

Proceedings of the  
**Regional Symposium** on  
**Open Educational Resources:**  
**An Asian Perspective on Policy and Practices**

19<sup>th</sup> - 21<sup>st</sup> September 2012

This Symposium is dedicated to the International Development and Research Centre [IDRC].

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# OPEN EDUCATIONAL RESOURCES (OER) FOR EMPOWERMENT OF OPEN SCHOOLS

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## **Abstract**

*In this paper an attempt has been made to discuss on the initiatives taken in developing Open Educational Resources (OER) for strengthening the open schooling system in India. The OER has become a movement worldwide for not only acquisition of knowledge in a digitized form but also has the significant characteristics to be repository of updated knowledge. No doubt this revolutionary initiative has come a long way in recent years for developing countries as blessing for increasing access to quality resource materials which not only facilitates learning but also links education with livelihood.*

## **1. Introduction**

Education has no longer remained as either the prerogative of institutions or the state, and even knowledge has crossed the boundaries of 'Gurus' (teachers). Thanks to Information and Communication Technology (ICT) which has not only brought the revolutions in the education system but also changed the strategies for learning amongst the young masses. As one progress in the present century, almost every day new and advanced technologies are getting evolved and thereby the strategies for learning are also getting updated in the educational institutions. The role of teachers in the context of planning learning strategies in the classrooms is getting replaced with the updated inputs as supported by the ICT. The policy planners, education providers and other players in the system, including parents, also need to get themselves updated to the changing scenario. As been observed, the teachers are supposed to be repository of knowledge in their respective fields and thereby can essentially facilitate the learning of the students effectively. This calls for self renewal of the teachers on a continuous basis to further strengthen this repository of knowledge. The educational institutions shall have to support for this cause to achieve its goals and objectives. It is in this context the open educational resources (OER) play a significant role to strengthen the education system in the developing world.

## **2. OER: The Movement**

The Open Educational Resource (OER) materials are the digitized version of the learning materials that are available freely and openly for learners, teachers and scholars to use and re-use for teaching learning and research activities. The basic objective of OER initiative is to have open movement worldwide to explore the effective and efficient systems to create, share and evolve open educational learning

materials. The UNESCO has been strongly advocating placing OER into practice. The Free/Libre Open Source Software (FLOSS) movement, at the initial years, joined with OER on the issue related to concretizing how to create resources and those could be re-used and freely maintained. The basic strategy adopted by the FLOSS movement mostly linked to (i) collective participation in development of content (ii) updating the content by anyone, (iii) contribution by many authors, (iv) defining learning outcomes (v) creation of support network and developing materials in a collaborative manner (vi) adapting ICT solution by the authors.

The history of Open Educational Resources (OER) goes back to 1994 when Wayne Hodgins has first time used the term “learning objects” in the context of instructional design for developing digital materials. He emphasized the importance of designing and producing the digital materials in such a manner as to be ‘reused’ easily in a variety of pedagogical situations. Subsequent to this, David Wiley in 1998 came out with the concept of “Open Content” basically for professional development of experts in the educational community. This idea became more popular by the inter-net users. The idea of ‘Open Content’ was based on the basic principles of open/free source of software acquisition movement and was widely applied to open content and the creation of widely adopting open license for content.

Larry Lessing and others in 2001 developed the idea of “Creative Common” and widely circulated a set of flexible licenses to improve the Open Publication License and thereby increasing the credibility and confidence to the Open Content Community. Meanwhile, the Massachusetts Institute of Technology (MIT) in 2001 also announced its “Open Course Ware” initiative to publish nearly every University course for free public access and for non-commercial use. It not only pronounced to encourage taking up such projects at the institutional level but also outsourced such activities leading the MIT brand to the movement.

Subsequently, in 2002 the term “Open Educational Resources” was first adopted at UNESCO’s 2002 World Forum on the Impact of Open Courseware for Higher Education in Developing countries funded by the William and Flora Hewlett Foundation. The forum resolved “Open Educational Resources are defined as “technology–enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes”. OERs are typically made freely available over the web or the inter-net. Their principal use is by teachers and educational institutions support course development but they can also be used directly by the students. Open Educational Resource includes learning objects such as lecture materials, references and readings, simulations, experiments and demonstrations as well as syllabi, curriculum and teachers’ guides.” (David Wiley, 2007)

### **3.OER in Indian Context:**

The Working Group on Open Access (OA) and Open Educational Resources of National Knowledge Commission (NKC), Govt. of India while discussing through its report on issues related to access to and quality of higher education observes that easy and widespread availability of high quality educational resources that would drastically change the paradigm of teaching for the better and improve the quality of education in institutions. While perceiving the OER in a narrower perspective, it proposes to free and open digital publications of high quality materials organized as

courses that include lectures, related reading materials, snapshots of discussions, assignments, evaluations, etc.

In India, major initiatives for creating open educational resources are mostly in the basic sciences and engineering areas. One of the major programs in India is the National Program on Technology Enhanced Learning (NPTEL) being carried out by seven Indian Institutes of Technologies (IIT's), the Indian Institute of Science, and other premier institutions around the country and being funded by the Human Resource Ministry. While the NPTEL objective is to enhance the quality of engineering education by developing curriculum-based video and web courses for the students, it also provides an opportunity for teachers and students from rural areas to learn from these high quality lectures and improve the quality of teaching in their classrooms.

The second important open educational resource project is the Ekalavya project launched by IIT, Bombay. In this project, the content is developed in various Indian languages and is distributed through internet. The Ekalavya project has also developed an Open Source Educational Resources Animation Repository (OSCAR) and provides web-based interactive animations for teaching various concepts and technologies. Funding for the Ekalavya and OSCAR project comes mainly from private industry.

E-Grid is the third main Open Educational Resources initiative of India that develops and maintains pedagogically sound and refereed Educational Resources in identified subjects. Subject specific portals are developed and these are managed by subject experts within the program. This project is supported by the Human Resource Ministry through IIT, Kerala.

In the school education sector, the National Council of Educational Research & Training, (NCERT), has placed its new edition of textbooks on its web portal for free download by children and teachers. It has also made accessible its audio & video programmes as a depository on the website and in webcast mode. But it serves only the limited purpose as the text books are mostly meant for the classroom transaction with limited option to promote self-learning.

National Institute of Open Schooling (NIOS), an autonomous organisation under the Ministry of Human Resource Development, Government of India, has brought radical changes largely due to the benevolent use of ICT. The changes are primarily of two types: i) offering on-line educational programmes and ii) using open educational resources (OER) where vast amount of educational material can be made available to learners free of cost. The initiative of NIOS in the context of OER development has been focussed mostly to develop exemplary open courseware which could be made available through Internet and thereby to supplement printed books.

OER has the advantage of making learning enjoyable, opens up possibility of accessibility to quality learning materials by all, and subject to continuous up-gradation of contents by subject experts. Because of its accessibility by all, it has been envisaged that not only the learners of NIOS could be benefited, but also learners from conventional education sector also would have access to the same without incurring any cost. The NIOS has recently taken up development of OER in three areas of vocational education, viz., (i) Computer and IT, (ii) Tourism and

Hospitality Management, and (iii) Rural Technology. The basic model used for creation of Open Resource is linked to the *Role Based Education for Scenario and Situation Based Learning and Situated Development for Social Reconstruction and Transformation*.

The Commonwealth Open Schooling Association (COMOSA), a body represented by the open schools in commonwealth countries under the mentorship of Commonwealth of Learning (COL), is committed to develop, adopt/adapt and share learning materials for its distance learners to address the diversified learning needs. It has recently adopted a policy related to OER in its recently concluded General Body meeting held at Seychelles for larger benefit of the ODL system. The first set of OER in school subjects were also launched and dedicated to the learners.

#### 4. Model in developing OER for Vocational Education in NIOS:

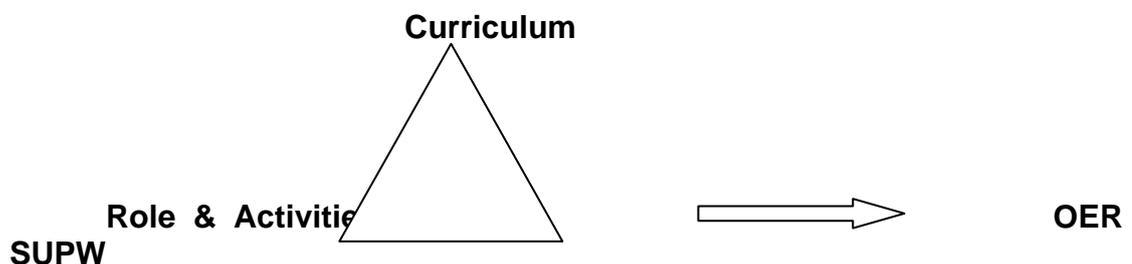
With the use of complete ICT applications in networking and global connectedness, the OER becomes independent of any existing delivery modes and can be used suitably in face-to-face, distance or in any mixed or hybrid mode. With the total virtualisation and integration of real life working and living, this becomes a new mode, the trans-mode of education.

Existing curriculum is converted into role and function based blueprint, and each role is specified in terms of functions-processes and expected results. Each process is then described by activities that help in completing the process. Each activity is written with its context or situation and supporting information given for learning, teaching and evaluating. Thus, ultimately the curriculum is changed into role and activities to give results. Each activity needs knowledge, tools, and other resources to complete the activity. The linkages established in the model included Role, Functions and Results (outcome) as highlighted below:

**Role → Functions- work processes → Results**

**Higher Level Roles → Higher functions – processes → Higher Results**

The triangular linkages in development of OER are indicated as below:



This triangle maps activities with OER and curriculum; and curriculum could be 'covered' by activities leading to Socially Useful Productive Work (SUPW). This paves the way for the learning through activities and the outcome will enrich the learners and society at large. Here in education we may choose situations as class of students, and/ or school and/or surrounding community. This was the intent of Mahatma Gandhi's Nai Talim to link education with working leading to social development and individual /group livelihood / employment.

The ultimate goal is to develop and deliver quality vocational courses by developing Open Education Resources and delivered to students for playing various roles in the areas of their career choice and for obtaining their livelihood and place in society. The basic aim is to make the vocational education sustainable in ever changing skill development process by creating partnerships with institutions and industries, which need to be absorbed in the framework of National Vocational Education Qualification Framework (NVQEF) of Govt. of India. The process of OER development leads to following outcomes:

- I) *Creation Open Education Resources (OER) in the form of role based small modules* at different levels useful for all students at the Secondary School stage (Classes XI to XII), both pre-vocational and vocational education stages.
- II) *Creation OER useful for job situations based on role based courses* for Senior Secondary Schools (Classes XI & XII).
- III) *Creation and management of Course Teams and Study / Training Center Teams* and organise their services for learners along with their continuous training and up gradation of vocational competencies and capabilities.
- IV) *Creation, management and maintenance of learner groups and their associates and communities* of teachers / trainers and learners and practitioners for continuous and sustainable development.
- V) *Creation of network of provider institutions, teacher & trainers, users and agencies* involved in the vocational education and employment and form their consortium or alliance for sustainable program development and deployment. NIOS with the support of institutions/organisations strives to achieve the goals in a partnership model.
- VI) *Creation of mechanisms for value conversion and wealth creation, quality assurance* and interest based community formation for the management of public-private and community partnerships for the socio-economic development of the locality and local community in the context of globalisation.

## **5. Development of Open Vocational Education Resources:**

For each subject area, Core Group of domain experts and Course Teams have been formed. The steps involved are:

- i. Existing providers and user institutions, experts and practitioners are identified and formed into expert/ production and deployment teams / groups, one each for the three selected areas.
- ii. Eight top experts in the profession are identified and associated with each team as team leader.
- iii. Focussed groups (Area based Teams of about 25 teachers each) for development and deployment are formed along with their leaders.
- iv. Community of developers, deployers and users are formed and organised through self-governance.
- v. Providers are being formed into partnerships / consortium with suitable MOUs.

## 6. Empowering Open Schooling:

The entire efforts for developing exemplar OER materials rest with the following principles with the ultimate goals to empower the open schooling movement in the developing nations in the following context:

- i. **Access and distribution of learning Resources:** OER helps in bringing collegiality and on-line co-operation among educators who share not only development of learning resources but also helps to increase the quality of learning resources that are available beyond the four walls of the classrooms. Since the learning materials are available at the public domain for use, which otherwise would have remained inaccessible.
- ii. **Capacity building:** OER offers not only an opportunity in building the capacity of the individual but also of the institutions through effective networking. For example, the teachers have to search for potentially useful resources based on the most updated knowledge which further enables them to adapt and reuse and thereby significantly helps them to build their own capacity and also they can further contribute for updating the resource materials by providing necessary feedback out of their own experiences.
- iii. **Collaborative Efforts:** The principle of OER is basically enhances in collaborating efforts in creating learning resources, more specifically in the context of developing countries. As the whole effort of collaboration is online, the materials can be infinitely customized, availability of appropriate free content license is used. Thus, this enables the developing nations to lead developments and contribute significantly to the knowledge community as active partner. These collaborative efforts facilitate in material development process and helps in empowering educators to demonstrate their potentialities.
- iv. **Best Practices:** OER are basically stored in databases or repositories. Since level of documenting the resources are undertaken scientifically, hence there is an ample scope to store the best practices in the form of source form, which usually goes unseen. Even this helps both educators and the organization to demonstrate the practices in their local situation with suitable adaptation, if necessary.
- v. **Research:** OER has strong component of research. Any resource material gets developed under the free content principles require to have strong basis of research. Since its primary goal and to create and host free content, multi-media learning materials, resources and curricula for all age groups irrespective of languages, a scientific method of approaching the material development process becomes a component of basic research. Similarly, the effective use of these materials and feedback generated helps in further enhances the quality of resource materials.

## 7. Conclusion:

Since vocational courses are basically a skill development process, it is being offered through a large number of institutions in the country with similar curriculum. The initiative taken by NIOS to bring the process into the open platform may help the institutions and individual not to replicate the curricular inputs. Under the existing ever changing socio-technological scenarios and work and market situations, the task of vocational education would become much easier process linking education with work. Thus it is a worker's role based training being given with a set of available input materials, technologies and workshop facilities available at the work places, workshop and training institutions. The integration of work with knowledge, socio-technological situations and value creation requires the processes of training and education not only in realm of vocational education, but it slowly transforms vocational education into 'higher education'.

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