# *HeNN e-Library at Dang*

## *Deployment Report*

**Submitted to**

Help Nepal Network

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## Objective

The major objectives of this project were:

- To setup an e-Library in Shree Adarsha Ma Vi, Lalmatiya, Dang
- To provide books and materials to set up a library for the communal use

## Introduction


*Photo 1: Before leaving Kathmandu*

In the initial phase, the project just intended to establish a traditional library at the school but after the IOE FOSS community came up with a proposal of Low Cost Digital Solution to the schools as well as agreed to volunteer for the same, the concept of e-Library emerged.

As proposed by IOE FOSS Community, the idea for low cost computer lab was to implement a Linux LTSP (Linux Terminal Server Project) system. This system enables one to use older low cost computers (also known as thin clients) connected to a powerful server running Linux. Moreover, the advantages of Linux is that it is freely available and there are numerous freely available educational softwares that run on Linux. For our project, we used five Pentium I computers as terminals and a Pentium IV computer as server. The Linux distribution used was K12LTSP.

## Deployment

Site: Shree Adarsha Madhyamik Vidhyalaya, Lalmatiya, Dang.

*Photo 2: The School complex*

The school lies about 100 meters from the Mahendra Highway over 4 *bigha* plot. The school has a new two storeyed concrete building where the regular classes take place. The building was constructed with the aid from British Gurkha group. Other supporting buildings are also present in the premises built with aid from various

donors. A separate hall, named Laxmi Devi Bhawan, was allocated for the purpose of computer lab. The lab (hall) was well furnished and carpeted. The furnishing had been carried out by Rapti Science and Engineering College being constructed nearby. The college has made agreement with the school to share the hall for some time till the construction of their own building is over. However, the sharing agreement applies only to the hall and not to the computers.

# The e-Library

## *Hardware*

A total of eight computers were acquired for the lab: three of which were Pentium IV computers and rest Pentium I's. Among the Pentium IVs, one was used as Linux LTSP server. Rest of the Pentium IV computers were configured to dual boot Microsoft Windows XP or Linux LTSP through the server. The Pentium I computers were used as thin client terminals. These terminals were diskless and were run with the processing power of the server over network.

The network backbone consisted of a 10/100 Mbps 16-port switch with all the computers connected to it.

*Photo 3: The Pentium I terminals*

*Photo 4: Hardware training session*

## *Softwares*

As mentioned above, the Operating System (OS) used in the server was Linux LTSP and the distribution used was K12LTSP. The softwares that came along with this distribution were OpenOffice.org office package, GIMP Image Editor, GCompris Educational Suite and various other educational games and softwares.

The system was partially Nepali localized with the help of Madan Puraskar Pustakalaya. Romanized Nepali Input system was introduced to the system for Nepali typing.

Since the deployment site lacked internet facilities, some websites that we thought would be useful for the students were installed in the system. Some of them were,

- Howstuffworks.com
- Wikipedia.org
- PCguide.com

Besides these, a wide range of e-books were made available preserving the concept of the digital library. Acknowledging the possibilities of the internet facilities in school, provisions of local website have also been made. School can host the website on the server for now and can go global later on when they have internet facilities.

*Photo 6: Students using the lab*

*Photo 5: Excited students crowding the lab*

## Manuals

A total of seven manuals were prepared with regard to the project as follows.

i. **HeNN e-Library: User's Guide**

   This manual was prepared for the general users using the system. This manual focuses on topics specific to the system.

ii. **HeNN e-Library: Administrator's Guide**

This manual was prepared for the administrator to diagnose and troubleshoot the possible errors that might get in the way of smooth operation of the system. A wide range of possible problems from basic 'no screen display due to incorrect plugging' to much advanced ones such as 'improper display due to incorrect graphics driver ' are covered in the manual.

*Photo 7: Training session for the students*

**iii. HeNN e-Library: Installation and Recovery Manual**

This manual explains in detail how to install the system as well as the steps to follow in case of system malfunction or failure.

**iv. Linux Fundamentals**

This manual focuses on fundamental concepts of Linux.

**v. Linux Fundamentals (in Nepali)**

A Nepali version of Linux Fundamentals was prepared keeping in mind the academic profile of the locals. Most of the text was taken from Nepalinux Manual by Madan Puraskar Pustakalaya.

*Photo 8: Training session for the teachers*

**vi. GCompris Educational Suite Manual**

This manual features the different educational games available in the GCompris Educational Suite software.

**vii. Linux LTSP Manual**

This manual is intended for the system administrator and contains detail information about Linux LTSP system.

Note: All the manuals mentioned above are under Creative Commons Legal Code License.

### Curriculum

Besides the manuals, three curriculum documents on computer education were prepared for beginners, intermediates and advanced level students. These documents were developed so that it would act as a guideline to the instructors as well as the students to acquire computer education using our Linux based system.

## Project Development

### The Schedule

The team departed Kathmandu on January 7, 2007. The date was initially scheduled for 4th of January. The delay was chiefly due to the delay of the delivery of the computers which shifted the whole schedule backwards. The visit was of 8 days including departure and arrival. The first two days were allocated for the system setup and student interaction. The next two were for the training and lab session. The remaining days were allocated for extension of the lab session, administrator training and case study.

*Photo 9: Student interaction session*

### Setup and Trainings

The first official day of the project (8th Jan, Monday) was scheduled for the hardware setup and student interaction program. As per schedule, two of the members (Jwalanta Shrestha and Shishir Jha) started setting up the system and the rest three (Ayush Shrestha, Kebina Manandhar and Rajiv Shrestha) went to the classes for the student interaction program. In the course of interaction, the team gave students a general introduction on the computer features, application and limitation. Besides, the team also interacted with the students learning their views on computer, answering their queries and clearing their misconceptions. A

*Photo 10: Students asking questions*

total of four classes were visited in two days interacting with around 120 students (of grades IX and X). Meanwhile the system setup group had some number of enthusiastic students observe and even get involved in setup. They were given a basic briefing on the structure of the system and were also taught to connect various computer peripherals. In the next two days, lab sessions were conducted in which the students were made familiar with the hardware. Basic trainings were also given to the students on mouse and keyboard usage. The students were very excited and overwhelmed when the actually got to use the computer. A general introduction and lab session was conducted for the teachers as well. A brief demonstration was conducted for the community personnels, visiting guests from the nearby schools and other local VIPs too.

Few feedbacks and responses have been video recorded too.

# Conclusion

The e-Library project seems very suitable to provide computer facility to rural areas of Nepal given the fact that it can be deployed in less than 1/4$^{th}$ of the price required to deploy traditional computer lab. Moreover since the operating system being used is Linux, the system is secure, stable and free of viruses. So the lab can be expected to last long and hassle-free to maintain. Furthermore, since the softwares used in the system are all Free and Open Source Softwares (FOSS), any software upgrades in the future will also be free of cost.


*Photo 11: The Handover program*

Given the overwhelming response and excitement of both the teachers and students, the project can be considered quite a success. The whole team worked from 9 am in the morning to about 5-6 pm in the evening through these days. Had it not been the overwhelming response of the students, interest of the teachers and support of the community, if would have really been hard for us to succeed.

However, the true success of this project should be evaluated in a long term. Only if the e-Library is sustainable in the long term and a large group of people be benefited from it, the project can be justified successful.

## Future enhancements and possibilities

The system is currently running 9 computers (including one previously owned by school). The existing hardware and the configuration can support reliably up to 12 computers. So the network can be expanded simply by connecting the inexpensive terminals. For further expansion, few hardware have to be upgraded. Major ones likely needing replacements are network switch with higher bandwidth, main server RAM, and possibly the hard disk size .

The major drawback of the project has been the unavailability of internet facility in the deployment site, which if existed, would have definitely been a boost for the users. However, since there is an IT college being established nearby in the school premises (land given in lease) we can be hopeful about the internet. According to the college officials, the college is acquiring a VSAT in near future whose services (as per the agreement between the school and the college) can be accessed by the school too. So the e-Library can hopefully be connected to the WWW in the near future.