone they can depend on to solve technical issues, they are usually much more receptive to using a school's computer system in their lessons.

Enabling SSTC members to provide technical support for classrooms that use the school's computer lab requires the school to establish a policy allowing members of the SSTC to leave their classes occasionally for this duty. This also requires that teachers who want an SSTC member's help to request it two or three days in advance so the student manager of the SSTC can determine which club member would be best suited for the task and can miss a class period. The SSTC member would then have to request permission from his or her teacher to miss the class. Generally, only those SSTC members who are doing well in a class are permitted to miss class to help another teacher use the computer lab. As a result, it is common for SSTC members to be among the best-performing students in school.

How do students benefit from joining the SSTC?

The most obvious benefit from being a member of an SSTC is the opportunity to gain more computer skills. Members of the SSTC also gain valuable leadership skills since they have important responsibilities to maintain the school's computer system and help teachers integrate computer use into their lessons. They also gain a useful mix of employability skills because they carry out the club's activities in a way that is similar to how technical support service companies run their business. These skills will make SSTC members more competitive in securing future employment. Proof of this comes from the fact that some SSTC members have taken the skills they learned in the club and started small, part-time, technical support businesses.

During the transition from one year to the next, Senior Technicians gain additional skills when they take on the responsibility of preparing new recruits to become effective Junior Technicians. This process not only reinforces their own knowledge, but they



also gain valuable experience in helping others learn and in helping to manage other activities in the club.

Assessments of SSTCs in other countries show that members greatly enjoy being involved in the club and they rarely drop out. In some schools, the demand to be an SSTC member greatly exceeds the school's need and the capacity of the club leadership to manage the club. It is clear that students in these schools are showing they believe that being a member of the SSTC is important and beneficial.

