

**The NEPAD e-Schools Demonstration Project:  
A Work in Progress**

**Prepared for the e-Africa Commission**

**by**

**Commonwealth of Learning  
in Coordination with the  
Information for Development Program (*infoDev*)**

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# EXECUTIVE SUMMARY

## Background

The NEPAD e-Schools Initiative is a multi-country, multi-stakeholder, continental initiative intended to teach ICT skills to young Africans in primary and secondary schools and improve the provision of education in schools through ICT applications and the use of the Internet. The first phase of the Initiative is a Demonstration (Demo) project that is being implemented by NEPAD through the e-Africa Commission (eAC) in partnership with a number of private sector organisations. Six schools in each of 16 countries were selected to participate. The Commonwealth of Learning, in partnership with *infoDev*, a multi-donor partnership housed at the World Bank, is managing the monitoring and evaluation of the Demo project at the request of the eAC.

This report is a summation of the progress made to date in those schools where the Demo has been fully implemented for at least three months. Two interim reports in January and July 2006 provided feedback to the partners on the implementation process and how it could be improved. The first interim report also included a summary of baseline data gathered from the schools prior to the start of the Demo.

Data for this final report have been gathered from the following sources:

- Questionnaires, comparable to those used to collect baseline data, completed by teachers, students and school heads at schools where the Demo project has been fully implemented for a minimum of three months.
- A questionnaire, designed to assess the impact of the Demo on policy development, completed by an official from the Ministry of Education in each country.
- A report from each of the country liaison persons (CLPs) on the status and impact of the Demo in their country.
- Interviews with the leader of each of the five consortia.
- Site visits to selected schools in South Africa, Kenya, Uganda, Rwanda, Senegal and Mali.
- A workshop involving representatives from civil society organisations involved in ICT in schools, selected CLPs, the private sector and eAC to discuss lessons learned and implications for the NEPAD e-Schools Initiative.
- Interviews with eAC staff involved in the leadership of the Demo project.

## Project Implementation

The project is very complex given the range of stakeholders and its international context. The following points summarise the main issues encountered in the implementation of the project. (Details are provided in Appendix B of this report.)

- Many of the assumptions that underpinned the objectives of the Demo have proven to be invalid. A review of “best practices,” gleaned from similar prc

in Africa and elsewhere, plus a better understanding of current related projects in the target countries, would have been useful.

- eAC's ability to provide effective project management leadership has been seriously constrained by a lack of both human and fiscal resources. The most serious consequence of this has been the lack of effective communication among the partners.
- The implementation process has taken much longer than the one year initially expected. The variance among and within the countries has compromised both the achievement of the Demo objectives and the monitoring and evaluation (M&E) process.
- Not all countries were equally prepared to take on a project of this nature, which meant that, for some, implementation has been delayed.
- The failure to actively include civil society organisations that have experience in introducing ICT in schools in Africa deprived the project of valuable support and resources.

### **Impact on Schools**

The impact of the project on schools focused on outcomes in several areas, which are summarised below. Data for these impacts were collected before and after the project through questionnaires completed by students, teachers and school heads.

*Student Competencies:* Students reported marked increases in competencies related to e-mail, word processing, spreadsheets and Web browsing. There were also substantial increases in the use of computers for e-mailing, using software and writing papers, and, finding and researching information.

*Teacher ICT Competencies:* Teachers felt their ability to use basic computer programmes, and their confidence in doing so, improved remarkably. They rated the training provided as “a good start,” but they all want more. However, many felt the level technical of support was inadequate.

*Pedagogical Applications of ICT:* Teachers reported that they tried to integrate ICTs into their teaching of the curriculum subjects, but that they needed more training, more in-school support and more digital content materials.

*School-Level Support for ICT Use:* Teachers and school heads were generally very pleased with the technologies provided, even though most experienced some problems with technical support. They were also pleased with the training and learning software supplied by the consortia. They stated clearly that they want more of both!

*School ICT Capacity:* All the responding countries had both an ICT in education policy and a development plan either in place or under development, including (in most cases) a plan for sustaining the model when the Demo is completed. Most of the schools now interact with the larger community. However, the biggest challenge for the Demo schools has been the provision of adequate support – both technical and pedagogical.

*Health Point:* The model deployed at each school was to have included a “Health Point” where students and the community could access health-related information. Most of the consortia have addressed this requirement by ensuring that health information was included in the subjects covered by the learning materials they provided to the schools.

### **Unanticipated Outcomes**

- The Demo is having a major impact on governments in terms of their awareness of the importance of adopting ICT in their strategic educational plans. The most specific example is the surge of development of ICT in education policies by Ministries of Education.
- The public/private partnership model initiated by eAC has been replicated in at least one country, Kenya, and is being considered in some others.
- The use of local partners is proving to have a major effect on the ease and efficacy of providing support to teachers.
- The impact of the Demo school in local communities is much more comprehensive than was anticipated. Teachers from neighbouring schools that have no ICT facilities are being trained to use the Internet at the Demo school to help them find learning resources, and community groups are being encouraged, for a fee, to use the school as a “learning centre” during non-school hours.
- The Demo appears to have triggered a process of “reconceptualisation” of the NEPAD e-Schools Initiative, not in terms of the end results that the Heads of Governments have articulated for the programme, but of the means through which to achieve them.

### **Lessons Learned**

The following are some of the comments received from respondents to the policy questionnaire completed by Ministry of Education officials, interviews with the leaders of each of the consortia and from the interview with the eAC staff involved in managing the Demo:

- Implementation and follow-up support has been more effective when local companies/organisations have been involved.
- Leadership for projects has significant resource requirements, which, if not provided, can seriously compromise the project.
- The creation of expectations that are not met results in disappointment and cynicism at the local level.
- Communication between stakeholders is critical to success.
- The commitment of senior leadership to the project is a major determinant of success.
- Demonstration projects that do not provide a clear vision for what is to follow soon lose the commitment from the people involved.
- Educational systems need to be assessed for their “readiness” to facilitate interventions of this kind.
- The e-school model has to be flexible. One-size-fits-all doesn’t work.

- Local support infrastructure must be developed and available to schools if the Demo schools are to continue after the Demo project period.
- The fear that other organisations would be in competition with the NEPAD vision was misplaced. Civil society organisations with experience in introducing ICTs in schools should have been welcomed into the partnership at the beginning of the Demo.
- There should have been more exploration of other ICT-in-schools initiatives going on in Africa.
- Support mechanisms such as the NEPAD e-Schools Coordinating Body and National Implementing Teams, working with the CLPs, have been under-utilised in terms of supporting the eAC and the CLPs.

### **Summary Comments**

This report and the two earlier interim reports chronicle some successes and quite a few shortcomings as the Demo project has proceeded to this point. Numerous strategies for improvement have been proposed, but mostly not acted on. Therefore, it would not be surprising if some were to conclude that the Demo marks the beginning of the end of the NEPAD e-Schools Initiative and that this is just one more project among the many in the African experience that has begun with raised hopes and ended in disappointment.

But such a conclusion neglects the importance of judging the Demo project in a global context where it is without precedent in terms of its international scope, socio-economic diversity and the comprehensiveness of the partnerships. The vision may well have exceeded the practical bounds of its reach within the expected timeframe, but that vision and objectives of the initiative continue to be of critical importance.

## BACKGROUND

A major component of the New Partnership for Africa's Development (NEPAD) is the development of information and communications technology (ICT) infrastructure, which is considered essential to the achievement of long-term, sustainable socio-economic development on the African continent. The NEPAD e-Africa Commission (eAC) is the task team responsible for developing and implementing ICT projects, one of which is the NEPAD e-Schools Initiative. This is a multi-country, multi-stakeholder, continental initiative that is intended to:

- Teach ICT skills to young Africans in primary and secondary schools.
- Improve the provision of education in schools through ICT applications and the use of the Internet.

Private sector involvement in the e-School Initiative is through the Information Society Partnership for Africa's Development (ISPAD), which brings together fiscal and human resources, ICT infrastructure and curriculum materials from private and public sector partners and civil society. The first phase of the initiative is a Demonstration (Demo) project that is being implemented by the private sector partners. The objectives of the Demo project are to:

- Determine typical e-School scenarios and requirements in various circumstances in Africa.
- Highlight the challenges inherent in a large-scale implementation of e-Schools programmes.
- Monitor the effectiveness of multi-country, multi-stakeholder partnerships.
- Determine "best practice" and exemplary working models for the large-scale implementation of the NEPAD e-Schools Initiative, which aims to equip more than 550,000 African schools with ICTs and connect them to the Internet.
- Demonstrate the costs, benefits, appropriateness and challenges of a satellite-based network.
- Demonstrate the costs, benefits and challenges of ICT use in African schools.

The Demo project is being implemented in six schools in each of 16 countries across Africa through partnerships that involve private sector consortia, the country government and eAC. The role of each partner is set out in a Memorandum of Understanding (MOU) signed by the partners. A list of the countries, the consortia assigned to each country and the schools involved is included in Appendix A. A list of the members of each consortium is available from eAC.

Under the terms of the MOU the consortia were to provide schools with an e-school model that included equipment, networking, connectivity, training and curriculum-relevant learning materials. They were also to support the operation of e-school activities for one year following implementation. The eAC's responsibilities included managing and co-ordinating the project; handling communication between partners and with media; facilitating the signing of MOUs; and ensuring the conduct of research, monitoring and

evaluation. Each participating country committed to select six schools, to provide appropriate physical facilities for the equipment at each school and to facilitate the implementation and operation of the project by naming a country liaison person (CLP) to ensure co-operation between the ministry and the implementing consortia.

The Commonwealth of Learning, at the request of eAC, led the monitoring and evaluation (M&E) of the Demo project in partnership with the Information for Development Program (*infoDev*), a multi-donor partnership housed at the World Bank. Dr. Glen Farrell led the M&E process on behalf of COL and, as of May 2006, was assisted by Ms. Shafika Isaacs, a former Executive Director of SchoolNet Africa and now the Education Director at Mindset Network located in Johannesburg, South Africa.

## **Report Focus**

This report marks the completion of the agreement between COL and eAC on the leadership of the M&E. Even though the Demo has not been fully implemented in all countries, it is important to release this report now because of the need for reasonable consistency in data collection and provision of feedback to those countries that are ready for the next phase. It is, therefore, a report of a work in progress rather than an end-of-project summative evaluation. It summarises the progress made to date in those schools where the Demo has been fully implemented for a period of time and the lessons learned from that experience.

Two interim reports were provided to the eAC in January and July 2006. The first included a summary of baseline data gathered from the schools prior to the start of the Demo implementation, as well as feedback to the partners regarding the implementation process and how it could be improved. The second report also focused on the Demo implementation process, the issues and challenges being encountered, and recommendations for dealing with them. It also addressed some post-Demo questions and issues that were emerging. The conclusions and recommendations contained in both interim reports are included in Appendix B, and the full reports are available from eAC.

Data for this final report have been gathered from the following sources:

- Questionnaires, comparable to those used to collect baseline data, completed by teachers, students and school heads at those schools where the project has been fully implemented for a minimum of three months. (A fully implemented school is defined as one having all equipment installed and operational, a cadre of teachers trained, digital learning materials available, and an Internet connection functioning.)
- A questionnaire, designed to assess the impact of the Demo on policy development, completed by a Ministry of Education official in each country.
- A report from each of the country liaison persons (CLPs) on the status and impact of the Demo in their country.
- Interviews with the leader of each of the five consortia.

- Site visits to selected schools in, Kenya, Mali, Rwanda, Senegal, South Africa and Uganda.
- A workshop involving representatives from civil society organisations involved in ICT in schools in Africa, selected CLPs, the private sector, and eAC to discuss lessons learned and implications for the NEPAD e-Schools Initiative.
- Interviews with eAC staff involved in the leadership of the Demo project.

## IMPLEMENTATION OF THE DEMONSTRATION PROJECT

The implementation of the Demo has taken much longer than the one-year initially expected and has been very uneven across the participating countries. The data in Table 1 (from the CLP reports submitted in December 2006) indicate the current status of implementation in each country.

**Table 1: Demo Implementation Status as of December 2006**

Country	Schools Fully Completed	Schools Partially Complete	No Implementation
Algeria			6 (Algeria not yet participating)
Burkina Faso			6 (consortia have made site visits)
Cameroon			6
Egypt	4	1	1
Gabon		6	
Ghana	3	3	
Kenya	6		
Lesotho	3	3	
Mali		5	1
Mauritius	6		
Mozambique		4	2
Nigeria	0	1	5 (2 by second quarter of 2007)
Rwanda	6		
Senegal			6 (activity beginning at 3 schools)
South Africa	3	2	1 (expected Feb. 28/07)
Uganda	1	2	3 (one by second quarter 2007)

## Observations

The reasons for this ragged-edged implementation were described in the two interim reports. Recommendations from these reports are included in Appendix B. These recommendations were not effectively acted on over the past year. However, the purpose of a demonstration project is not just to demonstrate, but also to learn from the experience. The following observations, synthesised from the various data sources, constitute an important checklist for the future management and implementation of similar projects:

- Managing a public-private partnership of this magnitude is a very complex task involving 16 national governments, five of the world's largest ICT corporations partnered with numerous regional and national supporting companies, and a lead agency accountable to the heads of all national governments on the continent. All parties at the beginning of the Demo underestimated this complexity. The CLPs, the consortia leaders and the eAC staff responsible for the Demo project consistently pointed out in their reports that the challenges of ensuring effective communications, establishing a shared vision and expectations, and holding partners accountable for commitments made were immense and required a much longer time frame than was allowed to be addressed effectively.
- Providing leadership for such a complex project requires significant fiscal and human resources, and the eAC was woefully short of both. eAC was expected to raise the funding it needed to carry out its leadership role, placing it in more of a mendicant position rather than one of leadership. In spite of the generosity of several organisations, including the corporate leaders of the consortia, eAC was under-resourced for the project management tasks it took on. As a result, there was a great deal of criticism from the other partners that eAC was not fulfilling its responsibilities under the MOUs.
- Leading such a project requires superb project management expertise, extraordinary attention to facilitating communication between the partners and clearly articulated objectives. However, eAC took a non-directive approach to leading the implementation process. It deliberately did not provide any direction to the consortia about the e-school solution to be provided, wanting instead to see what each consortium would provide as their best model. Further, there were no stated expectations about the implementation process other than that each consortium would sustain the project for a year following implementation. The consortia thought that this laissez-faire approach contributed to confusion about what was expected as well as to a very different implementation scheduling among the consortia. They would have appreciated a more directive approach from eAC.
- The post-Demo roles of eAC and the consortia have evolved as the implementation process proceeded. At the outset, eAC expected it would be in a position to manage the rollout of the e-Schools Initiative in the post-Demo phases and, further, that the Demo would show which of the consortia provided the best e-schools model to select for widespread implementation. But as the Demo proceeded, it became obvious that this one-size-fits-all model did not

accommodate the national policies, plans and current initiatives of national governments, many of which already had ICT-in-schools programmes underway. It also became evident that the corporate consortia leaders, and many of their constituent members, would continue to be involved with African countries regardless of the NEPAD post-Demo initiatives. While it is acceptable, and often advisable, for visions and expectations to change during a demonstration project, the changes need to be discussed and communicated. There were not effective communication nets in place to do that.

- Inclusion needs to be a core principle in projects that have multiple partners, each with their own *raison d'être*. However, the Demo implementation process has not encouraged the involvement of the many civil society organisations that play an important role in introducing ICTs in schools throughout Africa. According to the eAC staff managing the Demo, this was partly due to the belief that doing so would further complicate an already complex project. But it was also the result of not being initially aware of the extent that ICT activity in schools was already underway and the organisations involved. Indeed, in several countries the Demo project is dwarfed by the scope of such activity and by the initiatives of the countries themselves.
- The implementation experience highlighted the need for countries to ensure:
  - (a) A locus of leadership for project co-ordination that has sufficient authority and resources for the task;
  - (b) The appointment of a national implementing team to assist the CLP to carry out the assigned tasks; and
  - (c) An understanding of the project among key ministries of government, particularly those involved with national ICT and procurement policies. (There were many examples where implementation bogged down in the procurement policies of Ministries of Finance because of a lack of support for, and understanding of, the Demo project.)
- There was considerable variance among the corporate leaders in their perception of the purpose and duration of the Demo, and, in their commitment to it. Generally, the CLPs have reported that the consortia led by Oracle and Cisco were particularly thorough in their approach to implementation and provision of support to schools. This was confirmed by observations made during the site visits. Implementation in the schools allocated to the consortium led by Advanced Micro Devices (AMD) has been slower because AMD became involved later than the others; however, it is also seen as being thorough and proactive. Hewlett-Packard's efforts were compromised somewhat by budget problems that were compounded by a restructuring at corporate headquarters early in the implementation process. Microsoft has been uneven in its implementation programme, with several of the CLPs complaining about poor communication and a lack of initiative. Interestingly, Microsoft has concluded a number of separate partnership agreements with several of the participating countries during the implementation process.
- Obviously the responsibility for the protracted and uneven implementation of the Demo cannot be assigned to any one of the major project partners. With the benefit of hindsight they would all probably do some things differently.

However, many of the issues that have arisen could have been mitigated had the project begun with a comprehensive review of lessons learned from other projects involving the introduction of ICT in schools and from initial research about the policies and plans of national governments and the initiatives currently underway in the countries selected to participate in the Demo project.

## **IMPACT ON SCHOOLS: THE DEMO PROJECT OUTCOMES**

### **The Context**

One of the first tasks undertaken by the NEPAD e-Schools planning group was to reflect the broad objectives of the e-Schools Initiative in a set of more specific outcome statements and to develop measurable indicators for each of these outcomes. A full description of these is provided in Appendix C. These are also set out in the Monitoring and Evaluation Plan, which is available from the office of the project manager (contact Jeanne Meta at [jmeta@eafriacommision.org](mailto:jmeta@eafriacommision.org)). After developing the indicators, questionnaires were designed to be completed by school heads, teachers and students to collect the relevant data at various stages of the Demo.

To establish baseline data, the first round of questionnaires (the pre-survey) was delivered to and collected from schools manually prior to implementation of the Demo project. The same questionnaires, modified somewhat to capture summative data about respondents' perception of the impact of the Demo, were administered online approximately 18 months later in those schools that had been fully implemented for at least three months (the post-survey). Twenty-eight schools, located in Ghana (3), Kenya (6), Lesotho (3), Mauritius (6), Rwanda (6), South Africa (3), and Uganda (1), met this criterion. Problems with Internet connectivity and, in Lesotho, the school vacation schedule, negatively affected response rates.

The characteristics of respondent schools were similar:

- They were predominantly publicly funded in both the pre- and post-surveys (90% and 86% respectively).
- Slightly more rural schools answered the post-survey than the pre-survey responses (42% vs. 37%).
- The median enrolment in the responding schools was essentially equal in both the pre- and post-surveys.
- The median number of teachers in the pre- and post-surveys was 32 and 30 respectively.

The organising framework for the following analysis is based on the six outcome categories that were established for the NEPAD e-Schools Initiative: student competencies, teacher ICT competencies, learning environments, school ICT capacity, school environment and health point.

## Student Competencies

**Outcome:** *Students are expected to develop proficiency in using ICT and to become more engaged in their learning.*

There were 390 responses to the post-survey questionnaire from students representing 17 schools in six countries. Surprisingly, 60% of the respondents were female, which, in light of equal overall enrolments in the responding schools, suggests that males are under-represented in the post-respondent group.

The completed questionnaires provide a snapshot of changes in student capabilities that occurred over the course of the Demo project as a result of access to the computers that were provided:

- A quarter of the respondents to the pre-survey indicated they had never used a computer and another 27% had less than one year of experience. All respondents in the post-survey had experience that ranged from typing an essay in Word to downloading music and surfing the Internet at a cyber café.
- Of those students with computer experience, in the pre survey 50% said they learned their computer skills from their teachers, compared to 84% of the respondents to the post-survey.
- The most common uses of computers were:
  - (a) Playing games: 35% pre-survey; 37% post-survey;
  - (b) E-mailing and chatting: 31% pre-survey; 67% post-survey;
  - (c) Using educational software and writing papers: 27% pre-survey; 56% post-survey;
  - (d) Finding and researching information: 29% pre-survey; 72% post-survey;
  - (e) Drawing and painting: 20% pre-survey; 23 % post-survey; and
  - (f) Internet surfing: 14% pre-survey; 45 % post-survey.
- Some additional uses reported in the post-survey were PowerPoint (18%) and accessing health information (30%). Notably, a few learners (5) reported they were doing e-learning with a UK institution.
- Forty-five percent of pre-survey respondents said they did not use computers or ICTs in their studies, whereas 97% of post-survey respondents said they did.
- Computer access for students was reported as being almost exclusively (98%) in a computer lab.
- The proportion of respondents with access to the Internet was 25% pre-survey and 92% post-survey.
- Mobile phone ownership increased from the pre-survey to the post-survey from 27% to 38%.

One of the impact indicators for this outcome focused on the proficiency of students in using a computer for a variety of specific functions. The functions and the students self-rating of their expertise are described in Table 2. The data in Table 3 indicate how students rated themselves in terms of their ability to carry out specific functions.

**Table 2: Student Self-Assessment of Overall Level of Expertise in Computer Use (pre-and post-survey)**

Expertise Levels	Percentage	
	Pre-survey	Post-survey
None	56%	6%
Fair – able to operate basic computer functions and word processing applications	25%	33%
Good – able to operate at least three MS Office applications (MS Word, Excel, PowerPoint) and use them for school assignments	15%	24%
Very Good – all of the above skills used for school including the regular use of e-mail and Internet resources	3%	28%
Excellent – all of the above including use of e-mail, Internet surfing and searching; development of Web pages; participation in e-learning and online classes	1%	9%
Total	100%	100%

**Note:** Total pre-survey respondents = 934; Total post-survey respondents = 383

**Table 3: Student Self-Rating of Expertise on Specific Computer Applications**

Functions	Rating									
	Excellent		Very Good		Good		Fair		No Capability	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Word processing (prepare papers)	6%	14%	7%	27%	15 %	31%	20%	17%	52%	11%
Spreadsheets	3%	7%	3%	19%	10 %	24%	19%	27%	65%	23%
Presentation tools (PowerPoint)	2%	6%	4%	13%	9 %	26%	14%	27%	71%	28%
Basic e-mailing	2%	24%	4%	22%	10 %	23%	12%	17%	72%	14%
Basic Internet browsing	2%	17%	4%	24%	10 %	27%	13%	20%	71%	12%
Graphics	2%	8%	1%	9%	5 %	20%	14%	32%	8%	1%
Web page designing	2%	2%	1%	6%	3 %	6%	0%	23%	74%	63%
Use of chatting platform	2%	5%	2%	7%	6 %	12%	13%	26%	77%	50%

**Note:** Total pre-survey respondents = 934; Total post-survey respondents = 383

## Summary

Participation in the Demo has clearly had an impact on students' perception of their computer competencies, particularly the ability to use e-mail, work with word processing programmes, prepare spreadsheets and browse the Web. It has also changed the ways students used computers. For example, substantial increases were reported from the pre-survey to the post-survey in the use of computers for e-mailing, using software, writing papers and finding/researching information.

When asked what impact the Demo had on them personally, the students responded as follows:

- No impact: 1%.
- Increased confidence using ICTs: 70%.
- Learned how to use e-mail: 48%.
- Learned how to search for information on the Internet: 64%.
- Improved grades: 35%.
- Increased enjoyment of school: 53%.

However, there were some gender-based differences in the students reporting of this impact. The overall rating of their expertise was the same for both boys and girls, but what they used the computer for differed:

- Ten percent more girls than boys reported using e-mail.
- Fifteen percent more boys than girls said they surf the Internet.
- Thirteen percent more girls than boys used it to access health information.

There were no differences in terms of usage for finding and researching other subject information, using educational software and using PowerPoint or writing papers.

## Teacher ICT Competencies

***Outcome:** Teachers will apply ICTs in ways that will enable them to support students in their own use of ICTs, and use the technology themselves to improve their pedagogical practices in content areas.*

One hundred and forty-five teachers, representing 17 schools from six countries, responded to the post-survey. Seventy percent were male, which is 10% more than in the pre-survey. All aspects of the curriculum were represented in their teaching specialties.

One-third of the teachers in the pre survey had less than one year experience or no experience at all in using computers, whereas all respondents in the post-survey had some experience.

Twenty-four percent have been teaching for less than a year, 33% for between three and ten years, and the remainder for more than ten years. Seventy-seven percent have an

undergraduate or post-graduate degree. Sixty percent did not receive any ICT instruction during their pre-service training.

Table 4 provides a comparison of teachers' self-rating of their skill level, pre- and post-survey, on some selected computer applications.

**Table 4: Teacher Self-Rating of Expertise on Specific Computer Skills (pre- and post-survey)**

Functions	Rating									
	Excellent		Very Good		Good		Fair		No Capability	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Word processing	8%	25%	13%	18%	24%	32%	22%	17%	33%	8%
Spreadsheets	4%	14%	7%	12%	14%	27%	20%	30%	55%	17%
Presentation tools (PowerPoint)	3%	13%	7%	16%	13%	32%	17%	24%	60%	15%
E-mailing	7%	30%	7%	21%	17%	24%	18%	14%	51%	11%
Internet browsing	6%	26%	8%	25%	14%	27%	16%	13%	56%	9%
Graphics	0%	4%	2%	12%	6%	10%	18%	32%	74%	42%
Web page designing	0%	1%	1%	3%	4%	8%	8%	20%	87%	68%
Programming	0%	1%	1%	4%	3%	10%	12%	15%	84%	70%
Database management	0%	4%	2%	4%	5%	12%	14%	20%	79%	60%
Project management	0%	1%	1%	2%	3%	11%	10%	19%	86%	67%

Note: Total pre-survey respondents = 320; Total post-survey respondents = 139

The teachers were also asked in the post-survey about their overall comfort level using computers:

- 4% said that they don't use computers.
- 26% said that they need more time and assistance to become comfortable.
- 27% said that they had mastered the basics, but still worry about making mistakes.
- 43% said they feel very comfortable and that they had overcome fears.

Interestingly, when asked whether it was the training provided during the Demo or “other training” that had been more helpful in developing their computer skills, 40 % stated that it was “other training.” This training may have been provided by the Ministry of Education, by courses taken at the initiative of individual teachers from various private and public providers, from peers or during pre-service/in-service training.

Teachers’ perceptions of the Demo’s impact on their computer skills are supported by the views of the school heads. The latter were asked to consider those teachers on staff who had received ICT training during the Demo and rate their skills. The results were:

- No capability: pre-survey 53%; post-survey 10%.
- Fair (being able to conduct basic computer functions and word processing applications): pre-survey 33%; post-survey 31%.
- Good (being able to operate at least three MS Office applications and use them for preparing lessons, to make classroom presentations, etc.): pre-survey 11%; post-survey 31%.
- Very good (all of the above skills used for teaching as well as the regular use of e-mail and Internet resources): pre-survey 3%; post-survey 21%.
- Excellent (all of the above including use of e-mail, Internet surfing and searching; use of ICT in teaching any subject; development of Web pages; participation in e-learning and putting class online): pre-survey = 0%; post-survey = 4%.

When teachers were asked about the adequacy of the training they received during the Demo, opinions were mixed:

- Quite inadequate: 21%.
- Only basic training has been provided: 54%.
- Very adequate so far: 25%.

The school heads were more positive on this point; 43% said the training provided to teachers was “very satisfactory.” However, 43% of the school heads also said that the training of non-teaching staff was “inadequate.”

There was considerable variance in the opinions on the adequacy of technical support teachers received under the various categories:

- None available: 10%.
- Often not available: 4%.
- Needs to be improved: 46%.
- Very good, but sometimes not readily available: 33%.
- “Excellent”: 7%.

Observations made during site visits noted a great deal of variance among the consortia in the attention paid to this aspect of the Demo implementation. However all the school heads reported an ICT co-ordinator was now available in their schools. The importance of this

role was particularly noted during the site visits and in focus group discussions with teachers.

### *Summary*

The Demo has obviously had a positive effect on the development of teachers' ICT skills and, perhaps just as important, on their confidence in using the technology. The focus group discussions held during site visits by the M&E leaders supported this observation and also elicited additional comments such as these:

- “This has invigorated me as teacher. I feel I am part of a global community of educators.”
- “I have become more productive and efficient as a teacher. I can cover the material in 25% less time by using these technologies – and make it more interesting for the students.”
- “This is our library!” (A comment made to the M&E researcher while being shown into the school's computer lab.)
- “I am proud to be a teacher at this school. I am envied by colleagues from other schools.”

### **Learning Environments**

***Outcome:** As teachers and students develop their ICT skills the learning environment will shift from the traditional teacher-centred model to one that is more learner-centred.*

The following observations about the impact of the Demo on this outcome are based on an analysis of the data from the pre- and post-survey questionnaires completed by students and teachers.

One of the important questions pertaining to this outcome was whether students applied their new-found ICT skills in the context of their learning experiences. Students were asked to indicate how frequently they used ICTs for several generic purposes related to their schoolwork. Table 5 provides a comparison of their responses in the pre- and post-surveys.

**Table 5: Students' Use of ICTs for Schoolwork (pre- and post-survey)**

Purposes for Using ICTs	Very Often		Often		Seldom		Never	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
<b>Informative:</b> to find, acquire and use information	4%	15%	13%	50%	20%	25%	63%	10%
<b>Functional:</b> to use and manipulate existing information for educational purposes such as compiling lists of books, abstracting and summarising books and materials, using accessed information to prepare homework, and so on.	2%	9%	6%	26%	12%	33%	80%	32%
<b>Creating:</b> to compose, compile or produce new information (write papers, draw, programme, make PowerPoint presentations, give oral presentations, prepare newsletters, create own Web site, etc.)	3%	5%	11%	27%	16%	33%	70%	35%
<b>Communication:</b> to exchange and transmit information with other students, teachers or other people using e-mail or Internet; to join discussion forums and chats	3%	14%	6%	35%	10%	27%	81%	24%

**Note:** Very Often = every day; Often = twice or more/week; Seldom = few times/month

Table 5 shows a huge change in numbers of students who had never used ICTs from the time of the pre-survey to the post-survey. This is primarily explained by the fact that by the time of the post-survey all students had access to ICT infrastructure. The changes shown in the "Often" column for the categories "Informative," "Functional," and "Creating" suggest that the learning process has successfully shifted toward a more student-centred model. This change also may be related to the frequency of access that students have to ICT infrastructure as well as to the amount of encouragement they receive from their teachers.

Observations made during the site visits to Eastern Cape Province in South Africa and to Lesotho support the increased use of ICT for schoolwork reported by students. During both visits students were observed using the computers for learning from the curriculum-based materials that were supplied. While it may be tempting to interpret the increased use of ICTs to communicate as reflecting an increase in collaborative learning strategies, comments made during the student focus groups conducted during site visits suggest that the increase is mainly due to the use of e-mail for social purposes.

Table 6 shows how teachers' use of ICT tools changed over the course of the Demo.

**Table 6: Teachers' Use of ICT Tools (pre- and post-survey)**

Teacher Uses of ICT Tools	Very Often		Often		Seldom		Never	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Teaching specific subjects	2%	10%	8%	41%	16%	29%	74%	20%
Teaching computer skills	4%	13%	10%	23%	11%	29%	75%	35%
Finding information/materials	5%	33%	8%	35%	24%	16%	63%	16%
Making class presentations	2%	7%	4%	27%	12%	38%	82%	28%
Preparing lessons	4%	18%	9%	31%	13%	31%	74%	20%
Communicating with students	3%	8%	4%	23%	7%	37%	86%	32%
Communicating with other teachers	1%	8%	3%	30%	7%	35%	89%	27%
Communicating with parents	0%	1%	3%	10%	5%	20%	92%	69%
Monitoring/evaluating student progress	3%	8%	4%	14%	14%	42%	79%	36%
Preparing reports	3%	8%	5%	18%	19%	43%	73%	31%
Personal development	7%	22%	9%	36%	22%	25%	62%	17%

**Note:** Very often = every day; Often = twice or more/week; Seldom = a few times/month.

In Table 6, the differences between the pre-survey and post-survey in the “Never” column need to be interpreted in light of the fact that all respondents in the post-survey had access to state-of-the-art ICT infrastructure. The site visits confirmed that teachers are attempting to use ICTs in their teaching of most subjects; however, the digital materials available largely dictate choices. These are most often in subjects such as computer science, mathematics, science and, to a lesser extent, social sciences, and are often not aligned to the curriculum frameworks of the countries involved.

The site visits also afforded an opportunity to observe how teachers were integrating ICTs into their pedagogical strategies. While most are making an effort, they made the following factors are constraining their efforts:

- The computer labs are very crowded.
- The national model of education is very directive in terms of what students are expected to study and be examined on. This requires that material be covered, allowing little flexibility for a more student-centred approach to teaching and learning.
- They need more training.
- They need coaching to help them change pedagogical behaviour.

- Connectivity is erratic, which reduces the opportunities for collaborative work and web searching.

The post-survey asked teachers how they used the Internet. They responded as follows:

- For teaching specific lessons in various subjects: 48%.
- For making presentations/lectures: 30%.
- For preparing lessons: 61%.
- For communicating with students: 35%.
- For communicating with teachers: 40%.
- For accessing and using online assessment tool: 27%.
- For preparing papers and teaching materials: 69%.
- For collecting teaching and reference materials: 69%.

### *Summary*

While the evidence indicates that teachers are trying to integrate ICTs to make learning a more student-centred experience, it is clear that such an effort takes time – much more time than a one-year Demo project! Furthermore, it is clear that, while the deployment of technology is certainly a pre-requisite, the more fundamental challenge is to support the use of ICTs with local and contextually relevant digital content and ongoing training. And, in terms of the larger picture, it is important to have a clear vision concerning the purpose and priorities of ICT in education. Goals such as ensuring that students acquire ICT skills, improving access to education through distance and e-learning models and enhancing the quality of the learning experience are important. But these goals are unlikely to be achievable in the same time frame, and they require different inputs and supporting resources.

### **School ICT Capacity**

***Outcome:** Schools will provide teachers and students access to the hardware and software needed to support both the curriculum itself and the users.*

Participation in the Demo project has been a form of culture shock for most of the participating schools. Prior to the Demo many had no computers or other ICT infrastructure. A few schools had some computers, but typically they were not networked. Similarly, while a few teachers and students had used a computer in a cyber café, for most the Internet was something they knew about but had never used. One school head described the experience as being whisked into another age by a time machine!

Under the terms of the partnership of eAC, the consortia and the countries, the consortia implemented a state-of-the-art e-school model at each of the participating schools. While this differed somewhat from one consortium to another, these generic elements were shared by all:

- A computer lab consisting of at least 20 machines networked to a common server.
- One or more computers in the teachers' lounge area plus one in the administrative area.
- At least one printer/copier connected to the network.
- Internet access via a VSAT terminal, some form of wireless connectivity or dial-up or other form of wired connection.
- Direct satellite TV (DSTV) reception with a year's subscription to at least six educational TV providers such as the History Channel, Mindset, BBC, Disney Channel, plus a TV monitor and record/playback device.
- Digital educational learning materials approved by the Ministry of Education (Some of these were proprietary materials that consortium members allowed the schools to use over the Demo period, while others were open source materials that were provided directly or could be downloaded from various Web sites.).
- At least one week of training for a small cadre of teachers from each school who were then expected to train their school colleagues (Some consortia provided follow-on training at a later date and some Ministries of Education provided supplementary training. Technical maintenance training was also provided by the consortium, although this was variable.).
- Technical support (This was typically provided in a three-tiered fashion with the first level being a support person at the school who had received some basic training, the second through arrangements with local private companies, and the third via e-mail or telephone interactions with an expert in Johannesburg.).
- An electrical source (e.g., a diesel generator) if the school was not connected to the country's electrical grid.
- A health point in the form of a computer-based kiosk which provided health information.

Some of the differences between the consortium models included provision of:

- An electronic White Board.
- ICT tools such as digital cameras, video cameras and audio recorders.
- Laptop computers for teachers to use in various locations.
- LCD projectors and screens.

The ministry, often with the active participation of the school and community groups, was responsible for providing a suitable, secure room for the computer lab and other ICT equipment. In some instances however, the consortium had to take the initiative to get the facility ready.

The post-survey teacher responses revealed the following:

- Forty-three percent of the teachers have access to a computer at home in addition to the ones at their school.

- Their use of computers at school is predominantly in the computer lab (90%); however 35% also have access in the teachers' lounge and another 17% have access in the administrative office.
- There is a wide range in the number of hours per week that teachers have access to the school computers: 30% have between one to four hours; 35% between five to 10 hours; and 35% have more than 10 hours.
- Commercial cyber cafés are also popular access points with 75% of the teachers reporting using them as well.
- Teachers use the Internet primarily at school (91%), although cyber cafés are also popular (75%).
- Half the teachers have access to the school computers after school hours.

Digital learning materials were provided to each school by the implementing consortium and were reported to be well used and appropriate to the curriculum. This was also observed during the site visits. However, these materials tended to focus on the sciences, mathematics, and the basics of computer operation, so teachers in other subject areas, such as the arts, felt left out. Teachers also found that they could augment the materials they were provided by using the Internet – which was happening at each school as the skill level of the teachers developed.

The post-survey student responses indicated that student access to computers and the Internet was similar to that of teachers. Ninety-two percent said that the school was their primary access venue, and 64% reported using cyber cafés. Student access at school was reported to be almost entirely in the computer lab, and the students complained in every focus group about the crowded conditions in those labs.

Teachers and students differed in their perception of the adequacy of the support they were provided. Nearly 50% of the teachers said support was “often not available” or “needed to be improved,” whereas 83% of the students said that getting help using the ICT equipment was either “very easy” or “usually okay.” This difference probably reflects the likelihood that students got most of their help from their teachers while the teachers often had to rely on external sources. The school heads were the most critical of the support provided: 71% said it needed to be improved.

There was a gender-based difference among students on the question of Internet access to computers. While both boys and girls reported roughly equal access at school, 70% of the boys said they also access the Internet at a cyber café, compared with just 50% of the girls.

### *Summary*

The outcome of school ICT Capacity is focused on providing teachers and students with access to the hardware and software needed to support the curriculum, as well as on the support they need in order to use it. Generally, the schools and their communities were in awe of the technologies with which they have been provided, and they were pleased with the start that has been made on training and the learning software supplied by the consortia. They want more of both! However, they were not so happy with the support provided.

While all the schools included in the post-survey meet the criteria for having been fully implemented, there are many that have not been fully operational for much of the time because technical support and maintenance was not available in a timely manner. (See the article “E-School project has been neglected,” by Micheal Kifubangabo in the January 29 edition of New Vision at [www.newvision.co.ug/D/8/459/545945](http://www.newvision.co.ug/D/8/459/545945).)

The provision of technical support for the schools was made easier when the implementing consortium worked through local ICT companies who could then provide maintenance support.

## **School Environment**

***Outcome:** A school environment that supports teachers and students in the use of ICT will be developed.*

An environment that supports this outcome is one that has policies in place that enable ICT applications, encourages students to reach out beyond the formal classroom, encourages interaction with the community and provides resource personnel to support teachers as they learn to integrate the use of ICTs in the learning and teaching process. Data from the school head questionnaires, Ministry of Education officials and the site visits provide the basis for assessing this outcome.

As is discussed in more detail later, all the responding countries have an ICT-in-education policy either in place or under development that includes implementation plans. Furthermore, at the school level, 86% of the heads report that an ICT development plan is either in place or being developed. In most cases this includes a plan for sustaining the model that has been implemented after the Demo is completed.

Interaction with the larger community was one of the most encouraging and un-anticipated aspects of the school environment at all of the schools visited. Such interaction ranged from training teachers at neighbouring schools and encouraging them to use the facilities at the Demo school, to providing ICT services for the public and encouraging them to use the school as an e-learning centre. For example, a community group at one of the schools visited was raising funds to enable people to use the Internet as the “community library.” Most school heads see these community linkages as an essential part of their sustainability plan.

The biggest challenge for the Demo schools has been providing adequate support – both technical and pedagogical. This has been a learning process for all stakeholders, and there have been some notable changes during the Demo period:

- Consortia are working more closely with local implementing partners.
- Some Ministries of Education have taken steps to supplement training and provide schools with an ICT co-ordinator.
- School heads have recognised the need for a code of conduct for the use of computers and the Internet.

## *Summary*

Changing to a teaching model that encourages a more exploratory, student-centred learning style will take much more time to effect because such changes are often made more difficult because of the need to adhere to a prescribed curriculum. Nonetheless, there were instances where teachers were encouraging students to use the Internet to enrich their learning. But overall, the integrated use of ICT in pedagogical practice needs much more incubation time, better access for individual learners, more operational reliability and much more training and support before this outcome can be fully achieved.

### **Health Point**

***Outcome:** Each school will include a “Health Point” where students can access health-related information and through which health information can be disseminated to the wider community.*

Most of the consortia addressed this requirement by ensuring that health information was included in the subjects covered by the learning materials they provided to the schools. For example, all the CISCO, Microsoft, AMD and Oracle consortia schools were provided with health-related learning materials from CompuTainer, which was mounted on a server so students could have full access to the content. While to date there has been no significant development of the Health Point as a community resource, that may change quickly as the schools become an ICT resource for the wider community. Such plans were reported by a majority of the schools and by the community groups met during the site visits.

## **IMPACT ON EDUCATION SECTOR ICT POLICY DEVELOPMENT AND IMPLEMENTATION**

The importance of an enabling policy framework and implementation strategy has been shown to be universally important in determining the success of introducing ICTs in schools. Although it was not an explicitly stated objective, the Demo appears to have had some unanticipated effects on policy development in several of the countries.

The implementation of the Demo has coincided with a general surge of awareness among governments throughout Africa regarding the growing importance of ICT in overall socio-economic development (ICT4D). This, coupled with other developments such as the emergence of e-government models, regional initiatives to lower connectivity costs while improving access and enhancing service, and the perceived urgent need to ensure the development of ICT skills in the labour force, have served to create an environment in which sector-level ICT policies are being fostered – particularly in education. While this is a generalised phenomenon across the continent, there is evidence that the Demo project has had a catalytic effect on these developments, particularly in those countries where the Demo has been fully implemented and where an ICT-in-education process had not been under way before the Demo was introduced.

The data for these observations, and those that follow, are based on the following sources:

- Questionnaires completed by Ministry of Education officials prior to the start of implementation (from June to December 2005) and again in December of 2006)
- Reports from the CLPs
- Site visit reports

### **National ICT Policy**

As reported in the first interim report, all but two of the 11 responding countries had a national ICT policy in place. The two that did not, Kenya and Gabon, said that one was being developed. However, at that time only six countries had established an implementation plan, and just five had a budget to enable implementation. That appears to have changed. All countries in the Demo now have a national ICT policy that is being implemented with emphasis on infrastructure development, improving access, enhancing human resource capacity, fostering public-private sector partnerships and developing sector ICT policies across government ministries. In some countries, the national policy defines the expected outcomes for the education sector and specifies that the sector will develop policies and plans to achieve them. Rwanda is a particularly good example of ICT being at the core of national socio-economic development planning.

### **Education Sector ICT Policy**

One of the unanticipated outcomes of the Demo project has been its impact on the development of education sector ICT policies in those countries that did not already have policies and programmes in place. Prior to implementation of the Demo, four of the 11 reporting countries did not have an education sector policy in place, and very few had developed a plan and budget for implementation. Eighteen months later all respondents report that a policy is either in place or has been developed for approval. And most state that the Demo project has been a catalyst in motivating governments and ministry officials to take action. (The exceptions are those countries where implementation has not occurred and in those that already had policy in place and an implementation programme underway, such as Egypt.) Indeed, there are several examples (Kenya, Senegal and Uganda) where current budget allocations were changed to provide support in the form of computer purchases for non-Demo schools, more teacher training and materials development. The following comments illustrate some reasons for this catalytic effect:

- The Demo showed the government that they were behind in ICT development in schools.
- The potential for sharing global teaching resources was realised.
- The MOU signing committed the government to sustain the Demo schools and thereby forced the development of policy.
- The involvement of the president in the launching of the Demo attracted attention and underlined the importance of ICT in education.

The objectives of the ICT education sector policies are comprehensive in that they typically include the following factors:

- Ensuring that all students develop basic ICT competencies needed to participate in the knowledge economy.
- Ensuring that specialised ICT education (in areas such as computer programming, network management, etc.) is available in the curriculum.
- Ensuring that teachers develop the requisite skills to teach ICT content.
- Ensuring that teachers are able to use ICT in the teaching across the curriculum.
- Fostering research in the educational applications of ICT.
- Using ICT to improve school management.
- Developing content and sharing strategies.

Generally, the policies are comprehensive in terms of encompassing the needs of various target groups. All respondents indicated that their policy addressed the needs of teachers and administrative personnel very well and the needs of rural schools, girls and poor people fairly well. The needs of learners with special needs were the least well addressed.

Policies also vary depending on the education sectors included. Rwanda's policy, for example, includes all sectors, whereas Kenya's and South Africa's do not include universities.

## **Policy Implementation**

### *Priorities*

One consequence of the Demo implementation in several countries, including Uganda, Senegal and Kenya, has been requests for computers from schools not included in the Demo. This has resulted in some reallocation of the current budgets in the Ministries of Education budget and is reported to have influenced thinking regarding budget priorities for next year.

### *Funding*

The Demo has also brought funding issues to the forefront for both ministries and schools. While the implementing consortium covered most of the costs during the Demo year, the schools have had to develop financial plans for the post-Demo period. This has led to the consideration of the school in different ways: as a community learning centre, a service centre for neighbouring schools that do not have computers and connectivity, and as a community electronic library. Expanding the scope of the schools to provide such services helps generate revenue.

Another consequence of the need for funding has been a change in policy in several ministries to permit schools to assess an additional charge on student fees. But perhaps the most important consequence is that ministries have had to start calculating the total cost of introducing ICT in schools, realising that the cost of the equipment is small relative to the

costs of maintenance, connectivity, teacher training and, content development. The Demo has also galvanised various community groups, such as parent associations into fundraising activities.

### *Management and Co-ordination*

Survey respondents were asked to describe the structures and procedures that have emerged in response to the need to manage policy implementation and to co-ordinate activities with other government initiatives and with the many organisations involved in introducing ICT in schools.

Most countries have an ICT unit within the Ministry of Education that provides leadership on matters such as infrastructure and network development and advises on policy. Some have set up additional structures. For example, Kenya has established a ministerial ICT committee, chaired by the permanent secretary and supported by the ministry's ICT unit, that includes representatives of stakeholders involved in implementing ICT in schools. Kenya has also set up an ICT trust fund composed of public sector organisations such as ministries and other government institutions, private sector companies, donor partners, civil society, and academic and other educational institutions for the purpose of facilitating public-private partnerships to mobilise resources for schools and community learning centres.

Several countries have created intra-government steering committees to manage and co-ordinate development across government. For example, the Uganda National Planning Authority which, with the newly established Ministry of Information Technology, has a mandate to foster and co-ordinate ICT development across ministries, has created an Integrating Team to work with the Ministry of Education on ICT development in the system and to monitor and evaluate ICT policy. Rwanda has taken a more centralised approach by establishing the Rwanda Information Technology Authority (RITA), an autonomous agency, to act as the national ICT implementation and co-ordination body under the direct supervision of the National Information Technology Commission, which is chaired by the president.

Other countries have set up structures to co-ordinate the work of the various other organisations involved in introducing ICT into schools. Ghana, for example, has established a co-ordinating body that reviews proposals to ensure they are consistent with the ministry's ICT policy and implementation plan, and will complement activities already underway.

## **REFLECTIONS FROM THE PARTNERS**

The central partners in the Demo project are the country governments, the consortia and eAC on behalf of NEPAD. Each partner was asked to reflect on their experience to date, their thoughts about sustainability and the way forward. The data sources for governments were the CLP reports and the post-survey respondents to the Ministry of Education questionnaire. The data sources for the other two partners were the interviews with the

consortium leaders and with eAC staff involved in managing the Demo. All respondents were asked to express their views about the partnership, the Demo successes to date, the impact on the Demo school communities, the sustainability of the Demo e-school models and the lessons learned. Their comments are summarised below.

## **Reflections on the Partnership**

### *From the Governments*

- The Ministry of Education respondents were the most positive about the way the partnership has functioned. In fact Kenya adopted a version of the public-private model in setting up its ICT Trust Fund for Education.
- Ministry respondents were also complimentary about the manner in which the approval process was managed for the learning materials provided by the consortia.
- Both ministry and CLP respondent groups were very critical of the consortia on matters pertaining to communication and, for some, slow implementation and poor follow-up support. These criticisms are essentially the same as those identified in the earlier interim reports.

### *From the Consortia*

Each consortium comprised a number of companies that enabled it to provide a total e-school solution ranging from provision of electricity and connectivity to the training of teachers. Generally, these “internal” partnerships were reported to have worked well.

- One consortium stated that NEPAD required all consortium members to be technology companies. It was thought this was too restrictive with the result that opportunities to generate more resources were lost. This consortium indicated it had the opportunity to work with non-technology companies that were willing to participate by “adopting” a school in exchange for identifying the school with the name of the company.
- The consortia were critical of the governments for not taking more vigorous leadership on their responsibilities defined in the MOU, primarily for two reasons: the inability to facilitate the importation of equipment for the schools, and the lack of proactive leadership on the part of most CLPs to assist with arrangements for the implementation process.
- The consortia were most critical of eAC for its lack of leadership, failure to facilitate effective communication between the partners, failure to ensure commitment from governments beyond the signing of the MOU and lack of a post-Demo plan.

These comments, again, are not new. The disappointment comes, in part, from a lack of action to address the specific complaints, but even more so from a lack of opportunity to discuss them within the context of the partnership.

*From eAC*

- Several governments have not demonstrated commitment to the project beyond the signing of the MOU. The respondents particularly cited the delays in clearing equipment for the Demo through customs that could have been facilitated by governments.
- Commitment among the consortia varied, and this contributed to the implementation process being more protracted than expected.
- The Demo managers felt that the NEPAD policy of expecting eAC to raise its own operating funds was unrealistic, thus compromising its ability to fulfil its obligations effectively. For example, the development of a business plan, a key component of the overall plan for the post-Demo phase, was initiated 18 months later than expected because of having to search for funding.

**Reflections on Successes**

*From the Governments*

The following comments were made by the policy respondents and CLPs:

- The Demo influenced action on policy development and implementation in those countries where full implementation has occurred.
- The Demo has shown the benefit of using state-of-the art technology, wireless connectivity and that “rural schools can be e-schools.”
- Ministry of Education budget priorities have been restructured to support ICT in schools.
- Interest in open and distance learning has been sparked.

*From the Consortia*

- The learning/ teaching process has been improved at schools where the Demo has been fully implemented.
- The trainer-of-trainers model, where skills have been passed on to school colleagues, teachers in neighbouring schools and to members of the community, has been a success.
- One consortium expected more progress on the pedagogical integration of ICT in the schools. Another said they expected there to have been more clarity about the post-Demo rollout of the NEPAD e-Schools Initiative and the opportunities for involvement of the private sector.
- One consortium felt that the successes were predictable on the basis of similar projects already completed and documented around the world.

*From eAC*

- At a micro level, the successes achieved at the school level are important and need to be continued and expanded.

- At the macro level, the core ideas of a public-private partnership that enabled the Demo to proceed, coupled with the NEPAD e-Schools Steering Committee that linked the project to the participating governments, are important and, however imperfectly implemented, have provided an opportunity to learn from and improve upon.

## **Reflections on Community Impact**

### *From the Governments*

The following comments are indicative of the impacts cited by the CLPs:

- Parents' associations are promoting ICT in school, helping to raise funds and helping to improve school physical facilities.
- New community associations have been formed to promote use of ICT.
- Schools are providing the wider community with ICT services.
- E-schools are providing services to neighbouring schools that do not have ICT tools.

### *From the Consortia*

- The inclusion of teachers from neighbouring schools and, in some cases, from the wider community in the training process has broadened the local base of support in many instances.

### *From eAC*

- The eAC is aware of the impacts cited by the CLPs.

## **Reflections on Sustainability**

### *From the Governments*

- The Demo e-school models are probably too elaborate to be sustainable in all instances given the cost of connectivity, maintenance requirements, etc. Decisions will need to be made on the basis of what is practical.
- Several ministries have committed to sustaining those schools that have been implemented, and they are using these schools as models of "what can be."
- Available and appropriate-to-the-curriculum learning materials need to be ensured in languages that enable broad usage.
- Locally available technical support is critical.
- Teacher training must be ongoing and multi-level.

### *From the Consortia*

- Local accountability and expertise for schools will be important to ensuring sustainability.
- Local partners need to be identified and engaged.
- Clarification is needed on who owns the equipment in the schools at the conclusion of the Demo. If it is the Ministries of Education, they need to understand their responsibilities and the requirements of sustaining it.
- There needs to be a plan for sustainability and no one is taking leadership to develop one. According to the MOU, the Ministries of Education should be taking the lead on this.
- The consortia, or individual member companies, would be able to assist if there was a clear plan of action.
- The e-school models are essentially generic, so modifications may be needed in some cases to scale the model to the needs and sustainable capacity of the school context.
- The lack of common standards among the models deployed by the different consortia will make sustainability more difficult.

### *From eAC*

- The business plan is expected to provide the basis for addressing sustainability issues and the way forward for post-Demo activities.

## **Lessons Learned**

### *From the Governments*

- Continuous monitoring and follow-up is essential.
- Implementation and follow-up support has been more effective when local companies and organisations are involved.
- Leadership for projects like this require resources. Many CLPs were not provided with the necessary support or reorganisation of existing duties.
- The creation of expectations that are not met results in disappointment and cynicism at the local level.
- Communication between stakeholders is critical to success.
- The commitment of senior leadership to the project is a major determinant of success.
- Demonstration projects that do not provide a clear vision for what is to follow soon lose the commitment from the people involved.

### *From the Consortia*

- The selection of countries to participate in the Demo project was flawed because not all governments had a clear understanding of the project and the nature of the commitments. Briefings should have preceded the selection of participating countries and the signing of the MOU.
- Management of intra-consortium relationships needs to be based on transparent and open communication.
- The e-school model has to be flexible. One-size-fits-all does not work.
- Local support infrastructure must be developed and available to schools if the Demo schools are to continue after the Demo period.

### *From eAC*

- The fear that other organisations would be in competition with the NEPAD vision was misplaced. Civil society organisations with experience in introducing ICTs in schools should have been welcomed into the partnership at the beginning of the Demo.
- There should have been more exploration of other ICT in schools initiatives going on in Africa.
- The NEPAD expectation that eAC would be able to raise the operating funds needed to carry out its leadership role has proved to be unrealistic.
- The NEPAD e-Schools Coordinating Body, which comprises officials nominated by the governments of each country participating in the Demo project, is an asset that has been under utilised by eAC. This group may have been able to help eAC resolve some of its operational problems if it had been briefed more regularly.
- National implementing teams, working with the CLPs, should have been in place before implementation began. These teams needed to be representative of all stakeholders.

## **SUMMARY OBSERVATIONS**

### **The Demo Objectives**

Following are observations about and comments on the achievement of the objectives that were set for the Demo, bearing in mind that the project is not yet complete.

***Objective:*** *To determine typical e-school scenarios and requirements in various circumstances in Africa*

What emerges from the Demo project data, as well as from global research, is that trying to define “typical e-school scenarios and requirements” that can be generalised with any validity is not possible where there are such huge variances in cultural and socio-economic contexts as is the case across a continent as diverse as Africa. There needs to be a local

analysis of the context within which an ICT initiative is introduced based on factors that have been shown to influence the probability of the intervention being successful. (See *Meta-Survey on the Use of Technologies in Education in Asia and the Pacific*, edited by G.M. Farrell and Cédric Wachholz at [www.unescobkk.org/index.php?id=1225](http://www.unescobkk.org/index.php?id=1225), and *At The Crossroads: ICT Policy Making In East Africa*, edited by Florence E. Etta and Laurent Elder at [www.idrc.ca/openebooks/219-8](http://www.idrc.ca/openebooks/219-8).)

The following factors should be considered to understand the context and requirements of schools prior to introducing ICT:

- National ICT in education policy framework and implementation plans.
- Level and commitment of leadership for the initiative.
- Commitment to gender equity.
- Adequacy of infrastructure and access to it.
- Opportunities for collaboration with other organisations.
- Adequacy of human resource capacity.
- Adequacy of fiscal resources.
- Availability of appropriate learning content.
- Government procurement regulations.
- Teacher attitudes towards ICT applications.
- Sustainability of the initiative.

***Objective:*** *To highlight the challenges inherent in a large-scale implementation of e-schools programmes*

***Objective:*** *To monitor the effectiveness of multi-country, multi-stakeholder partnerships*

These two objectives turned out to be closely related. Both of these objectives appear to have been well satisfied since they have been the focus of the two interim reports. A detailed summation of the observations about the challenges is provided earlier in this report, under the heading “Implementation of the Demonstration Project.” However, although recommendations for meeting the identified challenges were outlined in the first and second interim reports (and appear again in Appendix B of this report), they have not been effectively acted on.

***Objective:*** *To determine “best practice” and exemplary working models for the large-scale implementation of the NEPAD e-Schools Initiative, which aims to equip more than 550,000 African schools with ICTs and connect them to the Internet.*

The inherent notion behind this objective is that the e-school models implemented by the various consortia would be assessed, and those judged to demonstrate “best practice” would receive some sort of preferred status as providers in subsequent phases of the NEPAD e-Schools Initiative. While there have been data collected and reported on the models and performance of the consortia during the implementation process, this objective is not being very well satisfied and is not likely to be by the end of the Demo phase. (See the following section, “Assumptions.”)

**Objective:** *To demonstrate the costs, benefits, appropriateness and challenges of a satellite-based network.*

While eAC has certainly been actively investigating the technical specifications and the means to make them operational, no such network has yet been available to the schools involved in the Demo; therefore, it has not been part of the monitoring and evaluation process. That said, the lack of affordable access to the Internet has been consistently identified as a serious challenge to the sustainability of the e-school models that have been implemented. Finding a solution to that challenge is of continuing importance.

**Objective:** *To demonstrate the costs, benefits and challenges of ICT use in African schools.*

The part of this objective relating to demonstrating benefits and challenges of ICT use in African schools has been well met; however, as discussed earlier in this report, many of the benefits will take much more time to fully achieve. The matter of a cost-benefit analysis has not been addressed. Cost-benefit studies are problematic in the best of circumstances, but in this case it was never made clear to the consortia that providing cost data was expected. As a result these data are unavailable to the researchers. However, one consortium did provide a gross estimate of direct and indirect costs of USD \$4 million to implement its model at the assigned schools.

### **Assumptions**

The objectives and implementation of the Demo were based on a number of assumptions, some explicit and some that emerged through the data-gathering processes. Several of the assumptions, such as the importance of partnerships with the private sector and building in an arm's-length monitoring and evaluation process, were laudable core components of the conceptual plan for the Demo project. However, several other assumptions that influenced the design and implementation of the Demo have turned out to be false. The lessons learned from these false assumptions are discussed here.

**Assumption:** *A Demo was needed to understand “best practices” for introducing ICT in schools.*

One of the consortia pointed out during the first round of interviews that a Demo was superfluous because a large base of literature on best practices and lessons learned already exists, much of it African-based, compiled by organisations such as SchoolNet Africa and the South African Institute for Distance Education. Had the planning process for the e-Schools Initiative started with a review of the literature it may have facilitated a more value-added approach.

**Assumption:** *eAC could raise sufficient funds from donor sources to enable it to carry out its project management role for the e-Schools Initiative and the Demo project specifically.*

It was evident, and reported, very early in the Demo project that the lack of resources was seriously constraining the ability of eAC to carry out its mandate. However, the matter was

not effectively addressed, which resulted in eAC coming under severe criticism from its partners for not providing the leadership needed.

***Assumption:*** *The e-school models implemented by the various consortia could be fairly and reliably assessed with the consortia judged to have demonstrated the “best practice” receiving some sort of preferred status as the service providers in the subsequent phases of the NEPAD e-Schools Initiative.*

Without commenting on the merits of doing such a comparison, the validity of the assumption was seriously compromised by several factors, of which the following are but examples:

- The assignment of schools to consortia was not random.
- There are several instances of inter-consortium collaboration in both the design of the e-school model as well as implementation strategies.
- There are many examples of cross-consortium membership, particularly in the areas of content providers and teacher training organisations.
- There were no common guidelines for implementing time frames.

Even if such a comparison had been possible, the assumption that eAC would be in a position to broker business to providers on behalf of donors and countries was improbable.

From the data collected there is no way to know how this assumption was formulated or communicated among the partners. If it was discussed, then all must share responsibility for assuming its validity. Certainly, the early interviews with the consortia indicated that this was one of the reasons, for some the only one, for agreeing to becoming involved in the Demo. Nevertheless, the consortia perceived that the ground rules had changed without their involvement when it became evident that this assumption was not likely to be met.

***Assumption:*** *The Demo project would be a new ICT- in-schools initiative in the participating countries.*

This was perhaps the least explicit of the assumptions and is mentioned here only because had the planning for the Demo begun with an analysis of the extant plans and programmes of the Ministries of Education and the myriad ICT in schools projects already underway through NGOs, faith-based organisations, donors and the private sector, there would surely have been a more collaborative and added-value strategy. Perhaps the fact that this did not occur is related to the following assumption.

***Assumption:*** *Civil society organisations involved in ICT in schools projects would compete with the NEPAD e-Schools Initiative and therefore should be kept at arm’s length from the process.*

It is unfortunate that this assumption guided relationships between eAC and organisations like the Global e-Schools, SchoolNet Africa and World Links during the planning of the

Demo and the early stages of its implementation. The experience of these and other organisations would have been useful. Happily, this is changing. A workshop held in September 2006, sponsored by IDRC, brought practitioners together with eAC staff and some consortia members to reflect on how the experience of civil society organisations could enhance future phases of the e-Schools Initiative.

### **Unanticipated Outcomes**

With any project there are unexpected outcomes that often turn out to be as, or more important, than those built into the project. The Demo project is no exception, as the following points illustrate:

- The Demo is having a major impact on government awareness of the importance of adopting ICT into their strategic educational plans and, in concrete terms, their awareness of the art of the possible. This includes not just first-hand experience with state-of-art technology but also a practical approach to the issues of sustainability. Supporting evidence for the latter is that Ministries of Education are working with the schools to develop sustainability strategies in collaboration with the larger communities where these schools are located.
- The most specific evidence of the Demo's impact on Ministries of Education is the surge of development of ICT-in-education policies as described earlier. This is particularly the case in countries that are less advanced in the deployment of ICT in education. The effect is less noticeable in countries such as South Africa and Egypt that have policies and programmes in place and large-scale deployment of ICT in schools.
- The public-private partnership model initiated by eAC has been replicated in at least one country (Kenya) and is being considered in some others.
- Several of the consortia have planned, either from the outset or decided more recently, to implement their e-school model by involving local partners. This is proving to have a major effect on the ease and efficacy of providing support to teachers.
- The impact of the Demo school in the local community is much more profound than was anticipated. Teachers from neighbouring schools with no ICT facilities are being trained to use the Internet at the Demo school so they can locate learning resources. Community groups are being encouraged, for a fee, to use the school as a "learning centre" during non-school hours. As well, parent-teacher associations are involved in helping to maintain the facility.
- The Demo has caused eAC to reconsider its leadership role in achieving the goals of the NEPAD e-Schools Initiative. According to the eAC staff interviewed, there is a realisation that the original concept of the contribution eAC could make to the implementation of the e-Schools Initiative is not realistic and must be reformulated. The following points should be considered as this occurs:
  - a) Ensure that eAC's stated commitment to continue the M&E process is honoured and that arrangements for doing this are put in place immediately.

- b) Review the stakeholder base with a view to including civil society organisations that have demonstrated commitment to the e-schools vision.
- c) Develop strategies to take advantage of the operating models that the consortia have put in place in collaboration with the host countries. (These models are the most observable legacy from the Demo and they can provide a continental platform for ongoing demonstration and research if they are maintained and kept current with developing technology.)
- d) Ensure that planning is based on an awareness of global “best practice” regarding the adoption and diffusion of ICT in education, the development of sharable digital content, and teacher-training standards.

## **Constraints**

There have been several developments that have constrained the Demo implementation process. The following have been particularly significant:

- The Demo project manager resigned in January 2006 to join AMD and there was a delay of several months before a replacement was appointed. Given that the eAC leadership team for the Demo was already understaffed and without adequate resources for their task, this meant that momentum was lost at a point when the other partners, particularly the consortia, were requesting that eAC provide more direct leadership.
- The original intention was that a business plan for subsequent phases of the e-Schools Initiative would be completed well before the end of the Demo. This did not happen because the funds to commission the work had to be raised and took much longer than expected. As a result, eAC has not been in a position to promulgate a vision for the future – something that all stakeholders were expecting and that is sorely needed.
- Implementation of the Demo has been delayed in several countries for a variety of reasons with significant negative impact on the project. Had there been an effective communication process that enabled stakeholders to discuss issues and the reasons for the delays in a mutual problem-solving environment, the impact would have been mitigated to a considerable extent.
- Several Ministry of Education officials expressed the opinion that the capital and maintenance costs of the models implemented by the consortia will constrain their widespread adoption in the post-Demo phase. They indicated that the models would need to be scaled down to a sustainable level.

## **EPILOGUE**

This report and the earlier two interim reports have chronicled some successes, and quite a few shortcomings, as the Demo project has proceeded to this point. Numerous strategies for improvement have been suggested, but mostly not acted on. Therefore, it would not be surprising if some were to conclude that the Demo marks the beginning of the end of the

NEPAD e-Schools Initiative and that this is “just another project” among the many in the African experience that has begun with raised hopes and ended in disappointment.

But such thinking would be wrong! The vision and objectives of the Initiative continue to be of critical importance to schools across the continent. Shafika Isaacs, the founding executive director of SchoolNet Africa, addressed this point in the second interim report. Referring to the many ICT in schools activities underway across the continent, she said:

“Amidst this myriad of interventions, programs, experiments and innovations taking place in almost all African countries, sits the NEPAD e-Schools Initiative. Never before has there really been a program that mobilised national government participation and leadership at the official continental level in the way the NEPAD e-Schools vision has. Further it has brought the private sector into partnerships that, while experiencing growing pains, has mobilised resources in a way that few other projects have been able to do. And there is much yet to learn about doing this in an optimal way. The e-Schools Demonstration project placed an emphasis on reaching rural schools and communities beyond the schools. The introduction of a ‘health point’ at least conceptually, marks a conscious attempt at involving the school as a community resource at the service of various communities.”

It is also important to judge the Demo project in a global context where it is without precedent in terms of its international scope, socio-economic diversity and the comprehensiveness of the partnerships involved. The vision may well have exceeded the practical bounds of its reach within the expected timeframe, but lessons are being learned and applied and the catalytic effects of the Demo on schools, communities and Ministries of Education are already evident.

## APPENDIX A

### ASSIGNMENT OF CONSORTIA TO COUNTRIES AND SCHOOLS

<b>Country</b>	<b>School</b>	<b>Consortia</b>
Algeria	Lycée Draa Mohamed Sadek	Cisco
	Lycée Abdelhak Benhamouda	
	Lycée Bouchoucha	
	Lycée Cité Olympique	
	Lycée Abderrahmanr Ben Ouf	
	Lycée Ben Sahnoun El Rachedi	
Burkina Faso	Lycée Provincial de Ziniare (Launch School)	HP
	Lycée Yadega	
	Collège d'Enseignement Général (CEG) de Pobe Mangao	
	Lycée Untaani	AMD
	Lycée Provincial de Boulsa	
	Collège d'enseignement général de Komtoega	
Cameroon	Government High School, Buea - Bokwango	Microsoft
	Government High School, Mvengue	
	Lycee Classique d'Edea	
	Lycee Technique de Bamenda	AMD
	Government Bilingual Secondary School, Bafia	
	Government Secondary School, Mbansan (Launch School)	
Egypt	El Moqta Secondary Mixed School	HP
	Omaer Ibn Abd El Aziz Elsalaa Secondary School	
	Elhadin Secondary School (Launch School)	
	El Ghrfa El Tegaria Secondary School	Oracle
	Sobeih Secondary School	
	Elwesam Experimental School	
Gabon	CES Lucien NKOUNA-Bongoville (Launch School)	AMD
	CES Edouard MOSSOT-Moabi	
	Lycée Paul Marie YEMBI NDENDE	
	CES André Gustave ANGUILE	Oracle
	Lycée Richard NGUEMA BEKALE	
	CES Mouapa BEOTSA	
Ghana	Acherensua Secondary school	Oracle
	Ola Girls Secondary School (Launch School)	
	Akomadan Secondary School	
	Walewale Secondary School	Cisco
	St Augustine's Secondary School	
	Wa Secondary School	
Kenya	Mumbi Girls secondary	Oracle
	Menengai Mixed secondary	
	Isiolo Girls Secondary School (Launch School)	
	Maranda High school	Microsoft
	Chavakali High School	
	Wajir Girls secondary	

<b>Country</b>	<b>School</b>	<b>Consortia</b>
Lesotho	Lesotho High School (Launch School)	Oracle
	Bereng High School	
	St. Cyprian's High School	
	Sechaba High School	Microsoft
	Qacha's Nek High School	
	Sefikeng High School	
Mali	Lycée Fodie Maguiraga	Oracle
	Lycée Bocar Cisse	
	Lycée Alfred Garcon	
	Lycée Mamadou Sarr	AMD
	Lycée Attaher Ag Illy	
	Lycée Dowele Mariko	
Mauritius	Belle Rose State Secondary School	Cisco
	Windsor College	
	Ambassador College	
	Rose Belle High School	Microsoft
	Mon Lubin College	
	MEDCO (Cassis) Secondary School	
Mozambique	Escola Secundaria deEmilia Dausse	Microsoft
	Escola Secundaria de Angoche	
	Escola Secundaria de Cuamba	
	Escola Secundaria de Vilanculos	HP
	Escola Secundaria Joaquim Chissano	
	Escola Secundaria de Gurué	
Nigeria	Federal Government Academy Suleja (Launch School)	Microsoft
	Federal Government Girls College Bakori	
	Federal Government Girls College Owerri	
	Federal Science & Technical College Uyo	HP
	Federal Science & Technical College Lassa	
	Federal Government College Odogbolu	
Rwanda	Collège St André	Cisco
	G.S. Muhura (Launch School)	
	Lycee de Zaza (in Kibungo-Zaza-Ruhembe)	
	Collège Christ-Rois de Nyanza (in Nyanza-Mugozzi)	Microsoft
	Ecole Secondaire St Francois de Shanghi	
	ESSA-Gisenyi	
Senegal	Lycée De Niakhar (Launch School)	MS/Cisco
	Lycée WAOUNDE NDIAYE	
	Lycée DE DAHRA	
	Lycée DE BARGNY	AMD
	Lycée IBOU DIALLO	
	Lycée ALINE SITOIE DIATTA	
South Africa	Hendick-Makapan High School	HP
	Lomahasha Secondary School	
	Maripe Secondary School (Launch School)	
	Ipetleng Secondary School	Oracle
	Thozamisa High School	
	Isiphosethu High School	
		Cisco

<b>Country</b>	<b>School</b>	<b>Consortia</b>
Uganda	Bugulumbya Secondary School (Launch School)	HP
	Kabale Secondary School	
	Masaka Secondary School	
	Kyambogo College School	AMD
	Bukuya Secondary School	
	St. Andrew Kaggwa Senior Secondary School, Kasaala	

**Note:** Data provided by the Project Manager, March 16/2007

### FIRST INTERIM REPORT CONCLUSIONS AND RECOMMENDATIONS

#### **Improving the Demo Implementation Process: Stakeholder Feedback**

Respondents identified a number of issues concerning the implementation process. While this is not surprising given that this is a complex project, these are issues that should be addressed in order to optimise the achievement of the project purposes.

*Uneven Implementation:* The implementation of the Demo project across the participating countries has been very uneven to date. There are a variety of reasons for this:

- Variance in the level of understanding of the project – and of commitment to it.
- Variance in the leadership skills and energy provided to project implementation at the country level.
- Variance in the approaches and timetable among the consortia providing the services.
- Lack of a clear and uniform timetable understood and agreed to by all stakeholders.
- A certain degree of cynicism that this will be “just another one-off” project that will evaporate once the Demo project is over

*Duration of the Demo:* The uneven implementation is giving rise to concerns about the duration of the Demo project. At the present rate, some countries will have completed the project by the time it is barely underway in others. This ragged edge of completion is likely to have deleterious effects on the success of the project.

*Pro-active Leadership Needed:* There is a clear message that the Commission needs to become more pro-active in providing leadership to the Demo project implementation. The specific needs are in the areas of:

- Facilitating communication among the stakeholders.
- Providing more direct leadership to the consortia.
- Facilitating the signing of MOUs among the Commission, the consortia and the country governments.
- Clarifying the Commission’s role with respect to the organisation of the country launches.
- Developing understanding of the project with the governments of participating countries.

*Insufficient Resources:* The level of human and fiscal resources being provided by both the Commission and most of the countries is insufficient to enable either party to fulfil the

partnership roles that were originally agreed. This appears to be a core factor that is constraining the implementation of the Demo.

*Post-Demo Vision Required:* There is concern that no operational vision for the post-Demo phases of the e-Schools Initiative has been developed. This concern appears to focus on questions such as: Where is the business plan? Where will the funding come from? How is satellite connectivity to be provided?

*Many Similar Activities Underway:* There are many other activities similar to the e-Schools Initiative underway in several of the countries. Some of these are pilot projects sponsored by donor agencies and private sector companies, while others are occurring at the initiative of countries themselves or through the work of non-governmental agencies (NGOs) such as School Nets. In sum, there is a need to ensure that NEPAD initiatives add value to the current reality.

## **Recommendations and Strategies**

*Communications:* Establish a communications programme that:

- Enables the Commission and the consortia to meet bi-weekly to share information and discuss common problems.
- Provides updates and other information to all stakeholders on a regular basis using appropriate technologies. This should include schools as they develop capacity.
- Focuses on officials in the participating countries, particularly those that are lagging behind in the implementation process, for the purpose of clarifying the project and the responsibilities of the countries.
- Provides current information about the NEPAD e-Schools Initiative and the Demo project to NGOs, non-participating countries, media, etc., via the Web, e-mail and hard copy materials.

*Broaden the Stakeholder Base:* The Commission should consider involving partners, as well as the other organisations and agencies that are currently involved with “ICT in schools” type of projects in Africa, in the longer term planning processes re the NEPAD e-Schools Initiative. This could bring additional capacities to the task would help create a more widely shared vision.

*Facilitate Policy Development:* It is apparent that many of the countries have accumulated considerable knowledge and experience in the area of policy development. Several others are in the process of developing both national and education sector ICT policies. Given the importance of enabling policy frameworks to projects such as the e-Schools Initiative, the Commission should consider producing a detailed documentation and analysis of this policy development experience and sharing it as a resource for policy planners.

*Monitoring and Evaluation:* The M&E process will need to conclude before the Demo period is completed in all participating countries in order to achieve reasonable consistency of the data and to provide feedback for those countries that are ready to move to the next

phase. This should not seriously compromise the validity of the conclusions re “lessons learned” given the fact that data will be available from at least two-thirds of the countries with all regions of the continent represented. Countries that have not co-operated in the implementation of the M&E plan by ensuring the completion of questionnaires and required reports should be advised that they will not be included in the M&E process.

## **SECOND INTERIM REPORT CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

There are marked differences among the consortia in their expectations from the Demo project and, therefore, in their assessment of its usefulness. At one end of this continuum is the view that participation is a learning process, that the Demo project is primarily an opportunity to demonstrate various options. At the other end is the view that the insights that the project is supposed to provide are already known and understood, and that the process is a waste of time and resources.

All agree that the project has turned out to be much more complex than expected and that the time frame of one year is far too short to expect significant changes relating to the outcomes and indicators described in the M&E Plan.

There is considerable variance in the CLPs’ assessment of the performance of the consortia in implementing the Demo project with regard to the effectiveness of communication, follow-through on commitments made and timeliness of expected actions.

The extruded time frame for implementing the Demo Project has resulted in variances not just among the participating countries, but also within countries because of the unevenness between consortia in their implementation activities. This begs the questions: “When is the Demo over?” “When does the new phase begin?” “What will that look like?” The roles of the NIT and the eAC in answering these questions are not generally understood among the stakeholders.

It is unfortunate that the eAC has been unable to act more aggressively on implementing the recommendations concerning communications that were made in the First Interim Report. The project Web site, for example, remains relatively unchanged. The role of NEPAD, through the eAC, to publicise, enable and explore the role of ICTs in education is substantial. But, to-date, it is substantially underdeveloped!

While the manner in which the eAC has carried out its role to this point in the Demo Project has been criticised, there is a widely held view that it has a very important role to play as the project moves forward. Defining that role may be one of the most important unanticipated outcomes from the Demo project.

The vision for the role of the eAC in the post-Demo phase is evolving. With implementation managed at the country level, the Commission’s role in procurement will

be limited. For some stakeholders, this will be different from the understanding they had at the beginning of the Demo Project. However, it will enable the eAC to focus its role in ways that support collective and collaborative initiatives among the participating countries.

Most of the countries participating in the Demo project also have several other projects underway that have similar goals to those of the NEPAD e-Schools Initiative. The reality of this burgeoning activity puts the Demo project in a perspective that was not well understood at the conception of the e-Schools Initiative. First of all, it underlines the points made earlier that, in many countries, the Demo project is a relatively small undertaking. Secondly, it challenges the eAC to develop its co-ordination role in a manner that is both inclusive and consultative.

The recommendations that follow are suggested as ways of taking this deliberation further.

### **Recommendations**

There will little new information gained by continuing the Demo phase in its current form beyond the end of 2006. The short-term impacts at the school level will have been assessed, and the new information generated from further data collection and analysis of the implementation process is likely to be minimal as the data are already becoming repetitive. Indeed, the problems that are arising as a result of the extruded implementation time frame are likely to be exacerbated if the process is allowed to drag on in its current form. Therefore it is recommended that:

- Priority be given to identifying those countries willing to commit, as part of their national planning, to maintaining as NEPAD e-Schools those that are equipped, have Internet connectivity and an ongoing process for teacher training as of December 31, 2006.
- The countries, once identified, be supported with programmes that enhance their capacity regarding policy development and managerial skills.
- The consortia be invited to continue their involvement with these e-Schools and to work with the eAC to develop a practical model for doing so. The elements of this model could include building school-level technical support capacity, introducing emerging learning technologies, supporting online content repositories, networked teacher training and research.
- The Commission, with the support of the identified countries and the consortia, develop a plan that embeds monitoring and evaluation as an integral component of this new phase of the NEPAD e-Schools Initiative for a minimum of five years. This would:
  - a) Be a realistic time frame in which to expect long-term results from the integration of ICTs into the teaching/learning process.
  - b) Provide a unique international platform in Africa for research and teacher training institutions to use a venue for academic investigations.
  - c) Facilitate collaborative models of content development and online content repositories.

- d) Facilitate an evidence-based approach to the development of standards with respect to training, school infrastructure and content.

While implementation of these recommendations will provide NEPAD with a practical model for moving forward based on the achievements of the Demo Project, and in a manner that respects country goals and plans, three realities remain which NEPAD cannot ignore. One is the likelihood that there will be other countries that would like to be part of the next phase but lack the necessary resources to participate. Another is that the number of other “players” involved in ICT in schools applications will continue to grow and to make contributions to the achievement of the broad goals that NEPAD has articulated. The third is the concerns that are being expressed about the cost of band width. Therefore the Commission should:

- Identify and work with those countries to attract donor support to enable them to meet the conditions for participation in the next phase.
- Continue to develop mechanisms through which to include other organisations in ways that foster collaboration, information sharing and intra-continental initiatives.
- Develop a clear description of the role it will play in facilitating the post-Demo phase of the e-Schools Initiative with attention to the suggestions that have been made in this report and communicate these to all stakeholders.
- Continue its efforts to ensure there is scalable access to connectivity for schools at rates that are within their capacity to sustain.

The development of the long anticipated Business Plan will hopefully provide guidance for these and other initiatives. However, if there is one basic message from the Demo experience up to this point, it is that “less is sometimes more.” Multi-stakeholder projects like this are highly resource consumptive and are fraught with communication difficulties and other challenges. The above recommendations are suggested as a way of approaching the next phase of the NEPAD e-Schools Initiative so that is more focused and manageable.

NEPAD E-SCHOOLS OUTCOMES AND IMPACT INDICATORS

NEPAD e-Schools Outcomes	Impact Indicators
<p>1. Students</p> <p>Through the use of ICT:</p> <ul style="list-style-type: none"> <li>• Develop appropriate level of ICT capability</li> <li>• Become more engaged in own learning</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate proficiency in the use of ICT for:*               <ul style="list-style-type: none"> <li>word processing</li> <li>spreadsheets</li> <li>basic e-mailing</li> <li>basic Internet browsing</li> <li>presentation tools</li> <li>graphics.</li> </ul> </li> <li>• Use ICT to collaborate, publish and interact with peers, experts and other resource people. *</li> <li>• Use ICT to locate, evaluate and collect information.*</li> </ul>
<p>2. Learning environments</p> <p>ICT is used to support constructivist teaching that is more:</p> <ul style="list-style-type: none"> <li>▪ Learner-centred</li> <li>▪ Knowledge-centred</li> <li>▪ Assessment-centred</li> <li>▪ Community-centred.</li> </ul>	<ul style="list-style-type: none"> <li>• Students use ICT to investigate the real world and build a wider, deeper knowledge base.*</li> <li>• ICT enables students to be active as participants in their own learning.*</li> <li>• The interactive, multimedia and communication characteristics of ICT are used to enhance student motivation.*</li> <li>• ICT is used to foster collaboration and co-operation among students and more interaction with teachers.*</li> <li>• ICT is used to support more individualised learning (at the students' own pace).*</li> <li>• ICT is used to provide learning experiences and allow students to progress at their own pace.*</li> <li>• ICT tools are used to increase student productivity.*</li> <li>• Students engage in higher levels of thinking such as application, analysis and synthesis</li> <li>• Adaptive technologies are used to enhance learning for students with physical disabilities</li> </ul>

<p>3. Teacher ICT competencies</p> <p>Teachers are competent to apply ICT in order to:</p> <ul style="list-style-type: none"> <li>• Support students (with respect to learning activities)</li> <li>• Create a constructivist learning environment</li> <li>• Contribute to the relevant learning communities</li> </ul>	<p>Teachers are:</p> <ul style="list-style-type: none"> <li>• able to teach students how to use available hardware devices safely*</li> <li>• able to use and apply basic software programmes in the context of their teaching*</li> <li>• able to use ICT to improve their professional and administrative proficiency*</li> <li>• able to use the Internet to locate additional learning resources to enrich the curriculum*</li> <li>• able to use ICT to facilitate a variety of assessment and evaluation strategies*</li> <li>• aware of health, legal and ethical issues with regard to the use of ICT*</li> <li>• able to plan and design learning experiences supported by ICT with a special reference health topics *</li> <li>• able to collaborate with other teachers internally and externally to their school*</li> <li>• able to develop digital content teaching materials on their own</li> </ul>
<p>4. School ICT capacity</p> <p>All teachers and students have immediate access to:</p> <ul style="list-style-type: none"> <li>• The hardware and software necessary to support the curriculum</li> <li>• The support necessary to enable its use.</li> </ul>	<ul style="list-style-type: none"> <li>• Teachers and students have ready legal access to a range of appropriate content software *</li> <li>• Students and teachers have ready access to ICT hardware*</li> <li>• Effective policies are in place for the management of hardware resources*</li> <li>• Teachers and students have access to online services such as Internet and e-mail*</li> <li>• Teachers and students have access to technical support when required.*</li> <li>• There is management and co-ordination of digital resource materials across all learning areas.*</li> </ul>
<p>5. School environment</p> <p>The school environment is supportive of teachers' and students' use of ICT based on a shared, community-based vision that prepares students to learn, work and live successfully in a knowledge-based, global society</p>	<ul style="list-style-type: none"> <li>• National policies and long-term plans are in place to promote and support and use ICT in schools* (Note: These should be shared via the portal that is to be established by the Demo manager.)</li> <li>• Pedagogical school policies encourage students to reach out beyond the classroom*</li> <li>• Curriculum support personnel are available to assist teachers to integrate ICT in the learning and teaching process*</li> <li>• School policies and processes engage parents, community members, school staff and learners in interactions and partnerships that advance the use of ICT in schools*</li> <li>• Schools collect and analyse data regarding the use of ICT to inform decision-making.</li> </ul>

<p>6. Health Point</p> <p>The Health Point is a unit to be developed within each school through which to:</p> <ul style="list-style-type: none"> <li>• Provide access to health information to children, parents and health workers (especially in rural areas)</li> <li>• Promote healthy living and awareness of health issues to the wider community.</li> </ul>	<ul style="list-style-type: none"> <li>• Health education is promoted in schools via print and ICT-related methods including broadcasting</li> <li>• A health portal is available to health workers and the wider community</li> <li>• Mass media are used to promote healthy living and to provide health related information on topics such as HIV/AIDS and malaria.</li> </ul>
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\*Outcomes that were expected to be achieved during the Demo.