# ONE LAPTOP PER CHILD (OLPC) PROGRAMME

## BACKGROUND

The One Laptop per Child Programme is a key project that aims at the Enhancement of Education through the Introduction of technology in Primary schools. The OLPC project, through digital, interactive, animated graphic rich content is able to help students visualize, simulate, share various complex concepts which improves their understanding, retention and ability to innovate.

The main objectives of the OLPC program are as follow:

- The enhancement of Education by enabling students to learn by doing through graphically rich, animated, interactive digital courses and gaming.
- To transform the role of the teacher from the knowledge holder to a facilitator who guides pupils to access the vast knowledge on the laptops, servers and on the internet.
- To enable Primary school students an early access to computers where they can develop computer skills through computer science courses which include programming skills.
- To expand their knowledge on specific subjects like Science, Mathematics, Languages and Social Sciences through online research and digital content hosted on school servers.

## COMPONENTS

In the first phase of the program implementation in 2008, the Government ensured that every District has a minimum of 5 schools running OLPC. In the second phase deployment which was launched in 2011, we ensured that all administrative sectors in the country have a minimum of 1 school with the OLPC program.
The current deployment provides laptops to schools according to number of students per study shifts (morning and afternoon).

- **Project Components**
    - The components of the OLPC programme includes;
        - School infrastructure readiness
        - Content development
        - Capacity building of head of schools and teachers
        - Repair and Maintenance
        - Project sustainability and contribution in ICT growth

## CURRENT STATUS

**DEPLOYMENT:** The distribution has reached a total deployment of 245,721 Laptops in 727 schools with this process on-going.

The current deployment plan covers the number of students studying according to shifts (morning and afternoon) where students who study in the morning shifts can share the laptops provided with the students who study in the afternoon shifts. There are future plans for the redeployment of already deployed laptops to match the proposed ICT in Education Master Plan.

### TEACHER TRAINING IN SCHOOLS WITH OLPC PROGRAMME

The deployment of laptops also includes the training of teachers where all teachers from primary 4 to primary 6 have been taught basic ICTs with 5269 teachers in 479 schools trained so far with this process currently on-going.

The teachers are being trained on the ICT basics, basic activities in XO Laptops, how to apply them in class and also common technical problems and how to solve them.


***Pupils and teachers enjoying xo laptops***

## District education officers and regional inspectors in OLPC basics training

Education officers and inspectors from the country's 30 districts y completed the workshop aimed at reviewing the Rwanda One Laptop per Child (OLPC) programme as well as receive training on new technologies installed in schools to support the programme.

The workshop was aimed at sharpening the minds of the DEOs who are in charge of education in the country.

They are closer to the schools implementing the programme. The DEOs were trained on how the laptops work, how they can be used to teach, and how they can be used as teaching aides. Also in attendance were regional education inspectors in charge of monitoring all education programmes around the country. There are plans for the training of the Sector Education Officers as well as the District IT officers who will be able to help with first level troubleshooting of OLPC systems.

**e-SOLUTION**

The OLPC program has also deployed 200 school servers (e-Solution) loaded with graphically rich, interactive digital lessons where students can learn at their own pace and there are 2088 teachers who have been trained on methodologies of preparing lessons, teaching and how to use the Learning Management System (LMS) to monitor the usage of laptops and manage

school roll call. There are plans to provide more of these systems to newly deployed OLPC schools.

E solution was introduced to enhance the usage of XO laptops and as an educational tool. It allows pupils to access electronic books with audios and videos stored in the school server for better learning.

E-solution is designed according to the National Primary School curriculum and its content can be accessed both on and offline.

This program brings digital content that is graphic rich and has interactive computer games which enable students to learn at their pace. E-solution also includes a management and information system that improves school management and enables teachers to prepare their lessons."

The e-solution program provides required learning materials to students from P4, P5 and P6. It contains digital courses and has the capacity to evaluate multiple-choice questions to gauge how well the students have absorbed the lesson.

The program enables students to progress at different speeds; fast learners move quickly to the next lesson, while those who need more time can practice until they are comfortable with the lesson.

"The e-solution information is accessible when students connect to the school server or by using a memory card on which the information is stored. Meaning that with or without a teacher, students are able to access the information for extra practice."

The school server enables the trained team to track the usage of e-solution to manage and make a follow up of how the school's information system is running.

The e-solution will help teachers and students address new content and teachers will be able to see what the students have been doing outside of class. This program runs according to the student's individual level and the information is accessed in a way that is compatible with the student's level.

E-solution comes as the third OLPC program, with 'Gnome' and 'Sugar' preceding it. The two software packages act as a platform for e-Solution to run together with a combination of other open source applications/activities which the teachers and students can use as additional educational resources.

There are currently plans to supply school servers to other 210 new schools. This will include a wireless Local Area Network (WLAN) connecting laptops to a school server which will enable students to save their daily work and the students will be able to access the course materials offline when out of school and server range.

**LEGO EDUCATION**

The OLPC program signed a MoU with LEGO to be able to provide an Introduction to elementary robotics to primary school students in Rwanda at an early stage by starting with the OLPC schools which already have programs which are compatible with the LEGO kits.

LEGO agreed to provide 75 We-Do Robotics kits, to provide trainings to OLPC staff and the OLPC program selected 5 OLPC enabled schools where we have students with special needs and learning disabilities.

The LEGO Education WeDo Construction Set is an easy set to use that introduces young students to robotics when combined with the LEGO Education WeDo *Software* and Activity Pack.

Students are be able to build LEGO models featuring working motors and sensors; program their models and explore a series of cross curricular, theme based activities while developing their skills in science, technology, engineering, and mathematics as well as language, literacy, and social studies.

The LEGO education WeDo consists of colourful interlocking plastic bricks and an accompanying array of gears, mini-figures and various other parts. Lego bricks can be assembled and connected in many ways, to construct such objects as vehicles, buildings, and even working robots. Anything constructed can then be taken apart again, and the pieces used to make other objects.

The Construction Set comes with more than 150 elements including a motor, tilt sensor, motion sensor, and LEGO USB Hub. Building instructions are included in the software.

The aim is to introduce Robotics in Rwandan schools The LEGO team introduced their vision and aim of wanting to engage Rwanda especially through the OLPC programme which is aimed at giving primary school students early access to technology.

In June 2015, 5 schools were selected to be trained as a pilot phase. The training took 5days, 2 full days training teachers; the rest 3 days training teachers in the morning and practical exercises with students in the afternoon. It was conducted by the OLPC staff members.

## Schools trained

| No | School | District |
|---|---|---|
| 1 | EP Gahini | Eastern Province |
| 2 | GS Rukingu | Northern Province |
| 3 | CS Rusamaza | Western Province |
| 4 | CJSM | Southern Province |
| 5 | Simardone | Kigali city. |

**SOLAR POWERED INTERNET SCHOOLS**

The Korea Education and Research Information Service(KERIS) working with SAMSUNG and working together with the OLPC program has provided 2 Solar Powered Internet Schools, GS Kamabare in Bugesera District and GS Gashaki in Musanze District. OLPC staffs have provided training to all the teachers at these schools on the Introduction to Computers, 21st Century Pedagogical Teaching Methodologies, Higher-order thinking and learner collaboration.

Furthermore, with cooperation with the Korea Education and Research Information Service (KERIS), there are plans for KERIS to provide more capacity building geared towards the use of ICT in Education with these schools to become model schools.

***GS Kamabare students enjoying using Samsung laptops***

## SCRATCH PROGRAMMING DAY.

Scratch is a visual programming language and multimedia authoring tool that can be used by students, scholars, teachers, and parents to easily create games and provide a stepping stone to the more advanced world of computer programming. It can also be used for a range of educational and entertainment constructionist purposes from math and science projects, including simulations and visualizations of experiments, recording lectures with animated presentations, to social sciences animated stories, and interactive art and music. Scratch allows users to use event driven programming with multiple active objects called "sprites". Sprites can be drawn—as either vector or bitmap graphics—from scratch in a simple editor that is part of the Scratch, or can be imported from external sources, including webcams.

The OLPC department has conducted the Rwanda Scratch Programming Day events for over 4 years. Scratch Day is a global network of events that celebrates Scratch, and the young people who code and create with it. During Scratch Day, kids and adults gather to share projects and learn from one another.

In 2015, supported by their school heads, primary school students and teachers in Rwanda had the opportunity to share their Scratch creations and to collaborate with other Scratch users around the world, using the One Laptop per Child (OLPC) laptops.

Six primary school pupils, three girls and three boys proudly showcased their scratch programming projects using their laptops in the OLPC Corner located at the library.

Hirwa Aldo from GS Kicukiro explains his project to the audience. It was all stories, games and animations as the Rwanda Education Board (REB) hosted its third International Scratch Day at the Kigali Library Services on 15th may 2015.

Pupils from primary four to six and various educators in the country joined an international network of other learners, teachers and enthusiasts who use the Scratch programming platform.

Twelve-year-old Fiston Karekezi from Ecole Primaire Gitega in Nyarugenge presented a project called The Beauty of Rwanda, tourism hotspots and places to visit, while Christian Benijuru, a primary six pupil at EPAK presented an animation depicting two people holding a discussion about education in Rwanda.

On her part, 12-year-old Ineza Vanessa , a primary six pupil at Ecole Primaire Remera Catholique presented an animation depicting a student giving dance instructions to classmates.

Meanwhile, Esther Giramata from EP Kagina, and Lambert Semikeke from EP Intwali both presented projects about Rwanda's Vision 2020.

Aldo Hirwa, a ten-year-old Primary 6 pupil from GS Kicukiro showcased an interactive Question and Answer Quiz on Science, Maths and English.

The day was an opportunity for learners to join the larger community of Scratch users and to exhibit the skills they have acquired through the use of the computers that were acquired through the OLPC programme in their respective schools.

"In providing such cutting edge learning opportunities to our students, we are confident that they will create the next generation of entrepreneurs and innovators to launch the future of Rwanda as a technology hub for Eastern Africa," said Eric Kimenyi, National Coordinator of the One Laptop Per Child Program, Rwanda Education Board.

Kimenyi explained that learning to code is essential to the development of critical thinking, logic, and problem solving skills among learners.

"Through partnerships with international organisations and events such as Scratch Day, Rwandan students are truly becoming global citizens at an early age. REB, in its continued relationship with OLPC, is creating the "XO Generation" of learners by encouraging student collaboration and the sharing of information," Kimenyi further said.

Mariana Ludmila Cortes, the Vice President of the OLPC global association expressed optimism at the level of achievement of the young students, and commended efforts by government and REB in providing an innovative, quality education system that is inclusive for all students across the country.

"Through use of the OLPC laptops, these students will be prepared to fulfill the national vision to unfold a knowledge-based economy," she said.

## MAINTENANCE AND REPAIR

The OLPC program is continuously carrying out the maintenance and repair of damaged laptops in all schools across the country at the end of every academic with teachers and heads of schools also being trained on how to activate the security feature (lease-key) for the laptops. The maintenance and repair is an on-going activity and currently with over 3794 laptops in 404 schools done.


***OLPC staff in maintenance and repair of xo laptops at our maintenance room***

## INFRASTRUCTURE

The first target is to wire all these schools to ensure that they have power plugs inside the classrooms, and we also add in lights in the classroom at the same time to ease the use of the laptops in class. There are currently 300 schools which have been wired through this process.

So this program is also about improving the infrastructure of the schools. If they're too far from the electricity grid we are using solar panels. "For schools that are far from the grid, we work closely with the project in charge of electricity rollout in the Ministry of Infrastructure to install solar energy.

Closer to the grid, we are working with district officers and the Rwanda Energy Group (REG) to complete the connection of schools to the national grid, with schools that are out of reach for the National grid connected to other power sources like Solar energy. There are so far 300 Secondary, TVET and Primary schools which have been connected with Solar power with plans to connected more schools.

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