
UNIT 6 INITIATIVES FOR ENHANCING ACCESS TO ACADEMIC RESOURCES IN INDIA

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6.1 INTRODUCTION

Academic resources are the academic content, which are available for general use for teachers, students, researchers, etc. These resources are available in many forms, such as books, journals, audios, videos, etc. Many of these are available for a price and many are available free of cost. Today, all these resources are available in digital form, which has made these readily accessible to the users.

The availability and accessibility of academic resources online have been possible due to open access publishing. There have been several initiatives, such as Open

Archives Initiative, the Budapest Open Access Initiative, Scholarly Publishing and Resources Coalition, the Free Online Scholarship, and initiatives by the ICSU, UNESCO, CODATA, MERLOT, Urriki, etc. These initiatives have allowed the stakeholders, such as the curriculum and course designers, course and textbook chapter writers, teachers and students access to unlimited academic resources online. Some of these academic resources are also called Open Educational Resources (OER), which are used for educational purposes. The academic resources are mostly in the form of articles in blogs and journals, seminar proceedings, monographs and books, theses and dissertations, unpublished documents, and audio, video and animation resources. The copyright of the academic resources, such as books and journals is managed by the publishers through a Creative Commons license that allows free access to the stakeholders with certain provisions that requires that the author is correctly attributed.

In India, several initiatives, both private and public have been made to provide academic content. The private initiatives are mostly through educational companies that charge an amount for the content. The government initiatives are mostly free of cost. We will only focus our discussion on the Government initiatives in this Unit.

The Government initiatives to provide online academic resources can be traced back to 2007, when the National Knowledge Commission recommended the use of OER for providing access to quality educational resources to all the stakeholders. In 2009, the National Mission on Education through Information and Communication Technology (NMEICT) was launched to make the highest possible use of Information Communication Technology (ICT) to reach one and all. Under the NMEICT, many initiatives have been taken. These initiatives have created a treasure trove of content, which are proving to be useful in overcoming several educational challenges. These initiatives : (i) leverage the content generated by the global OER movement; (ii) support the production of e-content by institutions offering high quality education; (iii) enhance mechanisms to publish and offer open source content; and (iv) ensure robust Internet-based platforms and connectivity to provide access to all. Broadly, the available academic resources may be classified into three categories. These are (i) Digital Libraries, (ii) Institutional Repositories, and (iii) Other Initiatives by the Government of India. In the following sections, you will learn more about these categories of academic resources in detail.

6.2 OBJECTIVES

After going through this unit, you should be able to:

- identify the various types of academic resources available to the stakeholders;
- describe the various digital libraries, Institutional Repositories and Government Initiatives;
- identify the ICT technologies used for creating and delivering academic resources to the learners; and
- explore the academic resources online to access content for your use.

6.3 DIGITAL LIBRARIES

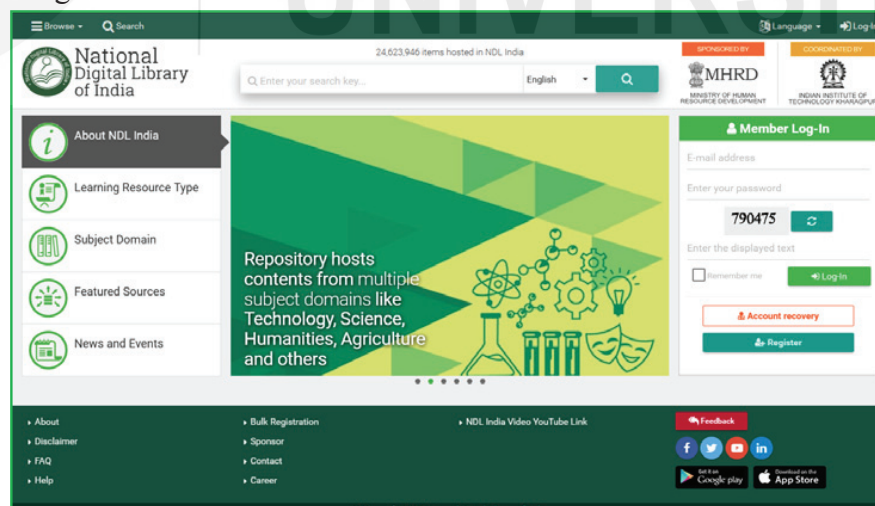
A digital library is an electronic collection of academic resources available in the form of compact discs or through the Internet. The academic resources offered by the digital library may be electronic resources from journals, books, audios,

videos, etc., created and published both by the institution and outside agencies. In India, there are a large number of libraries in various governmental educational organisations, such as schools, colleges and universities. Most of these libraries have a closed access, which allow only the teachers and learners of that particular organisation to access their academic resources. However, there are several digital libraries that are at the state and national levels, which provide open access to all users under user registration. We will discuss such digital libraries in the following sub-sections.

6.3.1 National Digital Library of India

The National Digital Library of India is an initiative under the NMEICT by the Ministry of Human Resource Development, Government of India. The library has been developed and managed by Indian Institute of Technology (IIT) Kharagpur. The objective of the National Digital Library of India is to make digital educational resources available to all citizens of the country to empower, inspire and encourage learning. It is a single window portal for accessing resources collected from institutions from India and abroad. It provides support to all academic levels including primary school students to researchers and life-long learners. It provides academic resources in all disciplines, which could be accessed through all devices. It has mechanisms to cater to the needs of the differently-abled learners. It provides help to the school and college students to prepare for entrance and competitive examination, to enable people to learn from the best practices from all over the world and to facilitate researchers to perform inter-linked exploration from multiple sources. The library can be accessed through the link <https://ndl.iitkgp.ac.in/>.

The National Digital Library of India has a repository containing more than 60 types of resources, which include digital textbooks, articles, videos, audio books, lectures, simulations, fiction and all other kinds of learning media. Presently it contains more than 24,000,000 items in the repository. These are from multiple subject domains, such as technology, science, humanities, agriculture etc., in over 70 languages. There are mechanisms in built using which the learners can find out the right resource with least effort and in minimum time.



Source: <https://ndl.iitkgp.ac.in>

6.3.2 e-ShodhSindhu: Consortia for Higher Education E-Resources

e-ShodhSindhu is a consortium that provides a platform for accessing academic resources under open access user registration. The main objective of the

consortium is to provide access to qualitative electronic resources including full-text, bibliographic and factual databases to academic institutions at a lower rates of subscription. It also aims to provide users scholarly content available in open access through subject portals and subject gateways. e-ShodhSindhu was formed in 2015 by merging three erstwhile consortia, namely University Grants Commission-Digital Library Consortium (UGC-INFONET), National Library and Information Services Infrastructure for Scholarly Content (NLIST) and Indian National Digital Library in Engineering Sciences and Technology and All India Council for Technical Education (INDEST-AICTE) Consortium. The consortium provides access to e-resources to students, researchers and faculty from colleges, Universities and other institutions. The authorized users from these institutions can access e-resources and download articles directly from the publisher's website. e-ShodhSindhu can be accessed through the link <https://ess.inflibnet.ac.in/about.php>.

The consortium has over 3600 member institutions at present. It provides, till now, access to more than 10,000 journals, 31400000 ebooks, 20 resources and 4 databases. The users can search the academic resources through the e-shodhsindhu subjectwise, publisherwise and collectionwise. Users have to register to access these resources.

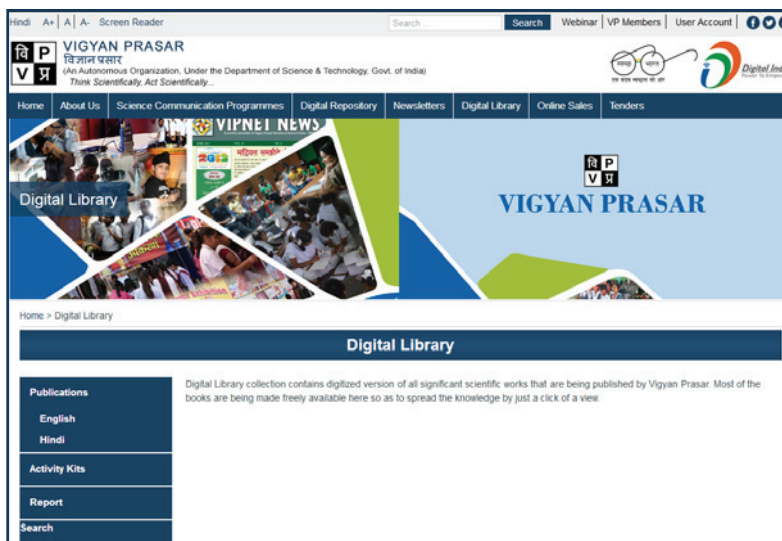


Source: <https://ess.inflibnet.ac.in/about.php>

6.3.3 Vigyan Prasar Digital Library

Vigyan Prasar is an autonomous body under the Department of Science and Technology, Government of India. It aims to popularise science and technology in India. It develops scientific knowledge content in many Indian languages in various forms including publications, news features, films, radio programmes, compendia, portals and a variety of new media, exhibitions and kits. It has reached out to millions of users. It can be accessed through the link <https://vigyanprasar.gov.in/digital-library/>.

The Digital Library of Vigyan Prasar offers digitised scientific works published by the organisation. The aim is to spread scientific knowledge among all. The academic resources offered by Vigyan Prasar Digital Library are in Hindi and English languages. While several resources are offered free, the user has to register on to the portal to access some of the resources.



Source: <https://vigyanprasar.gov.in/digital-library/>.

6.3.4 Traditional Knowledge Digital Library

The Traditional Knowledge Digital Library is a collaborative project of the Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, and the Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homeopathy (AYUSH), Ministry of Health. The aim of establishing this library was to prevent misappropriation of India's traditional medicinal knowledge at International Patent Offices. It can be accessed through the link <http://www.tkdل.res.in/tkdل/langdefault/Common/Home.asp?GL=Eng>.

This digital library contains a database of 2.5 lakh medicinal formulations from various classical texts of Ayurveda, Unani and Siddha systems of medicine. It also contains academic resources on modern medicine. The database is available in Sanskrit, Arabic, Urdu, Persian, Tamil, English, Japanese, Spanish, French, and German languages. This database can be searched by clicking on the Ayurveda, Unani or Siddha icons on the homepage. The search is facilitated through terms, such as Keywords, Diseases and International Patent Classification (IPC) Codes. There are more than 300 books of Indian Systems of Medicine, which are available at a cost of approximately US\$ 1000. Users have to register to gain access to the academic content.



Source: <http://www.tkdل.res.in/tkdل/langdefault/Common/Home.asp?GL=Eng>

6.3.5 Kalāsampadā: Digital Library Resources for Indian Cultural Heritage

This digital library is developed by the Indira Gandhi National Centre for the Arts (IGNCA), Ministry of Culture, Government of India. It is sponsored by the Department of Information Technology, Ministry of Communication and Information Technology, Government of India. The aim of the library is to facilitate the students, scholars, artists and the research and scientific community to access and view the materials related to arts and culture of India. It can be accessed through the link <http://ignca.gov.in/online-digital-resources/>.

The library has a collection of over a couple of lakhs of manuscripts, over one lakh slides, thousands of rare books, rare photographs, audio and video content along with the publications of IGNCA. These have been collected from all over the world and digitised. The sources include personal collections, museums, libraries, etc., from India and abroad. All these academic resources are available to the users from a single window. No registration is required to access these academic resources.



Source: <http://ignca.gov.in/online-digital-resources/>

Check Your Progress 1

Notes: a) Write your answers in the space given below.

b) Compare your answers with those given at the end of this unit.

1) List the digital libraries established by the different agencies of Government of India.

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2) Describe the various types of academic resources available in the National Digital Library of India.

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3) What is e-ShodhSindhu?
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4) Visit the online portal of the National Digital Library of India and e-ShodhSindhu and explore the academic resources they provide.
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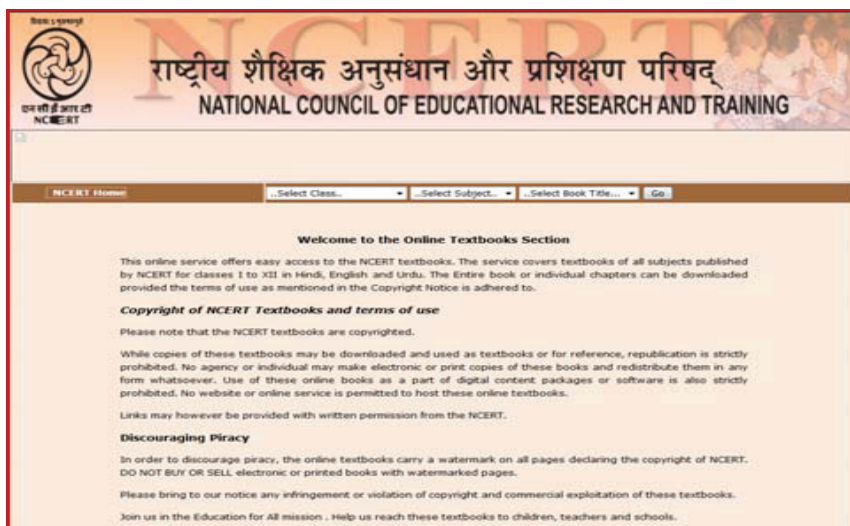
6.4 INSTITUTIONAL REPOSITORIES

An institutional repository is an archival collection of the intellectual output of an institution. For example, the intellectual output of IGNOU is the study materials, video and audio programmes, e-learning programmes, books, journals, reports, working papers, pre-print papers, conference presentations etc., produced at the University. A repository collects, preserves and disseminates such information in a digital form. Repositories of the digitised content are usually created using digital library software, such as e-Granthalaya, DSpace (Digital Space), GSDL (Green Stone Digital Library) and E-Print Archive. These software enable the academic resources in the repository to be searchable through a search engine. The various educational organisations under the Government of India have established repositories that provide content to the stakeholders. Some of the major repositories are described below.

6.4.1 NCERT e-Books

The National Council of Educational Research and Training (NCERT) is an autonomous organisation of the Ministry of Human Resource Development, Government of India. It aims to assist and advise the Central and State Governments on policies and programmes for qualitative improvement in school education. The NCERT has the objective of, among others, publishing model text books for schools, from class I to class XII. The NCERT offers the service of easy access to these textbooks free of cost. The book or a chapter of a book can be downloaded provided the terms of use as mentioned in the Copyright Notice are adhered to. It can be accessed through the link <http://ncert.nic.in/textbook/textbook.htm>.

The NCERT has created a digitised repository of the model textbooks for classes I to XII in Hindi, English and Urdu. It has a collection of more than 300 textbooks in a variety of subjects, such as English, Hindi, Sanskrit Urdu, Mathematics, Science, and Social Studies. Any user can access and download the textbooks for free. No user registration is required to access the content.

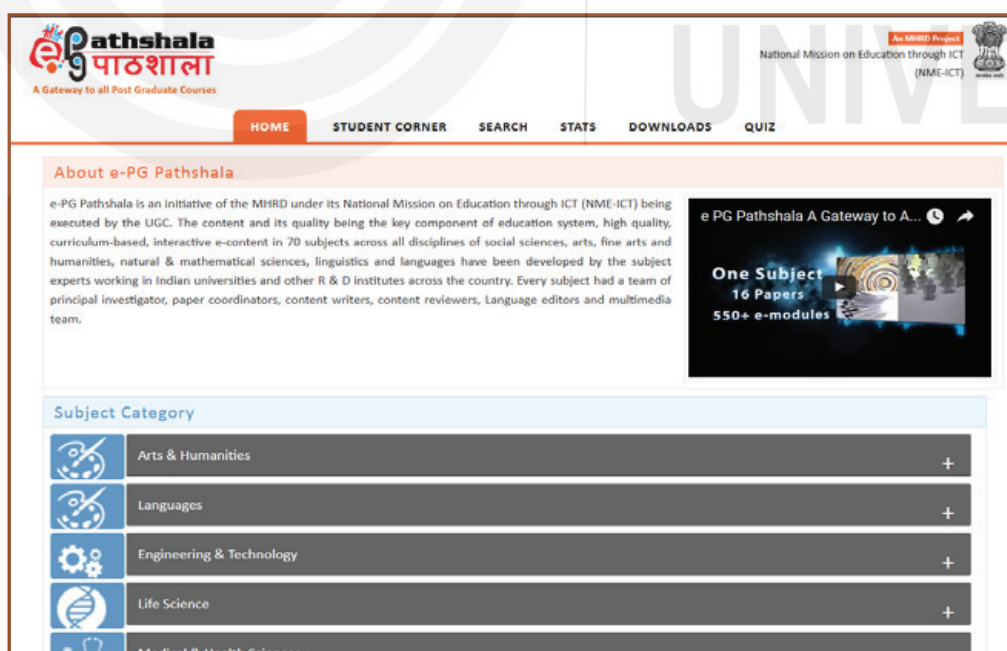


Source: <http://ncert.nic.in/textbook/textbook.htm>

6.4.2 e- PG Pathshala

e-PG Pathshala is an initiative under the NMEICT, which is offered by University Grants Commission (UGC), Ministry of Human Resource Development, Government of India. As the name indicates, the aim of e-PG Pathshala is to make e-content available using different delivery modes for supplementing and complementing the process of teaching and learning in higher education. It can be accessed through the link <https://epgp.inflibnet.ac.in/index.php>.

e-PG Pathshala has developed interactive e-content in 70 subjects at the PG level by subject experts in colleges and universities. The academic resources are available as courses through e-texts, e-tutorial videos, quizzes, reference material etc. Till 2019, there were more than 22500 e-text content material, 22000 e-tutorial videos, 22000 reference materials and 150000 multiple choice questions. This repository is freely available to any user without any user registration.



Source: <https://epgp.inflibnet.ac.in/index.php>.

6.4.3 Shodhganga

Shodhganga is an initiative of the University Grants Commission, Ministry of Human Resource Development, Government of India and INFILBNET Centre

to provide a platform that offers access to PhD theses and MPhil dissertations of research scholars of various universities of India. The aim is to tap these untapped and under-utilized academic resources and to prevent the unnecessary duplication and repetition of the research work resulting in saving the wastage of huge human and financial resources. It can be accessed through the link <https://sg.inflibnet.ac.in/>.

Shodhganga is a rich and unique repository of well-researched information. More than 400 Indian universities, till date, have contributed above 21000 PhD theses and MPhil dissertations. The range of subjects of these thesis and dissertations runs into hundreds. The portal can be searched using options, such as universities, departments, upload date, researcher, guide, title and keyword. These academic resources can be freely accessed by anyone. User registration is not required.



Source: <https://sg.inflibnet.ac.in/>

6.4.4 Shodhgangotri

Shodhgangotri is an initiative of the University Grants Commission, Ministry of Human Resource Development, Government of India and INFILBNET Centre. The aim of Shodhgangotri is to provide a one stop portal to access documents pertaining to research that is in progress. Academic resources on ongoing research helps the user to find out whether anybody else is working on a problem or in an area in which he/she is working or intends to work and plan accordingly. It also helps the user to get in touch with the investigator and get additional information, clarifications etc. Shodhgangotri has developed a repository of such ongoing research synopsis and offers through its online platform at <https://shodhgangotri.inflibnet.ac.in/>.

Shodhgangotri has, till date, a collection of about 6500 synopses from 70 universities. There is a wide range of subjects in which these synopses are available. The information of the research work is available as a brief abstract, introduction, literature review, objectives, hypothesis and references. The portal can be searched using options, such as universities, departments, issue date, researcher, guide, title and keywords. These academic resources are available for free without user registration through open access.

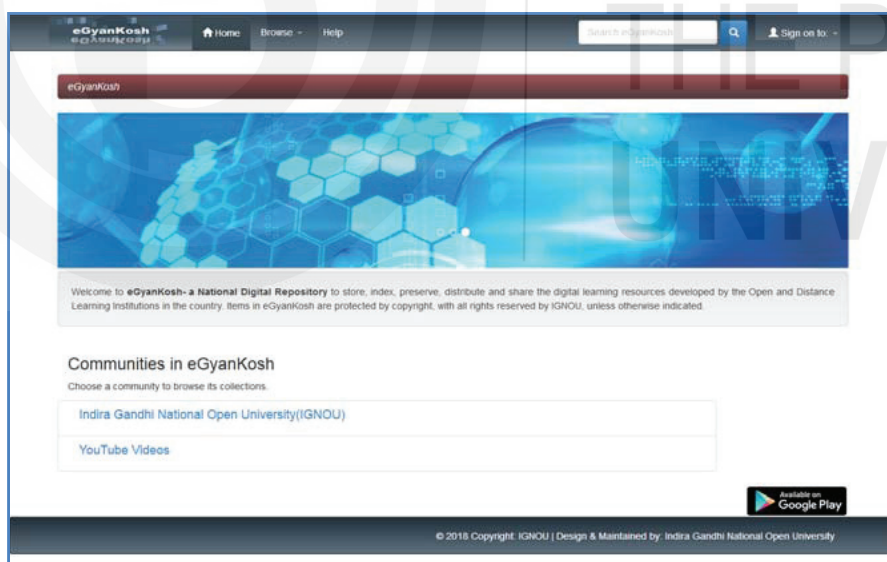


Source: <https://shodhgangotri.inflibnet.ac.in/>

6.4.5 eGyankosh

eGyankosh is a national digital repository that collects, stores and shares digital academic resources developed by open and distance learning institutions. It is developed and maintained at the Indira Gandhi National Open University. The portal can be accessed through the link <http://egyankosh.ac.in/browse?type=subject>.

The repository includes study materials of undergraduate and Post Graduate programmes. More than 200 programmes, till date, including MPhil and Doctoral Degree courses have been digitized and are made available by eGyankosh. There is also a YouTube channel linked to eGyankosh. Users need to register to gain access to these academic resources. However, some of the resources do not require user registration.

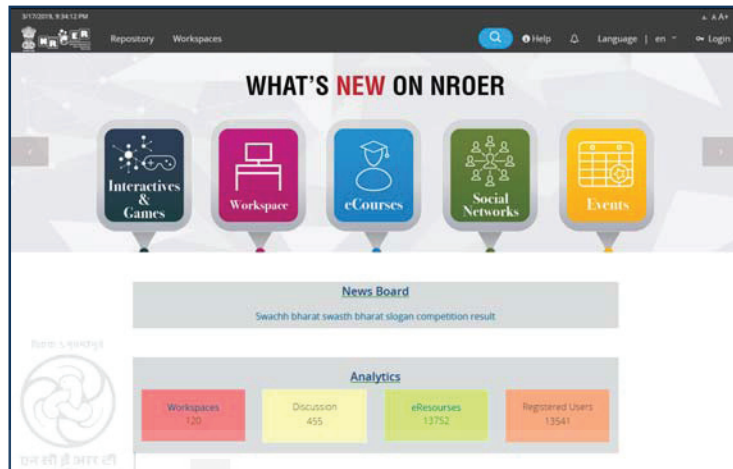


Source: <http://egyankosh.ac.in/browse?type=subject>

6.4.6 NROER

The National Repository of Open Educational Resources (NROER) has been developed by NCERT in collaboration with Homi Bhabha Centre for Science Education and the Department of Education, Ministry of Human Resource Development. The other contributors are the state councils of education research and training and other government agencies. The NROER can be accessed through the link <https://nroer.gov.in/welcome>.

The repository hosts, till date, more than 13000 e-resources, which contains e-books, documents, interactive content, audios, videos, and images. The content is mostly for primary, secondary and higher education levels. The open educational resources that are available in this repository are mapped to the national curriculum in about nine subjects. The users can access the content for free through open access mechanism.

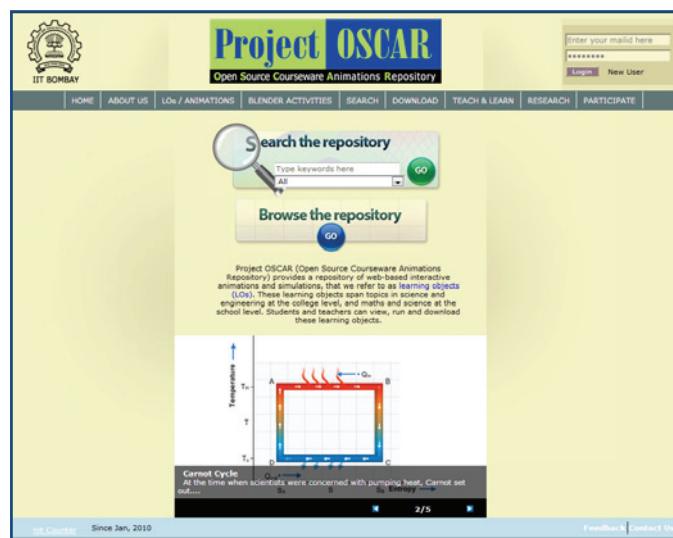


Source: <https://nroer.gov.in/welcom>

6.4.7 Project OSCAR

Project OSCAR (Open Source Courseware Animations Repository) is an initiative of IIT Bombay under its Ekalavya project. The main aim of Project OSCAR is to build a large repository of web-based, interactive animations and simulations for teaching and learning concepts in science and technology. The repository can be accessed through the link <http://oscar.iitb.ac.in/oscarHome.do;jsessionid=671701D7EB18162D7BFC9BE4EE5B11E5>.

Project OSCAR provides a repository of web-based interactive animations and simulations. These animations and simulations are in various topics of science and engineering at the college level, and maths and science at the school level. Students and teachers can view, run and download these resources through open access.



Source: <http://oscar.iitb.ac.in/oscarHome.do;jsessionid=671701D7EB18162D7BFC9BE4EE5B11E5>

6.4.8 National Cultural Audiovisual Archives

The National Cultural Audiovisual Archives have been initiated by the Indira Gandhi National Centre for the Arts, Ministry of Culture, Government of India. The main aim is to ensure long-term access to the oral traditions, performing arts, ritual and cultural practices and traditional knowledge systems of India in audiovisual form. It identifies and preserves the cultural heritage of India available in audiovisual form in institutions across the country through a process of digitization and making it accessible to the people. The repository can be accessed through the link <http://www.ncaa.gov.in/repository/>.

The repository is intended to cater to the research scholars, students, and artists. It makes available, till date, about a total of 31,500 hours of unpublished, non-commercial audio and video recordings. These are related to various aspects of arts and culture, which can be accessed for free without user registration.



Source: <http://www.ncaa.gov.in/repository/>

6.4.9 Swayam Prabha

Swayam Prabha is an initiative under the NMEICT, Ministry of Human Resources, Government of India. It is a group of 32 DTH channels devoted to telecasting of high-quality educational video programmes on 24X7 basis using the GSAT-15 satellite. The contents are provided by NPTEL, IITs, UGC, Consortium for Educational Communication (CEC), IGNOU, NCERT and NIOS and delivered through the INFLIBNET Centre. Swayam Prabha can be accessed through the link <https://www.swayamprabha.gov.in/>.

Swayam Prabha, till date, has a collection of over 147000 videos on topics at the school (9-12), post-graduate and under-graduate levels. These video contents are from diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities, engineering, technology, law, medicine, and agriculture.



Source: <https://www.swayamprabha.gov.in/>.

Check Your Progress 2

Notes: a) Write your answers in the space given below.

b) Compare your answers with those given at the end of this unit.

- 5) The repository that provides academic content at the school level only is
- 6) ShodhGanga offers the academic resources of
 - a) Video Programmes b) Journals c) Thesis d) E-books
- 7) State True or False.
 - a) National Cultural Audiovisual archives provides e-textbooks
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 - b) Swayam Prabha provides content for schools
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 - c) eGyankosh provides content for senior secondary levels
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 - d) Shodhgangotri does not provide information on synopses of projects

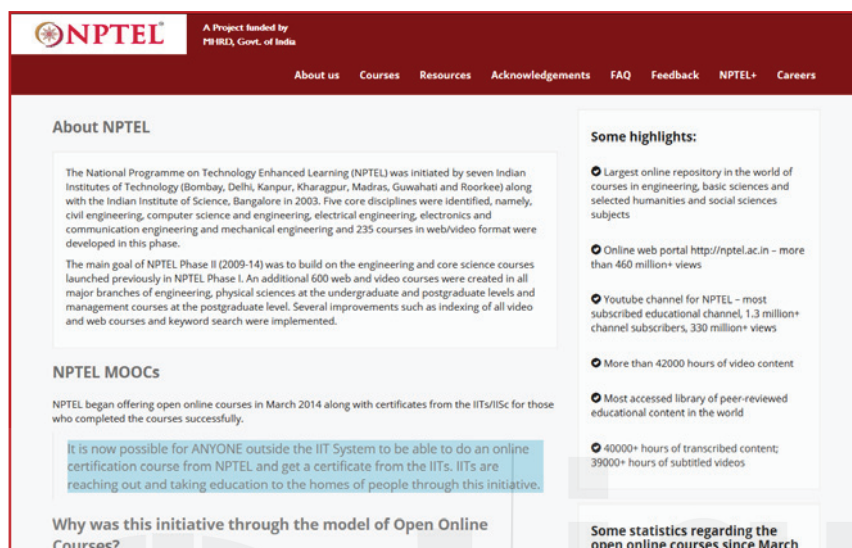
6.5 OTHER INITIATIVES BY GOVERNMENT OF INDIA

6.5.1 NPTEL

The National Programme on Technology Enhanced Learning (NPTEL) is an initiative of the Indian Institutes of Technology (IIT) and Indian Institute of Science (IISc) under the Ministry of Human Resource Development. The aim is to offer open online courses along with certificates from the IITs/IISc for those who completed the courses successfully. Anyone outside IIT/IISc system is able to do a course free of cost from NPTEL. NPTEL offers its courses on Swayam and Swayam Prabha platforms of the Ministry of Human Resource Development.

NPTEL can be accessed through the link https://nptel.ac.in/about_nptel.php.

NPTEL is presently the largest online repository in the world offering courses in engineering, basic sciences and selected humanities and social sciences subjects. It offers, till date, 740 courses containing more than 42000 hours of video content. Anyone who is interested in learning gets access to quality content, which is available for free.



Source: https://nptel.ac.in/about_nptel.php

6.5.2 NMEICT Initiatives

The National Mission on Education through Information and Communication Technology (NMEICT) is the endeavour of the Ministry of Human Resources Development to leverage the potential of ICT to benefit of all the learners in Higher Education Institutions. The aim of NMEICT is to bridge the gap in the skills to use computing devices for the purpose of teaching and learning among urban and rural teachers/learners in Higher Education domain and empower those, who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. It facilitates projects for development and delivery of e-learning, virtual laboratories, on-line testing and certification, on-line availability of teachers to guide and mentor learners, utilization of available Education Satellite (EduSAT) and Direct to Home platforms, training and empowerment of teachers to effectively use the new method of teaching learning etc(<https://mhrd.gov.in/technology-enabled-learning-0>).

Some of the important projects of NMEICT, such as Swayam Prabha and e-PG Pathshala have been discussed above. In the following sub-sections, a few more projects under NMEICT, such as Sakshat, Spoken Tutorial, Talk to a Teacher, Vidya Mitra, A-VIEW, e-Yantra, Virtual Labs, and FOSEE are discussed. All academic resources under these initiatives are provided under Creative Commons (CC-BY-SA).

i) Sakshat

Sakshat is the initiative of the Ministry of Human Resource Development under the NMEICT. It is a one-stop education portal launched in 2006. It is coordinated by a Content Advisory Committee having representatives from IGNOU, Delhi University, Kendriya Vidyalaya Sangthan, Navodyaya Vidyalaya Sangthan, National Institute of Open Schooling (NIOS) and NCERT. The Sakshat portal

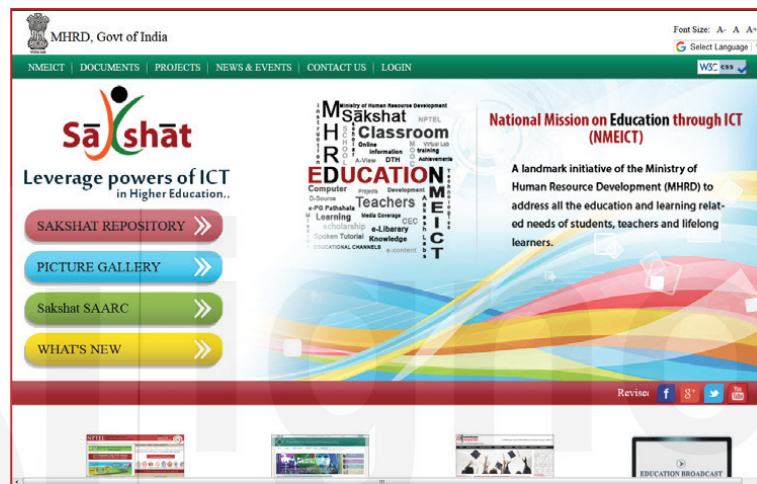
hosts a repository, Virtual Class, Spoken Tutorial, A-View, Talk to a Teacher, Vidya Mitra, e-Yantra, Virtual Labs, FOSEE and Swayam Prabha. It can be accessed through the link <http://www.sakshat.ac.in/>.

Repository

Sakshat hosts a repository consisting of e-books, e-journals, digital repository, digital library etc. Most of the sources are open source material. It also provides educational news, examination alerts, sample papers and other useful links.

Virtual Class

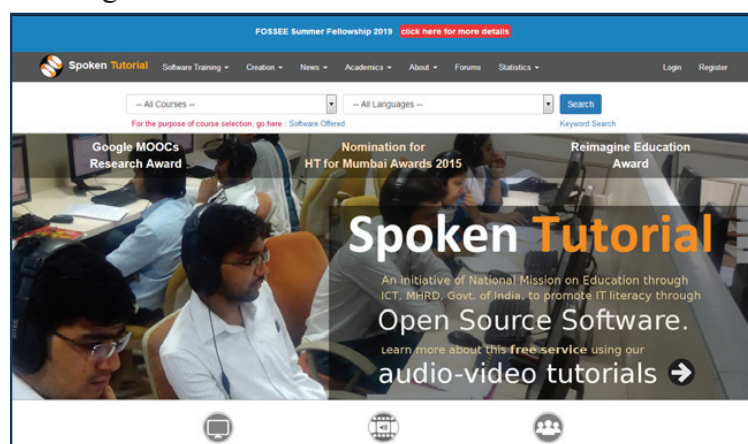
The Virtual Class of Sakshat offers several courses through Spoken Tutorials and NPTEL. The content has been divided into four quadrants, namely, e-content, web resources, e-tutor and self-assessment.



Source: <http://www.sakshat.ac.in/>

ii) Spoken Tutorial

Spoken Tutorial is an initiative of IIT Bombay under the NMEICT. It is an educational portal that provides free and open source software (FOSS) in several Indian languages. The main objective of this project is to promote IT literacy for education and improve the employment potential of learners in India, using FOSS. The intended users are school children, college students, working professionals, retired professionals, housewives, teachers, trainers, research scholars, software users and developers. The FOSS resources made available are Python, Scilab, eSim, OpenFOAM, DWSIM, OpenModelica and Osdag, LibreOffice, Geogebra, Jmol, GChempaint, Avagadro, GIMP, Inkscape, Blender, Firefox, and K Turtle, C, Java and Python programming. Spoken Tutorial can be accessed at <http://spoken-tutorial.org/>.



Source: <http://spoken-tutorial.org/>.

iii) Talk to a Teacher

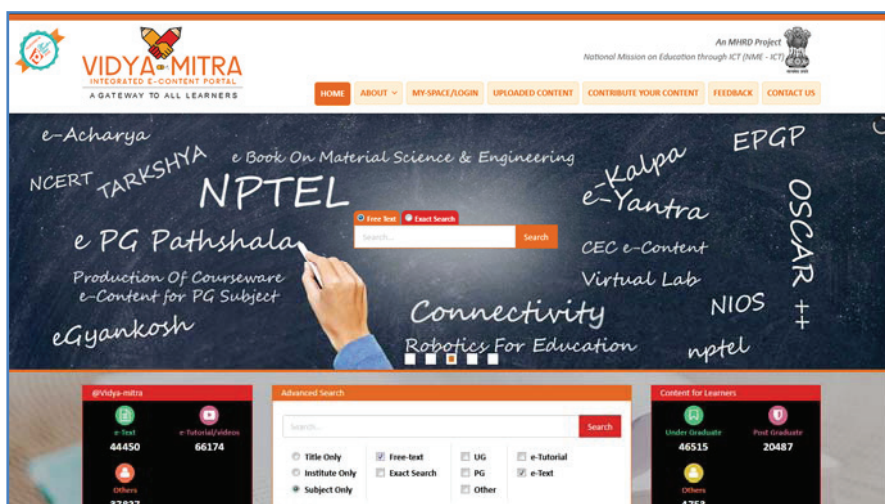
Talk to a teacher is an initiative by IIT Bombay under NMEICT. This is a portal through which select students can access the content of the engineering courses taught at IIT Bombay free of cost. The aim of this initiative is to provide quality engineering education for students and faculty of engineering institutions in the country. The courses include aerospace engineering, chemical engineering, The courses are recorded live in the classrooms of IIT Bombay and offered through this portal. The portal can be reached through the link <http://video.co-learn.in/cov/>. It can be accessed from the Sakshat portal as well.



Source: <http://video.co-learn.in/cov/>.

iv) Vidya Mitra

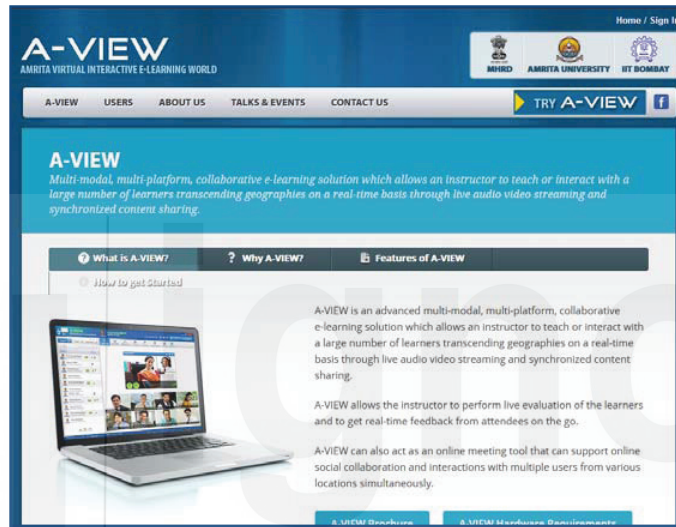
Vidya Mitra is an integrated e-content portal that has been developed by INFILIBNET under the NMEICT. The aim is to make all the academic resources accessible to the students through a single interface. The Universities and Institutions are the main contributors of academic content. The subjects covered range from arts and humanities to sciences, engineering and medical sciences. There is academic content available at the secondary, higher secondary, undergraduate and graduate levels. This content is available in the form of audio/video learning material, textual material, and multimedia-enriched materials. Presently the portal hosts more than 45000 items of e-content, and 66000 e-tutorial or videos, among others. More content from different projects are being uploaded including NPTEL, e-PG Pathshala NCERT, etc. The portal can be reached through the link <http://vidyamitra.inflibnet.ac.in/>.



Source: <http://vidyamitra.inflibnet.ac.in/>.

v) **A-VIEW**

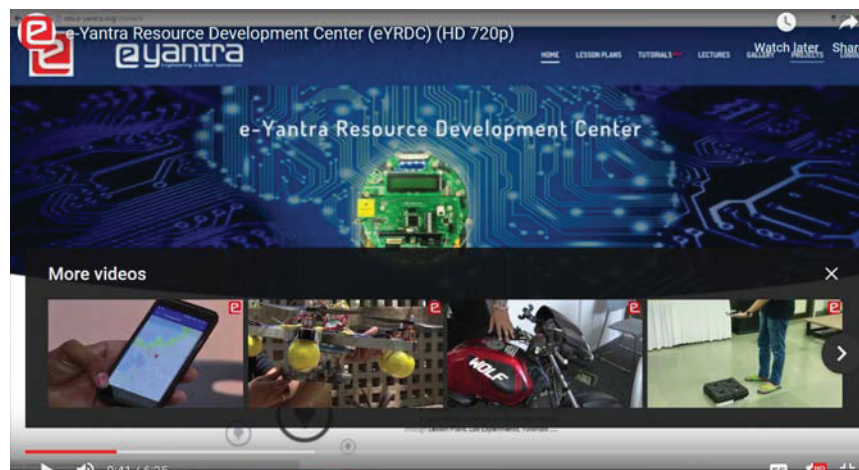
Amrita Virtual Interactive E-Learning World (A-VIEW) has been developed by Amrita University with IIT Bombay under NMEICT (<http://aview.in/aview>). A-VIEW is a collaborative multi-modal, multi platform e-learning solution, which was developed with the aim to equip the teachers and learners to connect with each other through ICT. It supports live audio-video streaming to allow teachers to interact with the students. It also allows the instructors to perform live evaluation of the students and obtain real-time feedback from them. It allows the use of documents and presentations. There is a built-in option of whiteboard. This advanced collaborative tool allows interactive 2D and 3D animations that can provide a near life virtual experience to the learner. It is also mobile enabled. A-VIEW is a free and open tool that can be used by any university or institution.



Source: <http://aview.in/aview>

vi) **e-Yantra Resource Development Centre**

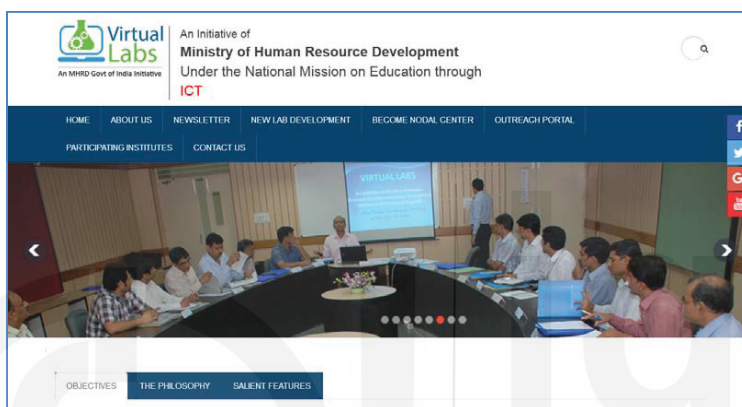
The e-Yantra Resource Development Centre has been developed by IIT Bombay under the NMEICT. Its aim is to share resources for teachers to help them run their e-Yantra labs in an effective manner in the field of embedded systems and robotics. Teachers require logging in to access the content for free (<http://content.e-yantra.org/>). There are free lesson plans and lesson modules that contain instructions for the teachers to deliver a lecture. There is a question bank and a teacher can use questions from this bank in the class to test the learning and comprehension of the students. There are lab experiments which the teacher can assign to the students. There are tutorials and lectures that help enhance the knowledge of the teachers.



Source: <http://content.e-yantra.org/>

vii) Virtual Labs

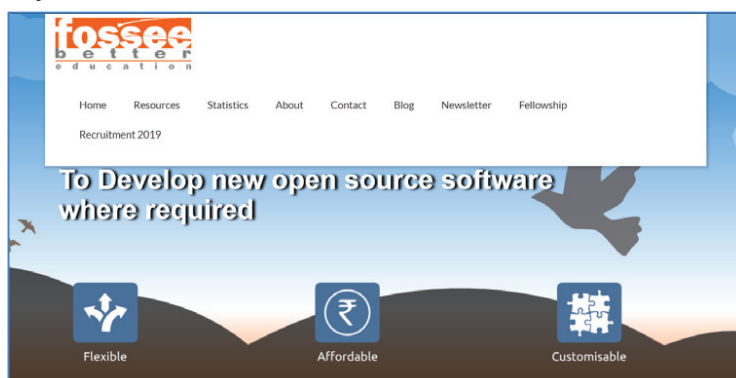
Virtual labs (VLab) are a project by the Ministry of Human Resource Development under NMEICT (<http://www.vlab.co.in/>). Twelve institutions, including the IITs are collaborating to develop VLab. The VLab aims to provide remote-access to labs in various disciplines of Science and Engineering for students at the undergraduate level, post graduate level as well as to research scholars. It is hoped that the inquisitiveness will be triggered among high-school students, who might be motivating them to take up higher-studies. Under this VLabs project, till date, over 100 Virtual Labs consisting of more than 700 web-enabled experiments have been designed and made available for remote-operation and viewing. The broad areas are electronics and communications, computer science and engineering, electrical, mechanical, chemical, civil, bio technological and biomedical engineering and physical and chemical sciences.



Source: <http://www.vlab.co.in/>

viii) FOSSEE

FOSSEE (Free/Libre and Open Source Software in Education) project is an initiative of IIT Bombay under NMEICT (<https://fossee.in/>). Its aim is to promote the use of free/libre open source software (FLOSS) tools to improve the quality of education and to reduce dependency on proprietary software in educational institutions. This project encourages educationists to learn simple software programming on their own and design codes for their subjects. The available FLOSS are Scilab, Python, sAIM, OSadag, DWSIM, OpenFOAM, OpenModelica, OR tools, OpenPLC, R, among others. The FOSSEE project has the activity of Textbook Companion in which it has ported solved examples from hundreds of standard textbook companions using FLOSS. These solved examples are in software codes, which have been created by many academics in the educational institutes in India. These textbooks pertain mostly to science and engineering courses at present. These have been made available as free academic resource for anyone to use.

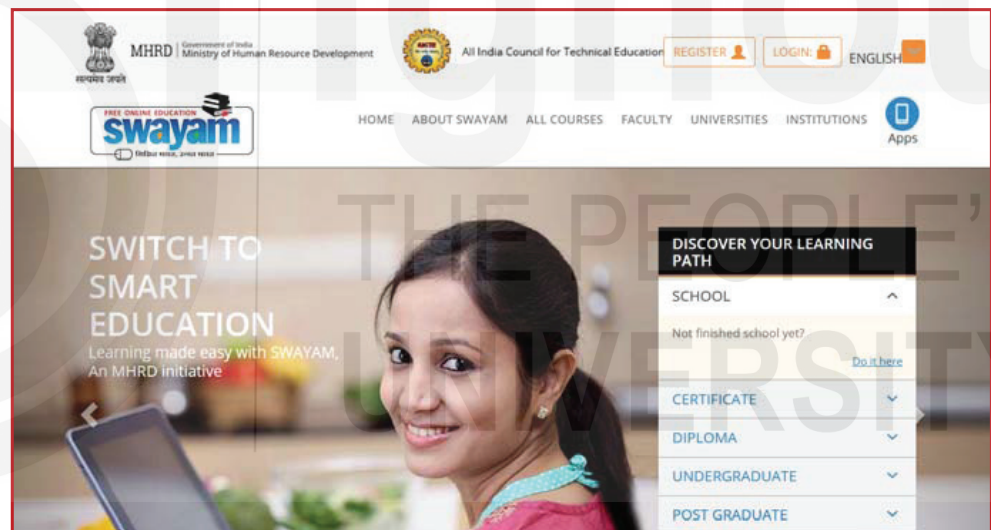


Source: <https://fossee.in/>

6.5.3 SWAYAM

SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) is a programme initiated by the Ministry of Human Resource Development, Government of India. Its aim is to provide the best teaching learning resources to all through bridging the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. SWAYAM aims to achieve this through a web platform of the same name. The platform has been developed by Ministry of Human Resource Development and All India Council for Technical Education with the help of Microsoft. It can be accessed through the link <https://swayam.gov.in/>.

The SWAYAM facilitates hosting of all the courses that are taught in 9th class till post-graduation. Professional programmes, such as law and teacher training programmes are also available. All the courses are interactive in nature. These courses have been prepared by more than one thousand teachers across India. These courses are available free of cost to the residents in India. The courses hosted on SWAYAM are in 4 quadrants – (1) video lecture, (2) specially prepared reading material that can be downloaded/printed (3) self-assessment tests through tests and quizzes and (4) an online discussion forum for clearing the doubts. These courses are coordinated by AICTE, NPTEL, UGC, NCERT, IGNOU, CEC, NIOS, National Institute of Technical Teachers Training and Research (NITTTR) and Indian Institute of Management, Bangalore (IIMB).

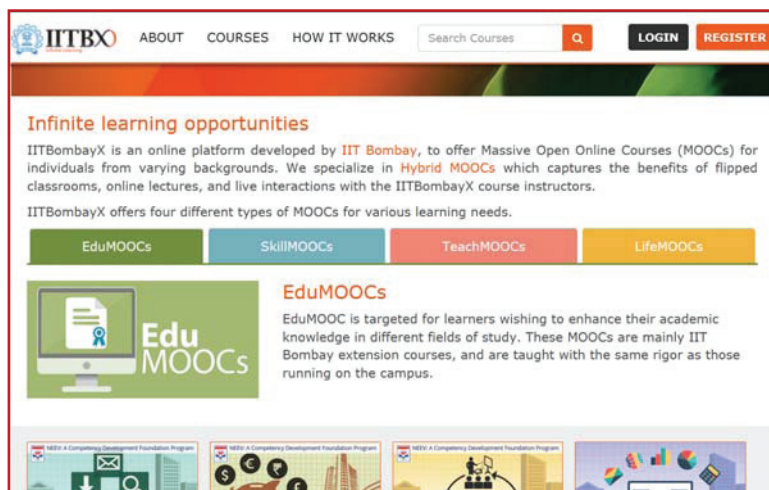


Source: <https://swayam.gov.in/>

6.5.4 IIT Bombay X

IIT Bombay X is an online platform developed to offer massive open online courses (MOOCs) to alleviate some of the issues of access and quality issues in higher education in India. The courses are mostly aimed at teachers and all those students who wish to upgrade their learning. The MOOCs are offered in a hybrid mode, i.e., both face to face and online. The platform can be accessed through the link <https://iitbombayx.in/>.

The MOOCs are categorised as EduMOOCs, SkillMOOCs, TeachMOOCs and LifeMOOCs. EduMOOCs are mostly the extension courses provided by IIT Bombay. SkillMOOCs are meant to train the professionals while they are on the job. TeachMOOCs are aimed at enhancing the teaching skills of the teachers across India. LifeMOOCs aim to benefit the lifelong learners to elevate their careers. The subjects covered are communication, computer science, design education and engineering. The courses are offered for a payment of registration fees.



Source: <https://iitbombayx.in/>.

6.5.5 NIOS

The National Institute of Open Learning is an autonomous organisation under the Ministry of Human Resource Development. Its aim is to provide sustainable inclusive learning with universal and flexible access to quality school education and skill development. It offers academic courses at secondary and senior secondary level. It also offers elementary level courses through its open basic education programmes (OBE). Additionally, it offers a number of vocational, life enrichment and community oriented courses. It can be accessed through the link <https://www.nios.ac.in/>.

The NIOS has developed an online repository of its course material. Hundreds of books are available to the teachers and students through this repository. These range from primary to higher secondary levels. All the subjects are included and are available in English, Hindi and regional languages. For the teachers, Diploma in Elementary Education course material is also available. Additionally courses for health workers named Jan Swasthya are also available. All these can be accessed and downloaded free of cost by anyone under open access policy.



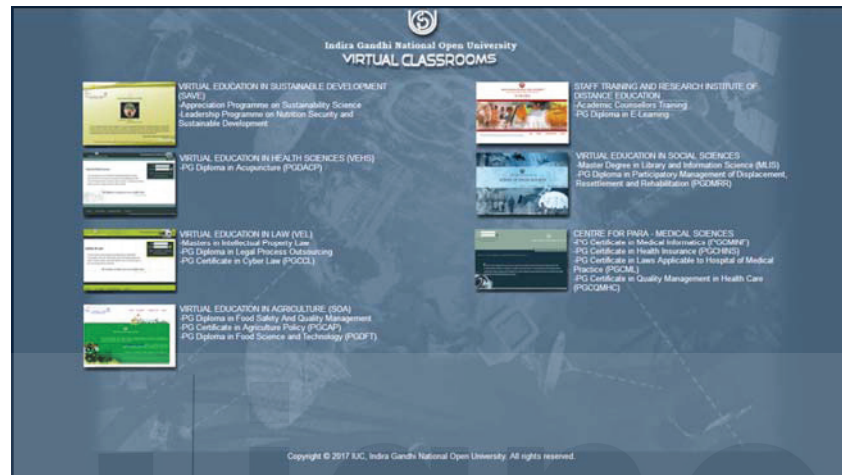
Source: <https://www.nios.ac.in/> (2018)

6.5.6 Virtual Class, IGNOU

The Indira Gandhi National Open University has developed virtual classes for some subjects that aim to facilitate the students to gain education in the courses

of their choice free of cost. It can be accessed through the link <http://www.ignouonline.ac.in/VirtualClass.htm>.

The contents are mostly made available from eGyankosh. The students need to register and study the courses. The courses are offered in the distance learning mode. Additional resources, such as video recordings, teleconferencing etc are also used to impart education. For certification the students need to pay examination fees and take the examination. The certificate is awarded after successful completion of the examination.



Source: <http://www.ignouonline.ac.in/VirtualClass.htm>

6.5.7 NIELIT

The National Institute of Electronics & Information Technology (NIELIT), (erstwhile DOEACC Society) is an Autonomous Scientific Society under the Ministry of Electronics & Information Technology, Government of India. It aims to offer industry oriented quality education and training in the field of information, electronics and communications technology. It can be accessed through the link <http://www.nielit.gov.in/>.

NIELIT has been providing information technology training through its foundation, advance diploma, MCA equivalent, and M-Tech level courses. It also offers information technology literacy courses such as Computer Concept, Basic Computer Course. Further it also offers courses in the non formal sector, such as Information Security, ITes-BPO (Customer Care/Banking), Computer Hardware Maintenance, Bio-Informatics, and Electronics Design and Technology, in association with State Universities. Students need to register for the courses and pay the required fees.



Source: <http://www.nielit.gov.in/>.

6.5.8 Mobile apps

Mobile apps are being utilised in a big way in education. Mobile apps help aggregate and provide relevant content that is customised as per individual needs. In the following sections, a few mobile apps developed by the agencies of Government of India are described.

i) e-Pathshala

The e-Pathshala has been developed by NCERT and the Ministry of Human Resource Development. Its aim is to achieve the sustainable development goal of offering equitable, quality, inclusive education and lifelong learning for all and bridging the digital divide. The app makes available educational e-resources including textbooks, audio, video, periodicals, and a variety of other digital resources to the students, teachers, educators and parents. E-Pathshala is supported on multiple technology platforms, such as mobile phones and tablets, and web portal through laptops and desktops (as Flipbook). A user can carry as many books as their device supports. The user-friendly features of the ebooks allow users to pinch, select, zoom, bookmark, highlight, navigate, share, listen to text using text to speech apps. The users can also and make notes digitally. The app is freely available on Google playstore and can be downloaded from the link https://play.google.com/store/apps/details?id=in.gov.epathshala&hl=en_IN.



Source: https://play.google.com/store/apps/details?id=in.gov.epathshala&hl=en_IN.

ii) SWAYAM App

The SWAYAM portal, as described in section 6.4.3 above, makes available huge volume of academic resources free of cost to the teachers and learners. The SWAYAM application has been designed for the teachers and students to access all SWAYAM content anytime and anywhere. The app is android based and can be downloaded from Google Playstore from the link <https://play.google.com/store/apps/details?id=in.gov.swayam.app&hl=en>.



Source: <https://play.google.com/store/apps/details?id=in.gov.swayam.app&hl=en>

6.4.8.3 IGNOU StudentApp

The IGNOU StudentApp is an Official Mobile App of Indira Gandhi National Open University (IGNOU). This app is designed to provide information to the students on the various aspects of their studies and administrative information such as Registration Details, Material Dispatch Status, Identity Card, Grade Card, TEE Result, Hall Ticket and various other important links in one window. The app is android based and can be downloaded from Google Playstore from the link <https://play.google.com/store/apps/details?id=com.ignou.studentsApp>.



Source: <http://www.ignou.ac.in/ignou/studentzone>

Check Your Progress 3

Notes: a) Write your answers in the space given below.

b) Compare your answers with those given at the end of this unit.

8) List any five initiatives by NMEICT.

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.....

9) Describe the MOOCs offered by IIT Bombay X.

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10) List the types of technologies used by SWAYAM to provide access to the academic resources.

11) Download the SWAYAM app and explore it. Describe the services it offers.

6.6 LET US SUM UP

We are ready to sum up the Unit on the Initiatives for Enhancing Access to Academic Resources in India. In this Unit, you have read about the initiatives by the Government of India to make available the various types of academic resources. These resources are freely available and accessible in a digital form anywhere anytime. You have read about the various types of academic resources available through digital libraries, repositories and other ICT initiatives. Now you can describe the various digital libraries, institutional repositories and government initiatives and list the academic resources provided by them. You have read about the different types of digital academic resources, such as audios, videos, presentations, animations etc that are available. You have also read about web support in the form of portals and mobile apps being used to provide access to these resources. Now you can identify the ICT technologies used for creating and delivering academic resources to the learners. Also, now you can explore the academic resources online to access content for your own use.

6.7 SUGGESTED READINGS AND REFERENCES

Daniel, Churchil. (2017). Digital Resources for Learning. Singapore: Springer Nature.

Sheninger, Eric C. (2016). UnCommon Learning: Creating Schools That Work for Kids, 1st Edition. USA: SAGE Publications.

Mrunalini, T. and Ramakrishna. A. (2016). Information & Communication Technology (ICT) In Education. Hyderabad: Neelkamal Publications.

6.8 ANSWERS TO CHECK YOUR PROGRESS

1.
 - i) National Digital Library of India,
 - ii) e-ShodhSindhu: Consortia for Higher Education E-Resources
 - iii) Vigyan Prasar Digital Library
 - iv) Traditional Knowledge Digital Library
 - v) Kalāsampadā: Digital Library Resources for Indian Cultural Heritage
2. There are over sixty types of academic resources available in the National Digital Library of India. These are e-textbooks, articles, videos, audios audiobooks, presentations etc. These are in various subjects, such as science and technology, humanities, agriculture, etc.
3. e-ShodhSindhu is an online portal that provides access to academic resources to students, researchers and faculty from colleges, Universities and other institutions. It contains, till date, more than 10,000 journals, 3140000 ebooks, 20 resources and 4 databases. After registration, users can read and download these resources for free.
4. The learner has to create user accounts and register into the portals for access. They can do this by following the instructions provided by the portal.
5. NCERT
6. C. Thesis
7.
 - a. False
 - b. True
 - c. False
 - d. True
8. Sakshat, Talk to a Teacher, A-VIEW, FOSSEE, SWAYAM
9. The IIT Bombay X offers three types of MOOCs. These are EduMOOCs, SkillMOOCs, TeachMOOCs and LifeMOOCs. EduMOOCs provide IIT Bombay extension courses. SkillMOOCs provide courses to train on the job professionals. TeachMOOCs provide courses to train teachers LifeMOOCs provide courses that aim to benefit the lifelong learners in their careers.
10. Online platform, Discussion forum, Mobile app
11. The learners may download the app from the link <https://play.google.com/store/apps/details?id=in.gov.swayam.app&hl=en>.