SYMBIOSIS
Centre for Distance Learning

ISSN 2582-9009

Symbiosis International Research Journ on Online & Distance Learning

Peer-Reviewed | Refereed | International | Interdisciplinary | Bi-Annual

Sustaining and Enhancing the Quality of ODL

Symbiosis Centre for Distance Learning
Symbiosis Bhavan,1065 B, Gokhale Cross Road, Model Colony, Pune - 411016, Maharashtra, India.
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SIRJODL Vol 3, Issue 1, Jan 2021
ISSN 2582-9009

PUBLISHER

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

We, the undersigned, hereby would like to explicitly state that the write-up titled, "**Enhancing Quality of Educational Resources in Open and Distance Learning"** is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Enhancing Quality of Educational Resources in Open and Distance Learning

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Abstract

Open and Distance Learning (ODL) is becoming a widely acceptable alternative to conventional university vis-à-vis classroom teaching-learning environment. This increasing trend is common mostly to pursue higher education in India. It has become necessary that quality of educational resources is ensured by the Higher Educational Institutes (HEIs) offering ODL programmes. Educational resources include infrastructure, course instructors/teachers, study materials, assessments, etc. The issue of a quality provision in ODL has been highlighted by stakeholders including the Governments, private groups, individuals and the society involved in an expanded system of higher education (Olojede, 2008). In India, responsibility of quality assurance is mainly on the government because government controls the regulating authorities such as University Grants Commission (UGC) or All India Council for Technical Education (AICTE). For ODL, government releases various guidelines through these regulatory authorities time-to-time to ensure the quality of education and related matters. The quality standards proposed by said regulators may not be applicable in its entirety for ODL environment. This may be because of the challenges surrounding distance education such as level of programmes and diversity in laws from one country to another, scope of the programmes in terms of its recognition worldwide and language constraints for delivery and for assessments. Despite these challenges, the underlining principle that should guide quality assurance is the quality of resources through which a course can be delivered to learners. Such resources influence the quality of learning, which in turn promotes course participation (Olojede, 2008). This paper highlights few of the educational resources used in ODL environment and strategies to maintain or enhance their quality. For this paper, various

educational resources used by HEIs in ODL are identified and a qualitative study is carried out to cite quality measures.

Keywords: Educational Resources, Quality Assurance, HEIs, Strategies in ODL, Interactive e-Books, MOOCs

Introduction

According to Sharath (2015), distance education helps people or learners to make informed choices about their present life and future. It is reflected as one of the most important innovations in education. It is an alternative to the conventional education system. To support this statement, regulators, learners, potential corporate sector who offers job opportunities to the students and parents need to be convinced that ODL institutions are not providing half-baked education but the education, which is at par with the conventional one. This can be achieved through the quality education, which is a by-product of quality or standard of resources. Comparable programmes delivered with high quality educational resources will help to change the mind-set of people towards distance learning as a second grade education (Stella & Gnanam, 2004).

Two principle components of ODL are 'Open Learning' and 'Distance Education.' According to University Grants Commission (UGC), Open Learning is a philosophy and Distance Education is the mode used for translating it into reality; the two are complementary to each other. In ODL environment, the learner and the teacher are separated by space and time demanding accurate mapping of all the resources to ensure desired outcomes. Two parallel authorities exist to regulate Open and Distance learning in India. Distance Education Bureau (DEB, n.d.), under University Grants Commission (UGC) and All India Council for Technical Education (AICTE, n.d.). According to AICTE, distance learning is creating an educational environment or experience of equal qualitative value for the students to best suit their needs outside the classrooms. In ODL, there is an increasing demand for quality educational services from learners. This indicates that in recent times students are increasingly becoming customers. This means students nowadays expect high quality programmes and are willing to search across borders to fulfil their needs. A jurisdictional restriction to ODL organisations also implies that students are disadvantaged of choices and may lead to significant academic loss (Ravichandran, 2016).

Maintenance of quality standards of technical education imparted through ODL has two aspects. One is the delivery mechanism of the courses/programmes and the other is quality

and relevance of the contents of the course. AICTE has now defined the procedures and regulations for the conduct of Technical Education through ODL and blended learning mode.

ODL Resources in India

In India, Higher Education Institutions (HEIs) mainly deliver the programmes at Post-Graduate, Graduate, Diploma and Certificate levels. Among these levels, Post-Graduate and Graduate levels are with highest number of learners. The enrolment of learners for these levels is given in following table 1 (All India Survey on Higher Education, 2019).

Table 1 Enrolment of learners at different academic levels (Source: AISHE Report/UGC)

Academic Year	Level	Total enrolment*	Percent in total enrolment (Conventional + ODL)
2016-17	Post-Graduate	13,18,871	11.28%
	Graduate	25,69,091	
	Diploma	90,579	
	Certificate	49,673	
2017-18	Post-Graduate	12,68,586	11.00%
	Graduate	25,54,411	
	Diploma	1,22,744	
	Certificate	85,602	
2018-19**	Post-Graduate and Graduate	17,05,059	10.72%

(*UGC announced that in the above enrolments 48.64% learners are women)
(**as per details provided by HEIs)

To cater the said portion of ODL learners, the HEIs mainly use following resources:

1. Tutors/Trainers/Instructors
2. Self-Learning Material/ Self-Instructional Material
3. Videoconferencing sessions
4. Notes
5. E-Books
6. MOOCs
7. E-Learnings, etc….

Quality of above-mentioned educational resources determines the quality of programmes delivered through these resources. Better the resources, better will be the programme and the students. Quality of resources can be ensured through a Quality Assurance System, which consists of formal procedures and rules. Quality assurance in ODL ensures the following:

- What activities to be undertaken
- Who should undertake the same, and
- To what standard it should be done

It is important to note that Quality Assurance (QA) is not the same as assessment. Quality Assurance is an ongoing process used during the creation and execution of the academic programme and assessment is something that is done once a programme is completed.

Quality Assurance Process

Quality assurance process may be different for different organisations. On the basis of set of activities the organisation performs, definition of quality and quality assurance changes. Broadly, a quality assurance system ensures defining right procedures, implementing those procedures with right standards or tools and collects the feedback from right users to verify said purpose of quality assurance. In ODL, primary objective of quality assurance is to attain the student satisfaction and improve the acceptability of the programmes worldwide. A typical quality assurance system in ODL can have following phases or steps:

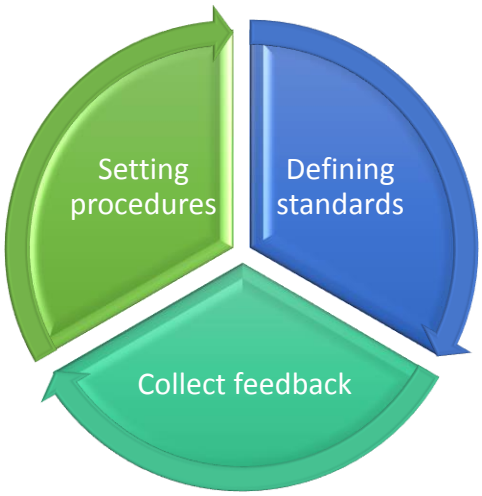

Figure 1 Quality assurance process in ODL

In ODL environment, setting up the procedures can be the first phase of quality assurance system. Procedures are nothing but the description of how various activities are performed or being performed in the system. In other words, it comprises of ways of doing things. Objectives of such procedures in any system are as follows:

1. Procedures are used to define what the organisation considers to be a good practice to be followed, and
2. Procedures are used to ensure that staff should apply good practices consistently while performing their regular duties in the organisation.

Typically, an ODL organisation may have procedures for preparation of new self-instructional material or change the content of existing self-instructional material in case the same is obsolete or outdated, addressing queries of the learners, conducting online or contact sessions, preparing/improving/revision of assessments to evaluate the learners and evaluations of submitted responses.

Beldarrain (2006) suggests that technology has played a critical role in changing the dynamics of each such procedures over the years, as well as the pedagogy in ODL. As new technologies emerged, instructional designers and educators such as HEIs had unique opportunities to foster interaction and collaboration among learners, thus creating a genuine learning community. For instance, e-books and, following that, interactive e-books have gained an extensive interest and have been used as a valuable medium in both conventional and ODL education systems.

All these procedures are routine and an ODL organisation needs to perform them on a recurring basis. Along with these recurring procedures, an ODL organisation may have the procedures which are long term or non-recurring like development of new programmes, recruiting subject experts, writing a course, testing and validating a course or programme, obtaining accreditations from regulating authorities, provision of academic infrastructure and legal compliances if any.

Second and most important phase in devising a quality assurance in ODL is defining right standards along with all the procedures identified. Standards are the yardsticks with the help of which the expected level to be attained for any procedures or activity is defined. In other words, Standards are the Specifications identifying the level or degree to which activities are to be performed. Standards for the educational resources commonly used in ODL are described in following table 2:

Table 2 Standards for the educational resources in ODL

Sr. No.	Educational Resources	Standard	Indicator/Measure
1	Tutors/Trainers/Instructors	Qualification pack	Number of tutors having prescribed qualification
2	Self-Learning Material/Self-Instructional Material	Pre-decided structures, House-style, Guidelines, Template	Units developed, Timely delivery
3	Videoconferencing sessions	Duration, Template, House-style, Guidelines	Sessions conducted as per standard
4	Notes	Template	Number, Coverage
5	E-Books	Pre-decided structures, House-style, Guidelines, Template	Units/Books developed
6	MOOCs	Audience, House-style, Guidelines, Template	Number of users
7	E-Learnings	Pre-decided structures, House-style, Guidelines, Template	Number of E-Learnings created

Above standards are indicative and an ODL organisation may have different set of standards as per its target audience, internal policies and regulation norms.

Third and most important phase in the quality assurance is collection of the feedback from users. After successful definition of procedures and standards, ODL organisation needs to evaluate that the procedures and standards so defined are implemented in a right way and for right users or not. This should be the responsibility of each process-owner in the organisation. In ODL, typically different departments exist to do so. For instance, the academicians can undertake the procedures related to development of self-instructional material and its evaluation.

Each process-owner can define the standard feedback collection methodology to collect the user views on resources they have provided. These resources are provided as a part of programme delivery by ODL organisations. Following table 3 suggests the target users of different educational resources:

Table 3 Potential users of educational resources

Sr. No.	Educational Resources	Potential users	Indicator/Measure
1	Tutors/Trainers/Instructors	HEIs, Learners	Programmes developed, Student satisfaction
2	Self-Learning Material/ Self-Instructional Material	Learners	Passing rate
3	Videoconferencing sessions	Learners	Passing rate
4	Notes	Learners	Passing rate
5	E-Books	Learners	Total access
6	MOOCs	Learners	Total access, Registrations
7	E-Learnings	Learners	Total access

Quality of HEIs or their programmes is a sum total of quality of their educational resources through which they execute the said programmes or courses. HEIs shoulders the responsibility of enhancing the quality of their educational resources to ensure learners' participation and sustainability of both programme/course and the institution itself. Quality Assurance in the HEIs is the nucleus of distance education system. HEIs should define suggestive measures to improve the quality and standards (Anbalagan, 2016). Table 4 depicts some strategies an HEI can adopt to enhance the quality of educational resources.

Table 4 Strategies an HEI can adopt to enhance the quality of educational resources

Educational Resources	Potential Users	Standard	Strategies to Enhance Quality	Reference
Tutors/Trainers/ Instructors	HEIs, Learners	Qualification Pack	• Appointment of specialised experts • Optimal mix of youth and experience • Diversified portfolio of teachers • NSQF compliances • Students and society is looking for skill focus in teaching • Faculty development and training • Seminal research agenda • Training for designing and documenting Self-Instructional Material (SIM), Self-Learning Material (SLM) and E-Contents	(Bordoloi, 2018); (Rao, 2016); (Madan, 2016); (Ubarhande & Bagade, 2019);
Self-Learning Material/ Self-Instructional Material	Learners	Pre-decided structures, House-style, Guidelines, Template	• High Quality Design and Development of SLM • Development of SLM well before launch of a programme • Anti-Plagiarism test on the material • Availability of SLM in both print and interactive multimedia content • Updated and peer reviewed content • Decision or Adapt or Develop	(Veeraraghavan, 2016); (Olojede, 2008); (Yuan et al., 2008); (COMMONWEALTH of LEARNING, 2005); (Pande et al., 2020);

			• Periodic updates in the content • Learner centric language and tone given to the content • Digital Repositories(covers a plethora of different content management systems and the search engines that index them) • Learning repository (created from combinations of in-house and third-party resources, enabling academics to retrieve and share these resources)	(Craig et al., 2012); (Atkinson et al., 2009)
Video-conferencing sessions (Podcasts and Streaming)	Learners	Duration, Template, House-style, Guidelines	• Participation of learners • Interactivity • Inclusion of practical and cases as applicable • Effective use of tools of communication • Flexibility of schedule • Scope for recording	(Veeraraghavan, 2016); (Craig et al., 2012)
Notes	Learners	Template	• Availability of Handouts like conventional classes • Availability of Lecture PPTs in PDF downloadable format	(Pratt, 2015)
Interactive E-Books	Learners	Pre-decided structures, House-style, Guidelines, Template	• The first teaching machine • Interaction occurs in multi-channels • Interaction is among user, digital book, and environment	(Bozkurt & Bozkaya, 2015); (McLuhan, 1964)

			• The book elements interact among themselves • Interaction occurs synchronously among many components	
MOOCs	Learners	Audience, House-style, Guidelines, Template	• Updated cMOOCs & xMOOCs • Better learning experiences • Targeting new segments of the student market • Using MOOCs as a marketing tool • Education Research and Development • Scope to submit feedback from MOOC participants within course itself	(Haggard, 2013)
E-Learnings	Learners	Pre-decided structures, House-style, Guidelines, Template	• Subscribed Content Delivery(provides a means of keeping up-to- date with content on the Internet that is updated frequently)	(Bhanushe, 2016); (Craig et al., 2012)

Conclusions:

There exists a viewpoint among the learners and companies offering jobs to these learners that distance education cannot be taken at-par with traditional educational system. This stigma attached to the distance education that it is not superior or at-par with conventional/traditional education system can be eradicated with development of comparable programmes and by offering them quality educational resources.

There is a need felt for quality assurance in the ODL system. Challenges in ODL such as quality and relevancy of content, learner's participation, technology advancements and its adoption, availability of skilled human

resources, etc. can be overcome through innovative ways and strategies. Strategies identified by researchers across the world related to online and distance learning enumerated in Table 3 needs to be integrated. A robust Quality Assurance framework shall be devised to ensure the quality in programme development, delivery, student support and evaluation. This paper leaves a scope to develop a framework using various educational resources and strategies identified. In ODL, penetration of advanced technology based tools for development of content and evaluation will change the entire paradigm. Technologies such as Artificial Intelligence can be used to develop the assessment models. Tools such as Renderforest, Animaker Edify, Ezvid, Hippo Video and Powtoon can be utilised to create more interactive delivery resources to ensure increased learner's attention and participation.

Educational Resources highlighted in this paper and respective strategies identified from literature will contribute to enhance the quality of teaching and learning in ODL. Currently, HEIs are using few of the resources identified in this paper; however, utilisation of optimum resources with applicable strategy will surely boost student inclination towards ODL.

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ISSN 2582-9009
Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

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Date: **17/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

A Review on Enhancing Quality of Online Distance Education

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Abstract

Increasing number of distance learning options for the students has led to competition between the institutions, universities and online e-learning platforms striving for attracting students for enrolment. This development can be considered as 'globalization of online distance education' as top-notch universities across the world are offering courses on online platforms. Because of this, all existing online distance education-providing institutions are stressed upon to improve the quality of distance education to sustain as well as to grow in this new competitive arena. The study aims to review high quality research papers and chapters to identify quality parameters for online distance education. This study attempts to identify top five quality parameters related to online distance education which, if improved upon, can help enhance the quality of distance education.

Keywords: Online distance education (ODL), e-learning and quality parameters.

Introduction

Since inception of distance education in India, there has always been a doubt in the minds of people whether distance education provides quality education or awards a certificate, diploma or degree just for the sake of it. With the adaptation of Information Technology in the area of distance education, the new term that occupies the centre-stage is distance education. Most of the progress in e-learning is visible during last two decades in India. With flexibility in learning, the online distance education is very popular with students and working professionals. Top universities across the world are now offering their courses on online platforms and are targeting students across the world. This now has put tremendous pressure on existing online distance providers to change themselves as per the changing online

distance education environment. To prevail in this competition, enhancing the quality of online distance education is must. Therefore, the present study attempts to identify top five online distance education parameters. If the institutions focus on these top parameters, it will lead to enhancement in quality of online distance education.

Purpose of the Study

The purpose of this study is to review the high standard published authentic research papers and identify top 5 ODL quality parameters which, if improved upon, will help boost the quality of online distance education.

Source of Data

The research papers for the review were retrieved from standard and high quality online research repositories such as Research Gate, Sage Journals and Springer Link.

Literature Review

Ascough (2002) in the written chapter endorsed that technology, content development and content delivery act as important parameters for delivering quality in online distance education.

As per Kebritchi et al. (2017), the quality of content development, integration of multimedia in content and instructional strategies play an important role in enhancing the quality in e-learning context. The review of the literature conducted by Markova et al. (2017) identified that for maintaining quality of online distance education the key factors are instructional design, instruction delivery skills, student engagement, learner support and standardised and continuous assessment.

While undergoing various online learning standard documents, Martin et al. (2017) summarized that while ranking from top to the bottom the criteria namely instruction analysis, instructions design and development, student satisfaction, student support, institutional mission, institutional structure, quality control, technological support were the major criteria mentioned in a majority of the reviewed documents.

Al-Rahmi et al. (2018) endorsed that use of proper technology enhances the learning experience amongst the enrolled students. Goodman (2018) identified that online courses are becoming of popular choice for learning as they provide flexibility in learning.

Paul and Felicia (2019) endorsed that there is a difference between face-to-face learning and online distance learning, whereas student's satisfaction, content development and content delivery play a

pivotal role in maintaining quality of online distance education. Rodrigues et al. (2019) explored that student's satisfaction through delivery of quality content and use of proper technology are prominent quality parameters in e-learning.

According to Radosavljevic (2019), the important quality parameters for effective e-learning are 'adaptive learning' as the students and faculties need to adapt to the virtual environment of teaching-learning and 'assessment.' Also, the technology used for disseminating the subject knowledge is being considered as an important parameter. Salloum (2019) found that e-learning acceptance by students is a critical parameter and students' need to be ready to accept learning under virtual environment, quality of content delivery and the trust of students are also considered as important parameters for e-learning acceptance by the students for effective learning.

In the context of e-learning, which considers learning thorough utilization of electronics and information technology, Bhattacharya et al. (2020) identified that learning support and continuity, multilingual availability, course reliability, personalization, reliability and collaboration are the key e-learning parameters in Indian context.

Table 1.1: Identifying top 5 key parameters essential to boost quality of online distance education

Sr. No.	Quality Parameters in ODL	Ascough, R. S. (2002)	Kebritchi M., Lipschuetz A. & Santiague L. (2017)	Tatiana Markova, Irina Glazkova & Elena Zaborova (2017)	Martin, Florence & Polly, Drew & Jokiaho, Annika & May, Birgit. (2017)	Goodman J., Melkers J., & Pallais A. (2018).	. Waleed Al-Rahmi, Ahmed Aldraiweesh, Noraffandy Yahaya, Yusri Bin Kamin and Akram M. Zeki (2018)	Helena Rodrigues, Filomena Almeida, Vanessa Figueiredo, Sara L. Lopes (2019)	Paul Jasmine & Jefferson Felicia (2019)	. Radosavljevic, V., Radosavljevic, S., & Jelic, G., (2019)	Salloum, S.A., Al-Emran, M., Shaalan, K. (2019)	Bhattacharya S., Roy S. & Das P. (2020)	Frequency of Parameter Appearance	Rank
1	Appropriate Technology/IT/ Technology Support/ Multimedia integration/ Virtual teaching environment	Yes	Yes	...	Yes	...	Yes	Yes	...	Yes	Yes	Yes	8	1
2	Quality Content Development/ Instructional Design/ Course reliability	Yes	Yes	Yes	Yes	...	...	...	Yes	...	Yes	...	6	3
3	Quality of Content Delivery/ Instructional Strategies/ Instruction Delivery design/ Delivery Skills	Yes	Yes	Yes	Yes		...	Yes	Yes	Yes	Yes	...	8	1
4	Institutional Mission	...	...	...	Yes	...	...	...	...	...	...	...	1	6
5	Institutional Structure	...	...	...	Yes	...	...	...	...	...	...	...	1	6
6	Quality Control	...	...	...	Yes	...	...	...	...	...	...	...	1	6
7	Students Satisfaction/ Enhanced learning experience/ Students Engagement/ Students e learning acceptance/ Students Trust/ Personalization/ Students Collaboration/ Learners Support	...	...	Yes	Yes	...	...	Yes	Yes	Yes	Yes	Yes	7	2
8	Standardised and continuous assessments	...	...	Yes	...	...	...	...	...	Yes	...	...	2	5
9	Flexibility in learning	...	...	...	...	Yes	...	...	...	Yes	Yes	...	3	4
10	Multilingual Availability	...	...	...	...	...	...	...	...	...	...	Yes	1	6

Conclusion and Discussion:

The top five parameters identified through review of literature are technology to create virtual learning environment and quality of content delivery (Rank 1), student's satisfaction through enhanced learning experience (Rank 2), quality content development and course reliability (Rank 3), flexibility in learning (Rank 4), standardised and continuous assessment (Rank 5). Rank 6 is shared by the following mentioned ODL quality parameters: Institutional Mission, Institutional Structure, Quality Control (as a Department) and Multilingual Teaching Support.

There exists no doubt that for online distance education, the creation of a virtual learning environment is essential and we can achieve this with the help of available innovative information technologies. Online distance education providers should focus on student's satisfaction, which can be achieved through enhanced learning experience, using various tools of student's engagement and lending students support to solve the problems arising in teaching–learning process.

Quality content development and instruction design can be considered as quality assurance in online distance education as it makes sure that no inferiorly designed course is provided to the students. This enhances the level of course reliability amongst the students. Online distance education providers is the popular option amongst students as well as working professionals as it provides flexibility in learning with any-time learning and support option. In this case, the institutes can concentrate on enhancing the learning experience of the students. Standardised and Continuous assessment helps students to be engaged with the course on continuous basis, as it stimulates the growth in learning and performance of the students.

Thus it can be concluded that being focused upon the above mentioned top five quality parameters pertaining to distance education will lead to enhancement of level of quality of online distance education.

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ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: "**The Role of Faculty Development in Online Teaching with Different Online Tools for the Effective Learning**"

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ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled "**The Role of Faculty Development in Online Teaching with Different Online Tools for the Effective Learning**" is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

Name : **Dr. Neha Gupta**

Signature : 

Date : **20/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

The Role of Faculty Development in Online Teaching with Different Online Tools for Effective Learning

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Abstract

Online education is no longer a frustrating phenomenon in higher education. During this pandemic, more than 70% faculty members had to use online platform for teaching. Most of the organizations and universities extended their online education offerings to provide education during this period. Administrators must recognize a need to support academician by using intensive and effective faculty development programmes (FDP). For any online teaching, instruction is important for improvement in quality of educational programmes. This measureable study has used an online survey to find different types and frequencies of faculty development programmes for online instructions. At institutions with an established teaching and learning development, the average FDP offered several different types of online teaching tools for faculty development programmes. The most common among them are websites, technical services, different online platforms, printed materials, and consultations with instructional design experts. The findings indicate that some faculty development programmes for online instruction are being offered more frequently. This helps in increasing the awareness of faculty for the online teaching.

Introduction

In any organization/institution, there are an increasing number of faculties teaching online courses. While there is a recognized need for faculty development to help prepare teaching online, there are many faculty development models being implemented with a focus on technology, pedagogy, methodology and course content. Some

faculties teach their first online course with no prior online teaching or learning experiences and exposure, with all their preparation only completed to conduct face-to-face classes. There are other faculties who participate in faculty development programmes that occur partially or completely online, giving them opportunities for online experiences. A question arises whether faculty development programmes prepare faculty to teach online by providing realistic online experiences or not. We assume that most programmes take faculty through a step-by-step training process. While there is evidence of improvement in faculty, there is little reporting of reflective thought, questioning of prior beliefs and assumptions about their classroom teaching, or rethinking over their teaching philosophy. However, it is prominent to note that faculty preparations to teach online could provide a powerful impetus to also implement changes in their face-to-face teaching including reflective activities. Previously, most of the ODL depended on just uploading the content and recorded lectures. Nowadays, our education system has completely switched to the online mode. The purpose of this literature review survey is faculty development literature and different tools/modes available for teaching. This research is to discover what we know about changes or transformation in teaching assumptions and beliefs when faculties prepare to teach online or when they are engaged in online teaching, and to overcome any gaps in research involving these changes. The implication could reform faculty development for online teaching and also reform face-to-face teaching practices. This review starts with an explanation of the literature review methodology, followed by a summary and comparison of the different teaching online tools. Then findings are organized around the key themes from the literature. Finally, similarities and conclusion are considered in regard to the possibility of faculty development for online teaching as transformative learning.

Methodology of the Literature Review

One of the major challenges of this literature search was the different definitions of distance education and open distance learning. We typically define distance education per se as courses delivered or instruction that occurs when students are not present in the same room, which could occur synchronously or asynchronously. There is a difference in time, location, or both. This

may include interactive TV, correspondence courses, and teleconferences, courses using videotapes, or online courses while Open Distance Learning (ODL) is a general term for the use of telecommunication with an aim to provide or enhance learning. Globally, the academic community is discovering and exploring the Internet, teleconferencing, and related means to achieve an extended classroom or learning experience. Students in India are earning degrees from all over the world. School students are exchanging e-mail across world as a support to their formal studies. Students and teachers at all levels are taking part in teleconferences and forming associations that never happened in the past five years. This differentiates the definition of virtual classrooms as asynchronous learning networks with a minimization or absence of synchronous class meetings. Online courses are those which are delivered completely on the Internet. Online education includes those courses which supplemented with Internet components and those conducted completely on the online. Hybrid or blended courses typically combine elements of traditional classroom instruction with online components. For this survey, the search was not limited to one particular mode of course delivery, but kept open by interchanging the terms distance and online and Virtual. A survey was conducted on the changes higher education academician make when learning to teach online specifically identifying for changes in the teaching field. We conducted a survey using combinations of the search terms faculty development, faculty training, faculty preparation, online teaching, distance education, ODL and teaching approach, effectiveness of online courses, virtual teams, student online experiences, and institutional policies.

Different Teaching Online Tools

Google Meet

Google's video conferencing app within Google Workspace, formerly G Suite, is precisely designed according to business needs. It is an easy-to-use interface that can handle up to 250 people in an online video meeting, depending on the Google subscription you are using. It is easy-to use interface that is fully cohesive with other Google related applications such as Google Calendar, allows people to create and drop in and out of meetings quickly, just by clicking a link.

During COVID-19 pandemic crisis, in March 2020, Google announced that the Enterprise functions of Google Meet were temporarily available to all Google G Suite customers. All Google Workspace and

Google Workspace for Education customers got their hosting cap increased to up to 250 participants per meeting and all these customers were able to record and livestream their video meetings.

Zoom

During pandemic, the most popular online tool was Zoom. Zoom is one of the most used online video conferencing tools. It is easy to use and its video and audio quality is quite good. Zoom also supports quite a lot of meeting functionalities. In the second trimester, most of the academic institutions conducted FDP, conferences and lectures on this platform. This platform is very simple to use.

However, due to the increased usage of Zoom in the past few months**,** some serious security problems were recognized. Even a new term 'Zoom-bombing' was invented to indicate the security risk by intruder, hackers or others invading into your video meeting. For any organization, this security risk is certainly something to take into consideration when deciding for the best video conferencing tool. To overcome this issues, Zoom later on came up with more features such as annotation feature, giving host the rights to restrict the attendees, etc.

Microsoft Teams

Microsoft Teams is a tenacious chat-based collaboration platform complete with document sharing, online meetings, and many more enormously useful features for business communications.

Having an excellent team space is key to being able to make creative decisions and communicate with each other. Shared workspace software makes this much easier to succeed, especially if a particular team is based in a very large company, has many distant employees, or is made up of an important of team members.

Microsoft Teams is extremely straightforward and user friendly. There is a little to no setup required. Still, some thought should be put into how a business wants to use the platform before rolling it out across the organization. The Teams is having so many features and licenses, therefore it is suggested to most of the organizations to use this tool for teaching and FDP.

Skype

Skype is one of the popular tool for the video conferencing. It is an IP telephony service provider which offers free calling between subscribers and pocket friendly calling to people who do not use the service. In addition to standard telephone calls, Skype also

enables file transfers, texting, video chat and videoconferencing as its additional features. The service is available for desktop computers, notebooks, tablets and other mobile devices. A number of companies, including Skype, produce dedicated Skype phones.

Incorporated in the free service is a softphone application that can be downloaded to any computing device running Windows, MacIntosh, Linux, or Windows Mobile operating systems. A function called SkypeOut enables calls to regular telephones; these calls are charged to a prepaid account or to a fixed fee annual subscription.

Its benefits are beyond the free and low-cost calls. They are said to include easy set-up and good audio quality. This tool is very old and previously used, mostly for the video conferencing .Now also it is being used for the teaching and other purposes. For using Skype from a desktop computer, you must add contacts similarly to the way you do for instant messaging and then, to make a call, just click the icon next to the Contact. You can easily send a link to attendees so that they can join the room for learning purpose.

Comparison of Different Tools

Sr. No	Functionality	Zoom	Google Meet	Microsoft Team
1.	**Security of Your Video**	The security of Zoom was clearly an issue. Intruders have been able to access video meetings that were not password protected	Google Meet is more secure than Zoom. It encrypts messages but doesn't use end-to-end encryption.	Microsoft Teams encrypts your data 'in transit.' They store your data in a secure network of data centers and use Secure Real-time Transport Protocol for video, audio and desktop sharing.
2.	**Number of Maximum Participants**	Maximum of 100 participants (including the host) per meeting. 500 user for paid version	100 people with Business Starter, formerly G Suite Basic. You can invite 150 persons with Business Starter and up to 250 with the Enterprise license.	The maximum at the moment is 250 people in one Teams meeting.
3.	**Time Limit**	40 min for unpaid version	Initially it was one hour but now no time limit.	No time limit.

		Upto 24 hrs for pro account paid version		
4.	**Recording Your Meeting**	With Zoom you can record your meetings. The recordings are saved to your local computer only.	Your meetings in two clicks with Google Meet. Capture audio, video, chat and screen sharing activity. After your video meeting ends, the recording is automatically saved to your Google Drive.	In the Microsoft team you can record our meeting.
5.	**Screen Sharing**	The meeting host can allow multiple people to share the screen at the same time.	Only one person may share their screen at a time during a video conferencing.	Desktop sharing is possible. It lets users present a screen during a meeting.
6.	**Captions**	Zoom also has a caption function but it is working manually. The host can type while talking or assign someone to type and write	Google uses a speech-to-text technology which makes it possible to automatically show the written captions live in the meeting.	In Teams you can enable live captions, just like in Google Meet. It detects what's said in a meeting and presents real-time captions.

		the closed captioning.		
7.	**Additional Features**	They include an annotation tool and background feature. Zoom does not let you use emojis, however it does let you use GIFs. Admins can turn this function on or off.	Meet has plenty of additional features. These include Intelligent Muting and a direct integration with other Google Workspace applications, emoji and GIF.	Teams continues to add new features. Here're some of the additional features they offer: private channels, email a Teams channel from Outlook, slash commands, polls, add SharePoint enterprise search as a tab in Teams.
8.	**Integrations**	Including some Google Workspace, formerly G Suite, apps, Facebook Skype, Microsoft Outlook.	Meet allows people to integrate video meetings with other teams using Skype for Business, and other video meeting systems based on the SIP and H.323 standards.	Able to download a wide variety of apps spread out across many categories including project management, file sharing, etc.

Conclusion

After this analysis, Google Meet, Zoom and Teams were found to have almost the same features and tools available to make video conferencing work. These association and video conferencing tools are very convenient for those working from home or in the organization. This survey reveals there are pros and cons for each application depending on your requirements.

Google Meet and Microsoft Teams are better for those who really want to be able to communicate in real-time, because they have full assimilation with respectively Google Workspace, formerly G Suite, and Office 365 - office suites that numerous businesses have already made available for their employees. Google Meet is also the best choice if you want to have the option for video meeting participants to join via dial-in, because Meet does not charge an additional call-in fee. Overall, Google Meet is more cost-effective.

Clearly, there is no obvious crystal comparison for the ideal video conferencing tool – the final choice depends on your own work needs and requirements. Today in the 21st century, where collaboration is the buzzword, ODL method of learning is most suited and globally accepted. ODL will now help educators from different parts of the world associate with students and vice versa to exchange their views and ideas enabling a better and exhaustive learning process.

This would be an inclusive method, where Knowledge Sharing become easy and fast.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: **Skills and Competencies needed for the Faculty members in ODL Format**

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled **"Skills and Competencies needed for the Faculty members in ODL Format"** is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Skills and Competencies Needed for the Faculty Members in ODL Format

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Abstract

This is a thematic piece of work on skills and competencies needed for the faculty members in ODL format. This paper starts with the discussion on the concept of Open and Distance Learning (ODL) and proceeds explaining the differences in ODL and traditional education. Then the central theme section of the research paper elaborately explains various components such as roles and responsibilities of a faculty member in ODL format, skills needed to be an efficient ODL faculty member, orientation of ODL faculty member. This paper concludes with challenges before the faculty members of ODL format.

Key Words:
Open and Distance Learning, Faculty Member, Role and Responsibilities, Skills, Challenges.

Open and Distance Learning

Open and Distance Learning (ODL) is becoming preferred and convenient Alternative Education System. The focus of this parallel education system is to provide an open access to education. It also provides freedom from the constraints of place and time. It is identified as a flexible learning opportunity especially for higher education.

The development of Internet based information technology is responsible for the growth of this new ODL system. The concept of ODL education evolved from an idea where the teachers and learners, despite being separated by geographic distance, can interact on a common platform.

The concept of distance education is not new in education sector. The distance education format was implemented by the University of Chicago for the first time in late 1800s. Today, except very few categories, it is possible to get education related to all sectors through distance education. All types of organizations, whether they are governmental, intergovernmental or non-governmental organizations, specialized institutions,

associations, industrial corporations, telecommunication companies, and others interested in this field can use the option of ODL education to meet their needs of upskilling and reskilling.

Due to its unique style of imparting education, ODL demands the unique skillsets needed at input level. Therefore, the faculty members engaged in the ODL education should be trained to excel in those required skills. Therefore, this paper reviews the skills and competencies needed for faculty members in ODL format.

ODL vs. Traditional Education

ODL and Traditional education both deliver quality education to students, however ODL education format is getting wide acceptance due to its multiple advantages. There are many contradicting opinions regarding ODL education format. However, in last ten years the traditional ways of education are being replaced by ODL. The traditional education, wherein a teacher teaches with the traditional tools such as chalk and duster and the students listen, is vanishing. Education is radically changing. Advanced modes of learning such as use of computers, laptops and projectors are fast replacing the traditional blackboard. Here is the comparative analysis of these two formats.

Convenience in Learning:

In many Open and Distance programmes, students can take the exam as per their convenience. Due to technological advancement, many ODL courses are also providing live classes and evaluations. This feature of the ODL format makes the learning enjoyable and therefore students learn faster than the traditional learning. Also, there are many such short term programmes which cannot be offered in traditional format. With the option of ODL, a student can learn and earn simultaneously. Most of the ODL courses are job oriented, therefore they make the candidate employable.

Technical Element:

Unlike traditional education, ODL demands access to various advanced technical gadgets such as computers, webcam headset, etc.

Cost Element:

ODL education is less expensive as compared to traditional education. This is possible due to online study material, huge number of students enrolled, economy of scale.

Location Advantage:

In ODL mode the classes are conducted using online tools, therefore student can attend the classes from any location. This saves time, money and energy and thus provides the convenience in learning. This

liberty is not available in traditional education.

The above specific characteristics of ODL which differentiate it from traditional education demand equally special skills at the delivery end. Therefore, the faculty members involved in the process of imparting education in ODL mode need to excel in some special skills. This fact should be also taken into consideration during faculty recruitment and development processes.

Responsibilities of Faculty Members in ODL Format

Faculty members perform many complex activities in the ODL setup. They have to accomplish multiple functions such as:

1. New programme development which includes market research, preparing programme structure, getting it approved from various bodies, etc.
2. Programme/course co-ordination
3. Content development
4. Preparing self-instructional material
5. Delivering virtual/online lectures.
6. Student counselling
7. Resolving academic and operational student queries
8. Promotional assistance to the enrolment team
9. Mentoring the students
10. Evaluation of student performance
11. Record keeping related to program
12. Budgetary provisions for the programme specific activities
13. Question bank development

Role of a Faculty Member in ODL Format

The role of faculty members in ODL format is noticeably different from the faculty members in traditional format. The ODL faculty member should have the clarity of this difference while working as a distance educator. Imparting education through ODL needs innovative, experimental and creative mindset. The central role of a faculty member is to create knowledge and impart it to suite the learner's ability and pace. In traditional face-to-face education, the faculty member is at the centre but the ODL education format is student centric. The role of faculty member is to facilitate the self-paced learning from distance.

In ODL format, a faculty member needs to undertake several activities. Apart from subject expertise, the ODL faculty member should also be good at using the tools for delivering the distance education. Teaching in ODL format involves designing a learning module, developing and delivering

the appropriate and latest content and evaluating the learners to guide them further. To make it relevant, the tools such as debates, discussions, critical analysis from experts need to be practised frequently to make education continuous and borderless.

Efficiency of ODL faculty member is tested at individual and at team level. Unlike traditional education where excellence of the particular faculty member is recognised, in ODL format the excellence of the entire team is recongnised because in ODL format the learners identify the entire team of faculty members as a unit, they generally do not know the individual faculty members. Therefore, teamwork plays very important role in ODL format. Thus the ODL faculty members should not restrict themselves to specific domain or stream. If needed, they should also be able to help and guide the students of other faculty members. At the end of the day, resolving the student query is the prime responsibility of the entire team. Consequently, there should be good interactions among the faculty members to be able to guide all type of students.

Similar to traditional education, communication skills are also important for the faculty members in ODL format. However, the communication skills needed for delivering ODL education should be more illustrative, expressive and interactive. Effective use of body language and voice modulation is essential when delivering the lectures. The distance barrier in communication should be balanced by adding comparatively more energy and enthusiasm. The communication skills when delivering ODL education are also tested through the efficiency of the faculty member to communicate using the technical tools. Unlike traditional education where students and faculty member are face-to-face, in ODL the faculty members have the challenge to create the virtual classroom wherein every individual student will always feel connected and being attended by the faculty member.

Skills Needed to be an Efficient ODL Faculty Member

- Passion to teach in ODL mode
- Good teamwork skills and interpersonal skills
- Aspiration to update knowledge from time to time and positive attitude towards changing requirements from institute and students
- Elastic mindset to accommodate innovative and experimental approach

- Technical skills and media skills to conduct the online session effectively
- Knowledge of legal provisions related to copyrights and IPRs
- Exceptional command over language.

Orientation of ODL Faculty Member:

During their tenure, the ODL faculty members are oriented in following four stages.

Designing stage

In this stage the faculty members generate new programme ideas considering the changing learning needs of the students from various streams. The ODL faculty members should continuously research for generating such new programme development ideas. They may get these ideas during the student counselling and student interactions. All new programme ideas need assessment on the ground of operational and market requirements. The final programme selected should justify a need to launch the programme and the additional efforts and inputs invested in that new programme initiation.

Development stage

Once the programme idea is selected for implementation, it's the time to convert the idea into action. This stage include big list of activities staring from programme structure preparation, getting the programme structure approved from the BOS and Academic councils, making the correction based on the recommendations, initiating and co-ordinating content development task with in-house and outsourced subject matter experts. This follows by getting the final content edited and proof-read, keeping the study material ready and the development of question bank of all relevant courses of the program.

Delivery stage

In this stage, the faculty co-ordinator should design the course delivery strategies. These could be hard copy study material, e-books, e-Learning, etc. This should be followed by identifying the delivery channels such as live virtual/online classes, recorded sessions, archived videos, etc.

Evaluation stage

This is the last stage in the process of imparting ODL education. The faculty members should derive appropriate methods to evaluate the learners' performance. After successful completion of these evaluation rounds, a degree/diploma/certificate should be awarded to the student. This stage also includes the important task of obtaining feedback from the student after successfully completing the program. This feedback helps the faculty members to make further developments in the existing course of action.

Challenges Before the Faculty Members of ODL Format

- The biggest challenge is to teach remotely: The faculty in ODL mode has to teach remotely which itself is a significant challenge in the process of imparting education due to its several limitations.
- Engaging student in virtual class: Engaging a student in online/virtual class is not easy for the faculty member. Due to distance barrier, the students lose interest in the class. Therefore, using various tactics to keep him engaged is really challenging for the ODL faculty member.
- Unlike formal teacher training programmes for traditional educators, ODL faculty members do not have an option to develop themselves to excel as distance educator. They have to learn these skills during their job and learn through experiments.
- The proportion of academic and administrative responsibilities of ODL faculty member is equal. Due to the overburden of administrative responsibilities, they can spare comparatively less time for academic developmental activities.
- Due to detached nature of learners, keeping track of learners' progress is difficult for ODL faculty member. Thus these faculty members also face the challenge of losing control on students.
- The ODL education is delivered using various technologies. These technologies have their own limitations and challenges. In addition, these technologies keep changing very frequently. Therefore, ODL educator should continuously learn and unlearn the various technical skills.
- The ODL education is not a 'one-size-fit-all.' Therefore, ODL faculty member need to continuously derive innovative teaching methods to suite the requirements of the individual learners.
- It is observed that the ODL faculty members do not get an equal dignity that conventional teachers get. There is lack of motivation and less growth opportunities for ODL educators.

Conclusion

Thematic Study on 'Skills and Competencies Needed for Faculty Members in ODL Format' concludes that, due to its unique style of execution, ODL

faculty members need different skill set to excel as effective ODL educator. These skills mainly include the skills such as interactive communication skills, team skills, interpersonal skills, administrative skills, technical skills, passion for teaching in distance mode, innovative and experimental approach, accommodative skills, and positive and flexible mindset.

ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, "**Integration of Technology in Online and Distance Learning**" is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

Name : **Dr. Satish Chinchorkar**

Signature

Date : **15/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Integration of Technology in Online and Distance Learning

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Abstract:

In a recently published National Education Policy 2020 (NEP-2020) for India, aggressive goal was set to achieve 100% Gross Enrolment Ratio (GER) in preschool to secondary level by 2030. Online and Distance Learning plays a vital role in achieving this challenging goal. Integration of Technology in Online and Distance Learning can make this goal feasible.

Online Distance Learning (ODL), which is also known as e-learning, distance education or online learning, is a method of education in which teachers and students are physically separated during teaching–learning process. Application of integrated technologies makes it possible to connect and facilitate the required seamless communication between the teacher-student and student-student.

As ODL is convenient, economic and flexible, it is gaining more and more popularity; especially during this COVID-19 pandemic (where social distancing is essential), the world is witnessing the significance of ODL at all the levels of education.

This paper illustrates enabler technologies with integration of these technologies in ODL.

Keywords:

Online Distance Learning (ODL), National Education Policy (NEP), Information and Communication Technology (ICT), Learning Management System (LMS), Integration, Pedagogy

Introduction

Every student has a distinct learning style (Dyer, T., Larson, E., Steele, J., & Holbeck, R., 2015) and hence conveying the concepts of lesson in an interesting format which would appeal most of the students is really tough task. Technology can make this task possible by increasing the course delivery options with well-designed multimedia

configurable resources. In addition to the traditional method of reading the text, many additional options are now available to students. These make the (virtual) classroom more interactive and assists the students with learning the content. Probably this shall help prevent the students from dropping out and ultimately help achieve the expected GER.

There is a sudden and amassed growth in on-line courses due to COVID circumstances. However, this has certainly increased the expectations and demands of including visual, kinesthetic, textual and auditory delivery in ODL; identification of appropriate integrated technologies making it possible to meet these aggressive demands.

Historical Background

According to Dyer et al. (2015), the integration of technology is possible via collaborative approach with following major features such as share purpose, focused cycle of inquiry, frequent dialogue, decision making process, intentional actions and evaluation. He further stated that what, where and how the information is being conveyed to students is determined by the technology to achieve more learning styles, high level of student engagement and high student outcome.

Marsap & Narin (2009) in their article explained the evolution of distance learning application initiated in year 1840 where Isaac Pitman started to teach the steno remotely using letters. According to him, scripts and visual approach are needed for interaction, participation and creativity in the distance learning which can be feasible by applying the appropriate technology.

In the article 'Role of Technical and Vocational Education and Training (TVET) in Sustaining and Enhancing the Quality of Education' (Chinchorkar, 2010), the effective use of Information and Communication Technology (ICT) in understanding the learning and broadening the assessment is explained well which is applicable to ODL.

Collaboration within constraints of time and place (Beldarrain, 2006) is being achieved using blogs, wikis, podcasts and social media which is further extended with chat-room, discussion boards, podcasts such as vblogs and audioblogs, RSS feed and web pages. The strong relationship between technology and interactions was established and explained as how the records of an

individual (such as progress, accomplishments and reflections) can be maintained using technology. Because the sense of belonging or 'presence' adds the comfort to instructors and students while interacting. Seven principles that technology should adopt were explained as: 1. Encourage contact between students and faculty. 2. Develop reciprocity and cooperation among students. 3. Use active learning techniques. 4. Give prompt feedback. 5. Emphasize time on task. 6. Communicate high expectations. 7. Respect diverse talents and ways of learning. According to him, instructional theory is learning outcome based, whereas learning theory is about how the learning happens and technology impact social interaction and affect learning process. Learner-focus-system is focused on customization and not on the standardization of content. The customization is based on cultural diversity, learning preferences and ability level.

Types of major distance learning (Stern, 2018) is listed as follows and suggested various Course Management Systems (CMS) with seven principles of good teaching:

- Correspondence Course: Using regular mails
- Telecourses: Using radio and TV
- CD ROM Courses: Using static computer
- Online Learning: Internet based
- Mobile Learning: Cellular phone and PDA

Technology can be used in five key levels of education as follows:

1. Presentation level
2. Demonstration level
3. Drill and practice level
4. Interaction level
5. Collaboration level

The generic model of teaching-learning (Wang, 2008) is defined with three essential components as: 1. Pedagogy 2. Social interaction and 3. Technology (as interaction with interfaces). It is stated that the usefulness of technology depends upon the utility and its usability.

On-line learning is feasible using Internet, however conducting laboratory courses is still the most challenging part. Ndahi (2006) in his article explained how the laboratory courses can be offered and delivered specifically in the Distance Education. According to him, by distributing the learning-kits the demonstration labs and

support service can make it possible to conduct even laboratory courses on-line.

Extensive collection of reviews and annotated bibliography on e-learning (Lodhia, 2006) illustrate the higher education environment and challenges specifically in Africa.

National Education Policy (NEP-2020) of India dedicated separate module on "Technology Use and Integration" which elaborated the prevailing Technology enabled platforms such as SWAYAM and DIKSHA. National Education Technology Forum (NETF), which is an autonomous body for free exchange of ideas and usage, was constituted for ensuring the equitable use of technology using online and digital education. The pilot studies, digital infrastructure, online platforms, digital repository, digital divide, virtual labs, training and incentives for teachers were explained with various models of learning and making standard digital capability.

The differentiation between campus and distance education (Traxler, 2018) made it clear by stating that the boundaries between online, e-learning, virtual learning are going to be blur. Traxler (2018) also explained the variation between formal and informal learning in terms of delivery modalities, pedagogies, epistemologies and cultures. According to him, the activities such as accreditation, qualification, assessment and grading are involved more in the formal learning.

Bogdanović (2012) in his article explained about the multimedia Learning Management System (LMS) along with the extensive list of books on e-education that consists of e-learning on cloud and Information and Communication Technology (ICT) and related technical support.

Technical framework seeking an integrated model (Picciano, 2017) based on three-part taxonomy first proposed by Gibbons and Bunderson as explore, explain and design. Enhanced further as Bloom's taxonomy based on six key elements as creating, evaluating, analyzing, applying, understanding and remembering. He suggested three innovative models as follows:

- Community of inquiry model: Includes three 'presence' as cognitive, social and teaching
- Connectivism model: Consists of application of tools such as MOOCS
- Online collaborative learning: Having three elements as idea

generation, idea organizing and intellectual convergence

Role of ODL in education:

Education is treated as engine of growth. This capacity of applying the knowledge and creating the value in very large scale is being built by ODL.

In his article, Traxler (2018) explained the definition and purpose of distance learning with future predictions and possibilities. He differentiated campus education and distance learning as one happens on campus or within campus universities, the other does not. It is well accepted that the basic purpose of education is to service economies and put learners into employment, specifically the cash economies and paid employment where ODL plays significant role.

Application and integration of technology has given tremendous power to ODL to achieve this basic purpose of education.

Integration of technology in ODL:

Technology is not limited to only devices and infrastructure involved in ODL but it also includes the integration with software, systems and services. The integration of systems for the activities such as admission, lesson delivery, examination/evaluation and award/certification (Venkata Subrahmanyam & Ravichandran, 2013) enhances the performance of ODL. Such systems include:

- Admission Management System (AMS): consists of test and registration formalities
- Financial Management System (FMS): includes fee and scholarship details
- Learning Management System (LMS) that includes
    - Learning Content Management System (LCMS): includes teaching material
    - Computer Aided Assessment (CAA): use of computers in teaching-learning
    - Electronic Performance Support System (EPSS): evaluation and assessment
- Integrated Course Management System (ICMS): Consolidation of courses

Such integration of systems builds social interactions in constructive learning environment that prepares the students to be life-long learners.

Challenges and Solutions: Roadmap Ahead

The Online Education evolved with the many challenges faced in every generation and accordingly the relevant technical solutions for these challenges were proposed.

The First Generation (1850-1960) of Online Education consists of print, radio and TV media (Sadeghi, 2019). Print media as asynchronous model met the challenges of delayed response, whereas the media like radio and TV were limited to unilateral direction.

The Second Generation (1960-1985) includes technology without computers such as audio cassettes, fax and mix-media. These technologies faced the challenges of scalability and tasks to keep the content updated.

The Third Generation (1985 onwards) is based on the Internet with various advantages over earlier generations such as study is possible from anywhere, anytime. It saves large amount of money and time without commuting, has flexibility to choose, gives opportunity to earn while you learn.

However, this Third Generation of Online Learning is also facing many challenges as follows:

- High probability of distraction: Dependency on the internet can create disturbance due to issues such as poor connectivity.
- Complicated technology: Usage of various features and functions of different online platforms becomes online classes intricate.
- Absence of social interactions: Learning is a process in which social interactions play a vital role. In online education, there is limitation on social interactions.
- No natural contact with instructors: Natural contact with instructors accelerate the learning process. Online education has serious limitation on natural contact.
- Job market may not recognize the qualifications acquired through online education: Many industries prefer hands-on skills, which may be difficult to acquire through online education.

Depending upon the challenges and specific requirements the solutions can be as follows:

- Extending the training to teachers and students on specific technology usage
- Implementation of virtual class-rooms and shift to upcoming internet technology such as 5G
- Application of platforms such as Moodle for sharing the learning material
- Include simulation techniques, game-based learning
- Develop adoptive learning which provides personalization and data-driven approaches
- Preparation of asynchronous videos and share the same with students
- Introduction of advanced proctored tests for assessment and evaluation
- Realization of fact (specifically in this COVID-19 situation) and convincing industry about significance of online education which may improve the job market.

Traxler (2018) classified the challenges as solvable, difficult and wicked and he suggested the technologies as solution for different horizons as follows:

Near Horizon	Medium Horizon	Future Horizon
Adoptive Learning	Internet of Things (IoT)	Artificial Intelligence (AI)
Mobile Learning	Learning Management System (LMS)	Natural User Interfaces

The future of online learning (Milakovich & Wise, 2019) completely depends upon the development of new technologies that includes communication bandwidth, processing that includes virtual machines (VM), memory and storage, software and specialization. Accordingly, the handsets with widgets and webtops with embedded system shall explore the display technology, portable, personal and global presentation software with games and simulation.

The blended learning approach will be adopted in future (Georgiadou & Siakas, 2006) in which the drivers for change will be as follows:

- Funding imperative: Depending upon the strategies of institutions and funds availability
- Learner's needs: Each student may have unique learning need, must prioritize
- Stakeholder's demands: The expectations from the parties involved to be considered
- Career opportunities: Industries need to be convinced with demonstration of needed skills
- Quality standards: The norms of frameworks must be followed

The learner's needs and stakeholder's demands should be considered first, followed by career opportunities and strategies. Quality standards should be fine-tuned to fit these goals.

Conclusion:

Specific recommendations to improve ODL operations are as follows:

- Invest more in the Information Technology Infrastructure
- Integrate all related relevant services to get better throughput
- Embracing the hybrid/blended approach is recommended
- Explore the blogging to for increasing the reach
- Adopt social networking for appropriate communication

Integration of Technology in Online and Distance Learning is contributing not only in making the geographical separations blur but creates more spaces such as cyber-spaces, phone-spaces. This causes decline in the political, economic, social and ecological differences in communities. Technology integration in online and distance learning shall impact not only the education sector but influence the service economy and cash economy with shattering the labor/job market.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

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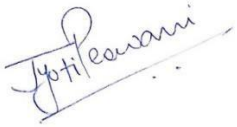
ISSN 2582-9009
Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, "**E Skills: Teaching with Technology for Online Educators**" is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

Name of the author**: Dr. Pallavi Soman** Name of the Co-author**: Jyoti Peswani**

Signature:



Date**: 18/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

E Skills: Teaching with Technology for Online Educators

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Abstract

Teacher is the one who shapes the destiny of students and that of the future citizens who eventually shape the destiny of the country. An inspiring, dynamic, enthusiastic, encouraging, skilful and dedicated teacher brightens the school environment. Teacher is a lifelong learner because of his association with scientific knowledge, so opportunities have to be afforded to him to ensure that he keeps learning and developing throughout his professional life. This is precisely the responsibility of teacher education system, which is more than a mere combination of two of its major components, i.e. pre-service teacher preparation and in-service education. Professional preparation and professional development of teachers is a continuous process. In-service training is the education a teacher receives after he begins his teaching profession. Training of a teacher is a lifelong process. There is a need to equip a teacher with more knowledge and more education to transform him into a best teacher.

Training is a need for developing teacher's skills for effective teaching–learning process. In today's scenario, there is paradigm shift from classroom teaching to online/virtual teaching. Teachers have experience in face-to-face teaching whereas no experience in online/virtual teaching. Due to advancements in technology, Open and Distance Education has gained importance and recognition worldwide. The distance educators, who teach in distance institutes, generally belong to conventional teaching. Therefore, to develop their skill to teach online, training is a dire need.

This paper highlights the importance and need of in-service training for distance

educators and to develop skills in e-teaching.

Keywords

Distance education, Distance educators, In-service training

Introduction

Because of technological advancements, there is a change in teaching–learning process. Teachers play a vital role in overall development of the students. Technology-enabled teaching has also transformed the place of teacher. This transformation helped overcome the barriers of distance, language, rigidity, lack of personalization, etc. This multifold transformation in teaching–learning process using several electronic tools and appropriate methodologies is broadly referred as e-learning/online teaching. Teacher as a protagonist have to be versatile to play multiple roles including that of an administrator, curriculum developer, manager, guide and online teacher. Teachers are trained to teach in conventional classrooms. When he/she joins distance education, he/she applies the same knowledge and skills for teaching; however, that is not enough in case of online teaching. Thus, there is a need to provide in-service training to the teachers.

The need of in-service education of teachers cannot be underestimated. It is a necessity in enhancing the work performance and motivation of teachers in the field. Absence of in-service training of teachers will retard professional growth of teachers as well as create "missing gaps" between demands and actual achievement levels. In-service education allows activities that may include seminars, workshops, conferences, classes, exhibitions, etc. that develop and improve employees in an organization from the initial employment stage until retirement. From the foregoing, it becomes imperative that entire attention should be devoted to the in-service education of teachers to promote their professional growth and development (Eduwen, 2016).

Generally, the teachers are regarded as the hub of educational development. Therefore, in-service education is concerned with the activities and courses in which a serving teacher may take part to upgrade his professional skills, knowledge and interest, after initial training.

Open and Distance Education (ODL)

Whenever we speak about education, we think about school. We often view school in a traditional, formal sense. Many people believe that true learning can only take place in a formal classroom setting. Others feel education occurs in different forms and environments. ODL is not the same thing as the conventional education. The profile of the distance learner is much different as compared to higher education through a distance mode and is different from the 17-23 age-group of tertiary college students. In a country like India which has a huge backlog of adult illiterates, semi literates and the educated unemployed, all in search of new knowledge and new skills including professional skills, ODL is a *god-send* opportunity (Soman, 2011). The learners in the distance learning system are separated from the institution by space. Hence, almost all the distance education institutions around the world adopted various technologies to minimize this 'divide.' Salimi (2007, p. 19) indicates that that are entire accounting degree programmes which offered online at the undergraduate and graduate the course needs to have the active presence of the instructor, the development of an online sense of community, participation and discussion by the students, a rich set of online presentation materials and study aids and inclusion of knowledge and problem based learning exercises.

E-Resources for Teaching

Distance education should widen and create access to learning and training opportunities that are tailored to meet the needs of the individual. Educators embraced the revolution, and the increased educational opportunities and especially the new learning models that have emerged are now influencing education and society as a whole. The 21st century thus begins with a paradigm shift in attitudes towards online education. Online learning is no longer peripheral or supplementary, yet an integral part of mainstream society. Our new understanding of the very nature of learning has affected the definition, design and delivery of education. Paradigm shift in education has resulted in new modes of educational delivery, new learning domains, new principles of learning, new learning processes and outcomes, and new educational roles and entities (Bozkurt et. al, 2015).

To bridge this gap, use of e-resources is an essential medium. By considering the following factors, it can give a platform for these learners to fulfil their life goals. The present scenario demands technologically enhanced structure of education, which can

fulfil the needs by overcoming the distance, and for which the teachers need to be trained.

The resources which enabled distance learning are (Fig. 1):

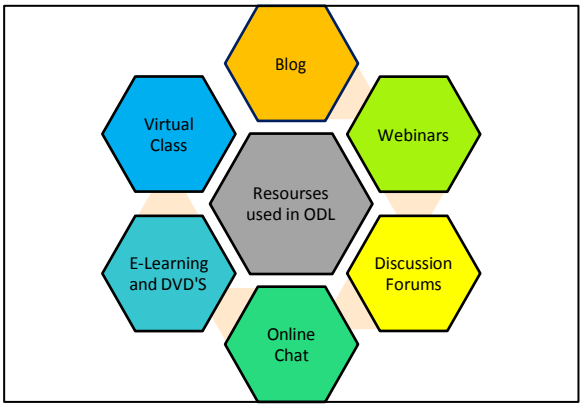

Fig. 1 Resources used in ODL

Virtual Classroom: Internet-based classes in live format for all courses can be conducted with proper infrastructure. The subject expert conducts the session where students can interact from their home or workplace. Live lectures can be archived and made available through the website 24x7.

E-learning CDs and DVDs are the asynchronous teaching aid given to students. In e-learning CDs, the contents are explained with reference to day-to-day real world practical examples.

Discussion Forums: A discussion forum is a Web Application for holding discussions and posting user-generated content. Internet forums are also commonly referred to as Web forums, message boards, discussion boards, (electronic) discussion groups, discussion forums, bulletin boards or simply forums.

Webinars: A webinar is a presentation, lecture, workshop or seminar that is transmitted over the Web using video conferencing software. A key features of a Webinar are its interactive elements which provides the ability to give, receive and discuss information in real-time.

Blog: A blog is a website where entries are written in chronological order and commonly displayed in reverse chronological order. Blog can also be used as a verb, meaning to maintain or add content to a blog. A typical blog combines text, images, links to other blogs, web pages, and other media related to its topic (Parchure, 2016).

In-Service Training

In-service education is also referred as continuing education that is designed for the retraining and reskilling. There are formal and informal programmes of in-service education organized from time to time. The higher authorities concerned with education want to ensure that the standards of education are properly maintained. That is possible only if the teachers refresh their knowledge and keep it up to the mark. The different agencies, therefore, keep on

organizing teacher education programmes for enriching the knowledge of teachers and also for overall proficiency and betterment. According to Lawrence, "In-service education is the education a teacher receives after he has entered teaching profession and after he has had his education in a teacher's college. It includes all the programmes–educational, social and others in which the teacher takes a virtual part, and also all the extra education which he receives at different institutions by way of refresher and other professional courses and travels and visits which he undertakes. All these are conducted for teachers' teaching in traditional mode (Fig. 2).

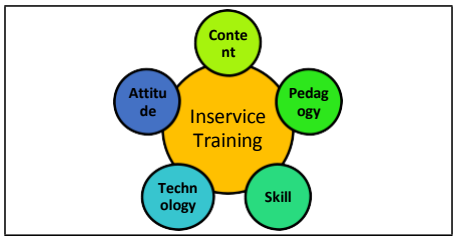

Fig. 2 In-service Training

Need and Importance of In-Service Training

Rabindranath Tagore has rightly stated, "A lamp can never light another lamp unless it continues to burn its flame." Unlike other countries, in India the trend is that once a teacher has joined service as a teacher, he continues to be so. For all types of teachers in India, in-service education is extremely needed. The following points (Fig. 3) indicate its need and importance.

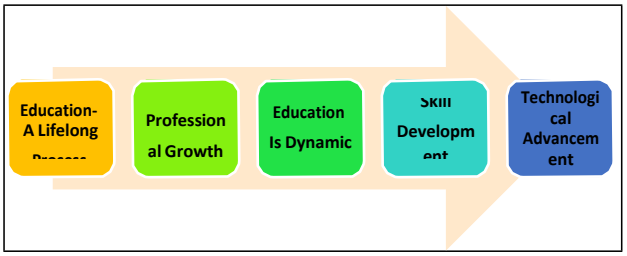

Fig. 3 Need and Importance of In-service training

In-Service Training for Distance Educators

As training and up-gradation of knowledge is imperative for conventional teachers, similarly it is indispensable for distance educators also. E-teachers should be very comfortable and up-to-date with technology and trends in education. Understanding how to communicate online and how to use internet-based tools in an education environment is critical to be successful as an e-teacher.

Berger and Goldberg (1974) highlighted these competencies:

1. Understanding and appreciating the educational objectives of the curriculum

2. Having an interdisciplinary science and technological education including history and philosophy of science rather than being a specialist in only one discipline

3. Seeking creativity

4. Being technology literate

5. Extending the capacity and imagination to improvise

6. Developing self-confidence and independence

7. Ensuring familiarity with the variety of existing instructional materials and available e-resources

8. Being emotionally intelligent (Eduwen, 2016)

Types of In-Service Training

Distance Institutes can arrange various types of high quality in-service training programmes for the distance educators based on the need analysis, such as:

1. A series of lectures designed to give participants as much information as possible by the experts.

2. Conferences (give participants an opportunity to question others and discuss ideas presented).

3. Workshops - Practical activities are conducted by a skilled consultant to enhance the performance on the job.

4. Staff Presentations - Used to acquaint teachers with administrative procedures and policies.

5. Professional reading - Group library reading and presentations.

6. Visits and demonstrations (opportunity to observe actual teaching techniques).

7. Seminars: A seminar is an academic forum whose major purpose centres on a reflection or discussion of problems and resolve it in the forum.

Conclusion and Recommendations

Good education requires good teachers. Therefore, appropriate opportunities should be provided to up-grade their knowledge and skills over the entire length of their career. It is, therefore, essential that there is a major reorientation of teacher education to ensure that teachers are equipped with necessary knowledge and skills to cope with the new demands placed on them. In view of the apparent problems confronting in-service teacher education, the following recommendations are made:

There is need to have a well-planned in-service education programme with clearly defined objectives, growth and improvement of instruction and leadership skills. In-service education should be recognized as part of institutional or organizational activities designed by government for staff development and motivation. Organizers of in-service education should focus on job-related tasks that are real, practical oriented and relevant to the participants. To regulate the conduct of in-service training for teachers to ensure uniformity of standard in-course content, methodology and evaluation. Government should encourage participants of in-service training through adequate funding to cater to some areas of their needs such as tuition fees, cost of textbooks and handouts, transport and boarding facilities. Deliberate efforts should be made by the various distance institutions to provide adequate information, knowledge and develop skill of distance educators.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, "**Integration of Technology in ODL: NEP -2020 Initiatives & its Fall-out Effects**" is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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Date : **18/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Integration of Technology in ODL : NEP-2020 Initiative and its Fall-Out Effects

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Abstract

Online and Distance Learning (ODL) mode of education is expected to serve three basic yet distinct purposes of Equity, Expansion and Excellence in education to achieve our national goal of 'Education for All,' without compromising on quality of education. India has emerged as a world leader in ICT (Information and Communication Technology). We are moving towards a digital society and knowledge economy through 'Digital India' campaign. Role of education is vital in this transformation where usage and integration of technology at all levels will be of paramount importance. This paper examines the provisions of technology initiatives adopted by National Education Policy (NEP) 2020 for education sector in general and for ODL mode of education in particular. It also discusses its likely fall-out effects.

Keywords

Online Distance Learning (ODL), 3 E's in Education (Equity, Expansion, Excellence), Technology, National Education Policy (NEP) 2020, Information and Communication Technology (ICT).

Introduction

Information and Communication Technology is a prime resource to overcome the limitations in ODL mode of education such as remote location of the learners who are in large numbers wherein the institution has to provide various services to the learners at different stages of a student-learning life cycle with limited human resources available. The various stages of student learning life cycle are:

1. Admission stage
2. Learning stage
3. Evaluation stage
4. Certification stage

ODL mode of education requires ICT infrastructure to cater to various stages of a student lifecycle. There are following sub-components of the ICT infrastructure:

1. The network of infrastructure
2. The computing infrastructure
3. The system and application software
4. The Internet Service Provider (ISP) and internet bandwidth
5. The security infrastructure
6. The policy framework

Methodology

The researcher has mainly scanned and studied the published data pertaining to the topic including the NEP-2020 document. Fall-out effects of the provisions of technology initiatives have been identified by way of Delphi method.

Technology Initiatives in NEP-2020 for Education Sector

NEP-2020 talks about the transformational role of education for making India a digitally driven society and knowledge based economy. While education will be at the core of this transformation, technology will improve the process of education and its outcome. Thus, usage of technology and its integration into education becomes absolutely essential. Emerging technologies such as artificial intelligence, machine learning, robotics and automation, internet of things, block chain, cloud computing, smart boards, hand-held devices, e-proctored exams are exponentially expanding and impacting teaching-learning methods within the classroom and beyond the classroom. This requires in-depth research on both the fronts.

In light of the above, NEP-2020 has recommended formation of National Educational Technology Forum (NETF) to facilitate decision making on induction, deployment and usage of appropriate technology in educational institutions by providing evidence-based advice to central and state government agencies. The focus of technological advancements will be for enhancements of teaching, learning and evaluation methods; training of teachers; improving educational access; educational governance; management, administration, admission, attendance, evaluations, etc. A multitude of multi-lingual educational software will be custom designed, tested and made available for students and teachers at all levels. Tech-enabled education platforms such as DIKSHA/SWAYAM will be integrated into education system. Disruptive technologies such as artificial intelligence,

3D/7D virtual reality will be embedded into education system from time to time after a periodical review by NETF. Higher Education Institutions (HEIs) will prepare basic versions of instructional materials and online courses in cutting-edge domains for up-skilling the students towards job readiness. It is necessary to emphasize ethical issues and legal issues associated with artificial intelligence based technologies and data handling, data protection, etc. Other technologies impacting our lives are renewable energy, water conservation, sustainable farming, soil protection, environmental preservation and green initiatives. These may be taught to the students.

Technology Initiatives in NEP-2020 for ODL Mode of Education: Ensuring Equitable Use of Technology

NEP-2020 drives the point to reap the benefits of ODL mode of education while addressing the drawbacks. The ODL mode of education should adequately address concerns of equity. Teachers in the conventional education system will require special training for online teaching, interactions, on line e-proctored examinations. Online teaching has to be embedded with experiential and activity based learning to make it wholesome and effective.

NEP-2020 recommends following key initiatives for blending ODL mode of education with regular or conventional education:

1. Pilot studies for online education by national agencies for review of results and continuous improvement.
2. Digital infrastructure, which is open, inter-operable, evolvable for use on multiple platforms to provide multi-point solutions.
3. Online teaching platforms and tools. SWAYAM/DIKSHA can be extended further. Two-way audio-video online classes is the need of the hour.

   A digital repository of coursework content, simulations, games, augmented reality and virtual reality will be developed for dissemination and use.
4. Addressing Digital Divide: Television, Radio, Community Radio will be deployed for telecasts and broadcasts. Such educational programmes will be made available round the clock throughout the year in different languages.

5. Virtual Labs: Existing e-learning platforms like DIKSHA, SWAYAM, SWAYAMPRABHA will be deployed for creating virtual labs for practical and hands-on experience for students.
6. Training and incentives for teachers: Teachers will be trained so that they can create high quality online content by using online teaching platforms and tools.
7. Online assessment and examination: National Assessment Centre will design and implement assessment frameworks. New technologies like e-proctored exams will be embraced.
8. Blended models of learning: ODL mode of education will be suitably merged into face-to-face, in person learning.
9. Laying down standards: NETF and other statutory agencies shall set-up content standards, technology and methodology for online teaching learning.

NEP-2020 recommends creation of a unique national-level centre for building of state-of-the art digital infrastructure, digital educational content and capacity clubbed with effective delivery mechanism to the beneficiaries.

NEP-2020 Fall-Out Effects of Technology Initiatives

While the policy focuses on multiple aspects, an interwoven thread runs through the policy is the interdependence of education and technology. Ours is a data-driven society, and there is a growing need to welcome and adopt the usage of technology in the field of education. The policy pushes forward a central theme of extensive and effective use of technology in teaching and learning, eliminating language barriers, increasing access and enhancing quality and good planning and governance mechanism in educational institutions. While the policy is a novel and progressive document, it is necessary to design and develop a comprehensive plan of action for pushing forward technological proficiencies to assist successful engagement with technology and its future advancements while providing effective safety measures for data protection and data privacy. Ed-tech companies can collaborate with educational institutions for developing customised online platforms or courses to increase reach among students. NETF can collaborate with Ed-tech industry to

streamline research and to adopt industry-led best practices.

Conclusion

Integration of technology in ODL is a step in the right direction. NEP-2020 drives technology initiatives in the education sector and in the ODL mode of education in particular. Whereas ODL mode of education provides equity and scope for expansion, a lot needs to be done towards achieving excellence in this mode of education. Top 100 universities as per NIRF Rankings (2020) have already been allowed by UGC to launch ODL mode of education. Post COVID-19 pandemic, a new blended model of education will emerge, which is necessary and inevitable. Stakeholders like industry partners, content and book providers, education-technology players, assisted technology players, ICT infrastructure providers have a lot to offer to educational institutions in terms of Research & Development (R&D), co-partnerships, collaborations, MOUs, content creation, delivery mechanisms, e-proctored examinations, assistive devices and many more. Educational institutions in-turn will benefit in terms of quality content creation and its effective delivery by the teachers to the student beneficiaries.

It is imperative to prioritise the technology initiatives and implement the same gradually. Efforts should be collaborative. I am sure it would be a win-win situation for the stakeholders involved in the education system.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: "**Learner Support Services in Open Distance Learning System: Plug and Play Model of Education**"

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ISSN 2582-9009

Symbiosis International Research Journal on
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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Learner Support Services in Open Distance Learning System: Plug and Play Model of Education

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Abstract

The core component of the institute of open and distance learning system is learner support services. The academic as well as academic support services are included in this system. The learner support services are the processes, which support the learner in their path of learning. This includes initiation, selection of important activities, planning, monitoring, execution and closure. This is a project life cycle model and is followed to ensure the Define, Measure, Analyse, Improve and Control (DMAIC) for process improvement. Learner support system is driven by the DMAIC model of life cycle. The purpose of this paper is to design and integrate the learner support services model for Open and Distance Learning Institute based on the descriptive study and the researcher's decade long experience in open and distance learning. It provides interactive support services with least manual intervention, staff responsibility for providing the services, ICT, method of service delivery and execution mechanism to ensure effective and efficient student support services.

Keywords: Support Services, Open Distance Learning (ODL), Integrate, System Design, Dashboard.

Introduction

Support Services: Support services is one of the main components of any ODL Institution. The support service

helps the learner in the learning path and gives support in the various activities of learning as providing study materials, print as well as electronic form, ensure the access of library services, counselling support online and offline both and proper conduct of assignment and examination. The learner support services can be classified based on the requirement of learners. The need of support services is emerged in the ODL system based on the survey as the learner faced the following difficulties: Less interaction with counsellors who can facilitate learning, unnecessary intervention and domination by the support staff, least access to information, fund constraints, lack of appropriate environment for study, time constraint due to family or work obligations, delay in receiving study material, non-responsiveness and ineffective management services, lack of rapport due to geographical remoteness, lack of self-study skills. The above factors are very common; therefore, the ODL needs a support service model to ensure effective services to the learners.

Requirement for Student Support Service

According to Alan Tait of the Open University UK, who narrated in detail about the learner support services, "the systems have to be developed which do not hamper the institutional needs by paperwork, meetings and other such activities." In ODL Institution, maximum time the learners are untouched with the process and the instructor. The support service system is one of the major gateway to provide the access and support to the learner. Today, learners are living the smart age where quick and instant support is the need of the user. The support service system is the design of the ODL system, which will help in ensuring a high level of satisfaction among the users.

Non-teaching support mainly move around the day-to-day problem solving related to the confusion of the learner about the program and the activities of general nature, suggestions, feedback, and helping in routing the learner at the right place. The delay and no response create the confusion in the mindset of the learner. Therefore, to ensure the

learner a ready support, it could be provided in the following manners:

Information related support: The non-teaching staff of the ODL institution should provide the basic information regularly to the learner such as the time line, the window of counselling session, the examination process, the credit structure, courses in each program and its relevancy, dead line of the course completion, and regularly connect and ask any difficulty in the process of learning. The ODL institution must assign a group of learner to each non-teaching staff so that an effective way of information sharing is ensured.

Second type of support is institutional related support. Here, the learner is required to understand the ODL institution including its background, the program detail and support services detail. These details must be provided in a very accurate manner so that the learner joins the program.

One of the most important components of the model is the support system, which allows everyone to contact and access the limited learning without any cost, but during the process of learning the learner engages with counsellor and joins the program. Therefore, this model is based on DMAIC. The learner first tests the quality of the course and then takes a decision to join. Therefore, ODL requires the learner support services.

Learning Support Centre is one of the major requirements to ensure a proper development and guidance of the learner at the local level in any ODL institution. The ODL institution must setup the learner support service centre at different geographical locations so that the learner could be able to interact and get support pertaining to day-to-day problems related to academic counselling, examination, assignment, fee and other general problems.

Framework:

To ensure an effective and efficient Open and Distance Learning Support System, a detailed framework is proposed as:

In step 1, functional requirement of the ODL system is presented in Fig. 1 as:

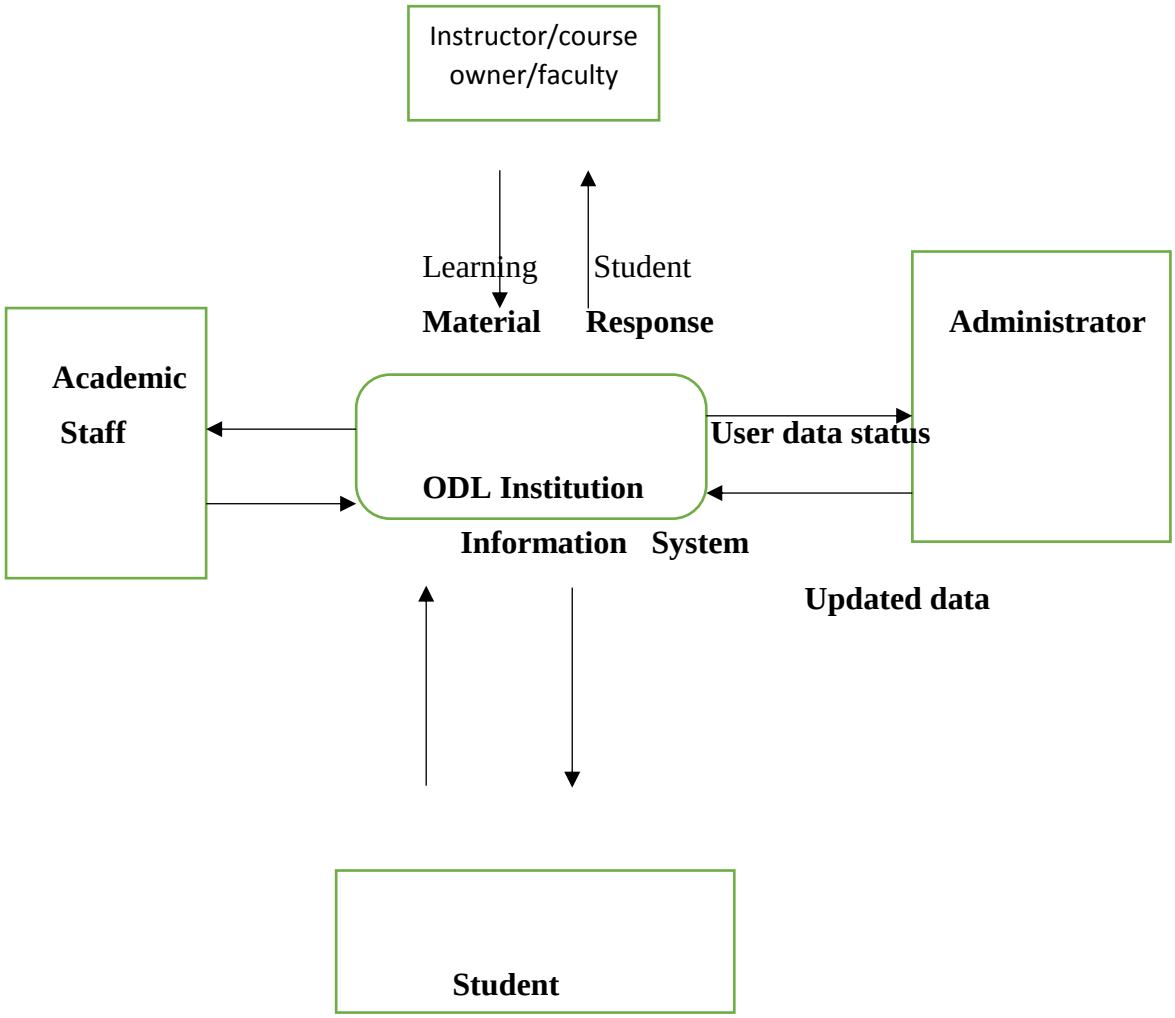


Fig. 1 Functional requirement of the system

Proposed Decomposition Diagram for ODL Institution (Fig. 2):

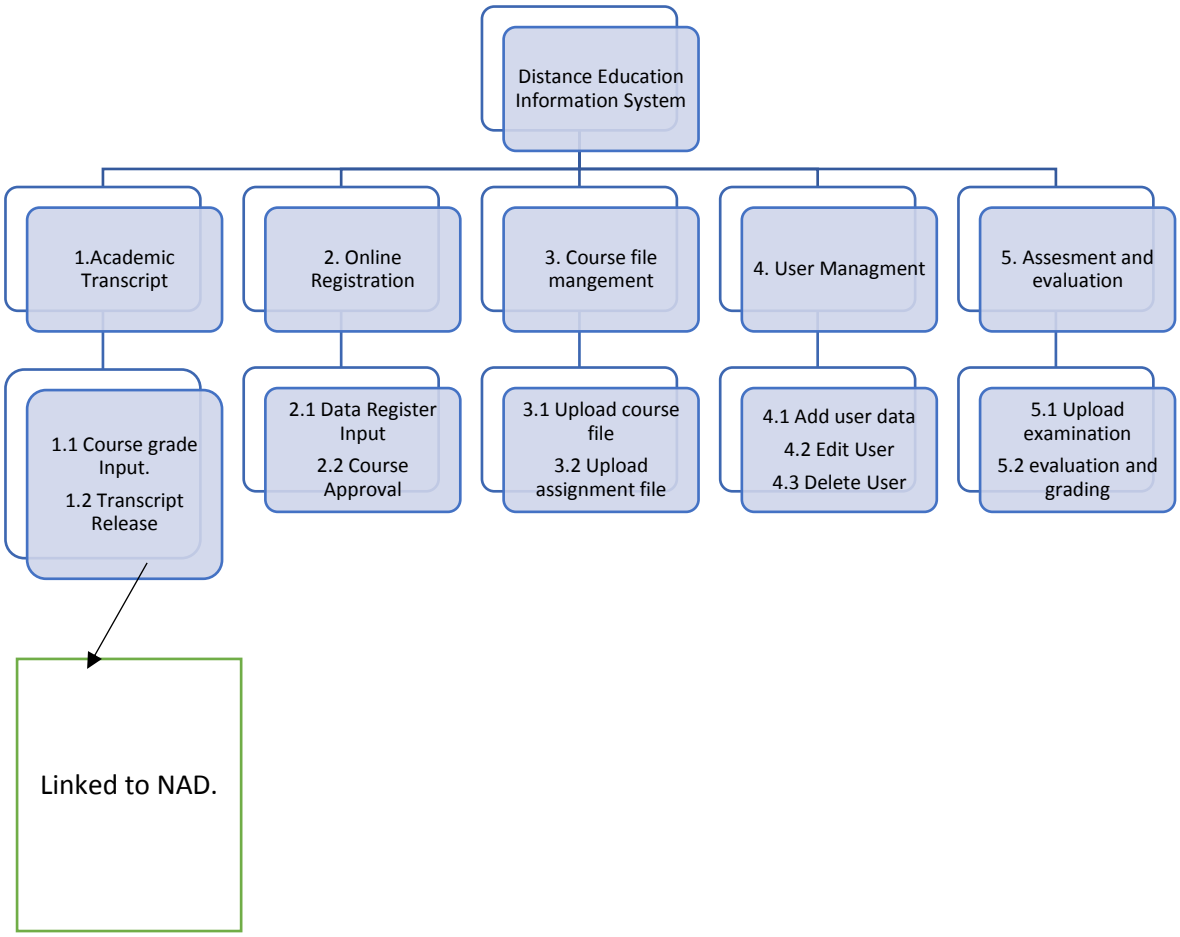
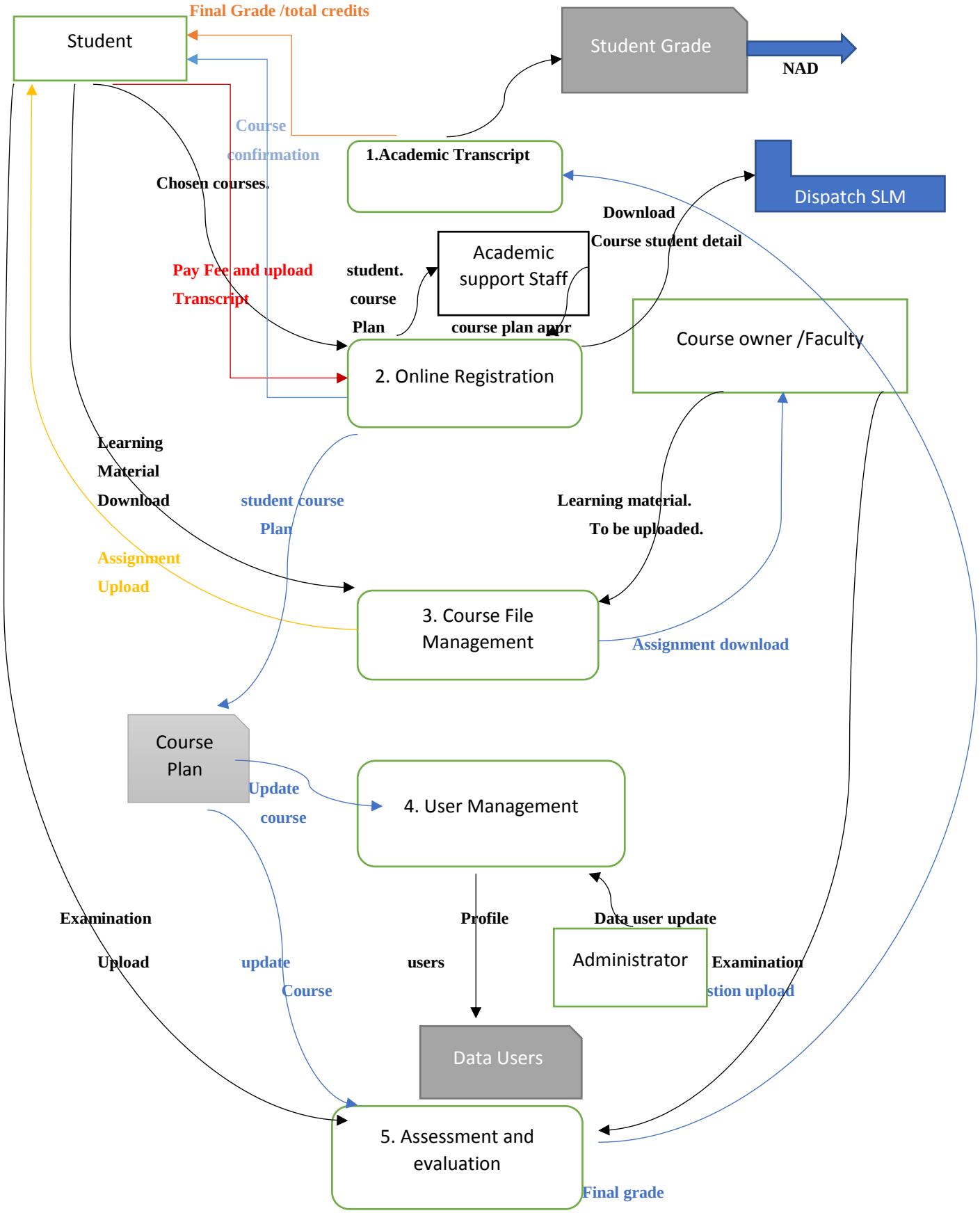


Fig. 2 Proposed decomposition diagram for ODL institution

Data Flow Diagram Level-1 (for ODL Institution)



User related details:

A) **Student:** must have an account that they have to apply to administrator, any individual can sign in and open the account on portal after Aadhaar/passport verification. For international student passport verification is mandatory. Sign up process must be automatic without manual intervention.

The roll number will be issued along with course confirmation.

B) **Course owner / Faculty/ Instructor:** can upload course file, assignment sheet, answer sheet regularly.

C) Academic staff (counsellor): must be the authority to approve student academic plan, submit news, and student grade, ensure proper dispatch of study material online and offline.

D) Administrator: must be authority to maintain user's sign-up administration.

E) Head of the Institute: to have a dashboard with all the 5 modules auto progress check support with visual graph.

F) Head of Finance: must be assignment the payment component downloads and visual dashboard from online registration module.

System Design:

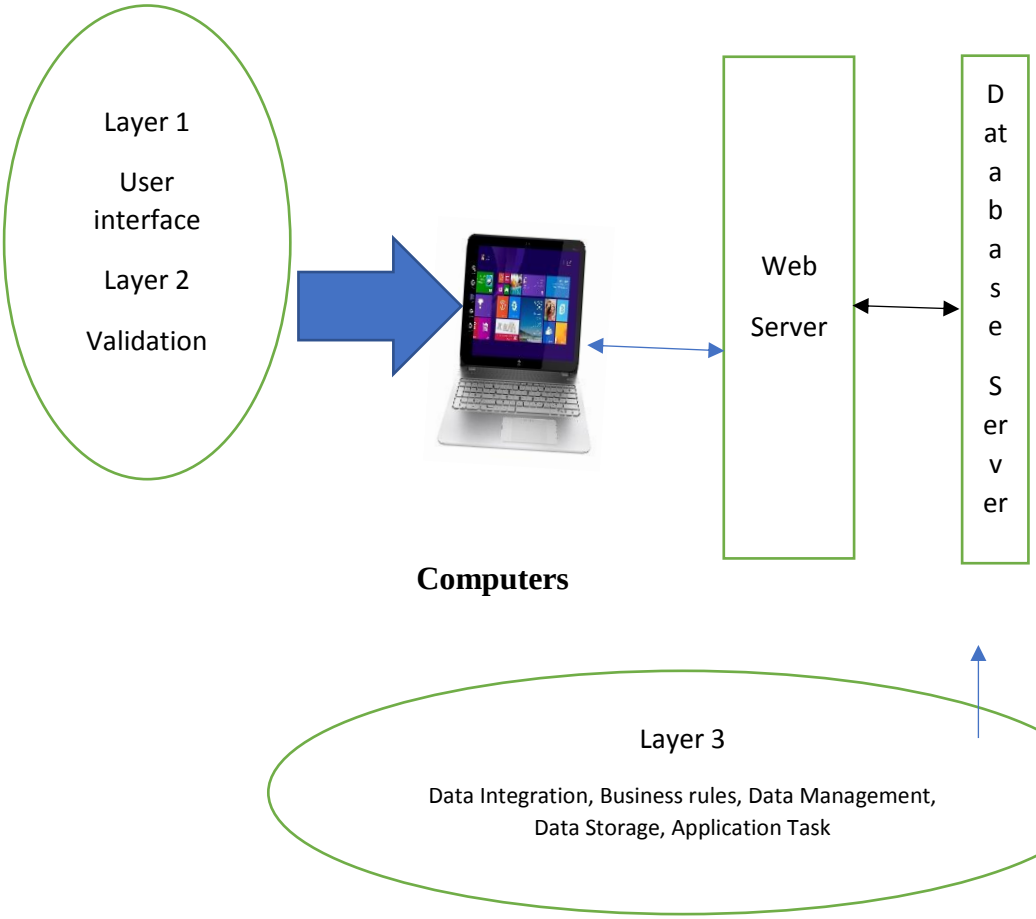
Proposed system is a web based automatic (AI and machine learning driven) integrated Information System that uses 2 tier architecture.

Level 1: handle http requests and give the response after the request is processed by the web server and module program (the program is based on the SOP defined by the institute).

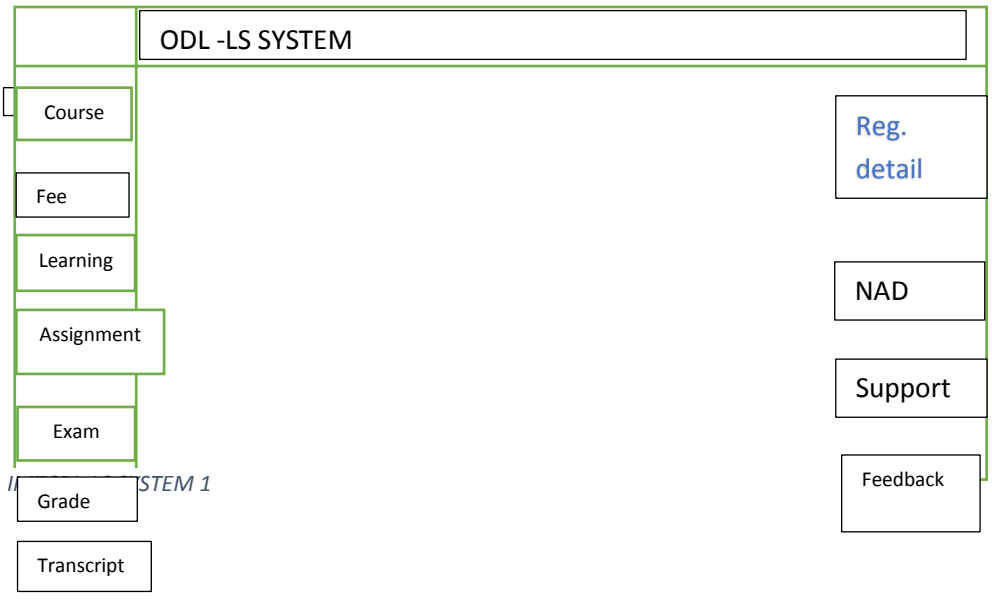
Level 2: handle database directory, mail server, and SNMP (Simple Network management Protocol).

Development tools are freeware and open source which are to be used to implement the system. Depending upon the requirement and use, the developer can choose any open-source ware (For example: PHP/Python as programming language, MySQL/Amazon Aurora/MS SQL Server as database server, and Apache HTTP as web server).

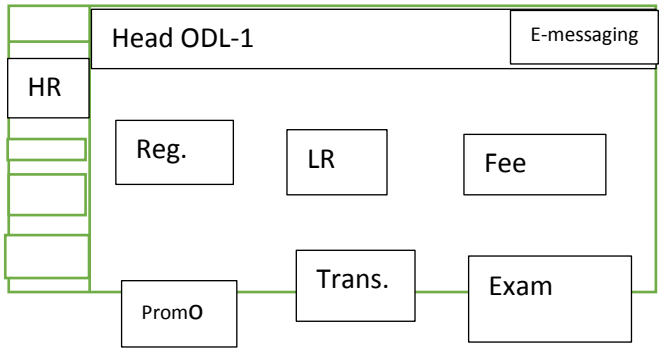
System Architecture:



A dashboard view for the student:



A dashboard View for the Head of the Institute:



Reg.: LIVE: Student registration detail in the graphical and tabular both auto instant updated

LR: Live: Learning resources related visualization

Fee: Pay Fee related visualization

PromO: Online marketing related live visualization synced with Google AdSense and Google Analytics if any

Trans.: Academic transcript data fixed.

Exam: Live Examination activity visualization

E- messaging: audio, video, text broadcast to all or few directly to users

Note: HR and other parts must be customized in the dashboard as shown in the left most corner.

In the same line, other users such as coordinators', course owners', and counsellors' customized dashboards must be created.

Network of Support Services:

There must be the support systems with three models. The two models depend on the print media and electronically developed content where the printed/E materials are sent to the learners. They send back the E-assignment responses to the learner support centres for evaluation on the respective instructor portal. In the second model, there is additional compulsory seminars and workshop related activities. The third category is where the learner has the option to pick the type of learning as offline (where learner will attain the physical instructor driven counselling at the learner support centre) or online (the learner could attain through synchronous learning platform). The above-discussed Network support services would ensure high level of

integrated learner support, and the ODL institution would be able to provide quality education.

Open and distance learning institute must have a division with the name of student registration and support division for ensuring support to the learner. The division have to setup the learner support centre for giving the support to the learner at the local level in the process of academic support, examination, digital learning support and knowledge development support, etc.

Types of Support Services:

The quality of the study materials and academic support services are the important components of the support services of the ODL institutions. This requires high-speed internet network between the headquarters, LSCs and students. This facility provides the better and improved method of Information sharing.

The setting up of learner support centres, admission, print material as well as electronics material development and dispatch, examination and testing are the main components of the support services. The activities of the support services are:

4.1 Learner support centre establishment**:**

Locations should be identified keeping in view the need and geography of the region. The centres must be in such a manner so that they can serve the need of the learner and attract the learner toward learning. ITC facilities must be ensured, and high-speed internet connection must be there at the centre**.**

4.2 Pre-Enrolment Services**:**

The admission form and prospectus and online/offline admissions with detail collection of fees, documents and providing the services related to support in admission is a part of this process.

4.3 Information services:

The main activity of this process is to provide information about the ODL programme as well as the counselling schedule and to encourage the learners to join the courses as per their suitability.

4.4. Post-enrolment services:

This activity includes self-learning material dispatch,

examination services, digital information service, financial assistance services, information and digital library, IT services, electronic and multimedia services and additional support service.

4.5. Dispatch of self-learning material services:

This activity includes dispatch of study materials, providing examination services, and assignment to a new student and existing students, as well as proper stock keeping, timely processing of the admission and dispatch of the SLM. The production, procurement and distribution are also a part of this process.

4.6. Examination services:

Developing the guidelines for conducting examination and evaluation of assignments; selection of examination centres; appointment of question paper setters, observers, centre superintendent; mark sheet and certificate development and dispatch; developing the new methods of evaluation and assignments are the roles of this process.

4.7 Information and digital library services:

Providing the latest eBook, eSLM, user guidance, case study services, online database, current awareness support and other related information support are the roles of this process.

4.8 Financial assistance support:

The objective of this process is to ensure the financial support to the learner.

4.9 ITC services:

To setup and maintain computer lab and ensure a proper support of the IT related process and make it user friendly are the roles of this process.

4.10 Electronic and multimedia services:

The objective of this process is to ensure a proper development creation and uploading of electronic material and audio-visual material for the learner through extra net platform, also to organize live online seminar of the latest development of the related courses.

4.11 Additional support services:

The objective of this service is to provide the change medium service, transcript service, elective selection service, and helping the

learner in selection of elective as per their requirement and skill, address change support service, provisional certificate, course completion and other services of miscellaneous nature. Issue of enrolment cards services is the part of this process. The additional support service must issue the identity card where the objective and the purpose of the card are to permit the learner to avail the facilities provided by the institute, to allow entry for examination and other purposes is the arrangement of OLS (open learning session).

Conclusion:

The efficiency of the support system depends upon ensuring the plug and play model of education which should be automated and the learning content should be demand driven and free from time and days. The institute should develop the e-content library from the previously recorded lectures and supply them as per the demand. We must ensure 24 x 7 learning and open learning as well as promotive learning with zero defect, and with this objective the proposed learner support model can be achieved. The most important feature of this model is that any person without paying any fee can join ODL institute and start limited learning but, once he/she opts for a course and registers, a formal way of course with credit will start. This model will help in fulfilling the 'Education 2030 Agenda' with a global commitment of providing education to all and free of cost. This will help in promoting and marketing of the course by engaging the user and developing the test of learning and finally indirectly convincing the user to join the course.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: **MOOCs in India: Changing Trend towards Open Distance Learning**

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
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Date : 07/01/2021

ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

MOOCs in India: Changing Trend towards Open Distance Learning

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Abstract

A massive open on-line courses (MOOCs) could be a model for delivering learning content online to a large number of individuals. These are open on-line courses without any restriction on number of participants and there is no limitation on accessibility. MOOCs gained popularity in early 2010s and are best alternative to the normal instructional model. MOOCs are centered on the teaching pedagogue and providing digital content to all students. The present study attempts to introduce different MOOC platforms available in India, the technology used, major challenges faced by them, and also future scope of MOOCs.

Keywords: MOOCs, xMOOCs, cMOOCs, eLearning, SWAYAM,

Introduction

A massive open on-line course (MOOC) represents a learning platform on internet, which gives open access to unlimited participants, sanctionative over ancient learning models and materials together with recorded lectures, quizzes, interactive forums and communities. It is one of the most recent additions in the field of distance learning. MOOCs are student friendly because there are no complicated procedures or formalities or prerequisites for enrollment to these courses. No hefty tuition fees are charged. Several such courses are available free of cost, whereas others charge rock-bottom fees (Chakravarty & Jaspreet, 2016). The resources provided are recorded lectures and primarily image-based tutorial contents, which are made available through this platform to plentiful participants. With the flexibility of time and place, MOOCs bring together students and 'like-minded fellow learners' across the globe (Baturay, 2015). The necessity of MOOCs came along in conjunction with the digitalization as well as the necessity of grasping information at a quick pace and lifelong learning. Therefore, fresh approaches are necessary to meet the learner's needs.

In this paper, we have described characteristics and forms of MOOCs,

global and Indian scenario of MOOCs, completely different platforms of MOOCs in India, key challenges for MOOCs, technology employed by these platforms, and future scope of MOOCs.

Characteristics of MOOCs:

1. **Massive:** MOOCs can accommodate huge number of participants. Across the globe, it witnessed over 180 million registrations. In 2020, MOOCs providers launched more than 2800 courses, 19 on-line degrees, and 360 micro credentials (Class Central, 2020).
2. **Open:** Anybody who is interested in learning can participate in MOOC with no requirements of a formal qualification. Participation is absolutely free to anybody who has access to internet. A participant may enroll for more than 1 course. The materials developed through the course is sharable and accessible to all registered students.
3. **Interactive:** MOOCs are extremely interactive. They provide opportunities to move not solely with the tutors but also conjointly with fellow students. The participants are inspired to make and share their contributions.
4. **Four Quadrant Approach:** e-Content, e-Tutorial, Discussion forum, and Assessment.

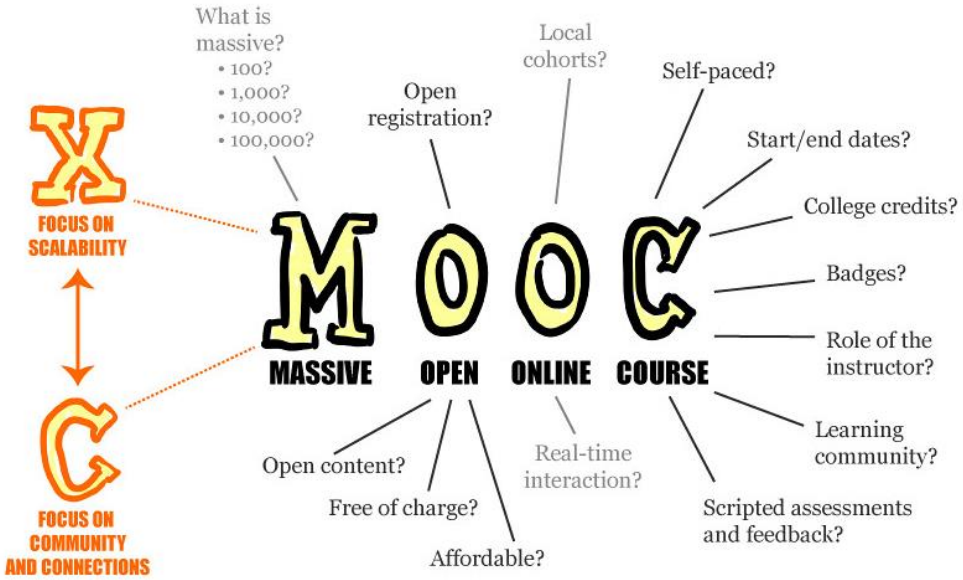


Figure 1 Large open on-line course (MOOCs; Nisha & Senthil (2015))

Forms of MOOCs

MOOCs are categorized into C-MOOCs and X-MOOCs.

i. **C-MOOCs:** they are supported connectivism. It is a creation of learner-centered environment referred to as connectivist. MOOC and hinge on the concept and platform originally visualized by patron saint Siemens.

ii. **X-MOOCs:** they need their background within the evolution of open courseware and open instructional resources. X-MOOCs are typically offered by universities in collaboration with a billboard organization whose aim is to get profit. X-MOOCs are online versions of ancient learning techniques (lecture, instruction, discussion, etc.) on proprietary specialist package platforms closely held by independent firms. They attribute legitimate and financial relationships between the technology providers and the universities that produce the content. X indicates the MOOCs that are content-based and follow additional behaviourist approach (Trehan et al., 2017). X-MOOCs are associated largely with the 3 largest platforms: edX, Udacity, and Coursera (Trehan et al., 2017).

MOOCs: World State of Affairs

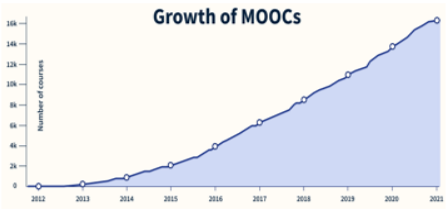
Across the world, there are several educational institutions, and top-quality educational establishments offer many MOOCs platforms. Coursera, EdX, Udacity, Udemy, Iversity, MiriadaX and FutureLearn provide a number of well-known MOOCs platforms across the United States of America and Europe. Table 1 shows numerous MOOC providers in various nations.

Table 1

S. No	MOOCs Provider	Country
1.	Coursera	United States of America
2.	edX	United States of America
3.	Udacity	United States of America
4.	Kadenze	United States of America
5.	Canvas Network	United States of America
6.	Stanford Languita	United States of America
7.	FutureLearn	United Kingdom
8.	European Multiple MOOC Aggregator (EMMA)	European Union
9.	Open Education (openedu.ru)	Russia
10.	XuetangX	China
11.	CNMOOC	China
12.	Chinese MOOCS	China
13.	University of China MOOC	China
14.	Zhihuishu	China
15.	OpenHPI	Germany
16.	gacco	Japan
17.	Fisdom	Japan
18.	OpenLearning	Japan
19.	JMOOC	Japan
20.	ewant	Taiwan
21.	Open Education (openedu.tw)	Taiwan
22.	Edraak	Jordan
23.	Miríada X	Spain
24.	MéxicoX	Mexico
25.	France UniversitéNumérique	France
26.	EduOpen	Italy
27.	Federica.eu	Italy
28.	ThaiMOOC	Thailand
29.	K-MOOC	Korea
30.	IndonesiaX	Indonesia
31.	Prometheus	Ukraine

Table 1 MOOC providers in various nations (Source: Category Central, 2018)

Class Central statistics (Fig. 2) declared that the fashionable MOOCs movement has more than 180 million learners across the world, excluding China. In 2020, MOOC providers launched over 2800 courses, 19 online degrees and 360 micro credentials.



Source: Class central, 2020

Fig. 2 Class Central statistics (Class Central, 2020)

By the end of year 2020, around 950 universities worldwide were going to launch 16,300 MOOCs. In 2020 alone, around 2800 courses were added. Within year 2020, MOOC providers' growth had stagnated: they were gaining the same number of students every year. However, in year 2020, the MOOC providers gained

over 60 million new students altogether. Half of these were only for Coursera (Fig. 3). During this year 2020, the UN agency gained virtually as many users than edX, its nearest rival, gained since its inception.

	Learners	Courses	Microcredentials	Degrees
Coursera	76 million	4,600[3]	610	25
edX	35 million	3,100	385	13
FutureLearn[2,4]	14 million	1,160	86	28
Swayam[2]	16 million	1,130	0	0

Source: Class central, 2020

Fig. 3 MOOC providers' growth (Class Central, 2020)

Overall, the distribution of courses across subjects remains similar to last year. 40% courses belong to the classes that are highest revenue generating: business and technology.

MOOCs: Indian State of Affairs

MOOCs have huge opportunities in India. The number of students enrolling for courses have increased drastically in recent past in India. India is determined to be one of the leading countries in terms of enrolments in courses offered by several fashionable MOOC providers together with edX, Coursera and Udacity. MOOCs have encouraged many organizations in India to enter this domain to beat the unmet demand for higher education. This online education is available in English and able to be translated in several regional languages to deliver highest quality education in all states of India. India recorded enormous growth in MOOCs and is dominating the worldwide development in this domain. Chief Operating Officer of Coursera, Mr. Richard Levin, said that India is one of the leading five nations in terms of revenue generated for Coursera and is also the second largest country with respect to number of registered users (Economic Times, 2014). IITBX, mooKIT, NPTEL and SWAYAM were launched and are functioning from India to deliver MOOCs. The key reason for this growth is low rate of enrolment in teaching.

MOOCs Progress in India

Web Platform/Provider	Year	Initiative
NPTEL	2006	NPTEL was started as educational content repository as MIT Open Course Ware. Today, It is one of largest publishers of OERs in the world.
	2014	NPTEL MOOCs powered by Course Builder were launched. Course builder is Google's open-source platform. The first batch provided 3 courses. It stated between July and December 2016.
	2015-16	In 2015, NPTEL offered 90 MOOCs. Between January and May 2016, 47 new courses were offered and 100 MOOCs started between July and December 2016.
mooKIT	2012	A lightweight platform designed and developed in IIT Kanpur in the year 2012.
	2014	Two MOOCs were launched using this platform: (a) Architecting Software for the Cloud. (b) MOOC on MOOCs: It witnessed around 2300 participants.
	2016	It launched a program called agMOOCs which comprised of 5 agricultural courses. Students and teachers of agricultural programmes were the target of agMOOCs.
edX and Coursera (Indian MOOCs)	2014	In July 2014, the first Indian MOOC on edX was developed and it targeted learners across the world. It witnessed massive success and attracted over 35,000 learners.

	2015	IIT Bombay, Birla Institute of Technology and Science Pilani, IIM Bangalore and Indian School of Business have launched MOOCs on edX and Coursera.
SWAYAM	2014	Ministry of Human Rights Development (MHRD) announced SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds) under its National Mission on Education through Information & Communication Technology (NMEICT).
	2015	MHRD formed the 'Main Committee regarding SWAYAM platform for MOOCs' to conduct a thorough examination of all elements for a successful MOOCs project.
	2016	2016 (March) MHRD developed and provided guidelines to institutions in India for development and implementation of MOOCs. 2016 (June) Microsoft was being awarded a contract for development of SWAYAM.
	2017	The SWAYAM portal was successfully launched on July 9, 2017.

Table 1 Progress of MOOCs in India (Trehan et al., 2017)

Main Challenges For MOOCs in Republic of India

1) Creation of digital content: This is an enormous challenge. Digital content includes voice, video, formatted text and animation. Apart from subject matter experts, this needs digital content developer. Digital content creation needs high quality devices

accustomed to read the digital content and once created to transfer it.

2) Internet access: The most necessary and major challenge is internet access and speed. This is a major hurdle in rural areas in India where the internet service providers are less.
3) Roadblock: Language barrier may be a major constraint for online education, notably in Republic of India. Most online platforms deliver courses in English. MOOCs need to take into account this issue and deliver the courses in regional languages as well and the courses need to be in native contexts.
4) Assessment and evaluation: Correct assessment strategies need to be incorporated wherever vast investment is involved.
5) Dropout magnitude relation: One of the biggest challenge for MOOCs is high dropout ratio. Barely 5% to 10% of registered individuals complete the entire course (De Coutere, 2014). Motivation to participate and continue with the courses is needed to overcome the dropout magnitude relation. The learners need to be encouraged to complete the courses by highlighting the skill development, personal growth and economic profit they would acquire after completing these courses.

Technology Used

To offer MOOCs, establishments have to choose self-hosted platforms, or use platform such as Coursera and Udacity. Once opting for self-hosted platform, the providers will prefer to 1) develop their own MOOCs platform similar to IIT Kanpur's mooKIT, or 2) use ASCII text file platform readily available. Indian government invariably believes in promoting the utilization of existing ASCII text file platform as their preference. These platforms could need modification and customization as per the need. Currently, NPTEL and IITBX are live examples of such effort working effortlessly using the open source technology.

1. **Course Builder:** NPTEL courses run on Course Builder, its Associate in Nursing ASCII text file platform created by Google in 2012. This platform is supported by the package and technology Google empowered for their online courses. Anyone can provide own courses utilizing this

Course Builder platform. This platform provides basic practicality for presenting course material, as well as learner activities and assessments and directions for targeting alternative Google product to make a course community. It provides basic services such as Google accounts, hangouts, and friend circles, which might be used as social networking feature, if enforced properly. Course Builder is made on Google app engine; it is written in Python. It uses the Google app engine to host the online application and Python for server aspect scripting. In 2013, Google announced collaborating with edX as a contributor to the ASCII text file platform, Open edX. Since then, Google solely provides maintenance for previous platform. No future upgradation is completed from them.

2. **Drupal:** MooKIT platform is developed utilizing Drupal, Associate in Nursing ASCII text file Content Management System (CMS). It is used as a back-end system for a minimum of 1.5% of all websites worldwide, starting from personal blogs to company, political and government sites. It is collectively used for data management and business collaboration. Drupal base code is written in PHP and it provides the user varied Drupal Apis to figure with and implement any feature on his own or uses contributed modules if the feature is already enforced. It is hosted on Apache Internet Server as Associate in Nursing application. Drupal features a vast support of around 6500 contributed modules which extend options provided by Drupal Core. For developing mooKIT, Drupal is selected because the CMS which is a core a part of the platform uses various alternative modules and services outlined to permit the user to access services of Drupal. These modules are written primarily in PHP and Java Script.
3. **Open edX:** IITBX is the platform developed at IIT Bombay by through significant customization of open edX code base. Its Associate in Nursing ASCII text file was unleashed on edX platform in 2013. EdX is developed by Harvard University and Massachusetts Institute of Technology (MIT). Open edX platform is getting used by

educational providers to host their own MOOCs across the globe. It also can be accustomed to host short courses and coaching modules. Also, educators will extend the platform to make learning tools that exactly meet their wants, and developers will contribute new options to the Open edX platform, thanks to nature of its availability as Associate in Nursing ASCII text file. Currently, it is used by various elite universities such as Stanford, also premier organizations such as Microsoft, and 2 Indian MOOCs, IITBX and SWAYAM, also are on the list. The entire list of its users is offered at Open online course for India's agri-professionals launched (2014). Open edX is almost entirely supported python with Django because the internet framework. It is a web-based platform for making, delivering and analyzing online courses. It is designed and developed utilizing the standard approach "LMS module" permitting learners to access course content such as videos, textbooks, problems and to examine their progress within the course, delivered by the "CMS or Studio module." These modules are designed for learners as well as pedagogue to make course structure and add course content. They, conjointly manage the course schedule, course team and set grading policy. Moreover, Open edX permits the users to research their course by providing a selected module named "Insight." It supports best and most of the advanced options for learners as well as the course providers.

4. **SWAYAM:** It runs on Associate in Nursing freelance platform which is formed in cooperation with the Microsoft. This platform is launched recently and is in growing stage. Therefore, most of its details are unobtainable currently.

Future Prospects of MOOCs

Looking at the present trends, it is expected that online pedagogy market can witness considerable growth within next 5 years and aid in distance learning programmes. However, since these courses are restricted to theoretical content presently, adoption of virtual room ideas may bring a sensible part within the online medium. Apart from that,

a lot of scholars, particularly from rural areas are expected to adopt completely different online channels to arrange for competitive exams. This is often considering the restricted choices obtainable for offline test preparation at these places.

Hybrid model is predicted to achieve traction in future, wherever online players are expected to open offline centers to supply classroom-like expertise to students. Also, gamification, the approach of introducing fun components such as game style in learning, is probably going to achieve quality in India. As per the report, some players have already started entering the space in order to boost engagement of learners.

There is little question that MOOCs have shown its scale of outcomes that are vastly positive that has to be completely evaluated and regarded and thought of by colleges, directors and policy manufacturers.

The MOOC providers have immense funds which will be placed to nice use if they are endowed unbiased with the thought of betterment. Following suggestions could be useful as artistic movement plan of MOOC studies:

1) The MOOC corporations and investors ought to be a lot careful and not act as typical businessmen or educationists. There should be a combination of both and they should stop attempting to sell their products thinking they might be the final word answer for all the education issues. This instance may facilitate the MOOC approach to all concerning students who have remediation and alternative learning defaults and who lack the essential skills of making, writing and arithmetic.
2) With the apt quantity of economic resources in their hands, MOOC corporations ought to reform and develop a lot of apprenticeship inclined course materials which will be employed in a lot of homogenized online format instead of absolutely online formats. Actually in future as we have a tendency to see MOOCs, it might indeed be probable to lie with blended learning that allows only meaningful involvement of faculty. To do so, they could even be compelled to omit the MOOCs completely as a result of their final product layout might not be immense and ponderous in terms of hundreds and thousands of scholars' enrolments and additionally may not be open or free. Rather, the course providers

and associated developers may rebrand themselves as providers of top quality content providers and provide a choice to the schools with a best method they might use their materials.

3) MOOCs being non-public enterprises might need to find a way to return their investments and create a profit out of everything. At some point of time, the initial investment will run out and then the companies would be in a need to generate revenue. Therefore, it is doubtless that some will survive and some would not. This seems to be a significant enigma for MOOCs developers that distinguishes them from division and tutorial style competitions at schools. UN agency develops their own on-line course materials on modest budgets primarily for teaching functions and not with the intention of earning a profit.

Conclusion

The MOOCs are the future of today's distance learning. They made the education simply accessible to anyone, at any place, at any time around the globe and improved people's lives by providing versatile and quality learning. They made a difference by providing free courses and enabled students around the world to participate, interact, discuss and learn from the expert faculties all over the world. MOOCs changed people's lives and produced out real change in communities. However, there might be a value effective and clever management for running MOOCs and a well adopted strategy which fits the universities and institutions. The MOOCs and on-line education have immense potential which might facilitate, guarantee and accelerate social cohesion and property growth. With very little efforts by the Government of India, online education is being offered to each individual. The education system managed through advanced technologies and online studies will certainly facilitate India to nurture its growth. 35 MOOCs may facilitate science and technology education accessible to plenty, however need to develop technical skills among students. The thirst for MOOCs is rapidly growing among Indians and that they have opted MOOCs for creating global classrooms a reality. For Indians, UN agency have a thirst for quality-based western education. MOOCs are serving as a desirable model in this direction.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: "**Effective Design of ODL Curriculum"**

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, **"Effective Design of ODL Curriculum"** is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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Signature:

Date: **17/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Effective Design of ODL Curriculum

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Abstract

The key purpose and intention of this paper is to discuss the loopholes in existing Open and Distance Learning courses curriculum and use of technological advancement to improve both the teaching–learning pedagogy as well as resource building and sharing aspects. The ODL system in India is almost 35 years old and the educational needs of millions of students in India and abroad are met with ODL system (Singh and Moumita, 2019). Because of COVID-19 pandemic, lot of reforms happened in regular and conventional academic engagements, and the entire education system is likely going to be revolutionized to a large extent in coming few years (van den Berg, 2020). Cost effective online education, learner-centric approach, synergistic blend of actual and virtual facilities, remodelling the existing framework, and fulfilling all the basic educational and performance evaluation requirements and designing a best-fit model for ODL systems is a key concern of this article.

Keywords

Open and Distance Learning, Curriculum design, learning resources

Introduction:

All over the world, it is observed that at least 30% population is finding it difficult to go ahead with regular academic full-time courses. Most of the organisations in the world realized this a long ago. The sector specific and application oriented courses are in tremendous demand for past 2 decades. Otto Peters, in his theory of industrialization, has described distance education as an industry embodying the characteristics of rationalization, division of labour, mechanization, assembly line, mass production, preparatory work,

planning, organization, scientific control methods, formalization, standardization, change of function, objectification and concentration and centralization (Singh and Moumita, 2019). There is a class in society which desires to upgrade their qualification from two perspectives: one is to keep themselves updated as per current technological upgrades and the second aspect is to update qualification to take the benefit of a higher cadre post and allied benefits. A large number of students who are geographically in remote areas and for whom joining universities for regular courses and upgrading their qualifications is still a dream (Rao, 2020). For such students, ODL is a blessing.

1. Curriculum Design: Step by Step Approach

Designing a curriculum and learning resources for Open and Distance Learning courses is always tough and challenging for obvious reasons: the appealing contents, covering recent technological upgrades, methods of engagement, teaching and learning pedagogy, well-defined learning objectives and learning outcomes, satisfying institutional and industry requirements, and above all the learner's satisfaction. In the Open and Distance Learning (ODL) system, quality also matters a lot such as learner-centric and product, application and purpose centric, the value for money, and the ability to meet the expectations of the stakeholders. The Figure 1 named "Requirements of ODL Curriculum" will highlight these aspects in a pictorial fashion.

Fig. 1
Requirements of ODL Curriculum

1.1 Sector Specific Approach:

The skill development concept always demands for your sector specific expertise. The content should be well researched, up-to-date and relevant to the sector of interest or domain area of learner, and should be flexible and well versed with key areas with upthrust for sector specific demand and growth. Under CSR schemes also, many industries are now offering very innovative ideas and undergoing tie-ups with reputed organizations to provide domain knowledge to a group of students who cannot afford the fees and cannot think of receiving such quality education.

1.2 Learner Centric Contents:

The relevant contents of the ODL system and availability on time when learner needs it. Similarly, the availability of resources to other stakeholders on time to review it well ahead of time to suggest corrective measures. Should also consider the need of the hour to blend the latest technological aspects smoothly to attract the learners and give them a clear vision about its effectiveness and usefulness for individual growth.

1.3 Creative Methods of Engagements:

When the thinking process starts while designing curriculum for distance learning, it becomes very much clear for the resource person to understand what distance learning is all about. The following points will give crystal-clear approach to take care of propagation of knowledge:

1. Special techniques of course design
2. Different approach for instructional techniques
3. Adaptive Methods of communication
4. Effective usage of Electronic media
5. Effective administration of interactions

The curriculum should be flexible and imbibed with use of as many inputs as possible and by structuring itself around the actual learning experience of the students. The recent development in the field of communication and computer technologies, have made it possible for better teacher-student dialogues and peer group interaction. Through e-mail and internet facilities, collaborative learning has become a reality. A healthy two-way communication between teachers and students always leads to effective outcome.

1.4 Adaptable to Recent Trends

The growth and technological advances should be minutely observed and inputs from sector specific experts will definitely give insight to content designer for ODL to stay focused in the areas where a demand for skilled people will be high. Actually, it attracts the aspirants from career point of view as well. Distance or Correspondence education is treated as a subclass system of education and is always considered inferior than the traditional education. This image can only be changed when distance education develops trust about itself in society and ensures significant benefits to learners. The acceptability of distance education and its positive interpretation plays a very significant role. It is observed that over a period now, the society started accepting ODL but still there is a long way to go.

1.5 Quality and Value for Money:

At the time of admission itself, the aspirants usually perform a comparative study based on certain parameters. The most important

parameters are whether the content is appealing, whether the curriculum is in trend, the quality of training and its effective organization, the reputation of institute based on market survey, the ethical way of progression, the cost involved and where I will stand in market after completion of the course. Tutors' different backgrounds, expertise and experiences result in different ways of curriculum implementation, hence problems of quality arise (Muyengwa & Mubika, 2013). The quality always emphasize on the inputs, transformations over a period and end results. The evaluation methods also a play a very crucial and stringent role in quality assurance.

1.6 Skill and Competency Development: Skill means ability of an individual to outperform a particular task or activity with his/her impact and it reflects expertise to display the competency of doing it. The curriculum design should take into consideration the skill gaps by comparing the contents with international standards. Organizing training programs with industry involvement and analysis of outcome by following well-defined evaluation methodologies will really prove significant to understand the skills achieved and developed in aspirants. The curriculum should take 360° review for inculcating skills like teamwork, effective and convincing communication, ability to work under pressure, problem solving, leadership qualities, self-motivation, positive thinking, confidence building and ability to accept failures and remedial actions to convert it into success.

2. Closed Loop ODL System Model:

To design and develop curriculum for Open and Distance Learning (ODL) system, it is always recommended to have a facility in the model to incorporate the changes based on the inputs received from various stakeholders. The model should be flexible enough to adapt to these changes smoothly. When considering all the meanings behind the two words, curriculum and design, curriculum design could then be described as a structure in which planning, problem and solution finding occurs and leads to the aims, intended learning outcomes, syllabus, learning and teaching methods and assessment, as well as other non-intended learning experiences of the learner (Chugh et al., 2017). Usually in industries, they follow PDR techniques, i.e. Plan, Do and Review. Reviewing is vital because it helps us take care of gaps, facilitates to adapt new methodologies or allow us to update the approach.

Figure 2 'Closed loop ODL system Model' will give us clarity about this closed loop approach.

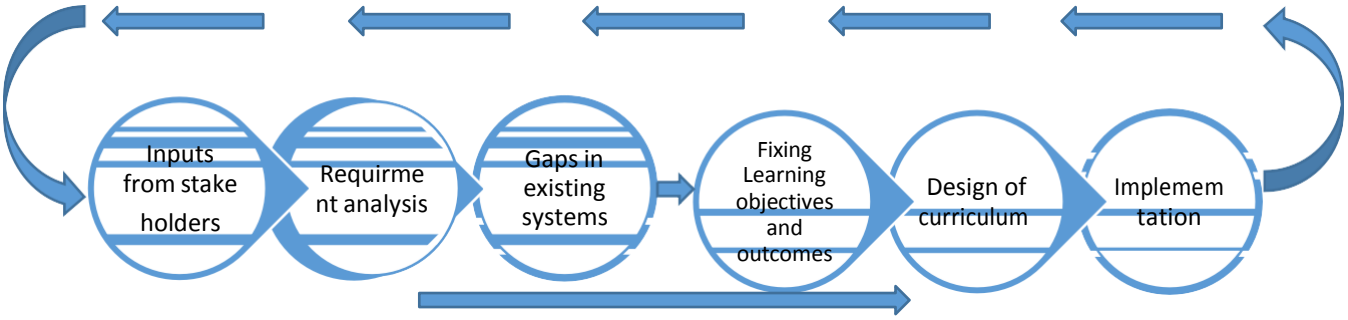

Figure 2 Closed loop ODL system model

2.1 Inputs from Stakeholders:

For an effective and successful curriculum, we should take inputs from following stakeholders:

1. Aspirants for their expectations
2. Industry experts for recent trends
3. Teachers for the challenges they have faced

Developing a questionnaire and propagating it to grassroot level to get the actual inputs will really provide an insight for the designer to take well-defined steps with proper justification.

2.2 Requirement analysis:

Which sector and topic the curriculum is targeted at? What are the lacuna in existing contents? What are the expectations of industries and society from the aspirants? Is there any need for some technological adoption to meet the changing scenarios? Change in methodologies and their consequences analysis, not only restricted to these, there are many virtues need to be considered lying a strong foundation. Although Social Networking media increases the potential range and scope for emergent learning exponentially, considerable efforts are required to ensure an effective balance between openness and constraint (Rani et al., 2013). It is possible to manage the relationship between prescriptive and emergent learning, both of which need to be part of an integrated learning ecology (Rani et al., 2013).

2.3 Gaps in Existing Systems:

Fixing the gaps in existing systems begins with the methods of screening, gathering and collating existing literatures and relevant literature to answer the questions through initial studies. The next step is sorting out irrelevant articles/papers for further simplification and analysing/re-evaluating shortlisted literature for critical analysis only by tabularising the parameters such as selection, interlinks, comparison, methodologies adopted, future scope and most important information with respect to conceptualisation of theories, opinions, outcomes and suggestions for future research.

2.4 Fixing Learning Objectives and Outcomes:

Regarding the specific course, the course designer puts enough thought process to decide the major intention behind it. Fixing the course objectives or learning objectives is usually viewed from instructor's perspective. What is to be accomplished? What is to be achieved? These are the questions that are expected to be answered during the course completion. It is as good as setting a target with clarity of intention and verifying it by analysing outcome to check where it stands. Focussing on outcome always provides us a great scope to analyse and improve our contents.

2.5 Design of Curriculum:

The following steps be strongly followed and recommended to have a full proof curriculum:

- Converting ideas to contents
- Overall blueprint of curriculum/course
- Mapping of objectives
- Addition of research components
- Imbibing project based learning concept
- List of skills and their evaluation
- Tie ups/MOUs for technological advances

Apart from these, there may also be some additional considerations based on the course we are planning and its specific needs.

2.6 Implementation:

The execution of contents through some trial runs and listing out lacunas and taking systematic measures in consultation with stakeholders and industry partners will prove useful to make the contents appealing as well as meeting the expectations of aspirants to take care of their wish lists. The sharing of contents by using technology and adding some multimedia components to it will also help serve the purpose.

Conclusion

In this article, we took a general review as to how an effective curriculum design helps create a win-win situation for aspirants and ODL offering institutes. The role of each member and their inputs make a systematic progression for creating new and acceptable options. This COVID-19 pandemic laid new normal of higher education and ODL has an opportunity to emerge as one of the promising learning culture with the blend of hybrid and innovative technological tools. The design of 'generation next' ODL education is our prime responsibility to shape our next generation's future and their careers.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

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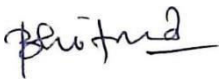
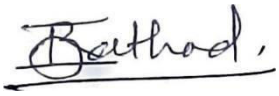
Author 1 - 

Author 2 - 

Signatures:

Date: **21/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Role of Open Educational Resources in Distance Learning

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Abstract

The paper explores the role of Open Educational Resources (OER) in Online Distance Education. With major developments in ICTs (Information and Communication Technology), various OERs have enriched our educational system. The in-depth utilization of various options and opportunities provided by the development of ICTs leads our education system to profound challenges and it has a serious impact on the cost, access and quality of educational contents. Besides technology, e-learning also includes instructional and educational approach to construct a thorough learning habitat, which is based on the web. Nowadays, e-learning is extensively used in higher education system as a support learning in any educational programmes. Collectively, the Open Educational Resources (OER) are coming up as most valuable and accepted alternative which improves access to a very high-quality educational content. These educational contents are released by top universities worldwide under open licenses which are free of cost. The rise in the popularity of OER has encouraged educators and researchers to become more contemporary in the style of their teaching, through the flexibility and observance. OER is used and adapted widely because of its cost-effectiveness in quality of educational content, teaching and learning. In conventional style of teaching, the educators spend most of their time in developing study materials, preparing lecture notes, creating questions and formulating answers for examinations. This paper discusses various challenges and opportunities in future by the use of OERs in our today's education system.

Introduction

The e-learning has steadily advanced with evolution of the field of Information and Communication Technologies and the emergence of various strategies in education, teaching and guidance to take most positive outcome of innovative learning opportunities.

Besides this, the rise in the popularity and availability of educational contents in Open Educational Resources (OER) brings a very

valuable opportunity to encourage the access to high standard of educational content created by many prestigious colleges and universities around the globe, under open source to allow free of cost usage of content.

OERs are contents in digital form for teaching and learning purposes, which are published online under open licenses of some prestigious organizations to enable their free usage and redesigning. These contents include complete courses of some academic programmes or the study materials such digital textbooks, their lessons, online lectures, work assessments and tests.

ICTs have administered very powerful tools for circulation of educational content over a wide spectrum. This brings improvement in access of the finest contents in the entire higher education institutions. ICTs can bring revolution to aggregate the current education system together with distance education at every level. OER holds commitment of improving the standard of education for various users in developed as well as developing countries. The educationalists are creating digital educational contents for educators and therefore the students are learning in a hassle free environment. Previously, access to quality education was possible only to those candidates who could join higher education institutions or for those who could afford buying quality educational contents. The OER movement intends to make this standard of content accessible free of cost to the user to boost educational opportunities to unprivileged sections of the society and this leads to leading to equalize the access. By improving the quality of contents, its access and reach, OERs can play a leading role in the current scenario of distance education system together with global acceptance. In the sector of OER, there is a huge growth around the world. In our country also, a group of Indian universities has taken meaningful initiatives to ingrain the OER into our educational system. Many proactive steps have been taken by Indian Government also by providing momentum to bring forward OER concept using various educational policies for infrastructure development in the country. A group of policymaking institutions such as All India council of Technical Education (AICTE), University Grants Commission (UGC) and many other advisory bodies are providing support to the OER movement in the country in order to improve access to quality content and education.

Concept of Open Educational Resources

The Open Educational Resources can be defined as "technically-enabled educational resources which are open in nature, for references, uses and endorsement by a group of people or organization for non-profit making purposes." OERs are commonly made available free of charges over the internet. Educationalist or teachers mainly use OER for course development but the same can also be used directly by the university or non-university

students. The complete layout of Open Educational Resources include various learning objects such as classroom materials, simulators, lab experiments and demonstrations. Along with these, the curriculum and syllabus are also included. Open Education Resources (OERs) have emerged as a useful way to provide a very high standard of quality education to unprivileged section of society. OERs together with MOOCs are the leading edges of the open and distance education system and with the course of time they are playing a significant role in education systems around the globe. The term OER was first coined in year 2002 at UNESCO forum for 'open educational contents provided free of cost in developing countries for higher education.' Open educational resources include complete courses, modules of the course, educational content, e-textbooks, online streaming videos, online test engine, supporting software, and many other tools, simulators, or techniques which are used to support the access to knowledge.

OER includes following points:

- Content for Learning: Learning content includes full detailed courses, courseware, modules of content, and objectives of learning. It also includes research material and journals.
- Tools: Tools include various softwares to support the development of learning contents, which can be easily used and delivered. This also includes organizing the contents, content development tools and learning management.
- Implementation Resources: To promote the open source publications, design principles, and contents, intellectual property licenses and copyrights needed.

To simplify the concern of managing the copyrights of the content posted on the internet, many individuals and organizations have turned to Creative Commons and the Open Courseware Consortium (McDowell, 2010). For the students and educators, OER can be valuable for many reasons.

OER has various advantages according to the perspective of students:

- Free of cost study materials
- Uninterrupted access to the resources
- Detailed topic analysis
- Upliftment in personal knowledge and
- easy access of study material

Many higher studies Universities around the globe have been using digital technology and web to develop distribution system of teaching and learning. OER is similar to other technical initiatives in education as it is also driven by many factors such as technology, economics and legalities. Recently, OER is gaining more attention due to its potential to counteract geographical, economic and demographic educational boundaries and advocate enhanced personalized learning.

Open Educational Resources in Distance Education

In current scenario of distance education system, there is a major shift towards more illustrative and

synergetic learning. The application of Open Educational Resources is promising to improve the access of a very high quality education around the world in both developing and developed counties. According to international measures, the Gross Enrolment Ratio in higher studies in our country (i.e. student's percentage enrolled in higher education) is quite low at 14% for master's programmes. Total enrolment in distance education in India constitutes 12.5% of the total enrolment at university level (MHRD, 2013). In India, distance education assists huge range of students who have diverse styles of learning, choices, with composite cultural upbringing, economical stature and geological locations. The Open Distance Learning (ODL) system aims at:

- Enhancement in the overall gross enrolment ratio
- Access of higher education to a huge segment of unprivileged population
- Bringing the learning resources to the unreached
- Giving opportunities to up-grade the skills with qualification
- Meeting all the demands of the people for their lifelong learning

The education system of India has a number of issues, which need attention and should be resolved. There is acute shortage of good educators, lack of resources, inadequate libraries and high standard of learning resources. In current scenario, ICT and its application in ODL and traditional education have a concrete effect on the use of OERs in distance education organization.

The basic principle of distance learning is to negate the geographical and demographic limits and to provide effortless reach to higher studies. The same is in conformity with the endeavour of the OER establishment. For the ODL universities, it is very important to maintain the standards with changing times and to ensure maximum utilization of digital and web technologies to meet the needs of higher educational system. In India, National Knowledge Commission also recommended the maximum use of OER and Open Access to solve the traditional education problems. The boundless availability of educational resources of high standards is crucial to change the model and structure of teaching for the betterment of comprehensive quality of education. OERs can come handy to bridge the gap between distance education and formal traditional learning and thus offering opportunities to those who could not have formal education. It is a long history of open and distance learning organization to create learning and educational resources for independent users or students who have time, money and resource constraints. Implementation of OER in Open and distance learning organization will be beneficial because of their calibration with traditional education system and distance learning programmes. Massachusetts Institute of

Technology (MIT) took initiative to make their open course available in order to position itself in the field of e-Learning and distance education ecosystem.

Scope and Challenges in the Use of Open Educational Resources

Introduction of OER has given opportunity to change the methodology of teaching-learning practices. New synergetic teaching-learning practices are coming up in our education system. With the ease of getting free of cost and high standard educational materials, now it becomes apparent for the educators to develop and learn new pedagogical layout. A few advantages of OERs in our educational system especially in developing nations are as follows:

- OER helps in saving time and resources to develop a good content in developing countries,
- OER helps in easing and aiding the knowledge sharing,
- OER makes addressing possible to bridge the digital divide by implementing capacity-building resources for educators,
- OER document and circulate primitive knowledge for future generation, and
- Uplift the quality of education at various levels.

Despite all the pros of OER and its rapid growth in the field of ODL and traditional education together with benefits to various educators and learners, there remains some critical issues that need to be resolved for further upliftment of OER. With its gradual development and wide usage, OER faces some significant challenges. There are certain bottlenecks in OER mechanism, which are also very true in Indian context. These are:

- Infrastructure barrier: To access OER, one needs a very good bandwidth of internet. Many users lack the access to reliable and fast broadband connectivity.
- Economic barrier: To access OER, initially there is a need of basic resources such as hardware and software. This could be one major barrier in implementing OER.
- Social barrier: OER is a complete technical entity, one needs to be good in technical knowledge to access all attributes of OER. Lack of technical skills could a barrier in this.
- OER development policy: Due to lack of academic recognition, there could be many educators who could access this Technology.
- Legal barrier: To obtain permission to use third party owned copyright resources may be complicated and time consuming.

Conclusion

The OER mechanism brings revolution in the field of information sharing and content creation. It has led to evolution of active and innovative participation in the development of educational content in digital format for entire educational sector. To ease the access of educational contents and resources, a number of innovative and creative ideas have emerged and implemented. A number of distance learning universities have taken initiative to make their educational contents available in public domain. Nonetheless, practice of OER in our educational system is currently in a beginning stage of implementation and a number of loopholes need be repaired. However, the overall potential for the development and growth of OER is outstanding in India which cannot be denied and many more such type of initiatives must be encouraged in the sector of distance learning in India.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: **Notion of Copyright Protection in Open Access Publications and Development of Self-Learning Material**

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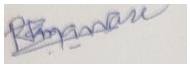
ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, **"Notion of Copyright Protection in Open Access Publications and Development of Self-Learning Material"** is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

Name: **Vishal Ranaware**



Signature:

Date: **22/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Notion of Copyright Protection in Open Access Publications and Development of Self-Learning Material

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Abstract

Copyright laws are protecting the creation of the creator of intellectual work such as books, cinematographic work, lyrics, music, published research papers and so on. It confers rights to the authors to enable them to use created work and to be recognized as a creator. Content published in an open access journal is accessible and free to use, however the access to content is conditional and subject to terms of the licence. Such published work can be used for the development of self-learning material. This research paper will explain the widely accepted creative common licences for open access publication and copyright protection through it.

Keywords

Open access, OER, Copyright, Creative commons, Intellectual property, Self-learning material.

Introduction

Generally, people are familiar with only two types of tangible properties, i.e. movable *(car, bike or other goods can be moved from one place to another)* and immovable *(house or things attached to the land)* property. Common thing between these two is both can be touched or felt. However, with advancement of civilised society, intangible property has emerged as a new type of property.

Intangible property means non-monetary property that cannot be seen, touched or physically measured (Mehta & Madhani, 2009). Intellectual property is the type of intangible property (Mehta & Madhani, 2009). Therefore, the question is what is 'Intellectual Property?' The answer is Intellectual Property are the legal rights which result from human intellect in the industrial, scientific, literary and artistic fields (The World Intellectual Property Organisation 'The Concept of Intellectual Property,' 2020).

The term intellectual property covers exploitative rights of design, literary works, inventions, etc. of their authors (Gale, 1978). Journals are protected by the intellectual property rights (Hossain, 2018). The author/s have right to exploit the work of his intellect, the author has exclusive rights, no one else is allowed to take the benefit of his intellectual efforts.

According to Article 2(viii) of the Convention Establishing the World Intellectual Property Organization (WIPO) signed at Stockholm on July 14, 1967, an 'intellectual property' shall include the rights relating to:

- literary, artistic and scientific works,
- performances of performing artists, phonograms and broadcasts,
- inventions in all fields of human endeavour,
- scientific discoveries,
- industrial designs,
- trademarks, service marks, and commercial names and designations,
- protection against unfair competition,
- and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields (The World Intellectual Property Organisation 'Convention Establishing the World Intellectual Property Organization – Draft Texts of Amendments Agreed in Principle,' 2020).

However, such work can be used with permission or under a licence. Also, there are certain statutory exceptions which will not create any liability if there is a use by the non-author/s.

Research Methods

For this research, a doctrinal research method is used. For this purpose, the researcher has used notified laws and judicial decisions as a primary data and books, journals, commentary as a secondary data.

Concept of Copyright

'Industrial property' and 'copyright' are the two branches of intellectual property (The World Intellectual Property Organisation 'The Concept of Intellectual Property,' 2020). The term 'Copyright' defines the rights that creators have over their produced creative and literary works. It gives protection to the books, music, paintings, sculpture, films, computer programs, databases, advertisements, maps, technical drawings and so on (The World Intellectual Property Organisation 'Copyright,' 2020).

Authors are taking efforts to produce the intended product; therefore, ideally, they

have the right to derive economic benefits from it. However, nowadays due to technological development it is difficult to control the circulation and usage of content. Books and journals are easily available to the users through internet. On this basis, following are the ways to use content produced by someone else:

a) Pay for the content

b) Use the content for the purpose exempted by the copyright law

c) Use content available in open access world

In first category, once you take the licence or permission from author or publisher by paying him some licence fee, users are allowed to use that content as per contract. Secondly, if you have not taken permission from author but the intended use falls under an exempted act then that act will not be considered as a copyright infringement.

In third category, the content is available free of cost but that is subject to certain conditions as defined by licences under which the content is made available. Nowadays, online journals are using creative common licences (Hossain, 2018).

Certain Acts Not To Be Infringement of Copyright

The copyright infringement in most of the cases will be replication of the novel work. It includes reproduction of the original work or a considerable portion of it in any form and also includes storing the work in any medium by electronic means (Infringement of Copyright, Exceptions and Limitation in the Digital Era, 2020).

Aggrieved person has to show that the challenged work is considerably similar to the original one. The courts will review both the works in question on the well accepted principle under copyright law, i.e. infringement action is launched only if the user used owner's complete work or substantial part of it (Infringement of Copyright, Exceptions and Limitation in the Digital Era, 2020).

Section 52 (Section 52(1) of the Copyright Act 1957, 2020) states the act does not amount to infringement of copyright. Those acts are defined under clause (1) of section 52 as given below:

(a) a fair dealing with a copyrighted work for the purposes of personal use such as research and criticism or review;

(b) a fair use of a work for the purpose of reporting in a newspaper or by broadcast;

(c) the reproduction of a copyrighted work for the purpose of a judicial proceeding or for the purpose of a report of a judicial proceeding;

(d) the reproduction or publication of a work in any work prepared by the Secretariat of a Legislature or by the Secretariat exclusively for the use of the members of that Legislature;

(e) the reproduction in a certified copy made or supplied in accordance with any law for the time being in force;

(f) the reading or narrating in public of any reasonable extract from a published literary or dramatic work;

(g) the non-copyright material composed and published along with copyrighted content for the purpose of educational institutions, to get exemption under this clause the same author and publisher can use maximum two short copyrighted passages in period of five years;

(h) a teacher or student uses copyrighted work for the educational purpose in course of instruction or in an examination to write an answer;

(i) any literary, musical or dramatic copyrighted work performed by staff and students of institution before the audience from the same institution such as staff, students or the parents and guardians of the students;

(j) if a literary, dramatic or musical work performed before an audience without charging money to watch that performance, or for the benefit of a religious institution by an amateur club or society;

(k) the reproduction of a periodical article on current topics such as economic, political, social or religious; however, this only excluded if the author of such articles waived his right of reproduction;

(l) if the content published in newspaper or magazine is the lecture delivered in public;

(m) the person in charge of public library direct to make the copies, not more than three, in case that book or copyrighted content is not available for sale in India;

(n) the work is reproduced for the purpose of research or private study, or publishing the work kept in the institutions to which the public has access;

(o) the publication or reproduction of any matter published in an Official Gazette, a Legislature Act;

(p) the publication or reproduction of the reports of the committees, commissions, councils, boards or other similar kind of legislature appointed bodies, unless production or reproduction is prohibited by the government itself;

(q) the publication or reproduction of the judgments or orders of the courts, tribunals or other authorities unless such acts are prohibited by the respective authority;

(r) the Legislature Act, rules or orders produced or published in any Indian language;

In all above cases user is protected by the law as these acts are not considered as a copyright infringement.

Concept of Open Access

Open access (OA) literature is online, digital and free of charge but not free to produce. It is also free from most of the restrictions of copyrights and licensing. OA literature is peer-reviewed and available to anyone interested. refers to the practice of making peer-reviewed scholarly research and literature freely available online to anyone interested in reading it.

The formal beginnings of the open access movement are several declarations issued in the early 2000s: the Budapest Open Access Initiative (2002), the Bethesda Statement on Open Access Publishing (2003), and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003). The policies put forth in those declarations form the core tenets of the modern open access movement, but there are several antecedents such as arXiv, a public repository for scientific papers. OA literature has following advantages:

a. removes price and permission barriers with some flexibility
b. wider and easier access to articles
c. compatible with copyrights, peer-reviewed, quality, indexing features and services same as conventional research articles

OA contents are available in following forms:

A) OA archives and repositories (Green)
In this the peer-review is not performed and the contents are freely available for the reader. These may belong to the individual, institutions or universities with various discipline. For example, the Wawasan Open University of Malaysia has an own Open Educational Resources (OER) repository of learning material. Authors may archive their work without taking anyone's permission and publish it on own website but these archives must need to comply with the protocol so that the contents can be available to the user and inter-operable.

B) OA journals (Gold)
These journals are peer-reviewed and the contents are then freely available for the readers. There is some cost associated with this including the peer-review charges, manuscript preparation and saving it on server. Those who want to make the content widely available have to pay the production cost so the contents are available for everyone free of charge. Such journals charge some processing fee to the authors or authors sponsor/s, have subsidy from the

hosting agency. Various policies exist for charging the processing fee to the author such as internal university authors does not need to pay the processing fee as well as if there is some income from the advertisement then this fee is waived off or the charges are less.

C) Hybrid OA

It is a combination of both open access and closed access journals. These publications are partially funded by the subscriptions.

D) Diamond or Platinum OA

These journals publish the open access contents without charging processing fee to the authors and readers, require grant from external sources.

Open access is helpful to many groups including authors, readers, universities, funding agencies, teachers and students. It is an access model not business model. To produce the content in OA, a consent of the copyright holder is needed. OA has two different versions: Gratis and Libre.

Gratis open access makes the content freely (without paying) available to read, but it does not permit the user to use the content in terms of copy, modify or distribute in any way. Libre open access is also freely available online but grants some additional rights regarding using the content for reuse and remixing. CC licences specify the rules for granting such an access to the user, the details of which are mentioned in the next section.

Types of Licences

Journals nowadays are using Creative Commons (CC) licences. The CC licence helps in sharing and reusing the work. It is one of the public copyright licences that allows the circulation of copyrighted work free of cost. This licence is used by the creator (author) of the work who wants to share their work with the people by giving the rights to share, use and build the work on the same. It provides flexibility to the author and the user who would use or redistribute an author's work under a specified condition given in the licence.

These licences were released in 2002 by a Creative Commons. The latest version 4.0 is released in 2013. These licences are applicable to all work which comes under the copyright, such as books, journals, music, movies, blogs, websites, articles, etc. With these licences, there are some icons which are as discussed below:

A) Attribution (BY)

All Creative Commons licences require to include the BY element and attribution to author. The user of this licence may distribute, copy, display and reuse (remix)

the work only if they give the credits to the author in the same specified manner.

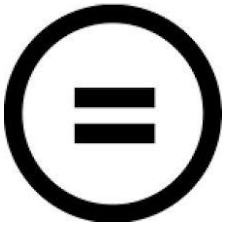
B) Share-Alike (SA)

If the user is using content published under this licence then user has to publish the produced work under a licence similar to the licence that govern original content. Without share-alike, derivative works might be sub-licenced with compatible but more restrictive licence clauses.

C) Non-Commercial (NC)

The user of this licence may display, copy, distribute and remix the contents based on it but buys only for non-commercial purpose.

D) No Derivative Works (ND)



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Accordingly following are the types of CC licences (Creative Commons 'About The Licences,' 2020):

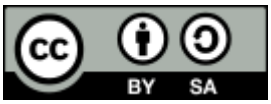
A) Public Domain (CC0)

Contents are freely available world-wide without restrictions. Attribution is not required. Contents can be remixed and used commercially.

B) Attribution Alone (CC-BY)

It allows the user to share, remix, use and distribute the work, even for commercial purpose with the condition that they credit the original creator of the content. This is a most preferred licence and attribution is required.

C) Attribution Share-Alike (CC-BY-SA)



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D) Attribution Non-Commercial (CC-BY-NC)

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Among all types of licences, the CC-BY-NC-ND is more obstructive licence. It allows the user to use, download and share the content with the condition that they must acknowledge the creator of the content. The user cannot change the content and the content should not be used for commercial purpose.

All the licences other than CC0 require attribution of the original author. The 'TASL' term is suggested by the Creative Commons for the attribution which has the full form "Title-Author-Source-License (CC)". This means it includes the copyright notices, cite the author details such as author name etc, cite the title of the original work, cite the specific applicable CC licence and also mentions the type of work i.e. derivative or adaption.

Conclusion

Journals published under full copyright protection are least open to the academic fraternity as it requires permission and money, which is not possible to most of the users. On other side though, the open access journals are least controlled by copyright laws and the rights are governed by terms of the licences. However, if content is available on open access platform, it can be accessed and used by anyone without paying money and users need not worry about copyright violation and its implications if user has complied with usage terms as defined by CC.

The self-learning material plays vital role in open and distance learning (ODL) as students mostly rely on study material provided by the institute. These institutes have to update their curriculum and self-learning material to satisfy the current market needs. However, there are certain limitations for developing or updating self-learning material such as:

a. Most of the time it becomes very difficult to find a subject matter expert who will give justice to the course/subject.
b. The main objective of the ODL is to provide every citizen easy and affordable access to quality education and institutes are providing education at low cost, therefore it becomes very difficult for them to develop new self-learning material or make changes in existing self-learning material at eleventh hour to meet market demand.
c. Generally, if authors are developing new content, it becomes a time consuming exercise and may cause delay in launching new programmes, course or subject.
d. Sometimes ODL institutions might have to face copyright issues.

These are the issues which can be resolved by using academic work published in open access publications or OER, however it is subject to CC licences.

On the basis of above study, the researcher found that 'Public Domain' is the most open type of CC licence and CC-BY-NC-ND licence is least open.

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ISSN 2582-9009
Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: **Open Educational Resources (OERs): A Boon for Digital Education**

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ISSN 2582-9009
Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, **"Open Educational Resources (OERs): A Boon for Digital Education"** is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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Date: **17/12/2020**

ISSN 2582-9009

Symbiosis International Research Journal on Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Open Educational Resources (OERs): A Boon for Digital Education

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Abstract

Technological advances have emerged as a replacement of various traditional ways of doing the things. Education sector which is one of the most intangible service sectors also cannot keep itself away from these technological advances. This paper is an attempt to touch key learning and basic concepts regarding online educational resources. Introduction of online distance teaching–learning is a reason behind the existence of open educational resources. Here researchers try to find about OERs and how they can make a contribution towards the development of national education.

Keywords

Online educational resources, OER

Introduction

Though 'Right to Education' is having official existence in India, it has been facing continuous challenges and hurdles to come into actualization. The set goal 'equitable access to quality education' is not far away from its accomplishment. There are various barriers including geographical and demographical barriers including shortage of 'Qualified Educators'(CARRHE, 2009) and

restrain access to educational institutions (Lall, 2005). Along with these, many of the educational institutions faced additional basic hurdles like number of students are more than the sitting capacity of the classrooms, outdated teaching aids and facilities, old-fashioned and outdated teaching-learning and evaluation methods (Stella, 2002). Increasing Indian population shows a considerable gap between 'demand for higher education' and 'the infrastructure for the fulfillment of the demand.' This shows a need for Online Distance Education (ODE) and preparation of reliable and useful Open Educational Resources (OER)**.** The various OER include open textbooks, videos, course materials, lesson plans, software and educational games as well.

Open Educational Resources

To enhance the quality education in India, Indian Government in 2007 enacted 'Right to Education Act' to promote universal education. The National Knowledge Commission (NKC) recommended (2007) that the role of Open Educational Resources (OER) be elevated to support access to quality education for all.

Objectives of the Study

1. To define learn the constitution of OER.
2. To study the value of OER to solve real world problems.
3. To learn 5Rs of OER.
4. To discuss advantages of OER.

Definition of OER

"Any type of educational materials those are available to the university community with little or no cost. It may also be the case with PSU-OER that the nature of these open materials means that students, faculty, and staff can legally and freely copy, use, adapt, and re-share them within the university community."

-According to Penn State University working definition of OER

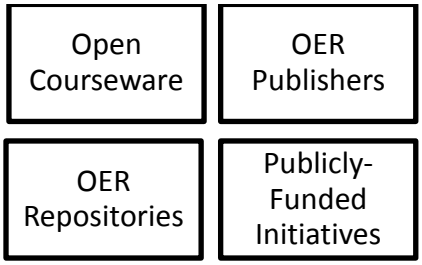
Similarly, OER definition is identified by various agencies or Universities based on their implications and applied characteristics. These are summarized in the following Table 1:

	Requirement of Open copyright license	Does not limit use or form	Non-discriminatory	Right of access, adaption and re-publication
Hewlett Foundation	√	√	√	√
OECD				√
UNESCO	√	√	√	√
Cape Town Declaration	√		√	√
Wiki educator OER handbook		√	√	√
OER Commons		√	√	√

Table 1: Various definitions of OER from various sources.

OER Movement

The first recognized OER project was the MIT open courseware project. In 1998, David Wiley coined the term 'open content' and in 2002, OER was first used at UNESCO's forum. The OER movement can be included in following 4 major categories



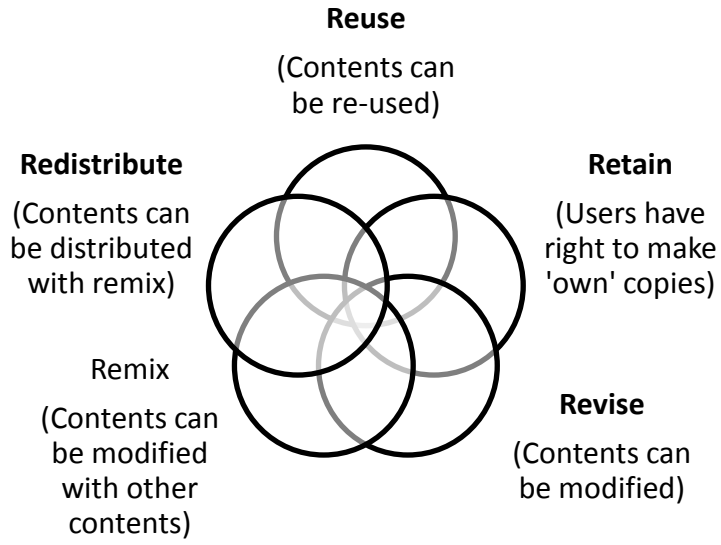
Open Courseware (OCW)	• In Open Courseware enhanced quality educational study materials are freely available through online mode. • It is digital publication where openly licensed open resources are online available 24*7. • They are having thematic contents with course plan and evaluation tools and a large-scale participation through online learning is possible.
OER Publishers	• There is increasing demand of textbooks and everyone is searching and demanding affordable alternatives for traditional textbooks. • This search can be fulfilled by OER. Specific collection and edition of OER can be developed depending upon the course requirements. • Saylor Publication can be one of the examples of OER Publisher.
OER Repositories	• Digital content repository can be termed as digital content warehouses. • It is more like a convenient place where one can search, share, edit, and mix OER from various sources. • There are variety of portals and gateways which provide open access to OERs.
Publicly-Funded Initiatives	• If we study OER policy in Europe and POERUP, we can see that many countries are keen to develop OER and adoption of OER is increasing at National, state and local levels. • Funding is made available for development of OER.

Five Rs of Openness

There are various types of OER, which include open access journals, text books, reading materials, course materials, educational audio and videos, digital PowerPoint presentations, etc. Though the

term is ‘open content’ or ‘OER,’ it describes any form of a copyrightable educational material in the software or digital form. This can be in public domain or in licensed manner which may be freely (without cost) accessible to all users and learners with everlasting authorization to engage in 5 Rs openness initiative described as follows:

1) **Retain:** It means the right of the authors to make and own the digital content and having a control over download, storage, duplication of the contents.
2) **Reuse:** It means the right about the usage of the contents over a wide range such as preparing a video, learning in a classroom or study group, etc.
3) **Revise:** It means the right to modify or alter, adjust and adopt the available content such as translating the contents from national level language into regional languages.
4) **Remix:** It means the right to revise the available content and make a combination with other content for making a more customized content relevant for a particular course.
5) **Redistribute:** It means the right to share the originally available or remixed version of the contents with other learners.



Advantages of OER

The overall advantages of OER include:

i. Creation of reliable savings which students can count
ii. Increase in academic freedom for the teaching staff
iii. Improvement in learners' knowledge and saving their money
iv. Making the course more attractive for potential learners
v. Learners can gain knowledge with faster pace
vi. Revenue enhancement for the institutions

Advantages of OER for the teachers

i. Extension of academic profile
ii. Provision of more engaging study materials for their students
iii. Increase in retention of the students as reduction in the costs
iv. Supports academic freedom and customized study material to alter and modify the contents

Advantages of OER for the learners

i. Learners get access to quality digital contents and OER for free or at lowest possible costs
ii. It is easier to 'find' and access required study material from available OERs
iii. More customized and relevant contents for the learners

Conclusion

OER has been found to be more reliable open access and less costly source for the teachers and learners. OER supports preparation of higher quality study materials and course contents. Academic flexibility can be achieved for the teaching staff and this might help learners to get customized study materials from various reliable sources. In India various OERs such as Swayam portal, NPTEL, TESS-India, etc. are continuing the worldwide OER movement and this seems to continue for next few decades.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Cover Page

Date: 11/01/2021

The presented manuscript entitled **"Use of Open Educational Resources (OERs) in Online Teaching and Learning"** is original work and not been submitted/published earlier or it is not under consideration for possible publication anywhere else.

I/We further certify that proper citations to the previous reported work have been given and no data/tables/figures have been quoted verbatim from other publications without giving due acknowledgement and without the permission of the original author(s).

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, **"Use of Open Educational Resources (OERs) in Online Teaching and Learning"** is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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Signature: 

Date : 11/01/2021

ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Use of Open Educational Resources (OERs) in Online Teaching and Learning

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Abstract

The COVID-19 pandemic affected the education system and transformed it completely towards online teaching and learning. This pandemic situation has forced everyone in the teaching fraternity to use Open Educational Resources (OERs) in the teaching-learning process. However, there is a big question on the quality of online education. In this scenario, the use of OERs is the only best possible solution to improve the quality of online education.

This paper discusses various prospects and obstacles surfaced after adoption of OERs in the distance education at the present time. It also discusses the concept of OERs, types of OERs, advantages and disadvantages of OERs, OERs initiatives in India.

Keywords: OERs, Open Education Resources, Online Teaching and Learning, ODL.

Introduction

Since the emergence of pandemic in 2020, the educational system in India and abroad has come to a halt. It was an unprecedented situation nobody imagined or witnessed in the past. Thousands of universities, colleges and institutions faced a questionable situation about how to impart education to their students. The lockdown and the social distancing norms made it completely impossible for the educational organizations to functions in offline mode. The challenge before the entire education system became the reason to find out suitable solution. Therefore, various innovative tools, methodologies and channels emerged to continue teaching-learning process.

During novel coronavirus pandemic, online learning became blessing in disguise. Thousands of students, faculty members and educationalist were benefited by

different ways and methods available in Online Teaching and Learning. Similarly, OERs became the supplement to maintain the quality and standard in online teaching and learning process. Under the extreme adversities of the pandemic, it turned out to be helpful for all in following concepts of OERs.

What are Open Educational Resources (OERs)?

OERs is not a new concept. It is there since long time but its need was not realized in recent time. In the year 1999, Open University (UK) and University of Tubingen (Germany) displayed and provided various academic materials free to all. After globalization and advancement in new technology such as internet, computer, electronic and digital media, OERs expanded into various parts of the world. Libraries transformed into Digital or Virtual Libraries from the storehouse of books. Emerging technologies have provided new platforms to access various electronic resources online. Universities and institutions built their own repositories for the expansion of their digital collections.

UNESCO (2017) defined OERs as "teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions." In nutshell, Open Educational Resources are educational materials in the form of electronic or print and are freely available in public domain, are editable, reusable and suitable for teaching, learning and research purpose.

Open Educational Resources consist of 3 words: Open / Educational / Resources, which are described in more details as follows:

Open: The materials which are available free in public domain, are permitted to modify and reuse.

Educational: Which can be used for the teaching, learning and research purpose.

Resources: It implies the study materials, books, e-resources, audio, video, power point presentations, etc.

The Five Freedoms of Open Educational Resources (OERs):

Wiley (2014) described five freedoms of Open Educational Resources (OERs) as follows:

1. Retain – The choice to create, collect and store the copies of contents which include duplication, downloading, storing and controlling.

2. Reuse – The freedom to use, extract the content, and modify the content by acknowledging the original source.
3. Revise – The freedom to alter, review, change, consolidate, translate content for optimum use and better understanding.
4. Remix – The right to collaborate, collate, combined and rearrange the content for betterment.
5. Redistribute – The liberty to share, communicate, distribute, common content amongst other.

Types of Open Educational Resources (OERs):

Following are various types or forms of OERs (Fig. 1):

- Open Textbooks: Text books, reference materials, theses, research materials, reports, etc.
- Presentations: Power point presentations, designs, models, etc.
- Multimedia and animations: Videos, Audio, visuals, Pictures, etc.
- Illustrations: Graphs, Tables, Sketches, Maps, modules, etc.
- Assignments and quizzes: Academic, Teaching assignments and quizzes.

Fig. 1 Types of OERs (Ehlers et al., 2018)

Purposes of using Open Educational Resources (OERs):

- To assist in teaching-learning process.
- To provide learning material as a supplement to academics.
- To uplift the skills, competency and professional ability of learner.
- To involve students thoroughly in process.
- To widen the scope of learning materials.
- To know the emerging trends in subject.
- To strengthen the pedagogies for learning.
- To innovate and upgrade subject domain knowledge.

- To bring teachers together on similar platform.
- To facilitate cultural diversity.

Challenges using Open Educational Resources (OERs):

- Time consuming to search the relevant materials.
- Lack of technical competencies to use the resources.
- Lack of initiatives and support from management to use online resources.
- Resources not being aligned with professional standards or regulation.
- Lack of awareness and skills to use the resources.
- Limitation of knowledge of modifying and seeking permissions.
- Lack of awareness about open licensing and copyrights.

Benefits of Open Educational Resources (OERs):

- Developed strategies in teaching-learning area.
- Demographic benefits beyond boundaries.
- Easy accessibility and availability.
- Collaborative efforts in knowledge generation.
- Awareness regarding intellectual property, patents and copyrights.
- Enormous knowledge base.
- Faculty collaboration and multidisciplinary approach.
- Reviewing and synchronizing research work.
- Knowledge exchange and mutual benefits.
- Storing and retaining course materials.
- Wide network of alumni.

Open Educational Resources (OERs) Initiatives in India:

There are many initiatives taken in India for Open Educational Resources (OERs), out of which some of the major initiatives are discussed as follows:

Digital Library of India:

Digital Library of India is a free online service provided by Indian Institute of Science (IIS), Bangalore in association with Million Book Project. Digital Library of India gives access to various books in English and Indian languages free of cost. Digital Library of India consists of electronic educational material collected from various educational libraries in India.

National Digital Library (NDL):

Under the National Mission on Education through Information and Communication Technology (NMEICT), the Ministry of Human Resource Development initiated the

project of National Digital Library of India (NDLI). NDLI provide free access to huge volume of educational materials such as Books, articles, Audio visual, Video Lectures, Multimedia Presentations, Pictures, Question Banks, Assignments, etc. available for all subjects such as Technology, Humanities, Social Science, Medical, Language, Literature and Law, etc. in various languages.

Shodhganga:

INFLIBNET Centre, Ahmedabad developed the digital repository Electronic Theses and Dissertations submitted to the universities in India; this is called 'Shodhganga.' The rights to maintain the Shodhganga project are owned by INFLIBNET Centre. As on today, 565 universities and 17 CFTI (Centrally Funded Technical Institute) in India have signed Memorandum of Understanding (MoU) with the INFLIBNET Centre to contribute in the different projects undertaken by Shodhganga. The Shodhganga repository has a collection of 2,92,032 electronic theses and 7,940 electronic synopses. All the Electronic Theses and Dissertations submitted to Shodhganga are available free of cost to read and download to the academic community all over the world.

ShodhGangotri:

ShodhGangotri is Repository of Indian Research in Progress introduced by INFLIBNET Centre. Under this initiative, research scholars/research guides can submit electronic copy of final synopsis of on-going M.Phil/ Ph.D in Indian universities and institutions to ShodhGangotri. All the synopses submitted to ShodhGangotri are available with open access to read and download.

Vidyanidhi:

Vidyanidhi is India's leading education portal which provides platform for KG-to-PG Educational Information Source, educational tools for doctoral research in India. Vidyanidhi is repository or consortium of electronic theses submitted by universities and academic institutions in India made available through open access to all academicians and researchers for research purpose.

EPrints@IISc:

ePrints@IISc is a collaborative effort of Indian Institute of Science (IISc). It is a repository of research outputs, scholarly publications of IISc community. EPrints@IISc runs on EPrints open archive software. Eprints@IISc can be accessed by anybody freely but the submission to ePrints@IISc repository is limited to the research community of IISc.

National Programme on Technology Enhanced Learning (NPTEL):

The National Programme on Technology Enhanced Learning (NPTEL) is sponsored by Ministry of Human Resource Development, Government of India and developed by 7 IITs (IIT Delhi, IIT Bombay, IIT Kharagpur, IIT Madras, IIT Roorkee, IIT Kanpur and IIT Guwahati) along with the Indian Institute of Science (IIS), Bangalore in 2003. NPTEL is an online learning platform for four core subjects; science, engineering, technology and mathematics.

e-PG Pathshala:

The Ministry of Human Resource Development (MHRD) under its mission of National Mission on Education through ICT (NME-ICT) initiated an important e-learning platform such as e-PG Pathshala which is implemented successfully by the University Grants Commission. The administrative responsibility including development and maintenance owned by INFLIBNET Centre, Ahmedabad. e-PG Pathshala covers 18000+ e-modules of various subjects such as arts, fine arts, humanities, social science, mathematics, language studies, phonetics, etc.

National Council of Educational Research and Training (NCERT):

Government of India in year 1961 established National Council of Educational Research and Training (NCERT). The main objective of NCERT is to assist and advice Central and State Governments in designing educational programs, long term policies, quantitative and qualitative improvement in primary and secondary education. Its work has been commendable in preparing and publishing academic textbooks, teaching materials, journals, newsletters, etc.

SWAYAM:

SWAYAM is India's national MOOCs platform launched in year 2017. It is initiated by the Ministry of Human Resource Development, Government of India. SWAYAM was launched under the mission 'Digital India' to provide free entry to web courses. Since its launch, over 10 million learners have taken courses on SWAYAM. At the rate it is growing, in a few years, SWAYAM could become the world's largest MOOCs provider.

Conclusion

The concept of OERs is gaining popularity and has completely changed the dimensions of information collection and dissemination. It has facilitated the collaborative and participative spirit as it is one of the needs of developing digital content. Government's policies have been proved as boosting factor with the use and development of ICT and OERs in educational organizations. Several new initiatives have been taking place to supply an easy access to all the required training, teaching and learning material. Universities, colleges and other educational institutes are taking initiatives to open their academic resources to others. OERs as a practice is new to India and therefore it needs to be developed thoroughly as its potential is unlimited and enormous. Online teaching and learning is a trend in recent times and, considering its benefits, it will continue to be in demand in the future as well. At present, OERs is the best possible solution for accessing online material and resources. Currently, OERs is the best platform for collaborative learning.

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: **Transforming Traditional Teaching- use of Open Educational Resources in ODL**

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

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Date : 07/01/2021

ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

Transforming Traditional Teaching - Use of Open Educational Resources in ODL

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Abstract

As schools and universities are shutting down around the globe because of COVID-19, many of us in academia are wondering how we can get up to speed and establish a stable direction towards workflow to get our podcasts, online lectures and tutorials for our students. The role of free tools plays an important role here. How effectively they can be used? How online teaching can make a greater impact on today's education? All academicians should explore new teaching tools and techniques.

Keywords: Moodle, ThingLink, TED-Ed, OER

Introduction

Open and Distance Learning (ODL) is a system of education wherein teachers and learners need not to be present either at same place or same time and is flexible regarding modalities and timing of teaching and also learning, as well as the admission criteria, without compromising necessary quality parameters/considerations. The online education system of the country comprises Indira Gandhi National Open University (IGNOU), State Open Universities (SOUs), Institutions and Universities offering education and includes Correspondence Course Institutes (CCIs) in conventional dual mode universities. 54% students believe that open educational resources are extremely important to their academic success. This statement has come from 2013's ECAR study which looks at exactly how students today are using technology in the classroom. There are other advantages also. The most important advantage is that teachers can now offer a unique, more personalized and engaging learning experience to their students.

Open Source Tools

Thousands of digital education tools are created with the purpose of giving autonomy

to the student, improving the administration of academic processes, encouraging collaboration and facilitating communication between teachers and learners.

The top amazing tools for online teaching are:

1. **Canvas**

Canvas is the educational revolution by Instructure, the technology company that makes smart software that makes people smarter. Besides the Canvas learning management system (LMS), Instructure offers Canvas Commons, the learning object repository (LOR) that actually gets used; Canvas Catalog, the customizable, all-in-one course catalog, registration system, and payment gateway; and Canvas Network, an index of open, online courses taught by educators everywhere.

2. **Google Classroom**

Classroom is a tool in Google Apps for Education that helps teachers create and organize assignments quickly, provide feedback efficiently and easily communicate with their classes.

3. **ThingLink**

ThingLink allows educators to create interactive images with music, sounds, texts and photographs. These can be shared on other websites or on social networks, such as Twitter and Facebook. ThingLink offers the possibility for teachers to create learning methodologies that awaken the curiosity of students through interactive content that can expand their knowledge.

4. **TED-Ed**

TED-Ed is one of the most popular educational platform that allows users to create educational lessons with the collaboration of teachers, students, animators—people who want to expand knowledge and have good ideas. The biggest advantage is that particularly this website allows democratizing access to information, for both teachers and students. Here, people may have an active participation in the learning process of others.

5. cK-12

CK-12 is another popular website that intends to reduce the cost of academic books for the K12 market in the United States and the world. In order to achieve this objective, this platform has an open source interface that allows creating and distributing educational material by the use of internet, which can be modified and contains videos, audios, clips, notes and interactive exercises. All these can also be printed and comply with the necessary editorial standards in each region. The notes that are created through this site (cK-12) can be adapted to the needs of any teacher or student.

6. **ClassDojo**

ClassDojo is another important tool to improve student behaviour. These days teachers provide their students with instant feedback so that good disposition in class is 'rewarded' with points and students have a more receptive attitude towards the learning process. It basically provides the users real-time notifications, such as, to students 'Well Done David!' and for working collaboratively '+1.' The information that is collected about student behaviour can be shared later with parents and administrators through the web.

Benefits of Online Education

1. Flexibility

Learners/students have this freedom to juggle their careers and school because they are not tied down to a fixed schedule. In a traditional offline classroom setting, class meeting times are preset and the student has no power over this, forcing him/her to work their schedules around these dates. Most people who choose online learning tend to have other commitments, and prefer this mode of learning as it gives them power over how they will delegate their time towards their different projects.

2. Reduced Costs

Online education basically costs less due to a variety of reasons. For example, there is no cost for commuting. Assorted costs that are related to transport, such as fuel, parking, car maintenance and public transportation costs do not affect the online student.

3. Networking Opportunities

Online education has another advantage also. It provides students/learners with the chance to network with peers across nations or even different continents. This often paves the way to other opportunities in terms of collaboration with other individuals in the creation/implementation of a project. In addition to this, parallelly, it makes them culturally sensitive and able to fit into other environments easily given their exposure to other cultures.

4. Documentation

All the information that you will need will be safely stored in an online database. This includes things such as live discussion documents, training materials and emails. What it actually means is that if there is anything that needs to be elucidated, the student will be able to access these documents fast. This in turn will help in saving valuable time. Talking about its most usage, it is especially useful for individuals that

need to carry out research for a project and submit their findings to a panel.

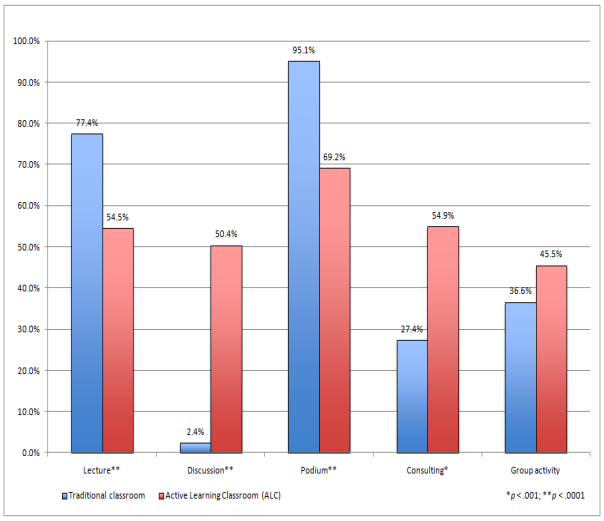
5. Increased Instructor - Student Time

Students in offline classrooms may or may not get the personalized attention they need to have for clarification about concepts. Even though the class sizes are small at CCA, most of the colleges have classes of students that number in the hundreds. This is not considered as a problem for this kind of unconventional education. Because online guided discussions and personal talk time with their professors and lecturers/teachers is an indicator of online classes. This increases the chances of performing well by a student due to the time their instructors give them. It also improves their problem-solving and communication skills, as well as knowing how to defend their arguments to superiors if needed.

6. Access to Expertise

An education in electronic mode for educational institutions such as colleges, schools, universities might give students access to specialized skill based degree courses that may not be available in an easily accessible or local institution of learning. Online learning provides the path for sharing expertise that helps more. People have access to education that is not readily available in certain geographical locations.

Such education pattern has grown over the last few years and has experienced mainstream acceptance. With the support of online class, one can get the control of their learning atmosphere, which eventually helps students develop a deeper understanding of their degree course. There are many new educational models of learning that are booming up in the market, providing students with varied opportunities to fashion their education into something that fits them, not the other way round. It also provides an opportunity to individuals to finish a graduation degree. They might have started and were unable to continue with for one reason or another. The future looks promising for degrees which are online. It also paves a long way for education to a larger section of the population than ever before.



Graph 2.1 Online education vs traditional teaching

The above graph clearly shows the trend of online education.

Generally, online education is a great option for students who have a little more freedom in their schedules. It is because conventionally the students do have some leniency in their scheduling in that some schools offer night classes. Some schools also offer classes that follows a schedule where teachers and students meet only once per week.

There is one simple and overlooking factor when it comes to scheduling is travel time to campus—a long commute can probably make schedules difficult, especially if one is planning on working while in school.

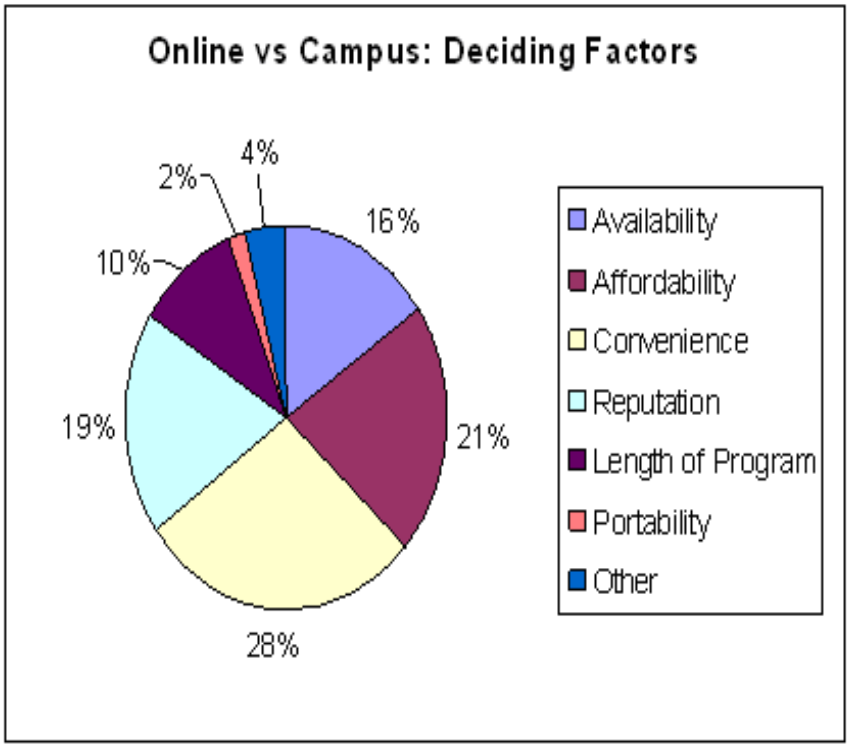


Chart 2.2 Online vs campus: deciding factors

Online Vs. Traditional Education: Discipline and Self-Motivation

One must take into account one thing when considering their faculty choices is their level of self-discipline.

Online education:

The online learning has increased flexibility that comes with a bit of a trade-off—you'll need to be highly self-inspired. All universities/colleges/educational institutes' classes require students to maintain required reading and assignments. However, some students may struggle to stay activated and motivated when learning from the comfort of their home.

The best students who are learning online may develop skills. These students might develop strategies for staying up to date on their respective coursework. They keep some free time every week for studying and creating a workspace with minimal distractions can help immensely.

Traditional education:

In the case of traditional education if we talk about punctuality, discipline and determination– traditional education does have an advantage in the views of millions. The regular and planned schedule of attending class a few times per week and having regular face-to-face interactions with instructors can help keep students on task. Students in offline, in-class/on campus settings have ample of opportunities and accessibility to be reminded of upcoming assignments which can help if they tend to procrastinate on large, time-consuming assignments.

Online Vs. Traditional Education: Social Interaction

One major area to consider is the level of social interaction students are hoping to have as they earn their degree. Do they need interaction from their peers and instructors to succeed and stay motivated? Or do they thrive in an independent study environment?

Online education:

Having Social interaction with professors and other students, while not as common in online courses, still happens regularly. The major difference is in the form it takes, with many online student interactions/discussions happening via video chat or through online discussion posts.

There are some online courses, which may also offer pre-recorded videos of the same lectures given to traditional, on-campus students. If the students is a social learner who likes to ask questions and pick the brains of their instructors, these video lectures can actually help them earn a deeper understanding of assigned reading materials.

Traditional education:

Despite a lot of technological advances in online education, traditional education is still likely a better option for those who thrive on face-to-face communication/discussion: watching, seeing and interacting with their instructors/educators. Such interactions on a regular basis can be motivating for them—it is bit easier to travel one further mile if they apprehend their–academics/professor/instructor is likeable and dedicated towards education.

Offline, ancient category settings can also provide additional facilities for this state of affairs questioning or attention-grabbing tangents which will facilitate a plan "strike" within the minds of students/learners.

Online Vs. Traditional Education: The Blended Education Model

It is slowly changing into clear to those that each online and traditional/at school education has its perks. Is there any way to reach the simplest of both? There is one possibility that is increasing in quality that is popularly referred to as as "blended learning."

In the current situation, info is meant to implement each offline, in-person learning and on-line work. The implementation of information planning will vary greatly, betting on the topic and educators. Except, for example, instructors could need solely meeting weekly for lectures, whereas assignment projects/assignments or alternative activities for college students to finish online at their own pace. This primarily permits students to receive a number of the positives from face-to-face social learning whereas still letting planning some flexibility.

There is another example–it would be a foundational program that offers some courses on campus and others online. For understanding, let us take an example of a Medicine Program. A medicine program may include an online anatomy course, and a simulation lab on campus. The ideology here is that certain courses involve material that is favourable to online learning,

while other lessons can only be taught in a physical classroom or lab.

Fig 3.1 Online tools for teaching

Conclusions

E-learning is not just a change of technology. It is part of a re-defining how we as a species transmit knowledge, skills, and values to younger generations of workers and students. Many case studies make few predictions of how e-learning and the functions it serves will continue to develop. Students will be able to have access to millions or billions of knowledge modules/study materials. Some will be webpages with simple text and graphics. Others may include multimedia simulations. In education sector in many fields, e-learning has become the default way to conduct training or to provide education. There are four secrets of e-learning. The first one is to teach what learners need to learn in the way they most naturally learn. The second secret is to define clear learning objectives. The third secret is based on the first two; it is to focus on the right objectives. The last secret is in the power of testing.

Promoting online study has been found by most of the researchers to open the students to vast resources that are found on the internet. Often most of the students in a classroom environment rely on the tutors notes and explanations for them to understand a given concept.

Among these, the main benefits of E-learning to institutions is the ability to provide training to large number of students located at any corner of the world. The students are charged hefty amount in the name of training fees and this increases the money available to the institution. This extra income can be used to develop new educational facilities and these will promote the education further (Gilli et al., 2002).

Despite all this, there are many advantages that online study has on transforming the learning process. There are some challenges imposed by the method. One of the challenges is the technological limitations of the current computers, which affects the quality of

the learning materials and the learning process in general.

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ISSN 2582-9009
Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

COVER PAGE

Research Paper Title: **e-Proctored Exams in ODL**

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ISSN 2582-9009

Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled "**e-Proctored Exams in ODL**" is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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Date : **11/01/2021**

ISSN 2582-9009
Symbiosis International Research Journal on
Online & Distance Learning (SIRJODL)
Volume-3, Issue-1, January 2021

e-Proctored Exams in ODL

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Abstract

Due to technical and available resource constraints, conducting exams online through test-taking environments is complex. Therefore, finding effective and automated proctoring solution for online examinations and assessments can be a challenge. In proctored examinations, a software monitors student's computer desktop, webcam video and audio. Once examination is over, the data captured by the proctoring software is transferred to the proctoring department for review. Successful implementation of e-proctored environment for conducting online test will definitely increase transparency in the examinations and evaluation system.

Keywords: ODL, E-proctor, web-proctor, Live-proctoring, record-proctoring.

Introduction

While discussing about e-Proctored examinations in Online and Distance Learning, one should first understand meanings of terminologies used in title itself.

Online and Distance Learning (ODL):

Distance learning exists in two forms:

1. Distance learning with study material in a traditional way, such as books, notes, etc.
2. Distance learning with study material with direct lecture through online mode, recorded lectures of experts, eBooks, etc.

Online learning in traditional way of education:

- Due to pandemic situation throughout the world, online teaching, learning and evaluation became keywords in the field of education.

In both processes, the examinations and evaluations are important factors to issue certification. As e-Proctored examinations and evaluations are expected to be unbiased, there will be proper reflection of knowledge earned by student and increased transparency. These processes need to be well defined.

Methodology:

As the study is based on secondary research, this researcher went through studies already published related to this topic. Also, the knowledge shared by persons working in examination systems in various institutions is included in this paper.

e-Proctored Examinations – Meaning, Types and Problems:

e-Proctored examinations are mainly used in ODL mode as its teaching-learning method is online. Due to pandemic situation, both Distance Learning institutes providing study material to students and even institutions having traditional in-campus learning method required to take examinations through online mode. For these two traditional types in education system, it is a new challenge to conduct examinations through online mode. Because conducting examinations with this new mode has new challenges such as how to send question paper, how student will write, how student will submit answer book and most importantly how to monitor student's activities while he writes the answers. For them, the e-Proctored examination, even if new, is one of the solutions.

During the examination, monitoring of student's behaviour is usually done through supervision, i.e. under proctor. Meaning of proctor itself is:

"A proctor monitors tests and exams. The purpose is simply to provide accountability, making sure students do not cheat or manipulate the test in any way. They may also be assigned with some responsibility of explaining the guidelines or rules."

So questions comes in mind:

What is a Proctored Exam?

"A proctored exam is associated with having an individual (proctor) overseeing an exam and monitoring the students. A proctor significantly impacts an exam's validity and integrity with airtight invigilation. In case a student violates the code of conduct, a proctor can discontinue the test and report the matter to the institution conducting the assessment."

What is Subsequent Proctoring?

"Subsequent proctoring is when images and logs are captured, and a video is recorded while candidates take the test, like a webcam proctored test. A proctor can later assess whether examinees engaged in illicit activities, based on the evidence from the captured images. Such exams can be taken at a time of students' convenience. They just have to log in and commence the exam without prior scheduling."

What is Online Proctoring?

Online proctoring refers to a digital form of assessment, enabling candidates to take exams from any location. The proctored exam software is used during online proctoring to allow students and participants to take exams at a place of their choosing. It must be adequately reliable and cheat-proof.

Proctoring an online exam is no longer arduous. Monitoring software is employed to monitor the test-takers through audio and video, establishing the exam's credibility and authenticity."

Online proctoring can be done in following different types:

Live Proctoring – A human invigilator supervises the exam remotely via webcam.

Auto Proctoring – AI-based proctoring monitors the candidate's live webcam feed, auto-flags up to 18 digressions.

Recorded Proctoring – There's no proctor involved in monitoring the entire session in real-time. Instead, the candidates' audio-visual and screen-sharing feeds are recorded throughout the test and reviewed later at the proctor's convenience.

What is a Web Proctored Exam?

Web proctored exam is the same as an online proctored exam, meaning it enables test-taking and test-hosting from any part of the world. A web proctored exam negates instances of unwarranted activities by employing advanced anti-cheating technology. One can easily take a web proctored exam or an online proctored exam at home.

Controversy over e-Proctoring escalated during the COVID-19 pandemic in year 2020, when many universities, K-12 schools and standardized testing organizations turned to commercial e-Proctoring suppliers for services. Students across the world protested the use of commercial e-Proctoring services at their post-secondary institutions.

Challenges to conduct e-Proctored examinations in India are:

1. Non-availability of required kind of hardware infrastructure, software, etc.
2. Non-availability of network at various remote places.
3. Non-availability of electricity connections at remote places.
4. Also, mind-set of students, parents and even persons involved in conducting the examinations and evaluation.

Conclusion

e-Proctored examinations are nowadays essential, unavoidable, can be successful.

1. However, precautions need to be taken to overcome challenges by spreading awareness about required hardware and software as well as making use of it to students and parents right from admission stage.
2. Workshops/Training programmes may be arranged to increase awareness within all the stakeholders.

Successful implementation of e-Proctored examinations will surely increase credibility, unbiasedness and transparency in the examinations and evaluation system.

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