# Project Proposal

Project title: The OLPC XO, Intel Classmate PC and Asus Eee PC user study

## Back Ground

Recognition of the importance of knowledge has gained momentum and there is a renewed impetus to integrate knowledge into countries’ development strategies. It is argued that knowledge could be the key to development and that an uneven distribution of knowledge explains variations in countries’ development. Knowledge is acquired mainly through education and education has been proved to be more effective when learners are involved, independent and self empowered [IDEA, 2009]. Researchers have shown that when used carefully information and communication technology (ICT) can bring about effective learning.

ICT is the combination of networks, hardware and software as well as a means of communication, collaboration and engagement that enables the processing, management and exchange of data, information and knowledge [Ngugi and Czerniewicz, 2007]. Use of ICT resources in education is referred to as E-learning (electronic learning). This comprises video conferencing, radios, televisions and web based learning. The guiding principle supporting the development of E-learning programs is easy access to learning material and freedom as well as flexibility to learn when and where you want and at a preferred pace. Important skills for independent learners are to know how to use the Internet, where the best information is found and access to the library [Stephenson, 2001]. In South Africa, there have been various discussions recently on the emergence of ICT in the educational context [Ngugi and Czerniewicz, 2001]. However, there are constraints in developing countries to the implementation of ICT in education, namely; many people are still living below the poverty line and hence cannot afford access to E-learning technologies. In addition, 42.5% of people in South Africa are also located in very remote areas where technology is said to be not easily accessible [Statistics South Africa, 2001].

There is a lot of excitement about the one laptop per child (OLPC) project which was launched by Nicholas Negroponte in 2005. It produces XO netbooks that are intended to be distributed to children in developing countries. The OLPC project is a nonprofit endeavor whose mission is to create education opportunities for the world’s poorest children, by providing them with a rugged low cost, low power, connected laptop with content and software designed for collaborative, self empowering learning [Laptop Organization, 2009]. There are a number of developing countries that have been involved in the OLPC project including; Libya, China, [Argentina](http://www.olpcnews.com/countries/argentina/), [Brazil](http://www.olpcnews.com/countries/brazil/), [Nigeria](http://www.olpcnews.com/countries/nigeria/), [Thailand](http://www.olpcnews.com/countries/thailand/), Ghana, Rwanda and Nepal. However, alternatives to the XO laptops are readily available and many manufacturers are producing a number of netbook products. As a result of the numerous netbooks currently available this project seeks to understand the intuitiveness of the XO laptop when compared with other similar products readily available on the market. Table 1.1 shows a comparison of netbooks.

Table 1.1: Comparison of the OLPC XO, Intel Classmate and Asus Eee PC [Wikipedia, 2009]. I also took some measurements myself

|  |  |  |  |
| --- | --- | --- | --- |
| **Model** | **Asus Eee PC 701** | **Intel Classmate** | **OLPC XO** |
| **Manufacturer** | Asus | Intel | Quanta Computer |
| **Weight in kg** | 0.92 | 1.5 | 1.45 |
| **Area of Display screen in cm2** | 140.8 | 224.25 | 175.95 |
| **Processor** | Intel Celeron-M  | Intel Atom | AMD Geode LX-700 |
| **Processor Speed in MHz** | 900 | 1600 | 433 |
| **Storage type** | SSD | hard disk | NAND flash |
| **Storage size in GB** | 4 | 60 | 1 |
| **RAM in MB** | 512 | 1000 | 250 |
| **Battery life in hours** | 2:45 | 3:25 | 2:45 |
| **Operating system** | Edubuntu Linux | Linux Edubuntu or Windows XP (we used Edubuntu Linux) | Red Hat Fedora |
| **Connectivity** | 10/100M Ethernet WLAN 802.11b/g/n | 10/100M Ethernet WLAN 802.11b/g/n WLAN with antenna, fMesh support (Linux only) | Integrated 802.11b/g (2.4GHz) interface; Mesh 802.11s networking supported |

## Statement of the problem

Due to an increase in the number of affordable netbooks, I have set out to evaluate and compare usability of three of the available technologies. The aim of the project is to evaluate the suitability and intuitiveness of netbooks for disadvantaged children in the educational context. An evaluation and comparison will be made between the OLPC XO, Asus Eee pc and Intel Classmate pc at a literature review level as well as include a user study involving local school students and teachers to assess differences, usability and preferences.

## Rationale

The rationale of this project is to better understand the suitability and usability of netbooks for educational purposes. It is hoped that technology investments of this kind will help contribute to improving education in South Africa.

## Literature survey

1. Blandford, A., Cox, A, L and Cairns P, Research methods for Human –Computer Interaction

This book discusses about controlled experiments, this information will be of much use in the user study where participates will be exchanging netbooks. The book also describes how statistics helps researchers make sense of usability research. It contains information on questionnaire construction and how to conduct interviews.

2. Shafika, I, ICT in Education in South Africa, June, 2007

This paper discusses the contributions of ICTs in education in South Africa. It also briefly looks at ICT policies governing ICTs in education and presents an overview of current ICTs in the South African schooling system.

3. Stephenson, J, Teaching and learning Online, 2007

This book looks at the developing understanding of approaches to online teaching and the emergence of pedagogies that will ensure online teaching and learning material are effective. It contains research and evaluation of online learning and expected future of online learning.

4. Chapman, R., Slaymaker, T., ICTs and Rural Development

This paper states that ICT have the potential to support rural development initiatives through managing, storing and sharing information and access. Constraints to the application of ICT are also stated, such as inaccessibility of technology in rural areas.

5. Wilson, T, D, “60 Years of the best in Information research on user studies and information needs”, 2006

This paper discusses user studies. It demonstrates good approaches to conducting user studies.

The following sites also provide some useful information on the for my project;

1. <http://en.wikipedia.org/wiki/One_Laptop_per_Child>

This site states the mission of the OLPC project together with their goal. Technology of the laptop is also included as well as some criticism and their distribution methods.

2. <http://wiki.laptop.org/go/The_OLPC_Wiki>

This site focuses on the mission of the OLPC project which is to provide educational opportunities to the world’s poorest children. Links are also provided that directs to the participation page and to more information about hardware, software and education.

3. <http://www.olpcnews.com/>

There are critics of the OLPC project on this site. Issues about the need for evaluation and measurements of the XO netbooks are discussed. This site also states that there is a need for training more volunteers who will help their communities with the XO laptops.

4. <http://www.sakshat.ac.in/>

This is a website where teachers and students interact and help each other. It shows the use of web based learning in education. Students can also test their knowledge and skills online.

5. <http://laptops.bizrate.com/asus-eee-pc-901-intel-atom-laptop-black--pid875915035/>

This site contains a detailed description about the Asus Eee netbook.

6. <http://desinformado.com/2007/11/mandatory-comparison-olpc-vs-asus-eee-pc/>

This site describes a comparison of the OLPC XO and Asus Eee pc. Their reliability, connectivity, and technology are evaluated.

7. <http://gizmodo.com/5114777/hands-on-with-the-intel-convertible-classmate>

Information on hardware and software about the classmate netbook is found here.

8. <http://laptop.org/en/vision/index.shtml>

This website contains the mission statement of the OLPC project and the distributions of the XO laptops that have been made.

9. <http://en.wikipedia.org/wiki/OLPC_XO-1>

This site has detailed information about history and design of the XO laptop.

## Hardware and Software to be used

Three different types of laptops will be compared in my study, namely;

* OLPC XO
* Asus Eee PC
* Intel Classmate

The Edubuntu Linux operating system will be installed on the Asus and the Intel computers, the XO pc is distributed with Fedora installed together with Sugar interface.

## Methodology

Firstly, I will have to approach students and teachers that will take part in the user study and ask them to contribute their time in my project. Previously disadvantaged schools, where generally technology penetration is low, will be chosen. However, we will work with schools which have had previous exposure and access to technology so that teachers and learners will hopefully be in a position to experiment with and make extensive use of the netbooks. Only three schools will be involved, with each school having one participating student and a teacher. The three different netbooks will be rotated amongst them with each person having a two week encounter with each netbook. Questionnaires will be circulated amongst participates before the user study to acquire their computer literacy and past experience with the technology. Observations will be carried out throughout the project to observe each teacher and learners interactions with the netbooks as well as field any questions that they might have about the technology. Post intervention interviews will be conducted to allow teachers and learners to discuss their opinions on each of the netbooks, commenting on ease of use, intuitiveness and appreciation or desire of features. This will be the primary source of information. Secondary source of information will include conducting a literature survey on the netbooks to evaluate and compare them. Conclusion will be drawn from the assessment of both results.

## Measurements of results

I hope to achieve a detailed comparison of the three netbooks with possible recommendations regarding their use in educational environments.

## Extensions

A project can be conducted at a much larger scale to access the impact of ICT on education using netbooks. This could help determine whether an investment in netbooks for educational purposes might be an avenue that government and private organizations wish to follow.

## Time Line

|  |  |  |
| --- | --- | --- |
| ***Activity*** | ***Duration(week)*** | ***Due Date*** |
| Commitment to project | 1  | 27/02/09 |
| Literature review on selected project | 2 |  |
| Project proposal | 1 | 02/03/09 |
| First presentation | 2 | 17/03/09 |
| User study: 2 weeks of using each netbook per school.1 week of data collection and analysis | 7 | 10/06/09This will depend on when I will get the netbooks |
| Literature review | 4 | 10/06/09 |
| Plan of action over the vacation  | 2  | 26/06/09 |
| Second presentation | 1 | 28/07/09 |
| poster | 2  | 24/08/09 |
| Draft paper on project | 2 | 14/09/09 |
| Outline of all the chapters | 1 | 14/09/09 |
| Final paper | 1 | 21/09/09 |
| Final presentation | 1  | 03/11/09 |
| Final project | 4 | 09/11/09 |
| Website | 1 | 12/11/09 |

## Reference

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2. Wikipedia (2009). “Comparison of netbooks, 2008” [Online]. Available: <http://en.wikipedia.org/wiki/Comparison_of_netbooks> [Accessed 20 May 2009]