

**REPORT OF THE ICT IN EDUCATION SENSITIZATION WORKSHOP**  
**FOR HEADTEACHERS HELD AT GAYAZA HIGH SCHOOL**  
**(19<sup>TH</sup> – 20<sup>TH</sup>) AUGUST, 2008**

SchoolNet Uganda in partnership with the Ministry of Education and Sports organized and conducted a two day non-residential *ICT in Education* sensitization workshop for school administrators.

The workshop which was held from 19<sup>th</sup> to 20<sup>th</sup> August 2008 at Gayaza High School targeted school Head teachers, Deputy Head teachers and Directors of Studies. The schools which attended included both public and private schools and both primary and secondary schools. The details of the participants are shown in appendix 1.

The workshop was held on a cost-sharing model between SchoolNet Uganda and the participating schools. SchoolNet Uganda was responsible for the workshop venue, meals, facilitators and workshop CDs. Each school was responsible for the transportation and accommodation of its participants for those who were coming from far. Participants were also expected to come with their own stationary.

**Workshop Objectives:**

The workshop had the following objectives:

- To provide the school administrators an opportunity to brainstorm the challenges they face in acquiring, optimally utilizing and sustaining the ICT resources in schools for the purpose of enhancing the teaching and learning process.
- To introduce the school administrators to interactive educational software that supports child-centred learning and to demonstrate how ICT can be integrated in the curriculum.
- To introduce the school administrators to project-based learning and to iEARN (International Education and Resource Network) which their schools can join for international school linkages and for tele-collaborative projects.
- To introduce and give a hands-on experience to new technologies which support learning like the SMART interactive Whiteboard and NComputing. The SMART Interactive whiteboard is a touch-sensitive screen which connects to a computer. Ncomputing is a technology which allows up to 7 work stations (each workstation has a monitor, keyboard and a mouse) to the same computer (system unit) so that more students can use the same computer to do different things.
- To introduce the school administrators to how to set up a School Digital Library that does not require Internet access as a supplement to the traditional book library.
- To introduce the school administrators to a new project (Adobe Youth Voices) to be implemented by SchoolNet Uganda in partnership with iEARN-USA and Adobe Foundation and to explain the selection criteria which will be used to select the 12 pilot schools for 2008-2009 project cycle.

- To get ideas and suggestions from the school Head teachers on how best schools can be supported in order to use Information and Communication Technology (ICT) to enhance teaching and learning in schools.

### Workshop Programme.

The programme below was used in order to achieve the workshop objectives.

<b>DAY 1 – 19<sup>TH</sup> AUGUST 2006</b>		
<b>TIME</b>	<b>BRIEF DESCRIPTION</b>	<b>LEAD BY</b>
8.30 -9.00 AM	Introductions and expectations.	Bright Kigozi
9:00 - 10:40 AM	Brainstorming session: Challenges of using ICT to enhance teaching and learning in Uganda schools and possible solutions.	Allen Nansubuga
10:40 - 11:00 AM	HEALTH BREAK	
11:00 AM – 1:00 PM	Introduction to interactive digital educational content <ul style="list-style-type: none"> <li>• What is interactive educational content</li> <li>• Evaluating educational software</li> <li>• Demonstration of how interactive content can be used to support student-centred pedagogy</li> <li>• How a school can acquire interactive digital content</li> </ul>	Kakinda Daniel
1:00 PM- 1:30 PM	Remarks by Guest of Honour and official opening	Hon. Joseph K. Mugambe
1:30 – 2:30 PM	LUNCH BREAK	
2:30 – 4:00 PM	Project-based learning: <ul style="list-style-type: none"> <li>• What is project based learning</li> <li>• Sharing some real examples of project-based learning (local &amp; international).</li> <li>• What the benefits of project-based learning to the students, learner and the school</li> <li>• Capacity building for a project-based learning teacher.</li> </ul>	Ronald Ddungu
4:00 – 4:20 PM	HEALTH BREAK	
4:20 – 5:30 PM	Interactive SMART Whiteboard: <ul style="list-style-type: none"> <li>• What is an interactive SMART Whiteboard?</li> <li>• Benefits of using the interactive SMART Whiteboard</li> </ul>	Samuel Kizito

	<ul style="list-style-type: none"> <li>• Demo lesson with the SMART Whiteboard</li> <li>• What are the cost implications?</li> <li>• Hands-on experience</li> <li>•</li> </ul>	
5:30 PM +	Private work and departure at own convenience	Student Peer Educators
<b>DAY 2: 20<sup>TH</sup> AUGUST 2008</b>		
9:00 -9.20 AM	Reflection on Day 1 Activities	Daniel Kakinda
9:20 - 11:00 AM	<p>School websites:</p> <ul style="list-style-type: none"> <li>• What is a website?</li> <li>• Why is it necessary for a school to have a website?</li> <li>• What makes up a good school website and why should a school have a good website?</li> <li>• How to plan a good school website to meet its objectives?</li> <li>• What does it take to have a website?</li> <li>• Testimony of having a website.</li> <li>• Demonstration of a school website from a user's point of view</li> </ul>	Richard Matovu
11:00 - 11:20 AM	<b>HEALTH BREAK</b>	
11:20 AM – 1:30 PM	<p>Introduction to iEARN (International Education and Resource Network) and the Adobe Youth Voices project.</p> <ul style="list-style-type: none"> <li>• What is tele-collaboration and a tele-collaborative project?</li> <li>• What is iEARN (<a href="http://www.iearn.org">www.iearn.org</a> ) and how can one become a member?</li> <li>• Linking to international educators for professional networking.</li> <li>• Getting the students, teachers and schools involved in global project-based learning.</li> <li>• Benefits of participating in iEARN activities to teachers (professional development courses, international conferences, etc).</li> <li>• Benefits to students of participating in iEARN activities</li> <li>• Introduction to Adobe Youth Voices project</li> </ul>	Kakinda Daniel

1:30 – 2:30 PM	LUNCH BREAK	
2:30 – 4:00 PM	School Digital Library <ul style="list-style-type: none"> <li>• What is a digital library</li> <li>• Setting up a school digital library.</li> <li>• Maintaining and updating the digital library.</li> <li>• Ncomputing as a way of increasing students' access.</li> <li>• Hands-on experience with the digital library and Ncomputing.</li> </ul>	Kakinda Daniel
4:00 – 4:20 PM	HEALTH BREAK	
4:20 – 4:35 PM	Student Personal Testimony: How ICT has impacted my life	Nannozi Joyce
4:30 – 5:30 PM	Closing remarks and award of certificates (Guest of Honour)	Mr. Nsumba-Lyazi
5:30 PM +	Departure at own convenience	

## DAY 1 – 19<sup>TH</sup> AUGUST 2008

### (8:30-9:00 AM): Session 1: Introductions and Expectations

Kakinda Daniel, the Executive Director, SchoolNet Uganda welcomed the school administrators and took them through the workshop objectives and programme. Thereafter, he invited Bright Kigozi to lead this session. The main objective of this session was to give the participants an opportunity of knowing each other and to give the workshop organizers an opportunity to know what the participants expected to learn from the workshop.

Each participant was asked to mention his or her name, school, position of responsibility and one expectation they had for the workshop.

### Participants' Expectations

The following were some of the participants' expectations:

- To learn about the different levels of Information Communication Technology (ICT) in the different schools and see where SchoolNet Uganda can help the schools to improve.
- To make and network with new friends.
- Good and enriching presentations from the workshop facilitators.
- To learn more on how the other schools are administering ICTs in their schools.

- To learn how to effectively use the current ICT resources at the schools in the teaching and learning of students.
- To learn how to use the digital library.
- To learn how to build and improve a school website.
- To learn more about SchoolNet Uganda and its activities.
- To share experiences with other schools on how ICT is being used in the teaching and learning process.
- To learn more about the Ncomputing system.
- To compare with other schools and see how they are using ICT in teaching.

After, the self introductions, Ronald Ddungu, the Deputy Head teacher of Gayaza High School who represented the host head teacher was invited to give some welcome remarks.

### **Welcome Remarks by the host Head teacher.**

Ronald Ddungu, the Deputy Head teacher in charge of academic and ICT developments at Gayaza High School welcomed the participants to Gayaza High School. He informed the participants that the Head teacher was away in Singapore on a networking trip and therefore not going to be able to attend the workshop. "Gayaza High School has a very big campus, so feel to move around. We expect to learn a lot from you and we are always open so feel free to come once again" Ronald added.

### **(9:00 – 10:40 AM): Brainstorming session: Challenges of using ICT to enhance teaching and learning in Uganda schools and possible solutions.**

This session was facilitated by Eng. Allen Nansubuga, the Technical Director of SchoolNet Uganda.

The main objective of this session was to give participants an opportunity to share experiences on how they were implementing ICTs in their schools, the challenges they were facing and to learn from any best practices.

### **Ground Rules**

The participants agreed on the following ground rules to guide them through the brainstorming session and in the rest of the workshop.

1. Do not laugh at, laugh with.
2. There is no wrong answer. All answers are acceptable.
3. Mobile phones should be kept in silent mode.

Allen used a question approach to modulate the brainstorming session.

*Q1. How would you define ICTs giving examples?*

**Participants' responses:**

Information Communication Technologies (ICTs) are a diverse set of technologies and resources that are used to create, share, manage, communicate and store information. They gave examples such as computers, CDs, radios, televisions, mobile phones, projectors, flash disks, calculators, video cameras, digital still cameras, Internet etc.

*Q2. What is it that you want to achieve and change with ICTs in schools?*

**Participants' responses:**

- To improve and speed up communication with stakeholders.
- To make teaching and learning more interesting thus motivating the students.
- To help students understand abstract concepts through the use of simulations and animations.
- To improve on the way of presentation of lessons.
- To improve interaction between the learners and what they are studying.
- To improve the teaching resources available to the teachers resource and to promote sharing of resources between teachers.

**Harmonization:**

Allen harmonised the discussion by noting that there are five researched objectives of using ICTs in Education and these are:

- Presentation of content in a more interesting way.
- Demonstration of abstract concepts.
- Improving the participation of learners.
- Interaction and collaboration.

She however noted that most schools have concentrated on the first two i.e. presentation and demonstration and have neglected interaction. With the Internet, there are so many resources that can improve collaboration and interaction.

**Current uses of ICTs in schools, challenges and possible solutions.**

Allen asked the participants to brainstorm on how they are using ICTs in their schools, the challenges and the possible solutions they are using to address these challenges and these included:

**Participants' responses included:**

- One participant gave a testimony of where she was supervising a teacher on teaching practice. The students had become noisy and stubborn but when the

teacher brought in a projector, it attracted the students' attention and the class became orderly.

- Students go to the computer labs and when they get bored, they open up the computers and start tampering with the hardware. This forces the IT coordinators in the schools, to guard the computers jealously by not allowing in students when they are not there and to have very restricting computer lab rules. As a possible solution to challenge, the participants were advised to teach the students the hardware parts to satisfy their curiosity so afterwards the students will not tamper with them.
- Computer viruses were mentioned as another major challenge. Participants were advised to get programs like Deep freeze that can freeze the hard disk. Students can do whatever, they want with the computer including deleting files but once the computer is switched off, the hard disk is restored to its original state.
- Some schools have introduced the Cyber School technology software where digital lessons in Biology, Physics, Chemistry and Mathematics are already developed. The lessons contain diagrams, simulations and animations which help the students understand some of the abstract concepts. However they faced a challenge that the software was protected and it could not be copied to other computers.
- Some of the teachers also do not want to share the educational resources they have.
- Some students and teachers do not want to participate in ICT related activities and also to use the available resources. They just use the computers to play games and send each other friendly messages.
- Some teachers are computer illiterate and therefore need some capacity building.
- Some of the teachers who go for capacity building do not to share the knowledge, skills and resources acquired at the workshops with other teachers when they return to their schools and just pose around with their new knowledge and skills.
- Some of the teacher especially the ones in schools around town do part -time teaching in a number of schools and so even when capacity building workshops are organised at schools they never attend. They think that computers are meant for students and have nothing to do with them.

As a possible solution, participants were advised to think of conducting the capacity building workshops in the holidays and also to organise joint workshops with their neighbouring schools and share the costs. Some of the teachers have to be forced into learning computer e.g. by requiring them to type their own exams.

- Equity of access to computers and computer resources whereby some students dominate them e.g. in mixed schools the boys normally dominate the use of the resources was also highlighted as another challenge.
- There is also the challenge of over protection of the computers and computer resources by the teachers in charge of the laboratories especially when there are very few computers so these teachers try to guard them jealously because when they get spoilt they find it hard to explain to the head teachers.

### **Harmonization:**

Allen noted that during the brainstorming session, participants had looked at what ICTs are, shared experience on how ICTs are used to access educational resources and the challenges of misuse and under utilization.

She advised that schools should choose ICTs that satisfy their political and social sustainability and emphasized the need for capacity building for both school administrator and the teacher.

She concluded by thanking the participants for having participated actively in the session.

### **(11:00 AM– 1:00 PM): Introduction to interactive digital educational content.**

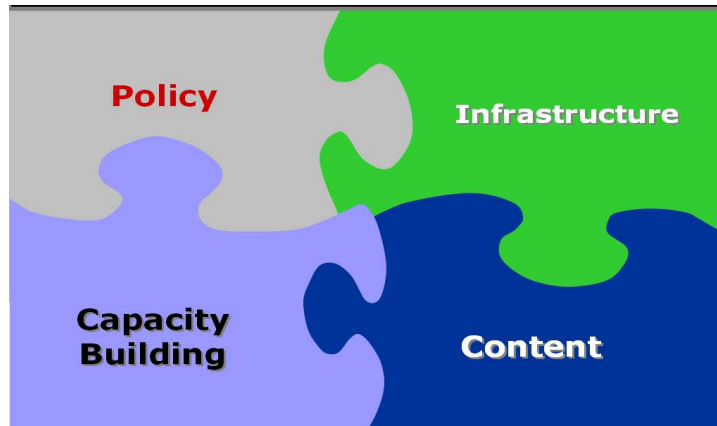
This session was facilitated by Kakinda Daniel, the Executive Director and Training Director, SchoolNet Uganda.

Daniel started by informing the participants that all the workshop presentations and any other documentation referred to in the workshop were on the workshop CD that was provided to the participants at the registration desk.

He noted that the current ICT initiatives in schools can be compared to the five blind men who went to see the elephant. Each blind man touched a different part of the elephant and therefore had a different view of what the elephant was. None of them got to know how exactly the elephant looked like.

He in particular, noted that many school head teachers have spent all the available resources on just buying computers forgetting other components of ICT in Education which is getting it wrong.

He emphasized that success in implementing ICT in Education is like solving a puzzle; you only get it right when all the parts of the puzzle have been fitted together.



**Fig. 1: Components of ICT in Education**

The four critical components of ICT in Education include policy, infrastructure, capacity building and content, all of which must be given due consideration.

- Policy: what the school's policy on ICT in terms of acquisition, access, maintenance, sustainability etc.
- Infrastructure: what ICTs are available and in what quantities e.g. how many computers and what type? Is Internet available and what bandwidth?
- Capacity building: what type of sensitization, training and exposure is given to the school administrators and teachers to change their mindset and enhance their knowledge and skills in using ICT to improve educational outcomes?
- Content: what type of digital educational content is available to the teachers and the students? Is it interactive and does it support child-centred pedagogy?

All these issues must be put together before expecting any returns on investment otherwise ICTs in schools will remain more of reliability than an investment.

Kakinda noted that though all the four components; policy, infrastructure, capacity building and educational content were extremely important; his presentation would only concentrate on interactive educational content.

He provided the participants with the quote below:

*“Computers won't begin to have a real impact on education until they begin to be a means of teaching subjects that would not have been taught before, using methods that could not have been implemented before and providing access that could not have been provided before”*

----- (Schank 2001, P.5)

Kakinda told participants that it was his hope that by the end of his presentation, they should:

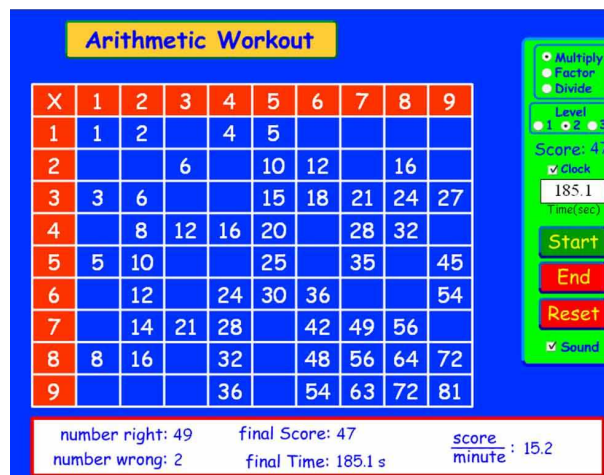
- Know what interactive educational content is.
- Know that interactive content can be used at all educational levels and across subjects.

- Know how interactive educational content can support student-centred pedagogy.
- Have enhanced understanding of how computers can be better utilized to enhance teaching and learning.
- Be inspired to use interactive educational content at home (because charity begins at home) and at school.
- Plan to acquire interactive content for their school.

Daniel illustrated the concept of interactive digital content that supports student-centred pedagogy with examples picked from different subjects at different educational levels. The examples were picked from lower primary, upper primary, lower secondary, middle secondary and upper secondary schools.

### Examples from lower primary school:

#### 1. The Arithmetic Workout



**Fig 2. Arithmetic Workout Simulation**

This simulation enables the learner to practice multiplication, division and factorization of numbers. It has three levels 1, 2 and 3 in order of increasing difficulty and provides immediate feedback. The simulation allows the learner to supplement class work.

#### 2. Introducing Fractions.

Children always do fractions in their daily life because they share whatever they get with their friends.

He showed a simulation where children can be introduced to fractions by sharing cookies amongst their friends. The child chooses the type and number of cookies and the friends he/she would like to give the cookies. The child is able to break the cookies into pieces and share them out. The child can then check whether or not the cookies were shared out equally among the friends.

## Examples from upper primary school:

### 1. Supporting the teaching and investigation of angles

Daniel showed the participants a simulation where the student can change the angle and then use the protractor to measure the angle. The learners are provided with a space where they can enter the answer. The simulation provides immediate feedback. The student can choose different angle ranges and can even change the orientation of the protractor.

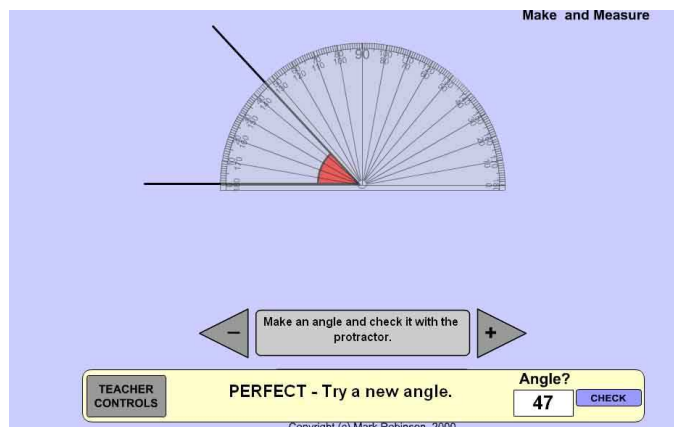


Fig. 3: Measuring angles simulation

### 2. Practice with solving the unknown (Equations)

The image shows a "Linear Equation Calculator" simulation. On the left, it displays the equation  $10x+9=29$  and the solution  $x=2$  with the text "Well done! x = 2". The steps shown are  $10x+9 = 29$ ,  $10x = 20$ , and  $x = 2$ . On the right, there is a grid of equation types:  $ax=b$ ,  $x-a=b$ ,  $ax\pm b=cx$ ,  $ax\pm b$ ,  $x\pm a=\pm b$ ,  $ax\pm b=cx\pm d$ ,  $\pm ax=\pm b$ ,  $ax-b=c$ , and "any", and  $ax+b=c$ ,  $\pm ax\pm b=\pm c$ , and "???". Below the grid is a calculator keypad with buttons for "+", "-", "7", "8", "9", "x", "÷", "4", "5", "6", "AC", "0", "1", "2", "3", "Do it", "x", and "+/-".

Fig. 4: Solving equations simulation

Daniel showed the participants a simulation that can help student compute different equations involving one unknown. The students can choose between the different types of the equations. The simulation is so flexible that the learner can solve the equations in many possible ways.

### 3. The Electric Bell

This simulation shows in a detailed interactive way how the electric bell works.

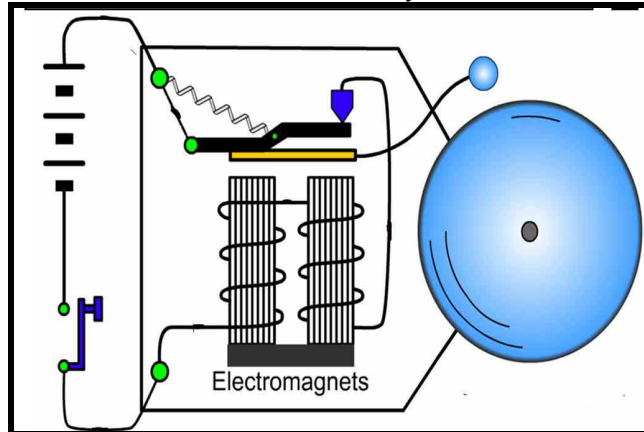


Fig. 5: The electric bell

### Examples from lower secondary school (S1 - S2).

#### 1. Properties of matter – States of matter

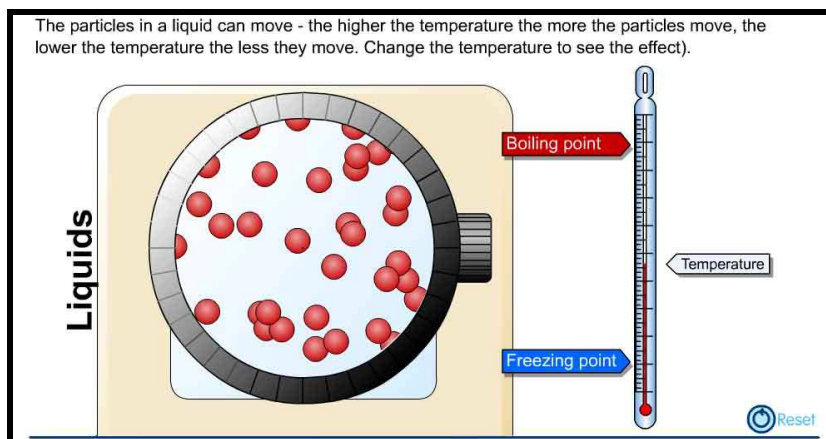


Fig. 6: States of matter simulation

This simulation shows the motion of the particles in the three different states of matter (solid, liquid and gas states). It helps the students to visualize the separation and the speed of the particles of matter in the different states. It also introduced the concepts of freezing and boiling points.

#### 2. Using measuring instruments and practice with measuring instruments.

##### (i) Using measuring instruments.

This simulation that explains how different measuring tools like the vernier calliper and the micrometer screw gauge are used.

(ii) Practice with measuring instruments.

Daniel used two online simulations to show how students after classroom session, students can practice using the vernier calliper and the micrometer screw gauge. The simulations have the objects to be measured whose sizes are adjustable and provide an immediate feedback to students' answer inputs.

Online vernier calliper:

<http://www.vjc.moe.edu.sg/fastrack/physics/vernier13.htm>

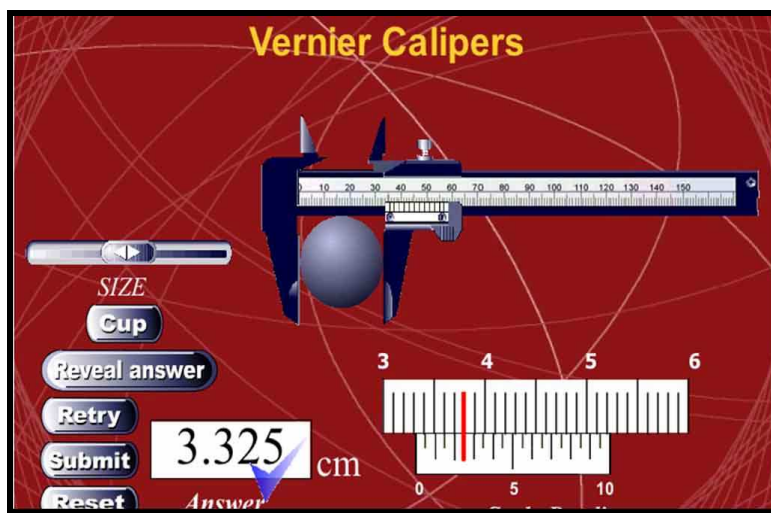
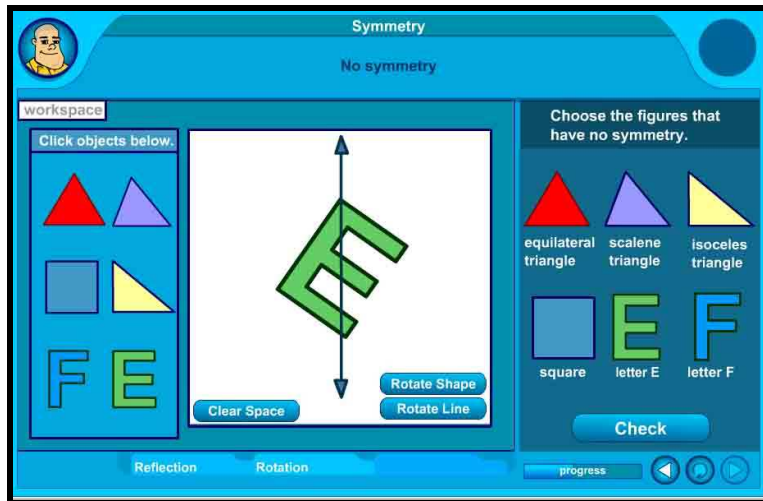


Fig. 7: Vernier Calliper Simulation

Online micrometer screw gauge:

[http://www.vjc.moe.edu.sg/fastrack/physics/macrometer\\_ya\\_v6.htm](http://www.vjc.moe.edu.sg/fastrack/physics/macrometer_ya_v6.htm)

3. Types of symmetry: Line and point or rotational symmetry



**Fig. 8: Line and rotational symmetry simulation**

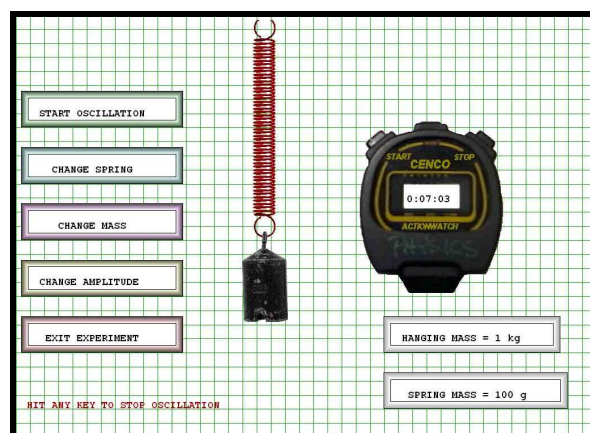
This animation can be used to teach the different types, the characteristics of the different types of symmetry and how to identify them. Thereafter it contains interactive exercises on identifying the types of symmetry which the students can try out.

#### 4. Constructing pie charts.

In this simulation, a student can either use the data provided or own data. It gives an exercise where the student first calculates the percentages and the corresponding angles of the pie chart using the calculator (provided in the simulation) and then fills them in the answer sheet. Thereafter, the student draws the pie chart by dragging to form the different angles of the pie chart.

#### Examples from middle secondary school (S3- S4).

1. Physics practical: Experiment to determination of the acceleration due to gravity,  $g$ , using a spiral spring.



**Fig. 9: Spring Simulation**

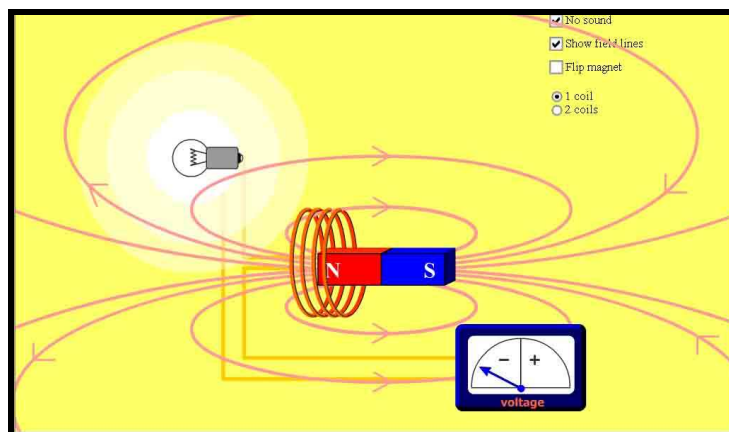
This simulation can be used to determine the extension of a spring when loaded with different masses and the corresponding time for a given number of oscillations when the spring is set into vertical oscillations.

Kakinda emphasized that students needed instructions just like in the normal practical lessons and also graph papers to plot and interpret their results.

“The simulations must not replace the traditional practicals but must just be used complementarily” Kakinda stressed.

Ronald Ddungu testified how he had used the simulation for his students S.4 Math students when teaching plotting graphs and finding gradients. By using ICT and making an interconnection with Physics, he was able to help students regain interest in Mathematics.

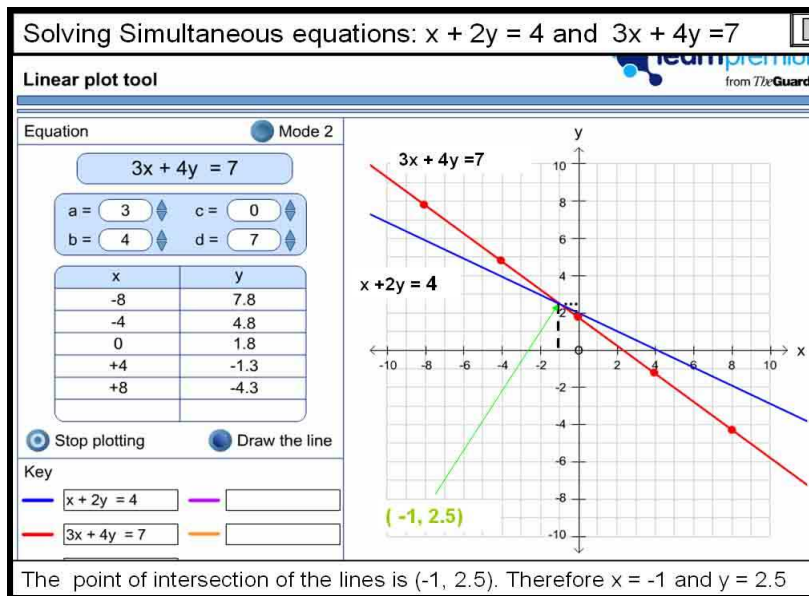
## 2. Laws of magnetic induction



**Fig. 10: Electromagnetic induction simulation**

This simulation can be used to introduce the concept of electromagnetic induction and to investigate Faraday’s and Lenz’s laws of electromagnetic induction.

### 3. Plotting linear graphs and solving simultaneous equations.



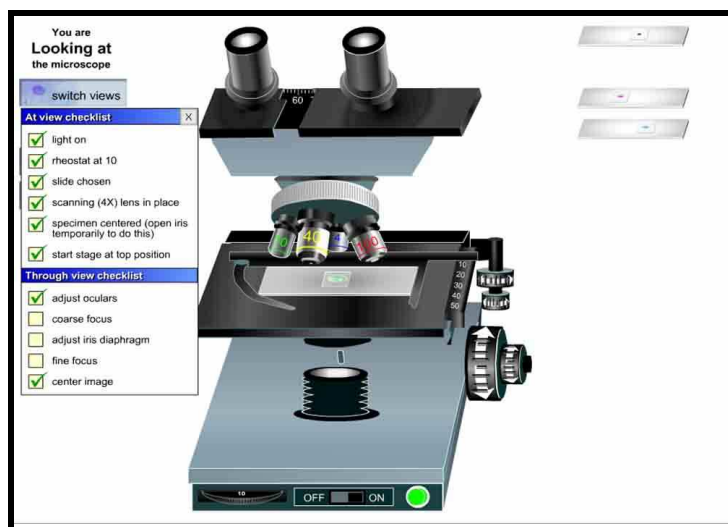
**Fig. 11: Line plotting simulation**

The simulation can be used to plot graphs of the form  $y = mx + c$  and of the form  $y = ax + by + c = d$ .

The simulation can be used to plot more than one graph and therefore can be used to solve simultaneous equations involving two unknowns by a graphical method.

### Examples from upper secondary school (S5- S6).

#### 1. Compound Microscope



**Fig. 12: Compound Microscope Simulation**

The compound microscope simulation which is available online at <http://www.udel.edu/biology/ketcham/microscope/> .

The simulation can be used to familiarize students with the focusing of specimens and what to expect when using a real microscope. It provides opportunity for students to look at microscope slides and to build their confidence in preparation of using real microscopes in a non threatening learning environment.

## 2. Physics Practical: Determination of focal length, $f$ , of a converging lens.

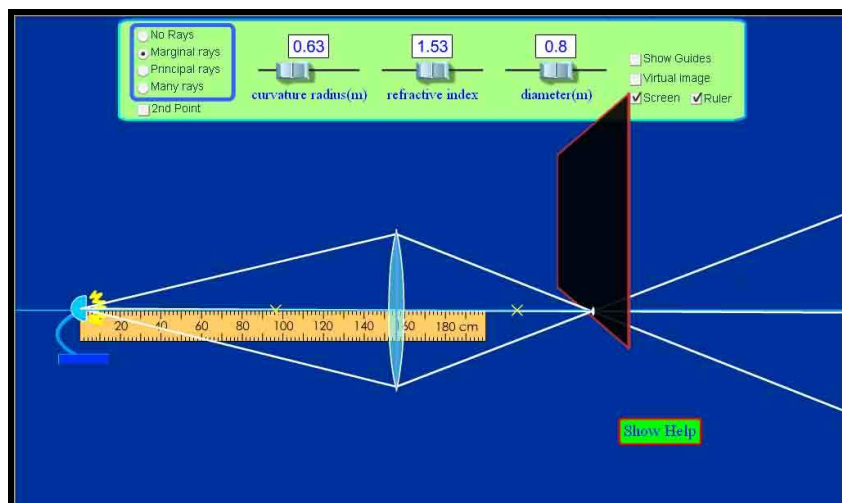


Fig. 13: Converging lens simulation

This simulation can be used to study the relationship between the focal length,  $f$ , of a lens and its radius of curvature,  $r$ , and its refractive index,  $n$ .

**(1:00 – 1:20) PM: Remarks by Guest of Honour and official opening by Hon. Joseph K. Mugambe, the Member of Parliament representing Nakifuma County, Mukono District and Chairperson of Committee on Science and Technology.**

Mr. Aggrey Kintu, the Head teacher of Bukooli Secondary school (one of the SchoolNet Uganda supported school-based Telecentres) welcomed the Guest of Honour on behalf of the participants.

He informed the Guest of honour that as Head teachers, they were very thankful to SchoolNet Uganda for not only providing schools with affordable computers but for providing Head teachers and teachers with the necessary sensitization, training and capacity building to use ICT to enhance teaching and learning in Uganda secondary schools.

“There are about 60 or more Head teachers who have come for the workshop” Mr. Kintu added.

## **The Guest of Honour's Speech**

The Guest of Honour then introduced himself as Hon. Joseph K. Mugambe, the Member of Parliament of Nakifuma County, Mukono District and Chairperson, of Parliamentary Committee, Science and Technology. He thanked SchoolNet Uganda for organising the workshop and also for inviting him to officially open it.

He thanked the Head teachers who had turned up for the workshop, because they as touch-bearers for the schools need to be comfortable with ICT if they are to provide guidance and leadership to the teachers and students in their schools. He noted quite often many Head teachers shy away from attending ICT workshops and instead give all kinds of excuses like having no time due to very busy schedules.

"I am sure all of you who have attended are entrepreneurs and are looking for new opportunities which ICT can offer to your schools and students" Hon. Mugambe added.

He challenged the Head teachers not be afraid of making mistakes because most of the products that are on the market are not perfect, that is why the manufacturers keep on producing newer models and brands.

Hon. Mugambe emphasized to the Head teachers that ICT when optimally used can help schools improve their productivity and efficiency. The schools should also use their computer labs to train the community thereby making the schools belong to the community.

After reminding the participants that an educated person is one who can apply what they are taught, wished participants a good workshop so that their coming would be an opportunity.

On behalf of the science and Technology Committee of the Parliament and the people of Nakifuma, he declared the workshop officially opened.

## **(2:30 – 4:00 PM): Project-based learning by Mr. Ddungu Ronald**

This session was facilitated by Mr. Ddungu Ronald, Mathematics and Physics teachers and an acting Deputy Head teacher of Gayaza High School.

This session had the following objectives:

- To introduce the participants to project-based learning.
- To share with the participants some real examples of project-based learning (both local & international).
- To show participants, the benefits of project-based learning to the students and the school at large.
- To provide some capacity building for a project-based learning.

Ronald project-based learning as a dynamic approach to teaching in which students explore real-world problems and challenges, simultaneously developing cross-curriculum skills while working in small collaborative groups or independently.

He said that Project-based learning starts with a question of mind such as ***life of the street children, degradation of our environment, poor waste disposal, AIDS scourge, energy wastage in our homes*** etc.

He then explained to the participants the advantages of Project-based learning and these included:-

- It inspires students to obtain a deeper knowledge of the subjects they're studying.
- Students develop confidence and self-direction as they move through both team-based and independent work.
- Students develop better communication with their peers and adults, and often work within their community while seeing the positive effect of their work.

He also gave the participants examples of technologies they can use to facilitate a project and said that a typical project can easily accommodate computers, the Internet, digital still cameras, video cameras, and associated editing equipment.

Ronald told the participants that for a teacher use Project-based learning, she/he should:

- Have a concern for the lives and futures of young people.
- Exude self-worth, be positive and enthusiastic.
- Be creative.
- Readily admit mistakes and be part of a team.
- Seek to improve her/his teaching practices for the benefit of learners.
- Be willing to share their knowledge, skills, expertise and resources.
- Be answerable to learners, parents, and the community

He gave the participants some few tips on how to excite and motivate learners into Project-based learning.

- Learners are motivated by education that takes place out of the building.
- Learners really want to do it and have a choice in what they pursue.
- Learners want to have an opportunity to collaborate with peers.
- Learners want to produce something. There must be a product and an audience beyond the teacher.
- Learners want to see that their efforts are useful to others.
- Learners need an opportunity for reflection and refinement.

Ronald shared with the participants the projects he has engaged his students in and these included:

- Foods and Nutrition club.
- Linking the school to the community where he cited two examples; one where the students and the top administration including the Head teacher were involved in

cleaning Gayaza Trading Centre and the other where S.I girls were involved in teaching Mathematics to students of Gayaza Church of Uganda Primary School.

- Training community members by where students of the Computer Club were involved in providing computer literacy class to teachers of the nearby primary schools. Gayaza High School had opened its computer lab to the community on Thursday evenings and weekends. .
- Creating peer teaching and learning resources.
- Internal and external seminars.

Ronald then mentioned some benefits a teacher can get when involved in Project-based learning which included:

- Opportunity for teacher professional development.
- Opening the teacher to the community and NGOs for futuristic work.

Participants noted that for Project-based learning to succeed in a school, the Head teacher must be supportive and the teachers should be sensitized about its benefits in terms of teacher professional development opportunities.

#### **(4:20 – 5:20)PM: Interactive SMART Whiteboard by Mr. Kizito Samuel**

This session was facilitated by Mr. Kizito Samuel, a Geography and Economics teacher at Gayaza High School

The main objectives of this session included:

- Introducing the Head teachers to the interactive SMART Whiteboard including the cost implications.
- Demonstrate some of the benefits of using the interactive SMART Whiteboard as a teaching tool.
- Give a demo lesson integrating the use of the SMART Whiteboard.
- Provide a hands-on experience of using the SMART Whiteboard to the Head teachers.

Samuel defined the SMART interactive Whiteboard as an electronic whiteboard which acts as both a display and an input device. The touch-sensitive display connects to a computer and digital projector to show the computer image.

One can control computer applications directly from the display, write notes in digital ink and save the work for later use. Anybody who can use the use a computer can use the SMART Board interactive whiteboard.

Samuel demonstrated some of the features which make the SMART interactive whiteboard incredibly easy to use. These included:

- Its surface is sensitive to touch i.e. you simply touch the SMART Board Interactive Whiteboard to highlight key points, access applications and Web sites, and write notes in electronic ink.

- It is possible to use an on-screen keyboard. The SMART Notebook software makes it possible for teachers and students to create rich educational content and dynamic lessons. One can draw, make notes, import files and add links to a page, print a Notebook page.
- Ink aware and text recognition properties. This enables one to write and draw directly into an active file. When you save an Ink Aware application file, your notes and drawings will be visible the next time you open it.
- The ability to save the material created for future use i.e. you can capture your work to SMART Board software as a screen shot that you can edit, or save your notes directly into several software applications, including Windows versions of Microsoft PowerPoint, Word and Excel, or into AutoCAD software.

Samuel mentioned the following benefits of using the SMART Whiteboard in the classroom:

- It transforms the teacher's space into an interactive working, training, and learning environment.
- Using the SMART Board allows students to do work on the interactive screen and retrieve it later. This constructivist method of learning boosts student's ability to learn and retain information.
- The board gives the user a real life effect which may not be achieved when using the mouse.
- Bowman Alden in his article on the use of the smart board in the class room observes that "Incorporating technology as a teaching tool may be one of the most effective ways to build both a child's self esteem and learning skills....".
- Students can use the interactive board to present projects and to demonstrate higher-order thinking skills.
- It helps energize presentations and motivate learners.
- It takes a one-computer classroom and turns it into a computer for everyone.

Samuel demonstrated some of the content that comes along with the SMART Whiteboard. He demonstrated how to dissect a toad and involved, he also one participants identifying the plate tectonics on the World map. He also showed a simulation of the different states of matter.

*"As with all technology, it's how it's used, not the technology itself that will ultimately determine its value for teaching and learning."* Samuel concluded.

### **Questions and answers:**

Participants had the following questions:

Q1.Does the SMART Whiteboard use special content or you can use any content?

*Response: The content I have been using for the presentation came along with SMART Whiteboard but you can create your own content and use it to teach using the board.*

Q2. How much does the SMART Whiteboard cost?

*Response: At the moment, there are two possibilities. You can either take advantage of an educational grant. The grant allows only one board per school at a subsidized fee of \$1741 US. Pick forms from ICT Consult, Makerere University; there are a few remaining and are sold at a first-come first-serve basis or purchase one from the open market at a fee of \$ 3200 US.*

Kakinda Daniel thanked Kizito Samuel for introducing the Head teachers to the SMART Interactive Whiteboard. He noted that technology was becoming cheaper everyday. Though they are currently less than 20 schools in Uganda with SMART Whiteboards the number will drastically increase in the coming years.

Kakinda shared with participants that he first saw projectors in California schools in 2001 and the SMART Interactive Whiteboard demonstrated in a workshop in UK in 2002 and at that time, he did not imagine these technologies would ever come to Uganda schools.

The Head teachers had a hands-on experience with the SMART Interactive Whiteboard under the guidance of Kizito Samuel.

**(5:20 -5:30)PM: Evaluation for Day 1.**

**The participants were asked** to write down their responses to two questions:

Q1. What new things have you learned today?

Q2. Anything you commit yourself to do when you return to your school?

**(5:30 – 7:00) PM: Private work**

During this time, the student peer educators assisted those Head teachers who had no email address to sign up for one. Participants were also free to check their emails and to do Internet research.

## **DAY 2 – 20<sup>TH</sup> AUGUST 2008**

### **(9.00 - 9.20)AM: Reflection on Day 1 Activities.**

Kakinda Daniel read out the responses the Head teachers had given to the Day 1 evaluation questions.

The Head teachers said that they had learned the following new things.

- Embracing the rate at which the world is moving (new technologies).
- To become more innovative, creative and think critically.
- About teachers attitudes towards ICT.
- How interaction with people in the community is vital and part of capacity building.
- Project- based learning as a way of motivating learners.
- How to use a SMART interactive Whiteboard.
- There new educational content and equipment used.
- Sharing of challenges and problems in a forum as a way of facing issues.
- I can stop cheating student but teach.
- There are innovative teachers out there.
- Importance of ICT in the teaching or learning process.
- A great need to shift gradually from using the blackboard.
- Learnt of the interactive smart board.
- How ICT makes learning easier and more interesting.
- ICT can the mind-sets of learners upon some subjects.
- Importance of community school relationships.
- Saw the Smart Whiteboard for the first time.
- In case you want to move things ahead in a school, it does not require a big group of people
- ICT is good for revising what the teachers have taught.
- Mind-set is the biggest barrier to change.
- How the school can give back or share with the community part of its resources through projects.
- Other ways of harmonizing high profile children with other members of society and how to teach them to work and appreciate life and have self confidence and encouragement to be creative in their work

The Head teachers committed themselves to do the following on return to their schools.

- To look at the different initiatives (projects) available and how to partner or network with them.
- Introduce and ICT club in my school
- Sensitize teachers about how ICT can be used to enhance teaching and learning.
- Carry out the work of educating the nation in a more educative manner.
- Implement the technology team as part of project based learning.

- Form my subject club and train it to reach and assist other schools.
- Encourage teachers to learn and use ICT in teaching and learning.
- Encourage teachers to take on project- based learning.
- I will see that my teachers use ICT in their day to day work.
- I will initiate a project which helps the community.
- Encourage team teaching.
- Teaching my lessons using ICT.
- Exploit the possibility of buying a SMART Interactive White board.
- Disseminate this knowledge to my teachers or staff.
- Be in touch with SchoolNet Uganda to see the programs they are implementing in schools
- Create an environment that will break through the mind-sets of the teachers. mind
- Mobilize more funding of ICT department.
- Purchase more ICT equipment.
- Share schemes of work and tests online.
- Form projects relevant to the environment.

**(9:20 – 11:00) AM: School Websites by Matovu Richard**

This session was facilitated by Mr. Matovu Richard, a Master's student in Software Engineering.

Richard began by thanking SchoolNet Uganda for its activities because he is a testimony of their works as he is currently surviving on the skills he obtained from participating in SchoolNet activities.

He told the participants that he was not to go into the details of how the websites are designed because that was for the designers who do the donkey work. As Head teachers, the participants only needed to know the things to consider when making decisions to have school websites so that they can get value for money.

He also said that he is going to use examples of the Uganda school websites that are currently available online.

Richard asked the participants what they understood by a school website.

Below are some of the answers the participants gave:

- A website is information about an institution or organization which is stored on the Internet.
- Using the analogy of the food web, a website is a group of interlinked pages that contain information about an institution.
- A website is a storage facility where information can be stored and then retrieved to be used later for other purposes.
- A website is a connection of digital pages.

Richard harmonized the discussion by first defining the Internet as the global connection of computers capable of talking to each other and the school website as the school's billboard or face to the world.

A school website is like the school's digital image to the world and information that is provided on the website is public so anyone can view it from any where in the world. He showed them the Ndejje SSS website as an example.

Richard asked the participants why it is necessary to have a school website. The participants gave the following responses:-

- It can be used as a communication tool to the parents, Board of Governors and old students.
- It can be used to market the school to the outside world.
- It can help in reduction of costs e.g. online registration of students can help reduce on the cost of printing registration forms.
- It saves time as people do not have to keep on going to the school in order to get information about the school.
- It can also be used to share vital information about the school e.g. the school's location, type of school, mission and vision etc.

Richard then harmonized the discussion by saying that the school website can be used for:-

- Corporate imaging and branding i.e. the online presence of the school opens up the school to the outside world thus making the information about the school accessible all over the world.
- Publicity and promotion i.e. the school website can be used to provide information about the school so that people can get to have a picture of what the school looks like, where they are located, the school's mission and vision, people to contact etc.
- Opportunity to connect and communicate with different schools and stakeholders e.g. school administration, staff, old students, sister schools, parents, PTA and board members, partners and prospective students so as to eliminate the barriers in involving the stakeholders in the school activities e.g. PTA meetings, BOG meetings, visitation days, incoming exams etc.
- Keep records for school Alumni i.e. to keep these records in one central place which stores them all this information so that someone can easily come and look for the records easily and get them very fast.
- Discussion of certain issues i.e. the school website may have a discussion forum, blog or polls where the parents and different stakeholders can share their opinions of the various activities taking place at the school. This saves time as they do not have to keep on coming to the school for meetings every time a new activity comes up. It also helps to keep the parents updated of what the school is doing. He gave an example of the Mengo SS news blog (<http://newsblog.mengoss.sc.ug> )

- Repository for educational resources and web links for students whereby students can go to the school website to get past paper, internet resources, video and audio resources. This can help solve the problems of limited library space, and limited books.

Richard cautioned the Head teachers that they should not just get a school website but should aim at getting a good meaningful website because a poor website reflects badly on the school's image to the rest of the world. Richard illustrated what should be avoided using examples from some of the Uganda school websites.

Richard then mentioned the following as some of the qualities they should look at in order to get a good website:-

- It should provide relevant and updated information since content is king therefore they should make sure the website has relevant content and data about the school.
- It should be easy to find on the Internet e.g. in the search engine like Google. He defined the search engine as a website where someone goes, types the name of something and then get information about it. He cautioned the participants that they should not assume that every web user know the school websites' URL. They should aim at being listed among the first two pages in the search engine so that if the user does not know the URL they can easily type the school name in the search engine and get it from there.
- It should load quickly because if the website takes a lot of time to load the user of the website may not be that patient to wait for it. He cautioned them against the use of excessive images, and animations because they slow down the rate at which the website loads in the browser.
- It should be easy to read, have good use of colors, have no simple spelling mistakes and compatible with different browsers because it represents the corporate image of the school.

Richard told the Head teachers that there are several strategies they can use to get good websites for their schools and these include:

- Setting clear objectives for having a website.
- Planning how to achieve the objectives and looking at which content best brings out your corporate image. Is it text, photos, video, audio or animations?
- Promoting the school website both online and offline by adding links to other websites in your niche and if you have links of other websites in your niche, your website is ranked higher by the search engines and this makes it easy for your website to be viewed on the first pages of the search engines.

- Budgeting for the school websites as there are some expenses to incur to pay off the people in charge of constructing the websites.
- Monitoring the web traffic of their school websites using some web tools that can measure web statistics like Google analytics. This helps to know whether people are visiting your website or not.

Richard then discussed what it takes make a good website.

1. **Content:** Content is King. Without content, a website is no website at all.

Richard showed some school website which had no content and was wondering what was the purpose of the website. He called on the Head teachers always to check their websites to ensure it has relevant, correct and update information.

Suggestions of relevant content for a school website include:

- School information such as history, philosophy, mission, vision, administration, student life,
- Contact information such as physical location, telephone number, email and contact form.
- School projects and clubs.
- Reports on school events.
- School updates such as announcements of upcoming events, holidays.
- Educational resources such as e-Books, teaching aids, journals, work plans and links to other useful websites.
- Interaction opportunities: Inquires form and discussion forums,
- Study guides and information about homework and suggestions on how parents can help out with the home work.
- Photographs and diaries from school trips.
- Old students (alumni) registration forms.
- Students' results etc.

2. **Domain Name registration:** A domain name is a unique name that identifies a website and there is no other website with that name. It is used for identification and branding. He then advised the participants to try and brand their school website with a name related to the school.

Some examples of domain names included:

School or Organization	Domain Name
Ndejje Senior Secondary School	<a href="http://www.ndejjesss.sc.ug">www.ndejjesss.sc.ug</a>

Namilyango College	<a href="http://www.namilyangocollege.sc.ug">www.namilyangocollege.sc.ug</a>
Mengo Senior School	<a href="http://www.mengoss.sc.ug">www.mengoss.sc.ug</a>
SchoolNet Uganda	<a href="http://www.schoolnetuganda.sc.ug">www.schoolnetuganda.sc.ug</a>

The domain names are cheap, registered for a full year and need to be renewed annually but it is possible to renew for a number of years. There is also classification for the Top Level Domain Names (TLDs) e.g. **.org** is used for organizations, **.com** is used for commercial institutions, **.net** which is used for networks, **.ac.ug** is used for academic institutions in Uganda and **.sc.ug** which is used for schools in Uganda.

3. Website design and programming which includes the designing of layout and appearance of the website and the functionalities of the website. This work must be done by a technical person who should charge the school depending on the type of the website.

There are mainly two types of websites each with its advantages and disadvantages.

**Type 1: Static websites:** These contain web pages which are stored on the web server in the same form as the user will want them. They are in some predefined format.

Advantages:

- They are simple and cheaper to build.
- They require less time to develop.
- They take a lesser time to load in the web browser.

Disadvantages:

- They are difficult and expensive to maintain in a way that in order to keep it updated you always need a technical person.
- It is not possible to create a community around it e.g. a discussion forum.
- There is very little interaction between the website and the user.

**Type 2: Dynamic websites:** These contain several web pages stored on the web server and are not in the same form the user views them. Instead the web pages keep on changing automatically.

Advantages:

- They allow interaction with the users.
- It is possible to create a community around it.
- They can be managed by non-technical people.
- They are easier to maintain and can contain thousands of pages.

Disadvantages:

- They have initial high setup costs.
  - They are complex to setup
  - They require more time to develop and setup
  - They require specific technology to setup.
4. **Web Hosting:** Your website should be accessible on the Internet 24 hours a day, 7 days a week. You need to find a company which can do this for you.

There are two types of web hosting:

- i. **Free web hosting:** This is where the website is hosted free of charge on some one's web server. Free web hosting has a number of disadvantages including the owner having no control of their website, limited storage space, there is no branding of the domain name, one hosting can include advertisements and unwanted content on the website and can also distort the page structure.  
An example of a school website hosted on a free server is that of Wanyange Girls School (<http://www.geocities.com/wanyangegs/> )
- ii. **Paid web hosting:** This is where the school will have to pay annually to have its website hosted on a web server. The advantages include the owner of the website has enough space to store any amount of pages, have control over their own content and the adverts to include , can choose the domain name to use for their banding.

### Question and answers

Q1. How much does it cost to setup a dynamic website roughly?

*Response: I can not estimate for you because the cost depends on the requirements according to what the client wants.*

Q2. Why do some websites load faster than the others?

*Response: It depends on a number of factors such as Internet connection, website's design, the graphics on the website and many others.*

Q3. Can the users delete information from the website?

*Response: it depends on the rights given to different users on the website. Those with administrator rights can delete the information but the normal users would be able to do so.*

**(11:20 AM – 1:30 PM): Introduction to iEARN (International Education and Resource Network) and the Adobe Youth Voices project by Kakinda Daniel**

This session was facilitated by Kakinda Daniel, the iEARN-Uganda national coordinator. The session objectives included:

- Introduction to tele-collaborative projects.
- Introduction to iEARN ([www.iearn.org](http://www.iearn.org)) – The International Education and Resource Network including how to join and to actively participate.
- Sharing with the participants the benefits of participating in iEARN activities.
- Introduction to the Adobe Youth Voices (AYV) project.

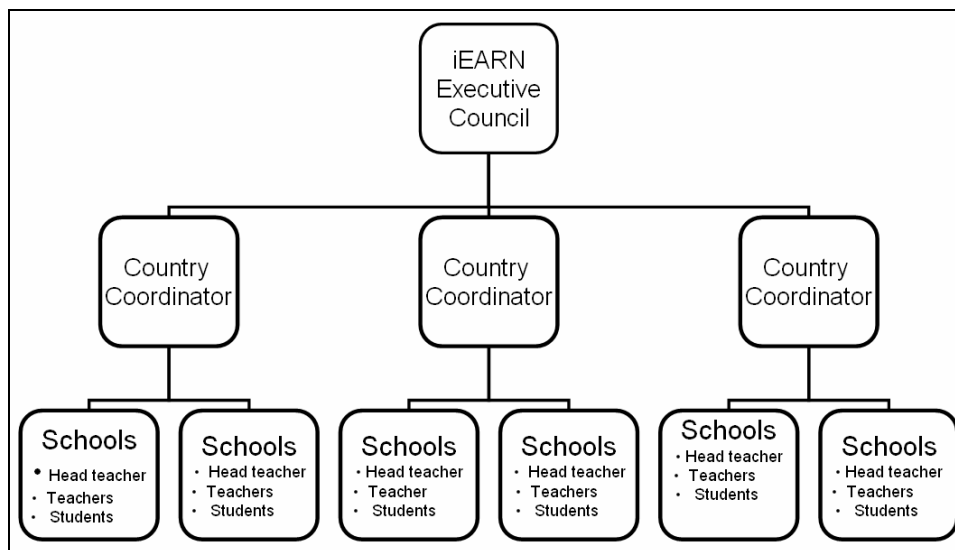
Daniel informed the participants that tele-collaboration involves working together with other people in different countries using Internet technologies like email and discussion boards. It moves project-based learning to a global level.

Daniel said the iEARN –the International Educator and Resource Network is a global non-profit network that supports over 20,000 teachers, 3 million students in 120 countries in over 30 languages to collaborate through a global telecommunications network on projects designed to make a difference in the world.

iEARN is basically:

- An international community of teachers and learners.
- An inclusive and culturally diverse community.
- A safe and structured environment in which youth can communicate with each other and it does not contain any dangerous content like pornography.
- A place for knowledge sharing and learning.
- A place where students can practice language skills e.g. the languages they study in the schools can be practiced with other students from those different countries.
- A known audience for writing and reading with a purpose.
- An opportunity to apply knowledge in service-learning projects.
- An opportunity for international social networking.
- An opportunity for professional development.
- An opportunity to provide students with the 21<sup>st</sup> century skills such as the digital skills and cross cultural understanding.

Daniel outlined the structure of iEARN.



iEARN International has a physical office in Spain and is headed by an Executive Council (EC) that consists of three members. Each EC member serves on a voluntary basis for two years. The EC members do iEARN day to day work virtually from their respective countries. He gave the example when he was serving in the EC in 2005/2006 with two other members; one from UK and another from Australia.

At country level, the iEARN country coordinator, validated new members, builds the professional capacity of schools and supports them in implementing iEARN activities. Daniel Kakinda is the current Uganda-iEARN coordinator.

Daniel then outlined the steps one goes through in order to participate actively in iEARN activities.

**Step 1:** Sign up i.e. becoming a member of iEARN

To join iEARN, you need to register and registration is free. Go to <http://media.iearn.org>, click on the **REGISTER**. Fill and submit the registration form. A notification for validation will be sent to your country coordinator.

After validation by the country coordinator, you receive welcome message to the iEARN community.

**Step 2:** Welcome phase - Develop effective relationship with other educators across the iEARN community.

After validation, it is possible to log in. you again go to <http://media.iearn.org>. Click on the **LOGIN** button. You enter your username and password.

The best place to start with is the “Teacher’s Forum” if you are new to iEARN. The “Teacher’s Forum” is a place for teachers to meet and share project ideas in order to find potential partners to develop a project. Inside the “Teacher’s Forum”, there are a number of discussion topics available. You can choose from an existing discussion or start up a new one.

A key to success in iEARN is developing effective relationship with the educators in the iEARN community and therefore:

- Teachers new to iEARN are encouraged to post a message to introduce themselves on the “Teachers Forum” and to describe briefly any special interests they or their class have.
- To read through the on-going discussions in the Teachers Forum and either participate in the on-going discussions or start a new discussion. When contributing to a discussion, one needs to be sensitive to religious and cultural diversity.

Daniel then gave the participants some few tips of the issues they should consider when initiating a discussion in the forum and these included:

- What is the issue? Is it local or global?
- Phrasing the issue.
  - Title must be catching to your audience.
  - Language & tone (brief, no slang, plain simple English, not telling but asking for contribution, open & flexible).
- Keep the discussions going?
  - Author needs to keep responding to the posting.
  - Author needs to value the contribution of the members.
- Cultural & religious sensitivity.
- Format of contribution? (text, sound, graphics, video)
- Output of the discussion?
  - Periodic summary posted in the forum.
  - Website.
  - Presentations (school, other schools, conferences (local & international))

Daniel then showed the participants an example of a message he had sent onto the discussion forum and had received responses from some International teachers. He asked the participant why they thought he had received the responses. They responded by saying that “*You introduced what you wanted very well and told them that you were interested in their suggestions and contribution*”.

**Step 3:** Learn about the projects and find partners (Project description booklet, Newsflashes, Project & Member databases).

Daniel told the participants that there were several sources of information about on-going projects and these included:

- News Flashes: Every two weeks, an online newsletter called “iEARN in Action” is sent by email to all registered iEARN members.
- Project Description booklet.  
Downloadable at <http://www.iearn.org/projects/projectbook.html>. He also told the participants that the current book had been downloaded for them and is on the workshop CD.
- Up-date description of projects and project search at <http://media.iearn.org/projects> . You can search projects by various categories, including keyword, languages.
- Educators can search for other educators who are part of the iEARN community at <http://media.iearn.org/people>, if you want to get in touch with them. Searching can be done by name, institution, country, city, school level and by language.

**Step 4:** Listen to testimonies of teachers and students who have participated in iEARN projects especially at sensitization workshops like this one.

He told the participants that there were people at the workshop who had participated in different iEARN activities and that he was going to give each sometime at the end of his presentation to testify.

**Step 5:** Become involved in a project

This can be done through the following steps:-

- i. Read through the project descriptions at <http://media.iearn.org/projects>  
Choose a project that fits your curriculum.
- ii. Contact the facilitator and introduce yourself and your students in the project forum.  
Tell where you are from and share your objectives for joining the project.
- iii. Introduce the project to your students. Talk about what iEARN is and netiquette.  
Prepare your students for online collaboration.
- iv. Have your students respond to other students’ postings. Encourage them to contribute their own ideas and perspectives to the discussion.
- v. Remember everyone wants responses to their messages.

A good project to start with if new to online collaboration is the Learning Circles ([www.iearn.org/circles](http://www.iearn.org/circles) )

**.Step 6:** Create a new project

Once you have made contacts in iEARN and are familiar with how projects are conducted on the forums, you can then create your own project using the following steps:-

- i. Announce your idea by posting it on the Teachers forum to see if there are other people interested in the topic and you should be flexible to allow for possible collaboration on the actual design of the project.
- ii. If you find other people who are interested in joining the project, fill out the Project Idea Template:

The project template includes:

- Brief one-sentence description of project.
- Full description of project.
- Age/level of project participants.
- Timetable/schedule.
- Possible project/classroom activities.
- Expected outcomes/products.
- Project contribution to others and the planet.
- Project language(s), curriculum/Subject Area.
- Names/email of initial participating groups, name of facilitator(s), and email of facilitator.

You will then need to email the project template to [projects@iearn.org](mailto:projects@iearn.org) . Once your project has been assigned to a project forum, it will also be posted as a topic in the online forum in which it will be taking place.

**Step 7: Attend iEARN Teacher Professional Development.**

This is online training of teachers in skills that can help them integrate project-based learning in their classroom. The training is carried out online and teachers from developing countries can obtain scholarships at the recommendation of their country coordinators.

## **Step 8: Attend iEARN International conferences and Youth summits**

These conferences take place every year and the countries in which they are hosted keep on changing in order to promote cross cultural understanding and also to enable the iEARN members to see what the other countries look like. It also gives the members an opportunity to social network. Morocco will host the 2009 conference and Canada the 2010 conference.

Daniel defined social networking as the connecting and working with people of common interest for the purpose of:

- Uncovering opportunities.
- Increasing knowledge.
- Sharing information, ideas & experiences.
- Building relationships.
- Meet inspirational role models.
- Break professional and social isolation.
- Increase self confidence and self esteem.
- Discover our potential.

### **Personal Testimonies of participants who were members of iEARN**

Daniel invited participants who were already members of iEARN to share their personal testimonies.

#### **Testimony 1: Ssenkunja John (Deputy Head Teacher, 3R's Secondary School, Lugazi, Mukono)**

Ssenkunja got exposed to iEARN at a workshop which was organized by SchoolNet Uganda. He became interested and joined iEARN. He was lucky at the time he joined there was an announcement of an online Teacher Professional development course which he applied for. Fortunately he got the scholarship together with some other teachers from his school. He was able to finish the course but most of the other teachers were not able to because of the demands of the course. As a teacher of Biology, he implemented a project about the environment and his students really enjoyed working on the project with the other youth around the World. Since then, his teaching has never been the same.

#### **Testimony 2: Ddungu Ronald (Deputy Head Teacher, Gayaza High School)**

Ddungu Ronald got to know about iEARN through SchoolNet Uganda. He became interested and joined iEARN. He applied for the online Teachers Development course and got the scholarship. He completed the course and obtained the iEARN "Master Teachers" certificate which he has used to get other scholarships for online courses. He

is currently doing a distant Masters Programme in Education for Sustainable Development by South London University fully sponsored by the Commonwealth. Ronald was able to attend the 2007 iEARN International conference held in Egypt with three of his students.

Ronald has been able to start up an iEARN club at his school and advised other head teachers to also extend iEARN to their schools.

### **Testimony 3: Kyewalyanga Wahabu (Computer Instructor, Kasambya Community Computer Centre)**

Wahabu got to know about iEARN through SchoolNet Uganda. He was recommended for a scholarship for the iEARN online teacher professional development course which he completed. He has mainly been participating in the forum activities where he often asks teachers across the world about what he is going to teach and they advise him. His students have also been able to participate in iEARN activities and have obtained a lot of Internet skills from the activities.

### **Testimony 4: Carol Namatovu (Just completed Bachelor of Business Computing at Makerere Business School)**

Carol started participating in iEARN activities while at Gayaza High School. She had a lot of interest in computers but the teachers would not easily allow her in the computer lab because most of them looked at it as a waste of time.

She participated mainly in the "Women in My Country" project. One day she read a story of a man who had battered his wife in Bukedde newspaper which she decided to share the story with her fellow iEARN members. This kicked off a new discussion where very many people shared stories of how women were mistreated in their countries.

Carol said participation in iEARN helped her in a number of ways including:

- Meeting and making friends with people from different counties.
- Understanding and being sensitive to different cultures.
- Computer skills and Internet research skills.
- Increased self-esteem and ability to express ones self.
- General knowledge which assisted her to pass well her General Paper.
- Ability to work across time zones.
- Develop interested in an IT related profession. Hence her decision to offer Business Computing at University level.

Carol was able to attend the iEARN International conference which was held in Dakar, Senegal in 2005.

### **Testimony 5: Ganatusanga Joseph (Head Teacher, Aggrey Memorial Secondary School)**

Joseph shared his experience about iEARN conferences. He has attended three iEARN International conference; 2004 (Slovakia) 2005 (Dakar, Senegal) and 2007 (Cairo, Egypt).

He said it is an opportunity for the iEARN community members to appreciate and connect with the different cultures. After collaborating online, members get an opportunity to meet face-to-face, attend professional development workshop, share project experience and ideas, explore places of historic and cultural interest, taste the different dishes since they prepare cross cultural dishes.

iEARN members also get to see exhibitions of what the other projects have been doing and several opportunities. He sited an example of a teacher from USA he met at the iEARN conference in Egypt who wanted to collaborate with teachers from Uganda on a project to do with street children.

There are also ICT in Education exhibitions at the conferences. The exhibitions are an opportunity to share and demonstrate innovative educational models, resources and latest technologies.

“Attending an international conference makes you realize, the world is one global village” Joseph concluded.

Daniel Kakinda showed participants photographs aimed at giving a visual understanding of activities at EARN conferences. He then invited participants to join iEARN, participate actively and start saving for the iEARN conference in Morocco (2009) and Canada (2010).

Daniel concluded his iEARN presentation with a quote:

*“When teachers and their students are "connected" . . . the "world" becomes an indispensable curriculum resource. When students communicate with people in distant and foreign places they begin to understand, appreciate and respect cultural, political, environmental, geographic similarities and differences. Their view of the world and their place in the world changes.”*

~Al Rogers~

## **Adobe Youth Voices (Project)**

Daniel Kakinda introduced participants to a new project called Adobe Youth Voices to be implemented by SchoolNet Uganda in partnership with Adobe Foundation and iEARN-USA.

Adobe Youth Voices (AYV) is a global philanthropy initiative that empowers youth worldwide to comment on their world using multimedia and digital tools to communicate and share their ideas, demonstrate their potential, and take action in their communities.

Adobe Youth Voices' initiative enhances the skills and knowledge of educators to use the multimedia tools more effectively with youth, and widely exhibits the student work in community, broadcast and online forums.

He then told the participants that Adobe Youth Voices (AYV) which has been implemented by schools in North America, UK and India for the past two years is now expanding to 12 other countries in 2008-2009 namely Argentina, Belarus, Botswana, Brazil, Canada, Egypt, India, Pakistan, Russia, Turkey, Uganda, and USA.

He told the participants that in Uganda, Adobe Youth Voices (AYV) will be coordinated and implemented by SchoolNet Uganda and will involve 12 schools only in 2008-2009 so he is seeking for the school administration's support for the project. The project will be evaluated at the end of the year and continued and expanded depending on the performance of the original 12 pilot schools (AYV sites). One teacher will be selected from each of the 12 pilot schools (with the recommendation of the Head teacher) to undergo a very intensive training to spearhead the project at each of the pilot school (AYV site). The intensive training will consist of a 6 week online course and a 5 day face-to-face course.

He told the participants that there will be criteria for selection of 12 teachers (one teacher) per school and the following are some of the qualities to be considered.

- The school must be a secondary school with youth of ages (11-18).
- There must be support from the administration for the project.
- The school must have reliable Internet connection.
- The teacher or the school leaders should preferably have experience in collaborative online projects, through which classroom teaching and students' work have produced "products" that can be enhanced through Adobe tools.
- The teacher should have ability to communicate online in English (or collaborate with a colleague to do so).
- The teacher should be committed to engage in the project for a minimum of one year.
- The teacher should have interest in helping building a student media program by sharing AYV methodology and results with professional colleagues in their communities and countries.
- The teacher should be willing to work with under-served communities (in schools or after-school/community-based programs).

- The teacher should agree to support one or more student-produced media projects that will include an “Adobe Youth Voices” logo and can be shared by the end of June 2009 with Adobe.

He then told the participants that there was a need for teacher professional training.

The Adobe Youth Voices (AYV) Professional Development Program has the following objectives:

- Educators get a full overview of the philosophy of the AYV program and what’s expected of them, their sites and their youth as part of the program.
- Educators gain an understanding of the value and methodologies of youth media making and the youth media tradition.
- Educators gain a clearer understanding of the various media forms and formats in which youth work can be created.
- Educators will learn about the steps and stages to facilitating effective youth media making practice.
- Educators will explore community connections and think about strategies for building and engaging audiences.
- Educators will be exposed to models of instructional practice as it relates to working with media and youth.

And that through AYV Professional Development, the teachers would:

- Develop a work plan and timeline for an AYV project at their site.
- Think through how to collaborate with AYV staff and other local experts for support, coaching, and sharing of best practices during the program year.
- Gain a general familiarity with the donated Adobe software their youth will use to produce works.
- Understand how to report progress and communicate lessons learned with other educators in the network.
- Discover how to contribute youth media work at the conclusion of the year to be exhibited locally, online, and globally.
- Know about the AYV program evaluation process and expectations.

He then said that the professional Development will be a hybrid model of training for selected teachers, consisting of both online and face-to-face professional development to equip teachers with skills to enable students to produce AYV media.

Daniel said that the training will be a 3-phase process, consisting of:

**Phase 1:**

A six week online orientation to Adobe Youth Voices for 4 teachers, one from each of 4 of the 12 schools to be run between early October/November 2008. The 8 teachers from the remaining 8 schools will attend their orientation training in phase 3:

The four Uganda teachers will attend an online orientation course on how to integrate digital media student productions in their classroom project work. The online course will be attended by 48 teachers, four teachers from each of the countries of Argentina, Belarus, Botswana, Brazil, Canada, Egypt, India, Pakistan, Russia, Turkey, Uganda, and USA.

The project will provide scholarships for the 4 teachers for the online course. The scholarships will cover the cost of tuition and the teachers will be expected to access Internet from their schools.

### **Phase 2:**

A 5- day face-to-face workshop in Dec 2008/Jan 2009 for the 12 teachers, one from each of the 12 pilot schools on the national level in which “community” is furthered and technical issues are dealt with.

The workshop will train the teachers to acquire digital production software skills and help with student media project work. The student media project work will involve video production and photographic and publishing media work.

The project will cover the workshop costs.

Participating teachers will receive licensed Adobe software (Adobe Photoshop and Premiere Elements) for their schools --for either video production or for photographic and publishing media work.

### **Phase 3:**

A six week online orientation to Adobe Youth Voices for 8 teachers, one from each of the remaining 8 pilot schools to be run in late February/March 2009. The four Uganda teachers will attend an online orientation course on how to integrate digital media student productions in their classroom project work. The online course will be attended by 96 teachers, eight teachers from each of the countries of Argentina, Belarus, Botswana, Brazil, Canada, Egypt, India, Pakistan, Russia, Turkey, Uganda, and USA.

The project will provide scholarships for the 8 teachers for the online course. The scholarships will cover the cost of tuition and the teachers will be expected to access Internet from their schools.

### **(2:30 – 4:00) PM: School Digital Library and NComputing by Kakinda Daniel**

This session was also facilitated by Kakinda Daniel, the Executive and Training Director of SchoolNet Uganda.

The objectives of this session were:

- To introduce the Head teachers to what a school digital library is and how to set up, maintain and update a digital library.
- To introduce Head teachers to NComputing as system where about 7 workstations (keyboard, mouse and monitor) can be connected to the same system unit as a way of increasing students' access to computer resources.

Daniel noted that schools were facing a number of challenges that needed to be innovatively addressed and these included:

- Under utilization and/or misuse of computer resources because many of the computers in school computer labs are used for playing games and playing music. The Internet is used for sending mails to friends, accessing websites for fun including pornographic websites and chatting with unknown people. He then showed then a graph of a research that had been done by the World Bank in collaboration with SchoolNet Uganda in 2004 about the students' computer usage in Ugandan secondary schools.
- Few students and teachers have access to ICT resources and the accessibility is irregular. A typical school computer lab has (10-20) working computers. This is partly attributed to the high cost of the computers and the lack of technical skills to maintain them by those in charge of the computer labs.
- Lack of relevant educational content on the computers. The reasons for this lack includes:
  - The wrong thinking that content has to be on the Internet ignoring the fact that within the school, there is a lot of educational content like teachers' notes, past papers which can be digitized and made available on the school local area network (LAN).
  - It is difficult to find content relevant to particular topics and for a particular classes on the Internet.
  - The very high cost of educational content in case the school wanted to buy it.
- High cost of running the ICT facilities because of the wastage of computer processing power (the typical CPU usage is less than 10%) and frequent downtimes due to computer viruses.
- The Internet is irregular, slow and expensive.
- Wasteful and expensive ways of storing and sharing educational content. Schools produce electronic tests and question packs, print them out, delete the electronic versions and store a few hard copies.

Daniel suggested to the Head teachers some solutions to the challenges which included:

- Setting up one computer as a content server which would host educational content locally. This content can then be accessed by the computers on the

school local area network (LAN). To access this content does not need Internet connection.

The content to be hosted would include:

- Educational content like websites, tutorials, study guides, e-books, readers which can be downloaded from the Internet and made available to the students even when there is no Internet connection.
  - Locally produced content by the school like reports of study tours, teachers' notes and study guides, question packs, past papers etc.
- ii. Better utilization of the processing power of CPU (increase the CPU usage) through the Ncomputing system which can run up to 9 workstations (monitors, keyboards and mice) on one system unit (CPU). This provides up to 9 different workstations and they are connected to the host by a terminal (X300 or L230) which gives the workstations access to host machine thus using the untapped power in the CPU. Students at each workstation don't necessarily be doing the same things.
- iii. Cutting down both the capital costs and the recurrent costs. Daniel took the Head teachers through the different costs (cost of computers and electricity bills) for a computer lab using the normal systems and that using the Ncomputing system. He thereafter asked the participants what they thought were the advantages of the Ncomputing system.

The participants gave the following advantages:

- Helps to cut down the capital costs i.e. costs of buying new computers
- Helps to cut down the running costs of the lab especially the electricity bills since the number of required system units drastically reduces.
- Create enough space in the lab.
- It cuts down the maintenance costs.

Daniel concluded his presentation with a live demonstration of a school digital library which he had set up. The digital library consisted of one Linux-based content server, a host machine and 3 workstations based of Ncomputing system. The content server contained content such as e-Books, educational websites downloaded from the Internet and past paper questions sourced from different schools. The educational content hosted on the content server was accessible from all the three workstations.

**(4:20 – 4:35) PM: Student Personal Testimony: “How ICT has impacted my life” by Nannozi Joyce**

Nannozi Joyce is a first year student offering Bachelor of Dental Surgery in Makerere University. She is also a National Student Peer Educator in the Inspiring Science Education for Girls Using ICT project implemented by SchoolNet Uganda.

The main objective of this session was to show the Head Teachers how the use of ICT in the teaching and learning process can impact on the lives of their students.

In her testimony, Joyce said that before attending the Science with ICT camp organized by SchoolNet Uganda in 2007, she used to use computers for playing games, surfing football, chatting and sending emails to her friends. She did not know that computers could be used for educational purposes.

She then got a chance of attending the Inspiring Science Education for Girls using ICT camp which was held at Gayaza High School and at the camp, the facilitators helped her to use ICT to explore some topics which had seemed abstract in her usual classes at school.

She mentioned that sometimes the teachers makes the students hate certain subjects e.g. in Physics when they are teaching projectile motion you are told that the stone is thrown up and at the highest point it is momentary at rest yet even when you throw it up practically you just can not see the stone at rest at the highest point but with the help of simulations she was able to understand some of these concepts.

She also told the Head teachers get tired of the “black and white” non interactive content n the blackboards. Computer simulations are interactive and normally coloured and presented science concepts in a more interesting and easily understandable way.

The camp was a turning point in her life because this was when she realized that computers could be used for study purposes.

At the end of the camp, the students were given CDs which had the materials that had been used during the camp. When she got home, she taught her brothers and sisters how they could also use the computers in their studies.

She also told her fellow students at school how they could use ICT in their education but they were slow to take up the idea since most of them thought that computers were only good for playing games and surfing.

She further went on to tell her teachers about it and her Biology teacher changed. He started doing research about the various topics on the Internet and he would even give the students assignments in Biology which they had to do from the computer lab.

She then went on to tell her head teacher about the use of ICT in the teaching and learning but the head teacher was not keen with the idea and asked her to talk to her teachers instead.

Using ICT, Joyce was also able to understand most of the abstract concepts that she had not understood in class e.g. evolution using the e-skeleton project ([www.eskeletons.org](http://www.eskeletons.org)).

During the camp, a mailing list was set up for all the participants ([ictcamp@uiderb.rg](mailto:ictcamp@uiderb.rg) ) and through this mailing list, she has gotten to know about several opportunities that are

available to students. She gave an example of two week ICT course she had been attending at Kyambogo which she got to know about through the mailing list.

Joyce got a chance of facilitating at the camp that took place the following year and was given a facilitation fee.

After realizing the good in using ICT for her studies, she decided to go to the Minister of Education, Hon. Geraldine Namirembe Bitamazire and tell her how she had benefited from using ICT in her studies. She went to her office several times but she was not able to meet her so when she finally met the Minister's secretary, she was told to first come up with a formal proposal to the minister which she is currently working on

She also promised the Guest of Honor that she will soon be going to his office to talk to him about the use of ICT in Education.

Joyce also told the participants that she was also doing voluntary work i.e. teaching students in the schools in the community where she stays how they can use ICT in their studies. She singled out St. Peters Nkokonjeru and St. Kizito. She was happy that at St. Kizito, the school was going to form an ICT club.

Joyce also got the opportunity of attending other workshops conducted by SchoolNet Uganda e.g. the technical workshop at Nalinya Lwantale Girls School where she got some technical skills which she uses to provide first aid technical support to a training school near her home.

Joyce informed the Head teachers that she was one of the facilitators at the 5-day basic ICT training workshop for teachers of Bukomero SS, where she was happy to contribute to the improvement of the teaching and learning process using ICT.

Joyce concluded her presentation by thanking SchoolNet Uganda for nurturing her into a useful and responsible citizen.

**(4:30 – 5:30) PM: Closing remarks and Award of certificates (Guest of Honour) by Mr. Nsumba-Lyazi**

Allen Nansubuga , SchoolNet Uganda, technical Director introduced the Guest of Honour as Mr. Nsumba-Lyazi, the Assistant Commissioner, Secondary Education comprehensive and the person who is in charge of ICT integration in secondary schools and thereafter invited Kakinda Daniel who was the workshop lead facilitator to give the Guest of Honour, a brief overview of what had transpired during the workshop.

Kakinda told the Guest of Honour that the workshop had been attended by over 60 Head teachers, Deputy Head teachers, Directors of Studies and in some cases the Head teachers came with teachers in charge of their ICT departments. The workshop had been organised on a cost-sharing model between SchoolNet Uganda and the participating schools where SchoolNet Uganda was responsible for the workshop

venue, meals, facilitators and workshop CDs and each school was responsible for the transportation and accommodation of its participants for those coming from far.

He thanked the head teachers for taking up the idea and that it had helped to reduce the costs of organising the workshop.

“It is possible to organise many more workshops if this model is replicated” Kakinda added.

After taking the Guest of Honour through the workshop’s objectives, Kakinda noted that as the lead facilitator, he was satisfied that the set out objectives for the two day ICT sensitization workshop for Head teachers had been achieved.

He concluded by saying that the Head teachers had been introduced to the use of interactive content in teaching and learning using software produced by Learnthings, a South Africa based educational software house.

“Learnthings will soon be signing an MoU with SchoolNet Uganda. This will enable schools to get interactive educational content in different subjects at affordable prices” Kakinda concluded.

### **Speech of the Guest of Honour**

Mr. Nsumba-Lyazi, the Assistant Commissioner, Secondary Education (Comprehensive), Ministry of Education and Sports thanked SchoolNet Uganda, the host school (Gayaza High School) and the participating schools for making the workshop a success. He appreciated SchoolNet Uganda for their innovative capacity of organizing the workshop on a cost sharing basis since that way they can organize more workshops at reduced costs.

He thanked the head teachers for participating in the workshop and told them that their participation was a testimony that they are dedicated to the teaching profession and had interest in enhancing teaching and learning through the use of ICT.

He extended his appreciation the appreciation of the Ministry of Education and Sports to Gayaza High School for not getting tired of the requests from the Ministry of Education and Sports and SchoolNet Uganda to host workshops at the school.

Mr. Nsumba told the participants that they had attended to update themselves with current trends and also to catch up with the rest of the world because the world is dynamic i.e. it keeps on changing and they are at the workshop to catch up with the changing technology trends.

“You can not afford to be static in a dynamic world. Technology is spreading very fast and the teachers should be at the forefront so that they can serve as examples in all their communities” Mr. Nsumba emphasized.

He told the Head teachers that the Ministry of Education and Sports is looking at putting up facilities to support the teaching in schools. Teaching should change from teacher-centered learning to learner-centered and move to new methods of teaching such as project based learning and elearning. All these necessitate the Head teachers to be familiar with ICT.

Mr. Nsumba outlined some of the initiatives the Ministry of Education and Sports had put in place to support integration of ICT in schools and these included:

- The Nepad e-schools project where Kyambogo College School and other schools are participating.
- The Cyber School project which is being implemented in over 100 schools around the country and expect to expand the project to 100 more schools next year.
- The ConnectED project in Primary Teacher Colleges (PTCs) where 8 PTCs have been given computers and trained by USAID.
- Over 80 secondary schools around the country have benefited from the Uganda Communications Commission grant whereby each school is being given 10 computers.
- The ICT initiatives in tertiary institutions e.g. the Global Digital Library that was set up at the Makerere University Business School.
- Establishment established a big computer laboratory at Makerere University which has over 600 computers.
- Elearning courses at Makerere University.
- A computer refurbishment centre is being set up in partnership with SchoolNet Uganda at Kyambogo College School.

All these initiatives seek to ensure that by 2018, all teachers and students can use ICT in schools.

Mr. Nsumba told the Head teachers that the Ministry was facing a number of challenges which included:

- Limited ICT infrastructure in the schools.
- Unreliable and expensive Internet connections in schools.
- Frequent power cuts or no power source especially in many rural schools.
- High capital cost of setting up ICT resources.
- Outdated and inadequate educational software on the market.
- Inadequate teachers with ICT skills.
- Lack of societal awareness on how ICTs can be used for educational purposes.
- Technology phobia i.e. some people fear to touch ICT gadgets.
- Sustainability.

“It is very important to highlight the challenges so that they can all plan together how to find remedies for them” he added.

Mr. Nsumba told the Head teachers that in order to overcome the above challenges, the following needs to be done:-

- Provide schools with computer infrastructure. He mentioned that SchoolNet Uganda was helping them out with this by providing good second hand computers to schools at subsidized prices.
- Assist the disadvantaged schools with computers. He mentioned that the Uganda Communications Commission was providing 10 computers to 80 disadvantaged rural schools around the country.
- Connect schools to Internet. He was glad that a number of organizations are helping out on this and there is also the Government cable that is going around the country and its going to provide high band-width Internet to schools.
- Conduct ICT workshops for head teachers and teachers to provide basic ICT skills to teachers. Over 2000 head teachers and teachers have been trained mainly through SchoolNet Uganda.
- Train teachers on how to use ICT in the teaching and learning of science.
- Train teachers in basic computer maintenance and trouble shooting and he told the participants that SchoolNet Uganda, Digital Links UK and the Ministry of Education and Sports are starting up a centre in Kyambogo College where teachers can go get these skills.
- Provide schools with ongoing technical support.
- He also asked all schools to budget for technology.
- Promote public and public partnership. He went on to tell the participants that government alone can not provide all these services and gave then an example of USE where the government had to partner with over 431 private schools.
- Involving various stakeholders e.g. Board of Governors members and told the participants that the World Bank had supported this proposal.
- Create more public awareness in using ICT in education.

He extended the Ministry of Education and Sports thanks to SchoolNet Uganda for helping to improve the quality of teaching through the use of ICT and recommended SchoolNet Uganda to the schools.

Mr. Nsumba concluded his speech by thanking the participants for attending the workshop, Gayaza High School for hosting the workshop, the facilitators and all those who had made the workshop a success. He then declared the workshop officially closed.

This was then followed by the award of certificated to the participants and the facilitators by the Guest of Honour.

-----**END OF REPORT**-----

Report by: Kakinda Allan and Kakinda Daniel

### Appendix 1: List and contact information of the participants.

	Name	School	Designation	Mobile and Email
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