

**E-LEARNING: MEANING, IMPORTANCE,  
PRINCIPLES AND RELEVANCE IN HIGHER  
EDUCATION**

M.A. Semester II

Paper: VII

Digital Governance: Theory and Practice

Unit II

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**Meaning and Importance of E-Learning:**

A learning system based on formalized teaching but with the help of electronic resources is known as E-learning.

E-Learning is the learning facilitated and supported by Information Communication technologies (ICT) to enable people to learn anytime and anywhere.

E-learning is nothing but the use of technology to connect teachers and students who are physically miles apart.

E-Learning involves the use of multi-media to enhance learning.

E-Learning can include training, the delivery of just-in-time information and guidance from experts.

While teaching can be based in or out of the classrooms, the use of computers and the Internet forms the major component of E-learning.

E-learning can also be termed as a network enabled transfer of skills and knowledge through which the delivery of education is made to a large number of recipients at the same or different times.

In the current era, where technology is rapidly evolving, education has also taken the support of ICT and now offers convenient ways to help increase the knowledge, education and literacy status of people.

E-learning platform provides anywhere, anytime easy access for upgradation of knowledge and skills.

It provides a platform wherein the individual gets a customized package related to key thematic areas through a self-guided process.

The presence of an instructor is not required and learners can decide their own time and venue for learning.

This provides a great amount of flexibility for the learner, allowing learning to fit within their busy lives.

In the physical absence of an instructor, it is important for e-learning to be impactful yet engaging.

This is achieved by infusing e-learning courses with attractive visuals, audio and other multimedia elements including simulations and animations.

The use of such innovative techniques to garner learner interest creates an indelible impression in the minds of the learners and helps them retain more as well as apply more.

Earlier, e-learning was not accepted wholeheartedly as it was assumed that this system lacked the human element required in learning.

However, with the rapid progress in technology and the advancement in learning systems, it is now embraced by the masses.

The introduction of computers was the basis of this revolution and with the passage of time, but with the increasing use of smart-phones, tablets, etc. these devices now have an importance place in the classrooms for learning.

Books are gradually getting replaced by electronic educational materials like optical discs or pen drives.

The learning can be imparted by a number of means.

In the past, these have included the use of mainframe computers, floppy diskettes, multimedia CD-ROMs (compact discs – read only memory), and interactive videodisks.

Most recently, Web technology (both Internet and Intranet delivery) are being used.

Future trends are looking at training delivered on smart cell phones.

This new, form of education is called, m-learning or mobile learning.

Knowledge can also be shared via the Internet, which is accessible 24x7x365, anywhere, anytime.

E-learning courses provide an enabling platform by virtue of which the professionals can upgrade their knowledge without going for regular courses.

E-learning platform provides an opportunity to quickly make technical concepts and communicate to a much wider audience at a faster pace.

Since the modules are standardized and not dependent upon the delivery of the trainers they have consistency in the content.

The e-learning courseware uses a mixed learning approach and hence could lead to better retention of concepts.

Easy tools embedded in the e-Learning courses help the individuals to learn and move at their own pace and take a formal assessment after each lesson.

So it provides immediate results and feedback, in case an individual is not able to score properly in a particular unit they are requested to re-read the chapter and go through assessment again.

On passing this test which is based on the technical knowledge and application of skills the individuals can deepen their understanding related to the project.

The schools which use E-learning technologies are a step ahead of those which still have the traditional approach towards learning.

No doubt, it is equally important to take forward the concept of non-electronic teaching with the help of books and lectures, but the importance and effectiveness of technology-based learning cannot be taken lightly or ignored completely.

It is believed that the human brain can easily remember and relate to what is seen and heard via moving pictures or videos.

It has also been found that visuals, apart from holding the attention of the student, are also retained by the brain for longer periods.

Various sectors, including agriculture, medicine, education, services, business, and government setups are adapting to the concept of E-learning which helps in the progress of a nation.

It is especially useful for organizations that operate from multiple offices and require a training solution that connects people at all locations, at any time and provides a standardized set of instructions and e-Learning to foster ‘enterprise transformation’ and enhance return on investment (ROI).

This could mean helping executives in gaining new competencies, launching new products or services or enhancing skill sets.

For the corporate sector, where training and learning are an integral part, e-learning has been immensely successful in creating a strong foothold.

With growing numbers, congregating employees from different offices for trainings is a logistical nightmare consuming unnecessary time, money and efforts.

E-learning has proved to be the best means in the corporate sector, especially when training programs are conducted by multi-national corporations (MNCs) for



professionals across the globe and employees are able to acquire important skills while sitting in a board room, or by having seminars, which are conducted for employees of the same or the different organizations under one roof.

With technology-aided learning, learners can learn as per their schedules and availability, helping them utilize their time better.

Moreover, innovative methodologies like simulations and serious gaming can kindle learner interest, providing opportunity to do and learn through application-based knowledge.

The opportunity to practice and hone or perfect skills not only ensures greater productivity and quality of work but infuses a sense of confidence in the learners which helps them achieve overall excellence.

With more and more industries adopting technology-aided learning as their chosen mode of training and learning delivery, it is clear that e-learning will continue to deliver

its sustained impact and radically change the way we learn.

A pioneering project under Digital India Programme is Learning Management System (LMS) in e-governance.

LMS is a software application for the administration, documentation, tracking, reporting and delivery of electronic courses (e-learning) and training programs.

As a capacity building tool, LMS facilitates efficient administration of e-learning and training for various government officials both at centre and states/union territories.

It has the objective of enhancing knowledge and skills of users as per their roles envisaged in the e-Governance Competency Framework (eGCF).

### **Principles of E-learning:**

In 2005, Professors John Anderson and Robert McCormick wrote ‘A Common Framework for E-learning Quality’ and ‘Ten Pedagogic Principles of E-learning’ describing an approach to the development of effective e-learning programs for Becta, the British government body which promotes technology in learning.

According to the two authors, the Ten Principles may help designers to construct pedagogically sound e-learning materials and related activities.

The principles may also help teachers to choose resources; design teaching and learning activities based on those resources; and support such activities while they take place.

Anderson and McCormick state that there is an implicit assumption in their approach that the more of the ten principles are embodied, the better the quality of the

pedagogy; and the fewer embodied principles, the lower the quality.

### **Principle 1 - Match to the Curriculum:**

The pedagogy should be matched with and aligned to the appropriate curriculum through clear objectives; the relevance of content covered; the appropriateness of student activities; and the nature of the assessment.

### **Principle 2 – Inclusion:**

The pedagogy should support inclusive practice seen in terms of different types and range of achievement; physical disabilities that can be particularly supported by e-learning; different social and ethnic groups; and gender.

### **Principle 3 – Learner Engagement:**

The pedagogy should engage and motivate learners.

This engagement should be evident in an ethos of being both educational and motivating.

#### **Principle 4 – Innovative Approaches:**

It should be evident why learning technologies are being used, rather than a non-technological approach which achieves the same end as effectively.

E-learning should be fit for purpose.

#### **Principle 5 – Effective Learning:**

This principle can be demonstrated in a variety of ways, for example, by using a range of different approaches in the learning platform that will allow the student to choose one that suits him/her, or that can be personalized to

him/her, or by satisfying a number of the characteristics of good learning

**Principle 6 – Formative Assessment:**

The pedagogy should provide formative assessments.

**Principle 7 – Summative Assessment:**

The summative assessments must be valid and reliable; comprehensible by teachers, learners and parents; able to deal with a range of achievement levels; and free from adverse emotional impact on the learner.

**Principle 8 – Coherence, Consistency and Transparency:**

The pedagogy must be internally coherent and consistent in the way the objectives, content, student activity and assessment match to each other. It must be open and accessible in its design.

### **Principle 9 – Ease of Use:**

E-learning should be transparent in its ease of use.

### **Principle 10 – Cost Effectiveness:**

Technology solutions need to be justifiable and affordable and the costs sustainable.

## **Relevance of E-learning in Higher Education:**

A key facet of learning is education which is a vital aspect of human life.

It is a means through which individuals gain knowledge, increase their awareness, enrich their personality and enhance their overall well-being for the benefit of all.

A central goal of education is to allow all individuals to develop to their full potential.

It implies full access to intellectual and skill development opportunities that will enable each individual to develop his or her full potential.

A significant challenge for public policy is to provide learning opportunities for all students irrespective of their home backgrounds.

The process of education is a life-long one in the sense that individuals start receiving it gradually after their birth and continue to do so through out their life.

However, the interpretation of the word education in common parlance is in the sense of imparting methodic



instructions and lessons for indoctrination and enlightenment of individuals.

In this narrow connotation the use of the term education is limited to the extent till which individuals are registered with some educational institution for completing a formal course.

Investment in education is beneficial in a multiplicity of ways, both for individuals and for society as a whole.

Education increases individual productivity as measured by the well-documented link between educational attainment and personal earnings.

At the national level education plays an important role in fostering economic growth.

Today's rapidly growing economies depend on the creation, acquisition, distribution, and use of knowledge, and this requires an educated and skilled population.

Higher education makes immense contribution to national economic performance and through that to the enhancement of the quality of life.

High quality and relevant higher education is able to equip students with the knowledge, skills and competences they need to succeed in life.

The success in professional life is markedly dependent upon appropriate networking and here comes the relevance of information and communication technologies.

It is with the application of information and communication technologies the world has been profusely transformed into knowledge world.

In the present era of intense competition in all sectors it is important that the individuals should start preparing

themselves for it from their school / college / university times.

They have to be particularly informed in the higher education stage.

That is why in the recent times emphasis is laid on more and more on adoption and use of information and communication technologies at this stage.

The world has gradually transformed into a knowledge world.

Knowledge enabled working population are acquiring dominant position in the present times.

Therefore, utmost attention has to be given to acquisition, retention and development of knowledge. For this purpose education pattern and system need to be suitably overhauled.

The role of information and communication technology is immense in such a scenario as its use improves efficiency and effectiveness levels; saves time, money and efforts; promotes knowledge sharing; provides platform for collaboration; and increases the reach of services.

E-learning is transforming education sector in a very innovative manner.

The widening of courses and the changing trends in education sector has formed a broader choice for students to decide their career as per their competence and skill.

Benefits of having such varied courses are not restricted to students but are also beneficial for colleges, educational bodies, corporate sector and the nation at large.

Any age group can get the best benefit of e-learning and excel in their chosen career path.

Higher education scenario has improved a lot over a period of time in India and technology has played a considerable role in it.

The Government of India and corporate sector have taken several important measures to promote e-education in higher education. Among these measures include EDUSAT satellite, National Mission on Education through Information and Communication Technology, National Programme on Technology Enhanced Learning, Virtual Labs, E-yantra, E-ShodhSindhu, E-PG Pathshala, Shiksha.com etc.

EDUSAT or *GSAT-3* (geosynchronous satellite for communication purposes) was the country's first committed and purposeful educational satellite for distant class room education from primary level to higher education.

Of late a programme of Government of India called *National Mission on Education through Information and Communication Technology (NMEICT)*, launched on *February 3, 2009* by Ministry of Human Resource Development, is assuming immense significance due to the reason that there is a compelling need to make increasing use of information and communication technologies to successfully overcome the exacting conditions prevailing in higher education sector, spread its ambit, make it more accessible, and meet the education related requirements of students, teachers / academicians and all those who are interested in learning.

The three essential components of NMEICT are broadband connectivity to all colleges and universities,

low cost access and computing devices for students and teachers, and high quality e-content generation<sup>1</sup>.

*Sakshat* is the main one stop portal of NMEICT and all e-contents which have been and will be developed under the mission are being or will be made available through it.

There are number of programmes / projects under the mission which are engaged in developing qualitative e-content.

These are: National Programme on Technology Enhanced Learning (NPTEL); Consortium for Educational Communication (CEC); E-PG Pathshala; Virtual Labs; Talk to a Teacher; Spoken Tutorial; Free and Open Source Software for Education (FOSSE); E-Yantra; Educational Resource Planning (ERP); Pedagogy; Direct-to-Home (DTH); Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) – India Massive

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<sup>1</sup> Sakshat, Ministry of Human Resource Development, Government of India, New Delhi, NMEICT Brochure, Page No. 02-03, <http://www.sakshat.ac.in/document/nmeict-brochure-30-11-2015.pdf>

Open Online Courses(MOOCs); and National Digital Library<sup>2</sup>.

*National Programme on Technology Enhanced Learning (NPTEL)* is a project in which seven Indian Institutes of Technology (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras, Roorkee); and Indian Institute of Science, Bengaluru are working for developing course contents in engineering and science streams<sup>3</sup>.

*Consortium for Educational Communication (CEC)* is an inter-university centre established by the University Grants Commission which intends to meet the concerns of higher education through the use of television as well as information and communication technologies<sup>4</sup>.

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<sup>2</sup> Sakshat, Ministry of Human Resource Development, Government of India, New Delhi, NMEICT Brochure, Page No. 05-22, <http://www.sakshat.ac.in/document/nmeict-brochure-30-11-2015.pdf>

<sup>3</sup> National Programme on Technology Enhanced Learning (NPTEL), Frequently Asked Questions, What is NPTEL?, <http://nptel.ac.in/faq.php>

<sup>4</sup> Consortium for Educational Communication, About CEC, <http://cec.nic.in/Pages/About-CEC.aspx>



E-content is being developed by it for undergraduate courses.

*E-PG Pathshala* is a portal under which the University Grants Commission (UGC) is developing e-content in 77 subjects at postgraduate level.

The content will be of eminent quality, based on curriculum and interactive in nature and will cover subjects of social sciences, arts, fine arts and humanities, natural and mathematical sciences, linguistics and languages<sup>5</sup>.

*Virtual Labs project* is for undergraduate and postgraduate levels students and research scholars of science and engineering streams.

Its objectives are to provide access to laboratories from a distance, motivate students to do experiments, furnish a

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<sup>5</sup> E-PG Pathshala, Frequently Asked Questions, What is E-PG Pathshala?, <http://epgp.inflibnet.ac.in/faqs1.php>

thorough learning management system, and mete out valuable accessories and resources.

The participating institutions are eight IITs (Bombay, Delhi, Guwahati, Hyderabad, Kanpur, Kharagpur, Madras, Roorkee); Amrita University, Coimbatore; Dayalbagh University, Agra; National Institute of Technology (NIT), Karnataka, Mangaluru; and College of Engineering, Pune<sup>6</sup>.

*Talk to a Teacher* project is being conducted by IIT Bombay in which Amrita Virtual Interactive E-Learning World (A-VIEW) educational tools being developed by Amrita University, Coimbatore are being used for training the teachers all over the country<sup>7</sup>.

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<sup>6</sup> Virtual Labs, Ministry of Human Resource Development, Government of India, New Delhi, Objectives of the Virtual Labs, <http://www.vlab.co.in/>

<sup>7</sup> Sakshat, Ministry of Human Resource Development, Government of India, New Delhi, National Mission on Education through Information and Communication Technology (NMEICT) Brochure, Page No. 13, <http://www.sakshat.ac.in/document/nmeict-brochure-30-11-2015.pdf>

*Spoken Tutorial project* is being led by IIT Bombay in which an audio-video tutorial of ten minutes in English and all Indian languages is provided on Free and Open Source Software (FOSS) on significant topics related to the field of information technology to promote self-learning<sup>8</sup>.

*Free and Open Source Software for Education (FOSSE)* encourages the application of free and open source software for making better the quality of education. It is purported to reduce reliance on commercial or proprietary software in educational institutions<sup>9</sup>.

*E-Yantra project* is being implemented by IIT Bombay for dissemination of education in embedded systems and robotics with the aim of providing hands-on learning to those engineering students who do not have enough access to laboratories and guides.

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<sup>8 8</sup> Sakshat, Ministry of Human Resource Development, Government of India, New Delhi, National Mission on Education through Information and Communication Technology (NMEICT) Brochure, Page No. 14, <http://www.sakshat.ac.in/document/nmeict-brochure-30-11-2015.pdf>

<sup>9</sup> Free and Open Source Software for Education (FOSSE), Better Education About Us, <http://fossee.in/about-us>

The intention is to enable these students to relate their learning experiences with real life practical issues and, thus, to bring into being such engineers who have pragmatic perspective and are prepared enough to face the challenges<sup>10</sup>.

*Educational Resource Planning (ERP) mission* solicits to develop, maintain, regulate and set up web based software system which can be used by educational institutions of the country.

The leading institution in this mission is IIT Kanpur and other partnering institutions are IIT Roorkee; Indira Gandhi National Open University (IGNOU), New Delhi; NIT, Hamirpur; Aligarh Muslim University, Aligarh, Amrita Vishwa Vidyapeetham, Kochi; Dayalbagh

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<sup>10</sup> E-Yantra, General, <http://e-yantra.org/faq>

Educational Institute, Agra; Jamia Millia Islamia, New Delhi; and Shri Mata Vaishno Devi University, Katra.

A learning management system called *Brihaspati* has been developed by IIT Kanpur for web based e-learning. Other educational resource planning modules are being worked out around *Brihaspati*<sup>11</sup>.

*Pedagogy project* is concerned with evolving appropriate pedagogical modes and practices for various classes, intellectual calibers and research in e-learning.

This project is primarily meant for contriving and making up such curricula for degree courses in engineering disciplines which are learner-centric and will facilitate result-oriented learning.

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<sup>11</sup> Sakshat, Ministry of Human Resource Development, Government of India, New Delhi, National Mission on Education through Information and Communication Technology (NMEICT) Brochure, Page No. 17, <http://www.sakshat.ac.in/document/nmeict-brochure-30-11-2015.pdf>

It is a collaborative project in which fifteen educational institutions are participating in the main stage - IIT Kharagpur; IIT Delhi; Birla Institute of Technology and Science (BITS), Pilani; IIT Roorkee; IIT Guwahati; NIT Durgapur; NIT Rourkela; Birla Institute of Technology, Mesra (Ranchi); IIT Bombay; Sardar Vallabhbhai National Institute of Technology, Surat; Shanmugha Arts, Science, Technology and Research Academy, Thirumalaisamudram (Thanjavur); NIT Trichi; NIT Warangal; International Institute of Information Technology, Hyderabad; and Amrita University, Coimbatore<sup>12</sup>.

*Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) Prabha scheme* refers to a collection of thirty-two direct-to-home (DTH) channels which will be telecasting educational programmes of excellent quality on 24x7 basis by making use of GSAT-15 satellites.

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<sup>12</sup> Pedagogy, Ministry of Human Resource Development, Government of India, New Delhi, Project Outline, [http://www.ide.iitkgp.ernet.in/Pedagogy1/pedagogy\\_main.jsp](http://www.ide.iitkgp.ernet.in/Pedagogy1/pedagogy_main.jsp)

Bhaskaracharya Institute for Space Applications and Geo-Informatics, Gandhinagar uplinks the channels for telecast purposes.

For higher education contents based on curriculum of post-graduate and under-graduate courses in different disciplines are telecast<sup>13</sup>.

*Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) – India Massive Open Online Courses (MOOCs)* is a digital platform through which online interactive courses are offered free of cost to scholars from ninth class to post-graduation level.

These courses can be accessed anytime, anywhere and by anyone.

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<sup>13</sup> Swayam Prabha, Free Online Education, Ministry of Human Resource Development, Government of India, New Delhi, About Swayam Prabha, <http://www.swayamprabha.gov.in/index.php/about>

There are seven national coordinators of MOOCs – NPTEL for engineering education (both post-graduation and under-graduation), UGC for post-graduation education, Consortium for Educational Communication for under-graduation education, NPTEL for engineering education (both post-graduation and under-graduation), Indian Institute of Management (IIM), Bengaluru for management education (both post-graduation and under-graduation), IGNOU for out-of-school education, and National Council of Educational Research and Training (NCERT), New Delhi and National Institute of Open Schooling (NIOS), Bengaluru for school education<sup>14</sup>.

*National Digital Library* is an online library of learning resources.

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<sup>14</sup> Swayam, Free Online Education, Ministry of Human Resource Development, Government of India, New Delhi, About Swayam, <https://swayam.gov.in/About>



Its pilot project has been started by Ministry of Human Resource Development.

IIT Kharagpur is developing its framework through which scholars will be able to access these resources in any language from a single window<sup>15</sup>.

*E-ShodhSindhu*, created by Ministry of Human Resource Development, is a consortium for higher education electronic resources.

It provides access to high quality digital educational resources including e-journals, e-books, and large number of bibliographic and factual information bank, to its member academic institutions at affordable subscription rates<sup>16</sup>.

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<sup>15</sup> National Digital Library of India, About National Digital Library of India, <https://ndl.iitkgp.ac.in/>

<sup>16</sup> E-ShodhSindhu, Consortium for Higher Education E-resources, About, <http://www.inflibnet.ac.in/ess/about.php>

Besides Government of India several private companies have also created their educational portals to serve the rising demands of higher education segment.

Some notable such portals are *Shiksha.com*, *Education World.in*, *Edukart.com*, *Brain Buxa*, *Dlpindia.com*, *Campus Hunt.in.*, and *Digitallearning.eletsonline.com*.

*Shiksha.com*, launched in 2008, is a higher education portal of a leading private company Info Edge (India) Limited<sup>17</sup>.

It has collection of information of more than 14,000 institutions (India and abroad) and over 40,000 courses (undergraduate and postgraduate) in various educational streams in demand like animation; arts, law, languages and teaching; banking and finance; design; gaming and comics; hospitality, aviation and tourism; information technology; management; media, films and mass

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<sup>17</sup> Info Edge (India) Limited is a premier online classifieds company of the country in recruitment, matrimony, real estate, education and related services. (Info Edge (India) Limited, Overview, <http://www.infoedge.in/corporate-overview.asp> )

communication; medicine, beauty and health care; retail; science and engineering; test preparation; and visual effects (VFX).

It has an active ask and answer community which is known as *Shiksha Café*.

There are more than 1,000 experts in this community who answer the queries of the students.

It has launched *Shiksha Ask and Answer Android App* for mobiles.

Shiksha.com is India's smartest college gateway that blends higher education related domain knowledge with technology, innovation and credibility to give students personalized insights to make informed career, course and college decisions<sup>18</sup>.

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<sup>18</sup> Shiksha, About Shiksha.com, <http://aboutus.shiksha.com/>

