



## NIOS OER - Promoting Access to Quality Education



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### 1. About NIOS

The National Institute of Open Schooling (NIOS), India was established in November 1989 as an autonomous organisation of the Ministry of Human Resource Development (MHRD), Government of India. With cumulative enrolment of 2.02 Million, NIOS has grown today as the largest open school in the world. It offers Secondary & Sr. Secondary level education and number of Vocational Courses through Open and Distance Learning mode. The elementary education is offered through its Open Basic Education Programme at Level-A, Level-B and Level-C equivalent to class 3, class 5 and class 8 of the formal education respectively.

It is not only a National Board with the authority to examine and certify learners, but also a National Resource Organisation for Open Schooling in India. The Institute develops curriculum, prepares its own self-learning material, produces its own audio/video material and multi-media packages for the learners registered with it. It accredits conventional schools and agencies to provide student support services to its enrolled learners. NIOS conducts two public examinations in a year as well as On Demand Examination (ODE) throughout the year to benefit the learners. It also functions as a publishing house and brings out several publications every year. The NIOS conducts research in Open Schooling and also organises training and capacity building activities for Open and Distance Learning functionaries.

### 2. OER Initiative

The National Institute of Open Schooling (NIOS) initiated [Open Educational Resources \(OER\)](#) specifically for Vocational programmes to be offered at Secondary (10<sup>th</sup>) and Sr. Secondary (+2) levels, including standalone programmes, in partnership with state level institutions and organizations.

### 3. Objectives of the OER Project

- Create Open Education Resources (OER) in the form of role based small modules useful for all students at the Secondary and Sr. Secondary Level in the above mentioned areas.
- Develop and deliver a vocational system of quality education supported by Open Education Resources (OER) and delivered to students for playing various roles in the areas of their choice and for obtaining their livelihood and place in society.
- Create and manage 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.

- Create, manage and maintain learner groups and communities of teachers / trainers and learners and practitioners for continuous and sustainable development.
- Create 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.

#### 4. **Programme/Course specific**

These educational resources will not only be beneficial for the students pursuing their studies through Open and Distance Learning (ODL) system at school level, but also will be accessible to millions of learners interested in development of their skills in various vocations. This will also help in vocationalisation of the curriculum at Secondary and Sr. Secondary levels across the Boards in the country. Aim of the project is to make the vocational education system sustainable and ever changing in skill development and applications by creating partnerships with social and industrial institutions. NIOS has developed **Open educational Resources** in the following areas of Vocational Education in the first phase the

- ICT Applications,
- Rural Technology and
- Tourism and Hospitality.

Main page of the NIOS OER as below It can be accessed through URL <http://oer.nios.ac.in>



The screenshot shows the main page of the NIOS OER website. The page is titled "National Institute of Open Schooling : YEARS OF EXCELLENCE" and "राष्ट्रीय मुक्त विद्यालयी शिक्षा संस्थान National Institute of Open Schooling". The main content area features a "Welcome to NIOS : Open Educational Resources" message and a description of the OER project. The page also includes a navigation menu on the left and a search bar at the top.

**Open Educational Resources**

**Welcome to NIOS : Open Educational Resources**

**National Institute of Open Schooling : NIOS-OER**

**Open Education Resources (OER) through ICT initiated by NIOS** The National Institute of Open Schooling (NIOS) formerly known as National Open School (NOS) was established in November, 1989 as an autonomous organisation in pursuance of National Policy on Education 1986 by the Ministry of Human Resource Development (MHRD), Government of India. NIOS is providing a number of Vocational, Life Enrichment and community oriented courses besides General and Academic Courses at Secondary and Senior Secondary level. It also offers Elementary level Courses through its Open Basic Education Programmes (OBE). Government of India through a gazette notification vested NIOS with the authority to examine and certify learners registered with it upto pre degree level courses.

The National Institute of Open Schooling (NIOS) initiated [Open Educational Resources \(OER\)](#) specifically for Vocational programmes to be offered at Secondary and Sr. Secondary (+2) levels, including stand alone programmes, in partnership with state level institutions and organizations. These educational resources will not only be beneficial for the students pursuing their studies through Open and Distance Learning (ODL) system at school level, but also will be accessible to millions of learners interested in development of their skills in various vocations. This will also help in vocationalisation of the curriculum at Secondary and Sr. Secondary levels across the Boards in the country.

## Technology Platform:

- A technology based e-platform was required to be created for the development and uploading of OER. NIOS believes in Open Source where the cost should be minimal and it should not be dependent on any kind of licences etc. Hence, it was decided to use open source technology platform for the development of OER. Considering the advantages and the strengths of MediaWiki, NIOS-wiki platform using MediaWiki software was created for use of the course team for development and uploading of OER.
- MediaWiki is an open-source software, originally developed for use on Wikipedia, and is the world's most popular wiki software. It usually runs with a combination of Linux, Apache, MySQL and PHP (LAMP), all open-source. (PHP is required, and the other three are the standard options.) A good reason for using a Mediawiki is the fact that its survival is guaranteed because it's the Wikipedia's engine.
- Since OER is a collaborative development of the content where many persons can contribute and modify the contents simultaneously so it becomes essential for maintaining complete version history which is possible in MediaWiki. The changes to the data structure are themselves preserved in the version history. The entire data structure is defined via a set of wiki pages.
- In MediaWiki searching and aggregating are easier as better tagging is allowed for every uploaded file. The edit attributes such as easy to navigate, easy to search, links to related articles, links to similar topics, categories, backlinks for missing pages, etc help in the development of OER.
- Community and Support: There's a strong community of users and developers around MediaWiki, who can provide support.
- One of MediaWiki strengths for development of OER is how easy it is to extend with its plug-in architecture. It is also a good knowledge management tool because of its many extensions that allow addition of
  - more community tools like blogs and structured discussions and
  - engines that can handle specific formats.

The specific advantages of the MediaWiki for development of OER in NIOS are as under:

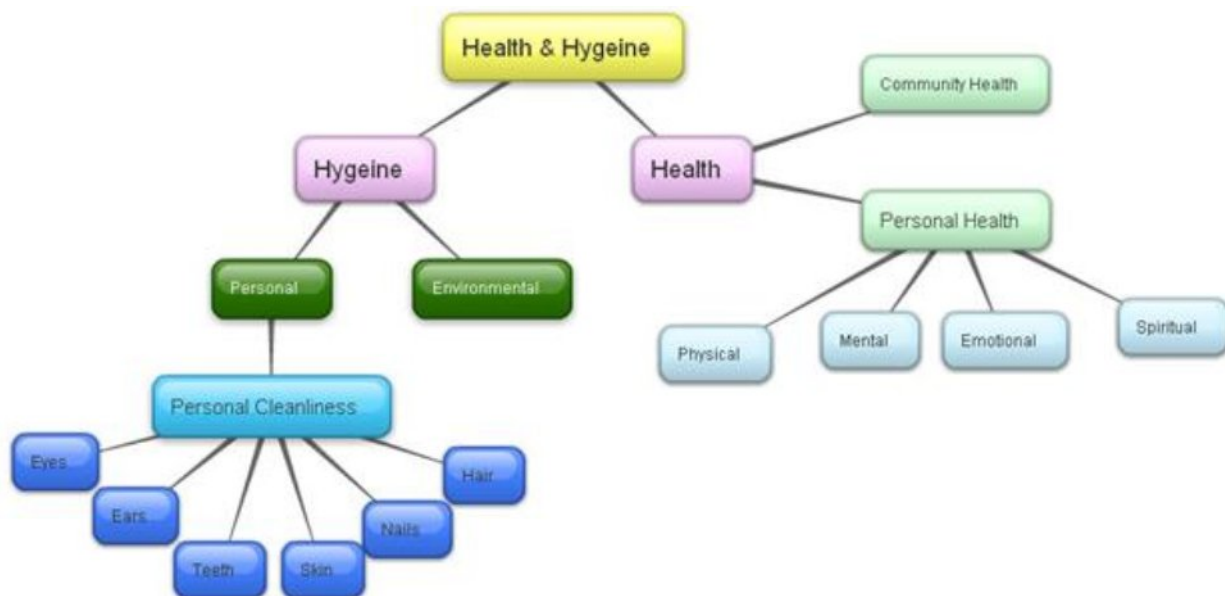
- anyone can edit
- easy to use and learn
- Wikis are instantaneous so there is no need to wait for a publisher to create a new edition or update information
- people located in different parts of the world can work on the same document
- the wiki software keeps track of every edit made and it's a simple process to revert back to a previous version of an article
- widens access to the power of web publishing to non-technical users
- the wiki has no predetermined structure - consequently it is a flexible tool which can be used for a wide range of applications
- there are a wide range of open source software wiki's to choose from so licensing costs shouldn't be a barrier to installing an institutional wiki

## 5. **Instructional Strategy**

- i) The material developed is in the format of Self-Learning Material with enough scope for Formative Assessment and joyful learning. The multimedia components like pictures, flash animations, PowerPoint presentations, videos and interactive tests have been incorporated in the OERs

- ii) The OERs developed are on the concepts identified by the developers through content analysis. Scenario-based learning is encouraged and in most of the cases at least one skill based objective has to be kept as one of the objectives. Moreover, the OERs focus on constructivists approach to learning. The syllabus has been divided into concepts by taking into account content analysis. Considering that OERs are being prepared for vocational stream, role based learning is focused with an emphasis on skill development. It is also expected that collaborative learning is encouraged by the use of advanced information technology.

Concept Map of a chapter Personal Hygiene under Rural Technology course



- iii) The materials have been developed by experts used by NIOS and these are now ready for deployment for teaching and learning. However, at present the materials are available for anyone to access, read and learn.

## 6. OER Development Process

### Constitution of Course Teams:

The entire development of OERs has been done through the course team consisting of subject expert and internal faculty as Course Coordinator.

### General Orientation of Course Teams:

Several workshops were held to orient the OER Course Teams and their team members in which concept of OER, including the copyright and open licensing issues and the platform of NIOS MediaWiki were discussed. A separate OER Server was installed with URL <http://oer.nios.ac.in>.

### Development of OER in Workshop Mode

Three workshops each for each course were organized. The first Orientation Workshop covered finalization of course syllabus, content analysis and development of concept maps for all three

courses.

### Details of OERs developed

Table 1 shows the number of OERs developed.

| Course                  | No. of OER | Multi-media Component |            |       |       |            |
|-------------------------|------------|-----------------------|------------|-------|-------|------------|
|                         |            | Flash                 | PowerPoint | Photo | Video | Activities |
| ICT Applications        | 67         | 34                    | 0          | 29    | 5     | 1          |
| Rural Technology        | 241        | 3                     | 1          | 116   | 4     | 1          |
| Tourism and Hospitality | 131*       | 1                     | 1          | 107   | 12    | 19         |

\*-> 47 already developed and rest under development.

### Structure of concept based OERs as SLMs:

The OER consists of the concept map, objectives, introduction, activity and assignments with interactive activities, formative assessments and inputs for scenario based learning. In majority of the cases skill-based objectives have been kept and opportunities for learning skills through videos, assessment tools and activities (developed by the participants and identified by the participants from OER pool). Development of multimedia components was made simultaneously. Various PowerPoint presentations, flash animations, videos, pictures, clip arts, interactive quizzes etc were also developed.

### Salient features of OER developed:

The OERs developed have following features:

- They are in the form of Self Learning materials completely covering a particular concept
- Unique in the structure as at present majority of the OERs developed are not in SLM form. If a search is done in the internet, one can find independent videos, pictures, textual write ups or animations covering only one particular aspect
- Various types of multimedia elements used pictures and videos from the field, animations, interactive tests etc.
- Focus on skill-based objective
- Thrust on role-based learning

### OER being used in NIOS teaching learning

The OER so developed are being used in the NIOS teaching learning by the learners enrolled in these courses and the teachers of NIOS study centres where these courses are being run. The enrolment in these courses are as under

| Course                  | Enrolment in 2012 | No. Of Study Centres. |
|-------------------------|-------------------|-----------------------|
| ICT Applications        | 1615              | 432                   |
| Tourism and Hospitality | 115               | 6                     |
| Rural Technology        | 212               | 65                    |

## Analysis Report

| Page statistics   |         |
|---|---------|
| Content pages   | 480     |
| Pages<br>(All pages in the wiki, including talk pages, redirects, etc.)         | 1,653   |
| Uploaded files  | 818     |
| Edit statistics   |         |
| Page edits since NIOS was set up  | 12,981  |
| Average edits per page  | 7.85    |
| View statistics   |         |
| Views total<br>(Views to non-existing pages and special pages are not included) | 933,288 |
| Views per edit  | 71.90   |
| Most viewed pages   |         |
| <a href="#">Main Page</a>   | 193,030 |
| <a href="#">COMPUTER AND ITS COMPONENTS</a>                                     | 29,554  |
| <a href="#">Phases of System Development Life Cycle</a>                         | 23,495  |
| <a href="#">ICT-Applications</a>  | 23,254  |
| <a href="#">Rural-Technology</a>  | 21,946  |
| <a href="#">Tourism and Hospitality Management</a>                              | 15,875  |
| <a href="#">CHARACTERISTICS OF COMPUTERS</a>                                    | 10,514  |
| <a href="#">Types of Soils</a>  | 8,869   |
| <a href="#">Types &amp; forms of tourism</a>                                    | 7,360   |
| <a href="#">Types Of Operating System</a>                                       | 7,226   |

## 7. OER Copyright Policy of NIOS

NIOS OER Policy states the following

- *Open Educational Resources (OER)* are resources and materials used to support education that may be freely accessed, reused, modified and shared by anyone.
- NIOS OER will also be accessible to all learners free of cost, interested in development of their knowledge and skills.
- NIOS OER aims to enhance the accessibility to quality education for all.
- NIOS will use the free and open Creative Commons licenses as the core licensing principle for OER outputs.



- The Materials will be made available to reuse, revise, remix and redistribute the materials within the framework of CC-BY-SA-NC license.
- NIOS OER will ensure continuous up-gradation of content.
- NIOS encourages open and transparent design and development of courses using open and accessible technologies.
- NIOS foster sharing among the participants in learning process.

## 8. Online Education using Moodle (LMS)

NIOS is also developing a platform using open source software (MOODLE) for online courses which are integrating with existing NIOS-OER for course content. NIOS has opted Moodle for creating online course with opportunities for rich interaction. Its open source license and modular design means that people can develop additional functionalities. Moodle is built on a modular architecture which is robust, scalable and flexible enough to mould to specific usage scenarios. It is an end-to-end fully integrated learning solution that enables learning and is fully compliant to international standards like SCORM, AICC, LAMS, IMS QTI etc. Because of its robustness and scalability which is very much required in Open Learning NIOS has opted Moodle for its course delivery mechanism.

It can be accessible by students and teachers of NIOS at <http://muktavidya.nios.ac.in/moodle>

Three areas of programme will be launched through online education programme i.e. Muktaavidya online courses of NIOS.

- ICT Applications
- Rural Technology
- Tourism & Hospitality

The screenshot shows the Moodle LMS interface for NIOS. The main content area features a 'Weekly outline' section with a 'Welcome to online program of NIOS' message. Below this, there is a section titled 'About National Institute of Open Schooling' which provides a brief history of NIOS, stating it was established in November, 1989, as an autonomous organization in pursuance of National Policy on Education, 1986, by the Ministry of Human Resource Development, Government of India. The text continues to mention that Open Schooling was originally experimented upon since 1979 as a project of the CBSE, and was later amalgamated with the NIOS. In October, 1990 through a resolution of the Government of India, the NIOS was vested with the authority to examine and certify students registered with it, up to Pre-degree level courses.

The interface also includes a navigation menu on the left with categories like 'People', 'Activities', and 'Administration'. A calendar on the right shows the month of June 2013. Below the main content, there are buttons for 'INTRODUCTION', 'SCHEDULE', 'ASSIGNMENTS', and 'GRADES'. The footer indicates 'Course Start-Up'.

## Online Course Design in Moodle

The online courses are designed as weekly course modules to help the learner to complete it in six-month's time. Some of the features activated within the LMS include:

- **Dashboard** -Learners can see the courses they have enrolled for. Moodle provides a number of plug-ins like calendar, RSS feeds, Podcasts, course ratings etc. which can be added as widgets.
- **Course Catalogue** -Provides access to the hierarchical course catalogue. Search feature to find the courses on any particular topic. Displays both free and paid courses and the students can also view the course summary.
- **Grades** -Learners can track their performance against each course by visiting the grades section which provides detailed grades for various resources and activities within the course. Also, they can get an overview of grades for all the courses they've enrolled for.
- **Alerts and Notifications** -Learners are alerted of upcoming events, assignments and activities in the upcoming events section. Apart from that, email notifications are also sent for various events and deadlines.

NIOS has included the following while designing the online course

- Assignment
- Chat
- Choice
- Database
- Forums
- Glossary
- Labels
- Lesson
- Quizzes
- Surveys
- Resources (text, rich text, animation, audio, video, documents, pdf, ppt, etc.)
- WEB Conferencing Features like VOIP Audio , Teleconference, Audio Bridge One way video (for the host), Public and Private Chat, Share Computer Screen, Document Upload (PPT/PDF), Share Web Pages, Recording, Whiteboard etc.

NIOS has also made the provision for the following

- Learner can Search for specific courses
- Learner can Enroll and study courses online
- Learner can View upcoming assignments, quizzes, events etc. online
- Learner Get alerts, notifications, RSS updates
- Learner Participate in Blog and Discussion Forums
- Learner can View pod-casts, announcements etc.
- Learner can see the Grades

## 9. **Challenges faced**

The OER development in the selected vocational areas was planned in a way that during the developmental stages the teachers would be empowered in using the new technology and in pedagogical aspects. The underlying assumption is that OER is an emerging area and the practicing teachers though good in their subject areas are not technologically aligned and pedagogically oriented to Self Learning Material development and are new to the concept of OER. Some of the experts dropped out during the course of development posing major



challenge for course development process. There are The practising teachers need lot many hours of pedagogical orientation, handholding and support in the development of OER using constructivist pedagogy , as they are used to conventional methods of teaching based on textual material and were exposed first time for development of Distance Educational Material. Also the teachers and experts engaged in the development of OER were found to be sometimes pre-occupied with their own primary commitments.

Experts had many different view-points on OER and converging on a common understanding was also a challenge. Only free access of any materials does not qualify it to become OER. Some experts were of the view that users must be able to re-use the free access materials and so the PDF files are not OER. Some experts were of the view that the development of OER materials should be done using open source only. The audio and video files developed using a license software can not be considered as OER materials. Some experts emphasised the need of making the OER to be Open in its complete sense (deviating from mere access of the material) and how Wikieducator can be used in achieving this goal. The experts demonstrated the use of Wiki educator as a platform for OER.

Quality of OER and its assessment were also a matter of challenge that were tackled though internal and external peer-review. We also realised that practising teachers need hours of pedagogical orientation, handholding and support in the development of SLMs using constructivist pedagogy, as well as on use of LMS.

#### 10. **Reflections on Practices**

The OER developed focussed on the skills and roles related to the courses taken. The first hand experience of the team in the field helped in achieving this aim. The course team members involved were practising teachers and Instructors in the Accredited Vocational Institutions, and that helped to complete the course development despite drop outs during the development process. Already a pool of teachers have become users of the NIOS OER platform and a network has also been created for regular interaction. Learners from the vocational study centres are making use of these materials, and the LMS implementation would help gathering more data about student interaction and engagement. Networking has already been created and institutionalised with the creation of the NIOS Wiki platform where all experts from various institutions, trainers from vocational study centres and learners contribute in the development. The wiki environment enables online collaborative course development, as teachers can directly work on the platform and other teachers in the group can see and edit the same. Overall, NIOS has embarked on a path of developing OER, and providing learner services through LMS, and now planning to create a Virtual Open Schooling model affordable to its learner.

#### 11. **Feed back**

##### **Some of the comment as given below:**

*OER's developed for Hospitality and Tourism, and Rural Technology courses are for distance learning are useful as developers made efforts to make material interesting using multimedia facilities afforded by communication technology. Developers tried to incorporate activities that can be completed by learners using available material. By watching demonstrations provided learners can practice different skills that comprise major part of these vocational courses. In the beginning experts found it bit difficult to change their approach toward distance teaching practices as they were face to face learners and teachers. Slowly they are changing their approach that required for designing skill based and role based learning. Many*

*experts are also trying to make the OERs learner friendly that require finding opportunities in their own environment using knowledge of practices of their own culture.*

Dr. Satyawati Rawool

*I learned many new things about Tourism & Hospitality management and Rural Technology and NIOS OER. Sometime our mindset is difficult to change or accept new things, but once we understand the impact/benefits/change then the task/work is joyful and meaningful. NIOS can develop more OER or learning material and learn in collaboration. I am happy to see the OER work of NIOS.*

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Mumbai)