

# Mapping Open Educational Resources for Access and Equity in Higher Education in India

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## **Abstract**

In today's competitive higher education world, the growth of Open Educational Resources (OER) initiatives offer real opportunities for improving access and transfer of knowledge and information to a wide range of users. OER movement has now grown to be a worldwide movement making higher education equally accessible through the web to all who can make use of it. It has the potential to permit globally created educational resources to serve the knowledge needs of diverse communities. Various forms of OER have dramatically reduced the cost and increased the availability of quality higher education at lower costs. OER and digitized print resources help alleviate situations arising from the paucity of up-to-date educational resources.

One of the greatest challenges India faces is to provide extensive access to quality higher education opportunities. In spite of having one of the largest higher education systems in the world, the overall GER in the age group of 18- 24 years still stands at 11% compared to the world average of 23% and 55% for developing countries. A GER of more than 35% is considered necessary for a country to achieve sustainable development in a global knowledge economy. India needs a massive expansion of opportunities for higher education to about 1500 universities to attain a GER of at least 15 per cent by 2012. Given its resource constraint operationalisation of this target is going to be a challenging task. An expanding OER movement offers great promise for meeting this challenge. A coordinated effort is therefore, required to design, develop and deliver OER tailored to meet diversified learner needs and styles. Accordingly, India's National Knowledge Commission (NKC) has recommended the use of globally available OER and Open Access (OA) as a means of radically increasing the widespread availability of high-quality educational resources for extending access and enhancing quality of higher education in the country. India has now become an active player in OER movement as evidenced by the increasing availability of OA electronic journals, OA repositories, open source software-based repositories and a vast digitized material offered freely and openly for educators, students and self-learners.

This paper maps the scale and scope of Open Educational Resources initiatives and examines how well the development of OER address the core concern of providing wider access to quality higher education at an affordable cost. The paper also identifies the factors that help or hinder the drive to improve accessibility to OER and outlines a strategy to make effective use of OER for promoting access, equity and excellence in higher education in Indian.

**Keywords:** India, Equity, Access, Open Educational Resources, Higher Education

## **Introduction**

Though tremendous efforts have been made world over to broaden the access to education there is a growing global demand for education and a growing gap between demand and supply. Already there are some 140 million postsecondary students globally. China and India have doubled enrolments in the past ten years. About thirty million youth are fully qualified to enter a university. This number will grow to over 100 million during the next decade. By 2020, 40 percent of the global workforce is predicted to be knowledge workers with a need for tertiary qualifications. In most of the world, higher education is mired in a crisis of access, cost, and flexibility. The dominant traditional forms of higher education in developing nations, characterised by campus based, high cost, and limited use of technology, seem ill-suited to address unprecedented global demand for education. An evident and expanding Open Educational Resources (OER) movement offers great promise for meeting this challenge by expanding access to experts, curriculum and learning materials, making learning opportunities more flexible and helping contain rapidly increasing costs through initiatives that make quality tools, content and practice widely available. The credible and sustainable OER in combination with online and open learning can increase access through increased opportunities for learning, improved cost-effectiveness of resources and increasing quality and

variety in resources. OERs and OCWs have great potential for providing access to knowledge for the global public including underprivileged and isolated students in developed and developing countries who are excluded from higher educational opportunities. If education is a public good OER make it a social property. The principles of OER are founded on the academic traditions of freely and openly sharing and extending knowledge.

The need for OER is growing and likely to continue to do so as jobs, technology and knowledge change rapidly. Connectivity to the internet is increasing; low-cost computers and enhanced mobile phones are being developed; and the body of open content in digital format is growing. There has been an increase in funding available for the creation, distribution and discovery of OERs. Making changes to OER, especially to address the needs of local circumstances and constituencies is at the core of OER and of adaptability as a human right in education. Reuse, rework, remix and redistribute are the major ways that OER can be used and changed.

### **In search of Access and Equity to Higher Education in India**

Higher education system in Indian is one of the largest and fast growing systems in the world with 431 Universities, 20677 colleges, 5.05 lakh teachers and almost 140 lakh student enrolments in higher education as in 2008. The Government plans to setup 16 new Central Universities, 14 World-Class Universities and several additional colleges during the 11th Plan. However in spite of tremendous expansion in higher education in the country, the overall GER in the age group of 18- 24 years still stands at 11 per cent, which is too low compared to 23% of the world average or 36.5% for countries in transition or more than 55% for the developed countries. There are significant intergroup disparities in access to higher education. GRE in rural India is three times lower compared to that in urban India. Among the poor it is about 12 times lower compared with non-poor and the lowest among the poor households belong to SCs, STs and OBCs (overall average being 1.30%). The GRE among SC/STs is three times and that of the OBCs about two times less compared with others. There are also wide gender disparities in terms of access to higher education- the GER being 12.425 for the males and 9.11% for the females. The females belonging to lower castes and the Muslim community suffer more acutely in accessing higher education. Still one-third of the country's adult population is illiterate. Proportion of women students in higher education is just 38 % and that of the SC/ST about 18%. The pass outs of our educational institutions are less employable as they lack the necessary skills and knowledge to compete in the global labour market. Students coming from socio economically disadvantaged backgrounds particularly find fewer opportunities for social and academic mobility due to quality constraints. Further the size of working population (over 400 millions), is too large to be trained for up-gradation of knowledge and skills through existing means.

Access, Equity and Quality are accordingly the main focus of new initiatives in higher education in India. Education Policy document of 1986 and subsequent policy announcements including the 1992 action plan have all been governed by five broad goals: enhancement of the higher education enrolment, provision for equal access to all, quality education and promotion of relevant education. The development experiences of the developed nations indicate that sustained economic growth requires a minimum of 20% to 25% enrolment in higher education. With this realisation the 11<sup>th</sup> Plan aims to increase the GER to 21% by the end of 12<sup>th</sup> pan with an interim target of 15% by 2012. It needs a massive expansion of opportunities for higher education to 1500 universities nationwide that would enable India to attain this target. Even to maintain the current ratio a new major university needs to be created every week. Given the paucity of quality faculty, inadequate infrastructure, lack of well equipped libraries, and the poor quality of available educational resources, operationalisation of this target is going to be a challenging task.

To make the educational system respond effectively and face the emerging challenges there needs to be a focus on transforming the higher education system into a more dynamic, flexible and diversified system having better linkage with social demands. Since the conventional teaching-learning methods cannot cope up with the scale of educational challenges, technologies of different kinds need to be harnessed to supplement the conventional teaching and learning process. It is in this context that OER is being seen as a means for ushering in a revolution in delivery of quality education in a cost effective and need-based manner. Of all the available modes and resources of education, OER have proved to be the most accessible, equitable, cost effective and multi- perspective resources, free from the constraints of time and space, and the rigidities of curricula.

The National Knowledge Commission (NKC) has also strongly argued that, the success of a knowledge economy depends to a large extent on upgrading the quality of and enhancing the equitable access to education. This can be done by encouraging the development and dissemination of quality OA materials and Open educational Resources (OER). NKC also recommended that a National e-content and Curriculum Initiative should be launched which should initially focus on the rapid production and acquisition of

multimedia and interactive content in high need areas in different vernacular languages through a collaborative process, pooling in the efforts and expertise of all major institutions of higher education in the country.

### **The Current State of Global OER Initiatives**

Even though the history of OER can be traced back to 1994, the phrase 'opens education resources' was first coined in 2002 at UNESCO's Forum. The OER movement formally began in 2000 when the Massachusetts Institute of Technology (MIT), supported by funding from organizations including the William and Flora Hewlett Foundation, decided to offer nearly all MIT courses and materials under Creative Commons licenses. By the time MIT went live, Wikipedia had been running for a year, the Internet Archive had been up and running for seven years, and Project Gutenberg had over twenty years of public domain, community-contributed content in its library. As the MIT initiative gained attention and admiration from educators and learners around the world, several universities starting following it. These initial initiatives eventually led to the formation of the OCW Consortium (OCWC), a non-profit entity with over 200 higher education institutions. As of March 2009, OCWC members have posted over 8,200 open courses worldwide in many languages.

There is growing momentum among higher education institutions to create OCW content and participate in the open movement. Between 2002 and 2007, the Hewlett Foundation, invested about \$68 million in its own OER initiative. UNESCO has created a Free and Open Source Software Portal and with the ICDE it has set up a task force to develop an international approach to OER. The African Virtual Open Initiatives and Resources (AVOIR) project collaborating with 13 African higher education institutions, the TESSA (Teacher Education in Sub-Saharan Africa) consortium created by, and working across, nine countries in Sub Saharan Africa, Carnegie Mellon University's Open Learning Initiative (OLI), China Open Resources for Education (CORE) with 451 courses made available by 176 university members, Universia.net active in ten countries, Open Learn Project of the UK Open University, Best First Year on Line project of Canadian Virtual University and Athabasca University, The Open University of Israel's portal, the Multilingual Open Resources for Independent Learning (MORIL), ISKME's OER Commons, Paris Tech OCW project of eleven member universities of France, and Japanese OCW Alliance of ten participating universities in Japan are some of the prominent OER initiatives. Some more OER projects are emerging at universities in Australia, Brazil, Hungary, Iran, Russia, Spain, Saudi Arabia and Korea.

There are many other institutions and businesses, and even individuals, creating OCW content like Apple Learning Interchange, Connexions, DLESE, EFRARD, EducaNext, Eduforge, iBerry.com, HEAL, JORUM, NARCIS, MIA, NEEDS, SeSDL, LEARNet, Curriki, GEM Gateway to Educational Materials, OCW Finder, Wikiversity, World Lecture Project, Maricopa Learning Exchange. Among the more notable of the many other current OER projects are Wikipedia, EduTools, the African Digital Library, the Knowledge Commons and the Open Content Alliance. There are 4807 OA journals worldwide and the number is continuously increasing. Freely accessible encyclopaedias like Wikipedia and Math World are growing in size and quality. UNESCO/IIEP hosts a Wiki called "OER useful resources" listing several other portals, gateways and repositories.

The above listing reveals that the OER movement is growing in the higher education environment world over. Collectively, these initiatives point to a growing energy and synergy in the OER movement. In 2007, an OECD report estimated 3,000 open access courses from over 300 universities. The numbers are even higher when OER beyond courses and in multiple languages in portals and gateways, institutional repositories, subject portals/collections and community-developed content are included. The ccLearn search engine project with Google has already collected over 25-thousand URL's of open educational resource sites around the world. OER repositories include Merlot with nearly 18,000 items; Curriki with over 6,400 resources; OER Commons with over 18,000 resources; and Connexions with over 4,600 resources, to name just a few.

### **OER Initiatives in India**

Realizing the importance of Open Access and Open Educational Resources, the universities and research institutions In India are taking extra ordinary efforts to support and promote the OER movement in the country. India is becoming an active player not only in the open source software movement and OA movement as evidenced by the increasing availability of OA electronic journals, OA repositories and open source software-based repositories.

As an inter-university centre on electronic media, established by University Grants Commission, the Consortium for Educational Communication (CEC) in coordination with 17 Educational Multimedia

Research Centres, produces TV programmes in various subjects. CEC has set up Learning Object Repository (LOR) and Digital Video repository (DVR) to provide worldwide access to these qualitative learning resources. National Council of Educational Research and Training (NCERT) has embarked upon a project to provide school text books based on National Curriculum Framework 2005 freely for the students and teachers through its website. The National Program on Technology Enhanced Learning (NPTEL) was launched in 2006 by 7 IITs, IIS, Bangalore and other premier institutions for introducing multimedia and web technology and enhancing the quality of engineering teaching countrywide by developing curriculum based video and web courses. The Oversight Committee on the Implementation of the New Reservation Policy in higher educational institutions has chosen this model to emulate.

E-gyankosh, the national digital repository initiative of IGNOU, envisages storing, indexing, preserving, distributing and sharing the digital learning resources generated by ODL institutions in the country. The repository facilitates anywhere, anytime access to a vast amount of self-instructional materials, audio-video programmes and archives of radio and television based live interactive sessions which are otherwise difficult to access and reuse. Launched by IGNOU and supported by MHRD, Sakshat envisages providing one stop solution to educational requirements of learners covering all fields of education including vocational education and learning for life skills. The user interface of the portal provides educational resources, scholarship, testing, super achiever, and has an inbuilt virtual class. Its interact module provides facilities like talk to a teacher, blogging, discussion forum, career counselling, etc and its content generation module follows a Wiki approach of content development and deployment.

The Ekalavya project launched jointly by IIT, Bombay and IGNOU on 26th January, 2003 aims at a free exchange of knowledge and ideas, by placing all the relevant academic material in the Open Source. The project has developed an Open Source Educational Resources Animation Repository (OSCAR) to create a repository of web-based, interactive animations for teaching various concepts and technologies. Its eGURU programme provides the students with a list of relevant and challenging projects, which encourage them to think of innovative technical solutions to various real life problems and its eOUTREACH programme produces high quality digital text, audio, video and HTML contents of educational value for wider dissemination. The eCONTENT programme of the project creates open source digital contents in Indian languages through translation and new writing on topics of relevance to education for all levels.

Brihaspati is an e- Learning platform initiated as open source freeware by IIT, Kanpur and supported by Ministry of Communication and Information Technology. This platform is being used since January 2003 to post the lecture notes, handouts, and reference material on the Intranet for supporting the classroom teaching, benefiting over 75 universities / Institutes across India. IGNOU and the Communication and Manufacturing Association of India (CMAI) are contemplating on providing educational content to students via text, audio, and video on mobile phones. IGNOU estimates that their mobile education campaign will have 25 million students.

Launched by IIIT, Kerala and supported by the MHRD, E-Grid portal has been designed to increase and facilitate access to education resources by the educational community and to facilitate collaboration, sharing of knowledge and best practices to improve the quality of education and learning. The Digital Library of India project, being coordinated by the IIS, Bangalore, along with Carnegie Mellon University, aims at digitising the books in India. More than 450,000 books, including those in Indian languages, have already been digitized under this initiative out of which about 220,000 are already available free on the web <http://www.dli.ernet.in>. So far 21 centres spanning academic institutions, social organisations, and government agencies have partnered in creating this repository of knowledge.

India has a good record in the Open Access (OA) area, with 110 OA Journals being published in the country. Furthermore, several Indian newspapers, both in English and regional languages, are available in Open Access. A large number of government reports are also available to anybody with internet access. A number of steps have also been taken for leveraging ICT at the higher education level. EDUSAT, UGC INFONET, and INDEST/INFLIBINET are some innovative projects undertaken by the Government of India for supply of copyrighted e-Journals and other important research material to Universities/colleges.

This early success in the development and use of OER India has to a large extent been hindered by inadequate broadband connectivity, shortage of computers, lack of training in ICT, inadequate telecommunication infrastructure, insufficient government funding, lack of awareness among potential users, and the absence of helpful policies of the Government. Language is also a constraint particularly while considering the adoption of open courseware. Multilingualism too functions as a limiting factor at times. One of the main concerns regarding OER initiative moving forward in India is the necessity to develop OER in various regional languages.

## Conclusion

OER availability in India has witnessed a steady growth yet its usage is still in its infancy. A number of challenges confront development and delivery of OER in India such as finding suitable technologies, devising compatible infrastructure, collaborating to develop educationally relevant and appropriate models and approaches and fashioning most flexible OER to adequately meet educational requirements of the country. In addition, there is a lack of knowledge about licensing and copyright issues, as well as a lack of institutional support on the part of universities. The initiatives are few given the number of universities, colleges and student population in the country. Little is reported on how the resources are being used across different environments and the impact of their use. There has also been no systematic national effort to develop a strategy for developing and delivering OER in India. Such a strategy would need to address the development of OER for a wider range of disciplines and regional languages. India will have to design and develop its own unique model that suits its needs and the available resources. Once India embraces the concept and expands on the available OA and OER, the intellectual development of the nation will be accelerated as these resources will create higher quality teachers and change their overall pedagogy for teaching.

As a knowledge society, we need to bring knowledge particularly to people who need it so badly like poor, unreached groups and areas. At present students and teachers from rural areas don't have access to the rich resources present in large libraries. OER address this concern by allowing socially and economically disadvantaged individuals to access all the information for free. Access to open courseware will help poorer students in the country to access the best possible knowledge available world over at minimal or no costs. Till the country develops its own sustainable and relevant quality content, it should weight readily available and economically viable sources of quality content for adoption and adaptation. It is important to take cultural concerns, including language, local context, and local user sensitivities into account before putting the material into use. We need to equip ourselves with human and technological capabilities to contribute to open course ware development in a globalised competitive context, develop the skills of adaptation of open courseware to suit the local requirements, build in elements of culture sensitivity in open courseware, and address the question of language especially in the multi lingual contexts and integrate the processes and outcomes of open courseware. Some prominent institutions and experts representing diverse knowledge areas should be selected to develop standards-based, customizable, high quality web based, multimedia, interactive open content repositories for various subjects and in different regional languages.

The continuing issues of technology, access, quality, costs, and relevance of OER need to be addressed on priority basis. Open courseware needs to be developed as an ongoing, internationally collaborative part of academic life. The important aspects of intellectual property rights, assessments of quality, standards that make open courseware broadly accessible, both the availability and the acceptance of appropriate technology, language translation, cultural relevance of imported materials, and a strategy of acceptance need to be addressed. The main challenge for the Government is to provide a robust IT infrastructure and associated socio-legal framework. Web access is needed and connectivity at sufficient bandwidth is to be made available. It is also imperative to disseminate information about the open courseware concept, establish educational quality norms, enhance capacity building and facilitate collaborative arrangements.

The combination of online learning and OER can enable availability, accessibility, acceptability and adaptability of both theses resources. They also hold promise for extending learning beyond the traditional boundaries of the virtual and physical classroom. Perhaps their strongest potential lies in their combined ability to enable participation in a shared commons of cultural and educational communities – enabling anyone to create, teach and learn in their own local context. This will ultimately support the vision of the country towards attaining the status of knowledge society. Our institutions need to assess awareness, production and use of their OER, to identify the main barriers and incentives for their development and consider possible evolutions for the future.

With PC penetration, internet access and bandwidth increasing, and OER delivery modes becoming more flexible with the large scale use of laptops and internet-enabled mobile phones, the future of OER movement in India looks promising. With more and more young people logging on to G-Talk, Face book, Orkut and You Tube etc, technology is no longer seen as an impediment but as supportive and indispensable. As the number of these users increases the OER will continue make strides and equip, enable, and empower the youth in India to seize ever growing opportunities in the global economy.

