



We hope you enjoy this edition of *OLE Nepal Newsletter*, a bi-monthly email newsletter from Open Learning Exchange (OLE) Nepal. It provides current news and information about the organisation and its activities and will keep you up to date with OLE Nepal's work to provide high quality education for children in Nepal.

Content Development:

Any implementation of ICT based education should not lose sight of the fact that technology is only the means, and the goal is to improve education quality, delivery and practices through technology integration. Hence, OLE Nepal has given digital content development utmost priority.

E-Paath, set of OLE Nepal's e-learning activities, is used to provide national curriculum framework based education to primary school children in English, mathematics, and Nepali subjects. These activities are conceptualized by our curriculum experts in close collaboration with subject experts from the Curriculum Development Center, feedback from the teachers who use them, and developed in house by our education conscious developers. These contents are then loaded in *E-Paati* laptops, providing interactive and animated demonstrations of the curriculum content to children to use in daily teaching learning process. Further, we are also working on technological innovations so that our e-learning contents can be used by our global collaborators and other like minded education projects with a relative ease.

In recent months we have undertaken a number of initiatives to improve both the activities being developed and the development workflow, and have been looking into the future on how we can expand the reach of *E-Paath* to the global education community. Compared to the rest of the OLPC community, OLE Nepal's deployment is relatively small (2500 and counting), but our content development in *E-Paath*

is industry-leading, and is highly sought after by other OLE Centers and OLPC programs.

History of E-Paath technology

We have used a number of different technologies over the last three years to develop *E-Paath* learning activities which had their own pros and cons. First batch of activities were developed using Squeak, a very powerful Smalltalk dialect. Although Squeak was a powerful tool and was an open source platform, we quickly realized its shortcomings in that experienced developers who knew how to work in the Squeak environment were hard to come by and the activities developed were too big that caused problems with the limited size of storage space in *E-Paati* laptops. We then focused our development in using Adobe Flash platform which had the advantage of being a very mature development environment, with many experienced developers, and the size of the activities developed was much smaller than with Squeak. Recently we have also started to develop activities in Karma, a framework we developed ourselves based on open web standards, which will be the standard development tool for the future.

Recent Developments Updated Flash framework

Over the last couple of months the *E-Paath* application framework has been rewritten, with a focus on allowing lessons to be easily localized, and to have a more consistent and modular structure. This framework represents both the visual interface for the *E-Paath* application, and all of the controls and supporting code for the activities themselves.

Latest Developments

- » Content Development
- » Network Summit
- » Dadeldhura School Network
- » ICT in Education Masterplan
- » Presentation at CDC
- » Deployment
- » E-Pustakalaya Development

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Localization

A key goal of OLE Nepal has been creating high quality curriculum based e-learning activities, which is in high demand around the world. However, until now it has been a non-trivial task to translate text, image or audio elements into local languages, and as OLE Nepal's primary focus has been on Nepali schools and students, almost all activities use Nepali language elements.

The new framework developed uses advanced text functionality available in Adobe Flash CS5, and stores all language strings in easily modifiable XML files. This means that a non-technical person is able to update these language files, changing the content of the e-learning activities immediately.

While the updated framework can load all of the existing activities developed, these activities will need to be individually updated to utilise the new localization functionality, and this is a non-trivial task. Of course new activities developed (all of the upcoming Grade 5 lessons) will use this new functionality, and the older lessons will be updated as time allows.

Improved Code Structure

The updated framework provides a more modular code structure with enhanced supporting classes for activities. This translates into smaller lessons (as more functionality is provided by the framework), which are faster to develop, more consistent in their functionality, and can be more easily updated - changing core framework files can update all affected lessons. This new structure will also make it easier to integrate new user interface elements, such as are being explored in the Activity Guidelines that are being developed.

Karma

In parallel with the updates to the Flash framework, we also continue to work on the new Karma framework, which was started last year by Bryan Berry, one of OLE Nepal's founders. The Karma framework uses only standard web technologies (HTML5, CSS and JavaScript), without needing the Flash plug-in.

Using Flash has worked very well on the XO platform, but when looking to the future it does present a number of problems. First and foremost, it does not run on every platform (e.g. the hugely popular iPhone and iPad platforms are not supported). By using only standard web technologies we ensure that our content will be viewable on the largest possible number of devices, since web technology is ubiquitous, and every new device has a web browser. Secondly, the flash plugin is developed and controlled by

one company, Adobe. We do not want to tie the future of our content to the fate of one company. By relying only on standard web technologies, we profit from the rapid advances that the competing browsers are making on supporting new technologies such as gestures and the great performance improvements. Thirdly, we can also tap into the huge developer base worldwide. Flash creates some barrier to entry, because you need the development tools from Flash. Lastly, the size of the activities becomes much smaller, which is important because platforms like the XO have very limited storage space.

In the Karma framework, we introduced support for activity templates. A number of activities follow the same pattern - such as the vocabulary activities which all have the same structure, except for the specific words that are being taught (with the associated sounds and pictures). We now have a template for such an activity, and creating a new vocabulary lesson is much simpler. Only the sounds and pictures specific to the new activity and a small description need to be developed; no new code needs to be written, greatly increasing productivity.

To validate the framework, we converted all the existing 62 Squeak activities to Karma, greatly reducing the size of these activities. We can now fit more activities in the same space on the XO: all the activities for half a year are included in the bundle we distribute to the school.

Activity Guidelines

A set of guidelines for the design, usability, navigation, conceptualization and development process of new activities is being written. This document will be very detailed, and will ensure these aspects are consistent across all activities, and that they follow 'interaction design' best practices. A number of great resources have been used in the creation of this document, including research by the Nielsen



Normal Group into primary school children's use of interactive media, and OLE Nepal will also undertake specific user testing with Nepali students. This kind of research, and development guidelines, will ensure that the quality of our e-learning activities will continue to improve year after year.

Future Directions

Of course, most of these developments above are aimed at improving the future development of *E-Paath* learning activities, both in OLE Nepal and around the world, so we have some clear future directions in this area.

We will continue to use both Karma and Flash to develop the new learning activities, using Karma where we can for the reasons outlined above, and continue to use Flash for activities heavy in animation, where Flash excels on the XO platform. We will continue to develop new activity templates in Karma, so that lessons that can be created using these templates greatly increase in scope. Internationalization - the translation and adaptation of multimedia to the local culture - will be an important area of focus as our activities start being used in other deployments around the world. As this happens we will be working with international developers to create more great content that is available to all - including to our own Nepali students. And of course as new devices and technologies (such as tablets with multi-touch and gestures) become more used in education, we will extend our support for them. The XO platform is very capable and well designed for our target users, but as with all technology it will eventually be superseded by something even more powerful and capable, and cheaper. And lastly, we plan to make it easier to get started with Karma, so that developers outside of OLE Nepal can get started with it more quickly.



Network Summit:

Rabi Karmacharya and Basanta Shrestha from OLE Nepal delivered a presentation titled "Delivering Free and Open Source Education Materials in Rural Schools using Wireless Network" at the International Summit for Community Wireless Networks held in Vienna, Austria from August 12 to 15, 2010. The presentation highlighted OLE Nepal's effort in connecting rural schools as part of the OLPC project and the various technical innovations that have been employed in delivering education content to far flung districts. There was a great deal of interest from participants in learning about various network equipment and tools that were used in OLE Nepal's expanding school network. The presentation also pointed at the various challenges faced in not just setting up the network but in ensuring proper maintenance and smooth operation of the network.



OLE Presentation at ISCWN

The Summit brought together implementers and technical experts in the area of community network from all over the world to share ideas and developments in the field. Participants included technology experts, policy analysts, university researchers and field specialists working at grassroots levels. In addition to their passion and expertise in setting up wireless networks, they shared a common belief that network access should be and can be made available to the mass at no or low cost to the users through various community wireless models presented at the event.

Dadeldhura school network:

Establishing network connection to schools is an integral part of an ICT-based education approach. Network connections allow for easy monitoring of equipments while establishing a two way communication channel amongst program schools and OLE Nepal. The network has also been used to remotely update school servers with new versions of *E-Paath*. Wherever possible, OLE Nepal's network team has been connecting schools to the Internet. The task of connecting the three schools in Dadeldhura has proven to be anything but trivial. In addition to the unforgiving hilly terrain, Dadeldhura is one of the most remote districts in the country, and it lacks the infrastructure needed to establish the school network. The schools are being connected to the World Food Programme's Dadeldhura Sub-Office using long range wireless radios, and then to the Internet through Nepal Telecom's ADSL service at the Sub-Office (WFP is one of OLE Nepal's partners in the project).

Samaijee Primary School in Haat, the nearest amongst three schools to the WFP SO, already has Internet access. This remote school serving a predominantly Dalit community is the first school in the entire district to have Internet facility. OLE Nepal's network team installed a relay point in a house up the hill from the school to connect the school to WFP SO. The connection to the second school, Janata Primary in Koral, will be completed as soon as the proposed relay point in Belapur is connected to the electric grid. The electric poles and lines that were laid out few months ago were swept away by recent landslides caused by heavy rainfall.

The most challenging task has been to connect Janajyoti Lower Secondary School in Hamtad, Alitaal. Not only is it located farthest from WFP SO, there are massive hill ranges between the two locations. After an extensive study of the area and poring over Google Earth images, the team prepared a network design that consists of three relay points: one on a Nepal Telecom's tower located in Kaphali -- a two hour climb

from the nearest road; one in Rupaiskada near Budar in Doti; and one up the hill from the school in Hamtad. WFP was able to negotiate with Nepal Telecom to allow to place our relay device on their tower. In Budar, OLE Nepal already has commitment from NCell to allow us to put our relay device on the tower they are planning to build within the next two months. If all goes as planned, all three schools in this remote Far Western district will have access to the Internet by December!

In order to maximize the use of the network infrastructure, OLE Nepal will make the network accessible to other schools that are in the vicinity of the relay stations. WFP has already donated six computers for two schools near the relay stations in Rupaiskada and Belapur. OLE Nepal team has already installed two computers containing *E-Pustakalaya* and *E-Paath* at the school in Rupaiskada. The remaining will be installed in Sunkeswor Primary School in Belapur once they get electricity.

We have also installed a VoIP phone at the school in Haat, making it as easy as picking up the phone and dialing a four digit number to call other schools and OLE Nepal office. Such a connection is invaluable in places like Haat where there is no regular phone line and the CDMA connection is very irregular.



OLE Nepal's antenna on Nepal Telecom Tower in Kaphali, Dadeldhura



ICT in Education Master Plan: Interaction Program on August 30, 2010

Building on the achievements of the workshop held on June 22 - 25 by UNESCO and Ministry of Education (MoE) on June 22 -25 to develop an ICT in Education Master Plan, OLE Nepal and MoE organized two workshops in August to consolidate the group outputs and to share the progress with the high level policy makers and ministry officials and collect feedback on the Master Plan content and development process. The MoE has set a target to complete the Master Plan by early next year, and OLE Nepal has been supporting in this effort.

The half day interaction program held on August 30, 2010 at Hotel Summit started with OLE Nepal's Rabi Karmacharya presenting the organization's various initiatives in ICT based education that were undertaken in partnership with various government agencies under MoE. Participants included both the Secretaries from MoE, Joint Secretaries, Under Secretaries, Director General from the Department of Education (DoE), Executive Directors from National Center for Education Development (NCED) and Curriculum Development Center (CDC), and host of other officials from MoE system, University Grants Commission, National Planning Commission, and Tribhuvan University's Research Center for Educational Innovation and Development (CERID). The presentation shed light on various models and aspects of ICT

in Education and its merits. Participants were also briefed on OLE Nepal's initiatives such as the One Laptop Per Child (OLPC) project, *E-Paath* and *E-Pustakalaya* development, teacher preparation program, design and development of network and power infrastructure, classroom management tool. The demo of *E-Paath* and *E-Pustakalaya* was also well received by the participants.

Under Secretary from MoE Mr. Narayan Shrestha then shared the progress on the draft Master Plan, as well as the consolidated output of the previous two workshops held in June and August. The presentation included the vision, programs and activities, policy strategies, budgetary needs and possible sources, leading and coordinating agencies and partners, and work plan for the Master Plan development.

Secretary of MoE Mr. Dipendra Bikram Thapa emphasized the need to use the lessons learned from the 26 OLPC pilot schools. He opined that there is no question that we need to move forward with ICT based education, but with proper and thorough planning in all aspects of the program. The workshop concluded with valuable feedback and suggestions on how and what to include in the Master Plan and suggestions on improving the OLPC model.

Master Plan Refinement Workshop August 4 – 5, 2010

OLE Nepal and MoE organized a two day workshop in Hotel Summit on August 4 – 5, 2010 to give continu-

ity to the Master Plan development. The workshop saw a host of participants from MoE, including all the Joint Secretaries, officials from DoE and other MoE line agencies. Secretary of MoE Mr. Dipendra Bikram Thapa attended the concluding sessions. Under Secretary Mr. Narayan Shrestha apprised the participants of the previous effort on writing the document (the workshop held in June) and presented a consolidated draft prepared by various groups during the same workshop.

Joint Secretary Mahashram Sharma elaborated on history of ICT usage in education in Nepal. He also highlighted different pilot projects DoE has launched, with a special stress on the OLPC pilot project that is being implemented in association with OLE Nepal. He requested the working group to complete the Master Plan in a timely manner so that it can be included in the SSRP. Joint Secretary of Planning and Monitoring Division Dr. Lawa Dev Awasthi assured the core team that ICT based education will be part of the mainstream education system while revealing the fact that the National Planning Commission (NPC) had accepted SSRP with a condition that ICT be integrated in the education system with topmost priority.

Two days of workshop further refined and consolidated the document and ended with a note of encouragement from the Secretary of MoE Mr. Dipendra Bikram Thapa, who also shared his views on ICT in education and wished the core team the best to complete the document.

Latest Developments

Presentations at CDC: OLE Nepal has actively engaged with the Curriculum Development Center (CDC) in the area of content development and has held a series of interactive sessions with CDC management to set up an institutional working relationship between CDC and OLE Nepal. This year alone, two presentations have been held at the CDC, with the last taking place on July 22, 2010. The purpose of these presentations were to update the wider audience within CDC and get their feedback on the different aspects of digital content development carried out by OLE Nepal. The last presentation also shared the outcomes of the earlier workshop that was held in June between OLE Nepal and CDC subject matter specialists, and helped raise awareness about E-Pustakalaya within the CDC ranks. The presentation was attended by the Executive Director, deputy directors and other officials from CDC. After the presentation, discussions were held on the subject of designing comprehensive courses, with detailed guidelines for teachers on how to integrate ICT into their regular teaching process.

Deployment: Once every year, OLE Nepal office is abuzz with staff and interns preparing to head out to the districts to distribute a new batch of *E-Paati* (laptops) to the schools. In the last month, we deployed a total of 558 *E-Paati* laptops to the existing program schools in five districts, taking the total number of laptops deployed to over 2500. These new *E-Paati* laptops were handed out to incoming students in grade 2 at the schools. The deployment in Mustang was done earlier in the year since this mountainous district follows a different academic schedule.



Deployment of the laptops is not as easy a job as loading the laptops onto a pick up and dropping them at the schools. Most of the schools are not accessible by road and require a walk sometimes of over an hour as in the case of Samijee Primary School in Haat, Dadeldhura in the Far Western part of the country. With the monsoon in full swing and the paths muddy and slippery, the task of transporting the goods to the schools turned out to be even more challenging than anticipated. OLE Nepal's deployment team had to seek help from locals to carry the *E-Paatis*, charging racks, bags and other equipment in *dokos* (basket), with few students offering help along the way.

The deployment teams also took the opportunity to interact with teachers and students to discuss the status of the program and challenges faced by the school. These informal interactions are valuable sources of feedback from real users of the the product and can give us better insights into the kind of problems faced in daily use. While at the schools, the teams helped solve minor technical problems, and also updated the school servers with latest *E-Paath* and *E-Pustakalaya* content. Overall, the deployment teams took satisfaction in witnessing the outcome of all the hard work of OLE Nepal staff being used productively and enthusiastically by students and teachers alike.

Refresher trainings will be held for teachers from schools in all of the above five districts after the Dasain and Tihar festivals are over in November. These refresher trainings help reinforce the concepts learned during the main teacher training, while addressing the challenges faced by teachers, solving problems and issues encountered so far, and to set aside misconceptions teachers may have had about ICT integrated teaching learning method. As for Mustang, instead of a refresher training, OLE Nepal and NCED trainers will visit schools in the district in September and hold discussions with teachers on how to better integrate *E-Paath* and *E-Pustakalaya* in classroom teaching.

E-Pustakalaya Development:

OLE Nepal continues to enrich *E-Pustakalaya* by adding more children's reading items to its already wide collection of books, audio and video materials. OLE Nepal recently entered into an agreement with the Gorkhapatra Sansthan, publisher of Nepal's oldest daily, to upload all of its monthly publications on the *E-Pustakalaya*. This agreement has given OLE Nepal full access to Nepal's oldest children's magazine *Muna*, highly acclaimed literary magazine *Madhuparka* and youth magazine *Yuvamanch*. OLE Nepal's *E-Pustakalaya* team will begin by uploading the first ever issue of *Muna*, *Madhuparka* and *Yuvamanch*. The oldest issue, which is over 24 years old, carries significant historical value. The special edition of *Madhuparka* brought out last year on the occasion of Laxmi Prasad Devkota's 100th death anniversary has already been made available on the *E-Pustakalaya*. 'Bal Adhyan Tatha Bikash Kendra' has also agreed to make their children's magazine *Chichila* available on the *E-Pustakalaya*. *Chichila* has been part of Nepali children for over two decades, and its addition to the *E-Pustakalaya* comes as a great news to us. *Schools and organizations interested in setting up E-Pustakalaya and E-Paath through local school network should contact OLE Nepal at info@olenepal.org.*

Congratulations: On the occasion of Education Day 2067, our own curriculum expert Ms. Achala Pokharel was conferred a medal and certificate by the President of Nepal Dr. Ram Baran Yadav for securing the highest score in all of Nepal in the Post Graduate Degree in Education offered by Kathmandu University. We are all very proud of her outstanding achievement. Congratulations.

