OpenCourseware: Learning Beyond Classroom

- Rupak Chakravarty, Lecturer-cum-Assistant Librarian, Deptt. of Library & Information Science, Panjab University, Chandigarh.

- Sukhdeep Kaur, Student, Deptt. of Library & Information Science, Panjab University, Chandigarh.

Abstract:

OpenCourseWare is an innovative and bold idea. It aims to support learning and teaching programme significantly. Learning material contained in an OCW provides learners an opportunity to gain knowledge beyond their routine classroom environments. These are in the digital form which can be accessed online, thus breaking the barriers of time and distance. Indian academics can play a significant role in creating OCW materials for the students to propagate the teaching and learning process diluting the limitations of traditional educational setup and begin a new culture of "Learning Beyond Classroom". The present study aims to sensitize the teachers and learners about the potentials of the OCWs. It presents a proposal for creating an "Indian OCW Consortium" at different levels. Also discusses the challenges and issues in establishing such an OCW project.

1. OpenCourseware (OCW): An Introduction

- "A free and open digital publication of high quality educational materials, organized as courses".
- "An OCW is a university course that is provided to the public without charge via the Internet."

The opencourseware concept is a part of the larger movement that promotes free and unrestricted access to knowledge. An opencourseware site provides open access to the primary teaching materials for courses taught at educational institutions, enabling educators to draw on the materials for teaching purposes, and students and self-learners to use the materials for the development of their own personal knowledge. The primary

characteristics of OCW are that it is offered for free, does not lead to a degree, and does not grant access to faculty. The OCW consists of syllabi, online presentations, and reading recommendations, which makes it particularly handy for use by other faculty.

2. Research Methodology:

2.1 Objectives:

The present study has dual objectives:

1. To create awareness regarding the benefits of OCW by analyzing the OCW projects of international repute.
2. To propose a guidelines for the establishment of Indian OCW Consortium.

2.2 Scope:

Online survey of the University websites of the North-West India to know the current status of OCW Initiatives in those regions. The universities of the following States and Union Territories are included: Punjab, Haryana, Chandigarh, Himachal, Jammu and Kashmir. The present study also covers the major OCW initiative at international level.

3. Relevance:

In India the OCWs can prove to be a boon for those learners who are not in the main stream and can be greatly benefited by using the course content whenever they need. The OCWs can also greatly contribute in strengthening the educational infrastructure of the institute providing distance education. Also lots of educational materials are being created by the students and faculty members of the educational institutions. These knowledge gems are lost after certain period of time. A well organized OCW project can disseminate and preserve for wider audience in future also. The relevance of the study can be best understood and expressed by analyzing and evaluating the benefits of OCW as mentioned below:

Global benefits

- Advances knowledge by unlocking information for the benefit of all
- Provides open access to high-quality educational content to educators and learners for whom the materials can make the most difference
- Provides a model demonstrating the value of openness
- Institutional benefits
- Builds global awareness of your institution's unique educational approach and curriculum
- Improves recruitment by helping the right students find the right programs at your institution
- Provides a resource for your students, faculty and alumni that supports learning and collaboration

Faculty benefits

- Builds awareness of your unique contributions to your field
- Fosters connections with colleagues around the world
- Preserves a record of teaching innovations and allows others to build upon them

Key Points

- Evaluation research and user feedback demonstrate that an OCW initiative has a positive impact on education around the world.
- OCW embraces faculty values around teaching and contributing to their disciplines, and reflects highly on the sponsoring institution.
- There are obstacles to mounting an OCW, but they are manageable.

3. MIT OCW: Opening up the doors of knowledge

MIT OpenCourseWare (MIT OCW) is an initiative of the Massachusetts Institute of Technology (MIT) to put all of the educational materials from its undergraduate- and graduate-level courses online, free and openly available to anyone, anywhere, by the end of the year 2007. MIT OCW can be considered as a large-scale, web-based publication of MIT course materials. The project was announced in October 2002. This project is jointly funded by the William and Flora Hewlett Foundation, the Andrew W. Mellon Foundation, and MIT. The initiative has encouraged a number of other institutions to make their course materials available as open educational resources.

MIT OCW offers over 1800 courses were available online. While a few of these are limited to chronological reading lists and discussion topics, a majority provided homework problems and exams (often with solutions) and lecture notes. Some courses also include interactive web demonstrations in Java or Matlab, complete textbooks written by MIT professors, and streaming video lectures. OCW is a free publication of course materials used at MIT. Students can:

- Get lecture notes, problem sets, labs and more.
- Watch lecture videos and demonstrations.
- Study a wide variety of subjects.

4. OCW Consortium:

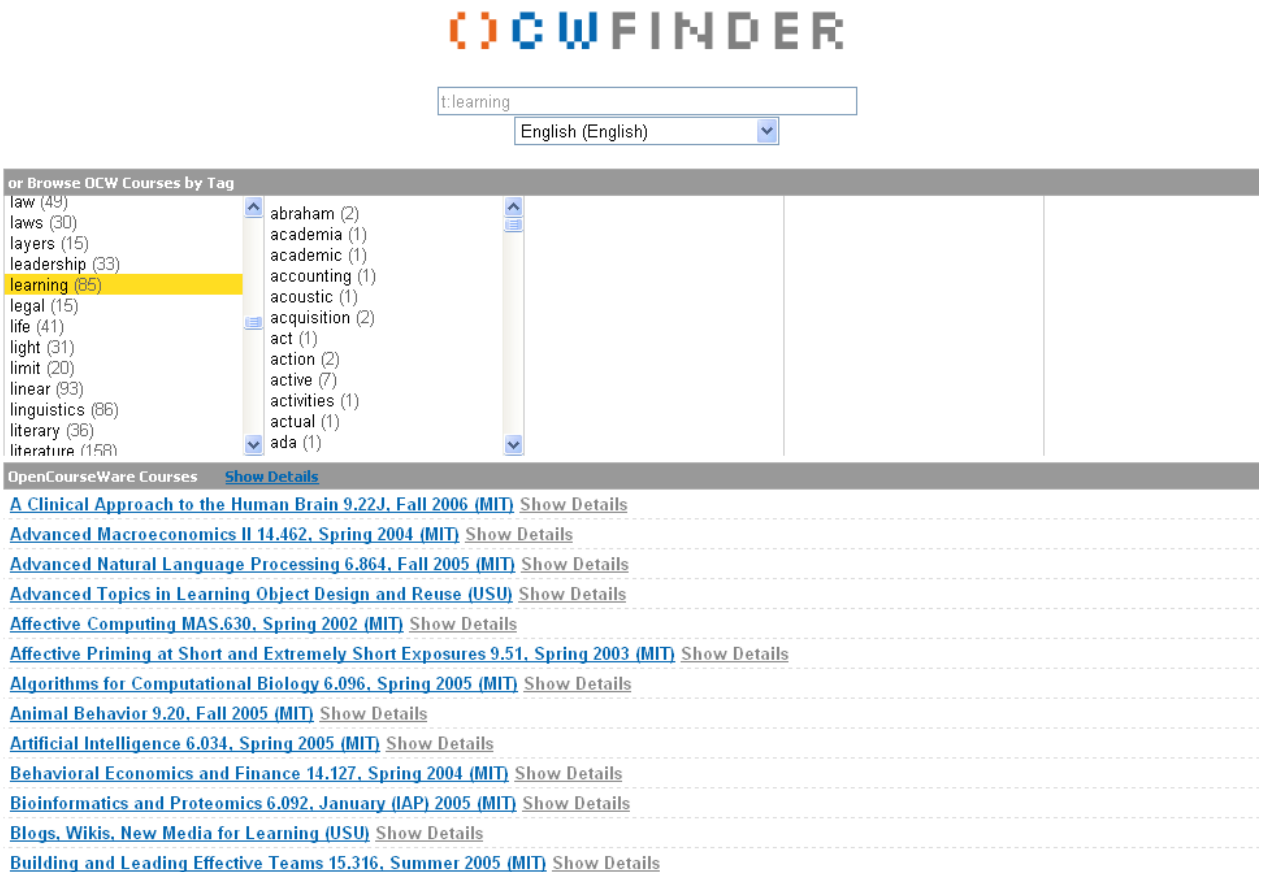
The OCW Consortium is a collaboration of more than 100 higher education institutions and associated organizations from around the world creating a broad and deep body of open educational content using a shared model. The mission of the OCW Consortium is to advance education and empower people worldwide through OCW.

<u>The Goals of the Consortium</u>

- Extend the reach and impact of open courseware by encouraging the adoption and adaptation of open educational materials around the world.
- Foster the development of additional open courseware projects.
- Ensure the long-term sustainability of open courseware projects by identifying ways to improve effectiveness and reduce costs.

5. OCW Finder:

OCW Finder provides a search interface to retrieve the open course wares. The courses can also be browsed through the keywords provided in the first column. Subdivisions of which are presented in the subsequent column.



5. OCW Softwares: Moodle

Moodle is a course management system (CMS). It is a free, Open Source software package designed using sound pedagogical principles, to help educators create effective online courses with opportunities for rich interaction. Modular design means that people can develop additional functionality.. We can download and use it on any computer. It can scale from a single-teacher site to a University with 200,000 students. It is also known as a Course Management System (CMS), or Learning Management Systems (LMS), or Virtual Learning Environment (VLE). In India around 250 institutions are using Moodle for the OCW management.

Moodle features:

Forums, Content managing (resources), Quizzes with different kinds of questions, Blogs, Wikis, Database activities, Surveys, Chat, Glossaries, Peer assessment , Multi-language support (over 60 languages are supported for the interface).

Moodle Community:

Moodle has a large and diverse user community with over 330,000 registered users speaking over 70 languages in 196 countries. The main international discussions are held in English. In India around 250 institutions are using Moodle for the OCW management. Some of them are Allindialive Online University, Chemistry Department, Pondicherry

University, Directorate of Distance Education, Dibrugarh University.

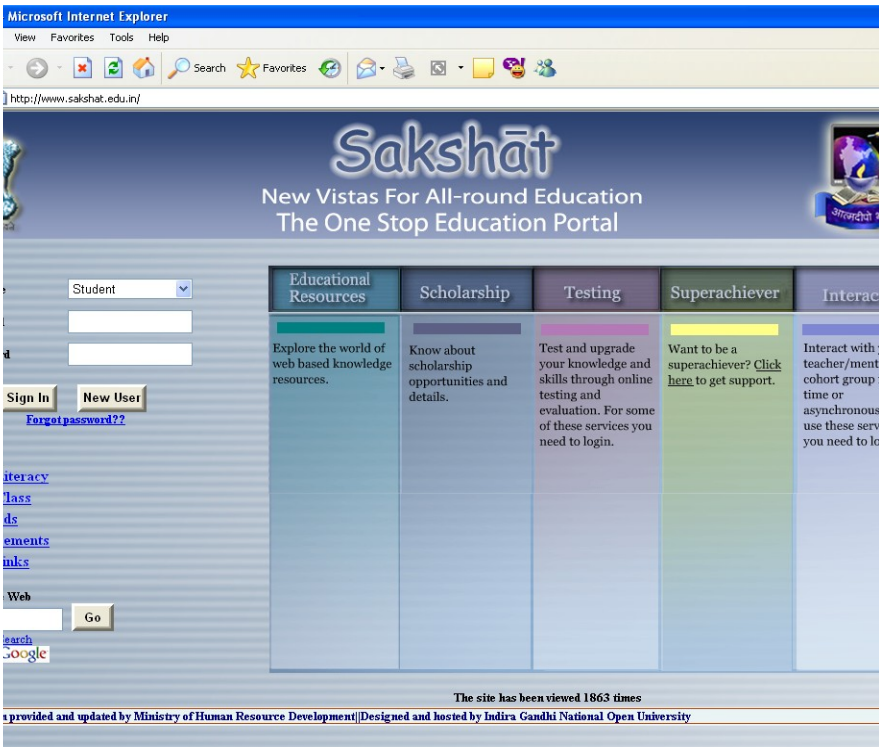
6.2 Brihaspati:

"Brihaspati" is open source software that could be used by any university. This is a very user-friendly open source framework and could be effectively used to build e-education application. One can also modiefy it and use it in domains like Human Resource Development and e-Governance. Currently this project is funded by Ministry of Information and Communication Technology, Government of India (since November 2003) and IIT Kanpur (since August 2002). It is being used by more than 70 institutions in India.

7. Indian OCW Initiatives:

7.1 MHRD: Sakshat**:**

Sakshat has been designed and developed by IGNOU for the Ministry of HRD, offers eBooks**,** eJournals, Digital Repository, Scholarship, Audio/Video Library having electronic resources (animations), Reference Material created by various educational bodies such as NIOS, IGNOU, etc. and Virtual Class. The study materials are mostly been classified on the basis of class, subject and topics.



7.2 IGNOU: eGyankosh

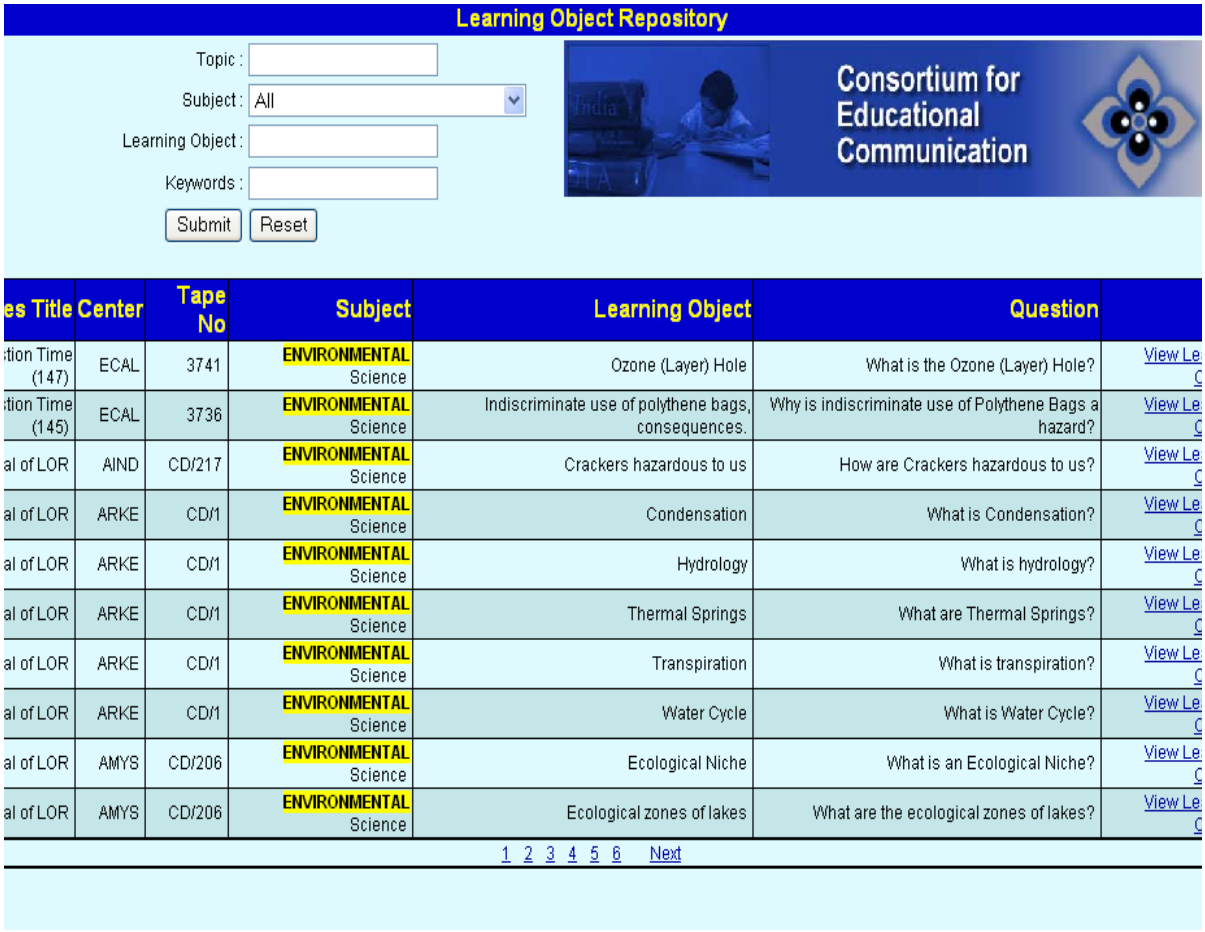
National Digital Repository is a major initiative of the Indira Gandhi National Open University to provide just-in-time access to learning resources 24×7. The repository is meant to facilitate sharing of resources among educational institutions in the country. It has been developed with an objective of long-term preservation of learning materials available in various formats.

7.3 Consortium For Educational communication (CEC)

the CEC coordinates the development of Centres, ensuring the quality of software, coordination of telecasting of the selected films, inspiring and encouraging innovations. During the two decades of CWCR and a decade of CEC considerable progress has been made.

CEC's Learning Object Repository (LOR) is an OCW initiative having educational resources in different subjects like Archeology, Biology, Botany, Chemistry, Commerce,

Computer Science, Economics, Education, English, Fine Arts, etc. Users have the facility to browse the LOR by using various various options such as Topic, Subject, Learning Object, Keywords, etc.



Learning Object Repository

Topic :
Subject : All
Learning Object :
Keywords :
Submit Reset

Consortium for Educational Communication

es Title	Center	Tape No	Subject	Learning Object	Question	
tion Time (147)	ECAL	3741	ENVIRONMENTAL Science	Ozone (Layer) Hole	What is the Ozone (Layer) Hole?	View Le C
tion Time (145)	ECAL	3736	ENVIRONMENTAL Science	Indiscriminate use of polythene bags, consequences.	Why is indiscriminate use of Polythene Bags a hazard?	View Le C
al of LOR	AIND	CD/217	ENVIRONMENTAL Science	Crackers hazardous to us	How are Crackers hazardous to us?	View Le C
al of LOR	ARKE	CD/1	ENVIRONMENTAL Science	Condensation	What is Condensation?	View Le C
al of LOR	ARKE	CD/1	ENVIRONMENTAL Science	Hydrology	What is hydrology?	View Le C
al of LOR	ARKE	CD/1	ENVIRONMENTAL Science	Thermal Springs	What are Thermal Springs?	View Le C
al of LOR	ARKE	CD/1	ENVIRONMENTAL Science	Transpiration	What is transpiration?	View Le C
al of LOR	ARKE	CD/1	ENVIRONMENTAL Science	Water Cycle	What is Water Cycle?	View Le C
al of LOR	AMYS	CD/206	ENVIRONMENTAL Science	Ecological Niche	What is an Ecological Niche?	View Le C
al of LOR	AMYS	CD/206	ENVIRONMENTAL Science	Ecological zones of lakes	What are the ecological zones of lakes?	View Le C

1 2 3 4 5 6 Next

7.4 IITs: National Programme on Technology Enhanced Learning (NPTEL)

It is a Joint Venture by seven Indian Institutes of Technology (IITs) and Indian Institute of Science (IISc). It is Funded by the Ministry of Human Resource Development (MHRD), Government of India. Six major engineering disciplines have been covered in this project so far (NPTEL Phase I) at the undergraduate (B.E./B.Tech) level.

1. Civil Engineering
2. Computer Science and Engineering
3. Electrical Engineering

4. Electronics and Communication Engineering
5. Information Technology
6. Mechanical Engineering

In addition, a number of core curriculum courses common to all engineering programmes such as mathematics, physics, chemistry, management, electronics, language etc. have also been included. Video courses provided through Technology Channel TV, Eklavya.

National Programme on Technology Enhanced Learning (NPTEL)

Joint venture by seven Indian Institutes of Technology (IITs) and Indian Institute of Science (IISc)
Funded by the Ministry of Human Resource Development (MHRD), Government of India

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Disciplines
- Civil Engineering
- Computer Science and Engineering
- Electrical Engineering
- Electronics and Communication Engineering
- Information Technology
- Mechanical Engineering

Important

Courses for which contents have been made available either in full or in parts are highlighted (bold font). VIDEO COURSES DO NOT HAVE ANY LECTURE VIDEO HERE. The scheduling of video courses through Technology channel (TV, Eklavya) has been posted under the link Eklavya on the main page of the website http://www.iitd.ernet.in. Conversion of lecture videos into MPEG form will be undertaken shortly.

Information Technology

Semester I

Course	Web/Video	Coordinator(s)	Syllabus	Contents	Discussions
Engineering Chemistry I	**Web**	**Prof. B. L. Tembe Prof. K. Mangala Sunder (IITM)**	pdf html	html	forum
Engineering Chemistry I	**Video**	**Prof. K. Mangala Sunder (IITM)**	Streaming video will be available soon		
Engineering Physics I (Theory)	**Web**	**Prof. Alika Khare Prof. Pratima Agarwal Prof. S. Ravi**	pdf html	html	forum
Engineering Physics I (Experiment)	Web	Prof. Alika Khare Prof. Pratima Agarwal Prof. S. Ravi	pdf html	html	forum
Physics I - Oscillations & Waves	Video	Prof. S. Bharadwaj	pdf html	-	
Engineering Physics I	Video	Prof. K. L. Yadav Prof. Jagdish Rai Prof. Ishwar Singh Prof. G. D. Verma	pdf html	-	
Mathematics I	**Web**	**Prof. Inder K. Rana**	pdf html	html	forum
Mathematics I	Video	Prof. Swagato K. Ray Prof. Shobha Madan Prof. P. Shunmugaraj	pdf html	-	

7.5 ERNET: VidyaVahini & Shishya:

ERNET is largest nationwide terrestrial and satellite network with point of reference located at the premiere educational and research institutions in major cities of the country. OCW initiatives initiatives include:

- SHISHYA: It contains the educational resources (CBSE) under the subject Chemistry, Mathematics, Biology, Botany and Zoology for class IX,-XII. It contains question answers ranging from short and long answers.

- VIDYA VAHINI: Vidya Vahini is a portal which provides opportunity for schools, teachers and students all across the nation to express and share their creative and academic potential via the Internet.

8. Online Survey:

Current OCW Scenario with special reference to North-West Region of India:

SNO.	**State**	**Universities**	**OCW**
1	Punjab	1. Punjabi University; Patiala	X
		2. Guru Nanak Dev University; Amritsar	X
		3. Punjab Agriculture University; Ludhiana.	X
		4. Punjab Technical University; Jalandhar.	X
		5. Baba Farid University of Health Sciences; Faridkot	X
		6. Punjab Veternary Sciences University; Talwandi Sabo	X

		7. Thapar University; Patiala	X
2	Haryana	1. Kurukshetra University; Kurukshetra	X
		2. Maharishi Dayananad University; Rohtak	X
		3. Guru Jambheshwar University of Science and Technology; Hisar	X
		4. The CCS Haryana Agriculture University; Hisar	(√)
3	Chandigarh	1. Panjab University	X
		2. **<u>Punjab Engineering College</u>** (A Deemed University)	(√)
4	Himachal Pradesh	1. Himachal Pradesh University; Summer Hill, Shimla.	X
		2. Dr. Y.S. Parmar University of Horticulture and Forestry; Nauni, Solan	X
		3. C.S.K. Himachal Pradesh Krishi Vishva Vidyalaya; Palampur	X
		4. Jaypee University of Information Technology (JUIT); Waknaghat, Solan.	X
5	Jammu & Kashmir (J&K)	1. University of Jammu; Jammu	X

		2. University of Kashmir; Kashmir	X

Above table clearly shows that the OCW initiatives are very few in number, *in fact only 2* such projects exist in the whole NW region of India, described below:

8.1 Punjab Engineering College (PEC), Deemed University:

PEC offers OCW resources through its "Academia Webserver" under different engineering disciplines like Aeronautical Engineering, Applied Sciences, Chemistry, Civil Engineering (CIV), Civil Engineering (CE). User registration is required for accessing the resources.

8.2 The CCS Haryana Agriculture University, Hisar:

It contains only 23 learning objects related to agriculture and allied disciplines.

9. Findings:

- OCW initiatives benefits the creators, users and the institutions
- Very few universities in the NW Region in India have started OCW project.
- Technology support and other infrastructural requirements are already available to most of the university.
- Software for creating and maintaining an OCW is available free of cost eg. Moodle
- An OCW movement is needed in India to translate the vision of "Learning beyond Classroom" into a reality.

10. Recommendations: Proposal for "Indian OCW Consortium"

10.1 Policy Framing:

The present study proposes the establishment of the Indian OCW Consortium spanning all the educational institutions. For example in the primary and secondary education sector, NCERT, CBSE, NOS, NBT, etc. can play a major role in framing guidelines for the primary and secondary schools. In the area of higher education, MHRD, UGC, NAAC, AICTE, etc. can do this job. In case of distance education, DEC, IGNOU can frame the guidelines.

10. 2. Content Creation:

The digital content for the Indian OCWs should be the responsibility of the educational Organizations including Universities, Colleges, Technical Institutions (Engineering, Medical etc.) These organisations may be imparting education in both regular and distance Education. The OCW may consist of assignments, projects, dissertations, seminar presentations, reports, animations, designs and models, etc. created by the students and researchers. The institutes may come up with such a policy (voluntary or mandatory) that encourages the content creators. Teachers also have the special responsibility in the content creation as they may be creating such resources for classroom teaching.

Grass-root Creators:

- Students: UG, PG, Research Scholars
- Teachers : Schools, Colleges, Universities, Technical Institutions.

Provision should be made for

- Campus wide Policy framing
- Infrastructure development.
- IP-clearance: OCW publisher has the rights to make the materials available under open terms and that nothing in the materials infringes the copyrights of others

- Permits use, reuse, adaptation (derivative works), and redistribution of the materials by others

11. Conclusion:

OCW is still a new and evolving concept immensely beneficial to the learning community including the benefits for the teachers. The main issue is volunteer contributions to OCW. However, it needs training and motivation by providing a steady and supportive teaching environment. An OCW initiative aligns closely with the educational and public service missions of a non-profit institution of higher learning. More importantly, such an effort resonates deeply with faculty who have a passion for teaching and who have dedicated their lives to the advancement and dissemination of knowledge. This is why a key factor for success of an OCW initiative is to ensure that a core group of faculty stand squarely behind the effort and can serve as champions of the idea.

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