8 | The Genesis of OER at the Virtual University of Pakistan

Naveed A. Malik

Abstract

The provision of higher education in Pakistan faces familiar challenges of access and equity. This was true in 2000 and is still true in 2012. Only about seven per cent of the college-age population is actually enrolled in tertiary education. Institutions are full to capacity and there is an acute shortage of qualified faculty in existing institutes and universities, making the setting up of additional new institutions an uphill task. In addition, universities are concentrated mostly in the larger cities and the cost of education is, in general, very high. The reduction in funding for the public sector universities in recent years has resulted in higher tuition fees, further exacerbating the equitable access issue.

The Virtual University of Pakistan (VUP) was established by the government in 2002 to address the capacity and access issues by using technology to deliver high-quality education at affordable rates throughout the country. To understand the evolution of VUP towards open educational resources, it is necessary to comprehend the design decisions taken and the strategy adopted towards achieving the objectives laid down for VUP.

Keywords: Pakistan, virtual university, satellite broadcast, OER, enablers, barriers

Development of the Concept

The idea of establishing a virtual university was first articulated in the Information Technology Policy that was developed by the Ministry of Science and Technology in 1998–99. This was followed by a pre-feasibility study and then a full feasibility study, both supported by the United Nations Development Programme, in 2000. The establishment of a "virtual IT university" was recommended by the study due to strongly expressed demands in the then internationally booming IT sector and impediments to equitable provision of higher education.

The early part of 2001 was devoted to developing a project proposal for government funding; in late 2001, this PKR (Pakistan rupee) one billion project (USD 20 million) was finally approved. The project envisaged using broadcast television to deliver videolectures to every corner of the country, whilst academic support would be provided over the Internet. The project team was assembled in October 2001, and within just six months the university opened its virtual doors and the first cohort of students was admitted to a bachelors programme in computer science in March 2002.

Design Decisions and Development

To provide access to the university's programmes at all locations within the country, it was decided to opt for a broadcast medium. Distance education in general had encountered some acceptability issues at that time. Thus, it was further decided that to enhance acceptability of its programmes, the virtual university would utilise the services of the best available professors in the country to develop courses in the form of videolectures supported by reading materials, and then deliver the courses using free-to-air television. The well-known professors would constitute the new face of distance education and would go a long way towards improving the general public perception of this new concept.

Support to the students was to be provided over the Internet, and a learning management system (LMS) was acquired and deployed on the university's own servers for this purpose. Examinations would always be held in a strict proctored environment to further improve the acceptability of academic credentials offered by the university.

Broadband availability was still in its infancy in Pakistan in 2001. As a result, all support/reading material was provided to students through the LMS in the form of simple text. It was felt that using richer material such as animations or video would constitute further impediments to equitable access, since the majority of students would be accessing the LMS over a dial-up link.

Another decision regarding equitable access was that the university would not undertake any activity, whether it was course delivery or interaction or support, that would in any way differentiate between large cities and remote areas. A level playing field was to be provided at all times, and the university undertook to continuously improve its pedagogical approach as infrastructure improved.

In the very early days, the university rented television broadcast time for its courses from the national provider, Pakistan Television. It was immediately apparent that this mechanism could not be sustained over a long period due to costs and time constraints. As a result, the university submitted a project to the Government of Pakistan to establish its own television facilities, and in June 2004, two free-to-air satellite channels, fully owned and operated by the Virtual University, started broadcasts using Pakistan's only communications satellite, PAKSAT-I. The capacity was further enhanced shortly thereafter and the university now operates four TV channels of its own: VTV1, VTV2, VTV3 and VTV4.

The Progression Towards OER

Free-to-air broadcasts of the university's courses, initially over PTV and later over VTV1–4, meant that any person or institution falling within the satellite footprint could easily receive, view and, if so inclined, record the broadcast lectures. A healthy debate ensued within and outside the university regarding the protection of its intellectual property, and various suggestions emerged to prevent recording and piracy of the videolectures.

It did not take long to discover that piracy in a broadcast environment could not be prevented. In a moment of clarity, the university decided that all individuals who wanted to acquire knowledge from its courses should be able to do so freely. If anyone wanted formal academic credentials they could register with the university, do the semester work (assignments, quizzes), sit the midterm and final examinations for each course, and be awarded certificates, diplomas or degrees as the case may be. Registration would require the payment of tuition fees that would be kept at an extremely affordable level, and the promise of economies of scale would be fully leveraged.

The Virtual University of Pakistan was designed to operate as a formal university to supplement the capacity of existing conventional institutions and provide equitable access to higher education for all students, regardless of their geographical location. By making its courses freely available to the public at large, VUP had already taken an important step towards OER in 2002, but did not realise it at that time.

Innovation, Methods, Costs and Quality

Once the pedagogical model had been finalised (videolectures supported by online interaction), the question of video format assumed prime importance.

Many examples of a camera-in-the-classroom approach were available on the Internet. An informal psychological study suggested that the viewer of these videos was immediately disconnected from the learning experience and became more of an onlooker rather than a participant in the class. There were also many "talking-head" videolectures available, but these suffered from another psychological lacuna: the body language of the professor was not visible to the students, and it was only possible to stress certain points by varying the audio level or inflection.

It was decided that VUP would use a full-body videolecture format. Lectures would be filmed in a professional studio environment and professors would directly address the cameras. There would be no students in the studio, and custom designed "sets" would be used. Similarly, there was no white-board or any other manual medium in the studio, to ensure that all written material was presented through computer-generated slides in post-production; this was done to maintain high production quality. Professors would be free to move about and could use their body and arms to add stress to points needing emphasis, in as natural a manner as possible. As a direct consequence, a new factor had been introduced into the academic arena: professors would have to undergo "auditions" to ensure that their on-screen presence and voice timbre were both suited to the medium.

Experienced and well-known academics were then invited to develop the courses according to outlines approved by the Higher Education Commission (HEC). These high-profile individuals belonged to other universities in the country and even included Vice Chancellors of at least three different institutions. Course development was a fairly tedious process, with an enormous level of attention being paid to the detailed design, including scripts. It was estimated that the delivery of a one-hour lecture required nearly 12 hours of preparation and a further three hours of post-processing. The resource persons were adequately compensated for their efforts and the production of a single course was an expensive endeavour, but the potential of reuse and delivery to a large number of students made it economically feasible.

In the first instance, eminent academics were invited to develop courses according to the provided outlines, and it was assumed that their standing in the profession was sufficient to ensure a very high-quality product. However, it became immediately apparent that a more systematic approach was required to ensure consistent quality. The new medium (delivering lectures to an unquestioning camera) also posed timing challenges, and professors tended to cover more material in the uninterrupted sessions than what students could be reasonably expected to assimilate. A detailed development framework was therefore drawn up, complete with review and feedback loops, and this framework is continuously reviewed and enhanced by the university.

The videolectures comprise the tip of the academic iceberg that education at VUP has come to imply. However, this is the most visible component and also carries the most academic worth.

Tools and Repositories

The videolectures of all VUP courses are broadcast on the university's own satellite TV channels. Students require a dish receiver to receive and view these courses. A further project, again funded by the government, was used to provide receiving equipment to cable operators throughout the country so that the channels became available in all households over cable networks. Students started demanding copies of the lectures, and after an initial short experiment with videotapes, the university made the lectures available through CDs and DVDs provided through the university's online bookshop at the cost of replication.

The advent of YouTube[1] in 2005 ushered in a revolution in video publishing by providing a free platform for the storage and dissemination of videos without any cost to the publisher; even the cost of bandwidth required to stream the videos was borne by YouTube. It did not take long for this to become the largest repository of video materials ever established. Thus, it was almost a foregone conclusion that VUP courses would eventually end up on YouTube, and it was decided that the university should establish its own YouTube channel,[2] then start uploading its lectures there for easy access from any part of the world.

This added another twist to the development cycle. Lectures now had to be post-processed into several different formats: broadcast television with the highest quality, CDs and DVDs with medium quality and online provision with the lowest

[1] www.youtube.com
[2] www.youtube.com/vu

bit rate. In 2008, VUP started uploading its lectures onto YouTube, and very soon more than 6,000 hours of videolectures had been uploaded. The initial access to these lectures was in random order, but students joined in the effort and started publishing "playlists" that grouped and ordered all lectures belonging to a single course, then made these lists available to the public at large.

A significant effort towards OER was simultaneously taking shape at the Massachusetts Institute of Technology (MIT) in the form of MIT OpenCourseWare (OCW). The MIT OCW site[3] went public in September 2002, with most of the published courses comprising text materials. Some lectures for a small subset of courses were available in video format, but these were the minority. OCW materials were placed on MIT's own servers whilst video content was hosted externally. As the number of courses with videolectures increased, it was obvious that the paths of MIT OCW and YouTube would intersect, as did indeed happen. Currently, most of the video content from MIT courses is hosted on YouTube whilst a small number of video clips (rather than lectures) are still available from MIT servers directly.

The VUP became a member of the OCW Consortium (OCWC) in 2010.[4] As part of the membership requirements, VUP was required to publish at least ten courses under a Creative Commons licence over the next three years. This is when a concerted effort to publish VUP courses in the form of an OCW site started. In a very short time, the VUP Open Courseware site was established.[5] VUP courses were already structured according to the requirements of its LMS, and it was fairly straightforward to publish all courses on its OCW site, complete with assignments and solutions and, in many cases, associated reading material as well, by linking through to the LMS repository. Since the videolectures were already hosted on YouTube, it was a simple matter to link the VUP OCW site to YouTube. Almost overnight, more than 130 three-credit undergraduate- and graduate-level courses were made available by the university under a Creative Commons licence. In 2012 the VUP site received the Outstanding New Site Award for OpenCourseWare Excellence from the OpenCourseWare Consortium.[6]

It is interesting to note that the MIT OCW site started before YouTube came into existence yet now hosts most of its video content on YouTube, whilst in the case of VUP, its lectures were hosted on YouTube before its OCW site was published. With all of its content being made available under a Creative Commons Attribution-ShareAlike licence (CC-BY-SA), VUP has established an important OER site that is proving useful to other institutions and individuals both within the country as well as overseas.

Enablers and Barriers

The prime mover for the OER effort at VUP was that right from the very start, the university was completely based on the innovative use of modern information and communication technologies (ICT). All study materials were designed from the ground up as digital materials, and all assignments and quizzes were handled

---

[3] ocw.mit.edu

[4] www.ocwconsortium.org

[5] ocw.vu.edu.pk

[6] ocwconsortium.org/en/community/blog/2012/03/29/ocw-consortium-announces-2012-winners-of-site-awards-for-opencourseware-excellence

digitally through the LMS. The only transition required was very much in line with the repurposing philosophy of OER: VUP simply recast its own materials and published them in a different format.

All resource persons and professors were required to assign all intellectual property rights (IPR) to the university at the time of course development, because the university intended to broadcast the lectures and therefore needed the right to do so. This ownership of IPR has also enabled the university to publish its courses as OER without tedious negotiations with course authors.

The recognition of the VUP OCW site by the OCWC has further strengthened the case for the use of these OER by other institutions. Whilst many professors and students from other institutions benefit from VUP courses and videolectures informally, at least one professor has used this material formally at another university in a very innovative manner. He has provided his students with VUP videolectures for his course and prescribed a viewing schedule. He then brings the students together for a discussion session once a week; they are expected to have viewed the lectures and done the required background reading and preparation before coming for the face-to-face meeting. According to the professor, the quality of interaction with the students has improved phenomenally, since the questions they ask are no longer impromptu in-class questions but well-researched problems that require expert input. It is hoped and expected that other professors from other universities within Pakistan will follow suit.

No significant barriers were encountered, and the VUP effort to make its content freely available has been admired by one and all, with the spirit of OER seemingly well understood. The HEC expects that the VUP OCW site will become a role model for other institutions to emulate.

Policy

At the moment, there is no policy on OER in Pakistan. Although one can argue that all materials developed through public funds should be made freely available to all comers, this has not been the practice. Universities and other institutes of tertiary education are self-governing bodies operating under charters granted by the federal or provincial governments, and are free to take their own decisions. The HEC is the regulator, laying down curriculum guidelines and establishing faculty induction criteria. It does, however, provide federal grants to public-sector universities, and these could be used to leverage the roll out of OER. However, the OER issue has not been addressed so far and no policy guidelines have been established.

Strategy and Sustainability

It should be clear from the above narrative that the advent of OER at VUP was due more to a set of serendipitous circumstances than to a focussed effort in this direction. The progression of its study materials towards OER was much more of an evolution rather than a revolution. Almost no additional effort was required on the part of the course authors, and the entire exercise was undertaken by technical staff at the university. This has important implications for the future.

The university is experimenting with new pedagogical approaches whereby discovery-based learning will be stressed and course materials are expected to morph away from the lecture-based format into smaller, topic-based modules, complete with self-assessment exercises, challenge problems and remedial suggestions. The role of the online tutor will also change towards providing more guidance than tuition. It is expected that the "openness" of VUP materials will not be affected by this transition. In fact, the newer materials will fit very nicely into the "repurpose and reuse" philosophy of OER by providing smaller modules as compared to one-hour videolectures.

In terms of sustainability, the university's enrolment trends have amply demonstrated that publishing its courses freely has had no negative impact whatsoever on enrolment. Open publishing of course materials is, in one way, the ultimate peer review. The fact that the VUP materials are mentioned favourably in academic and social circles has given new impetus to this effort, and the uncertainties of the early days have been completely replaced with a new-found confidence on the part of students and faculty alike.