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Sustaining and Enhancing the Quality of ODL

COVER PAGE

Research Paper Title: Utilising the benefits of COVID-19 disruption for the betterment of open and distance learning (ODL)

Theme of the Paper: Utilising educational technologies for ODL

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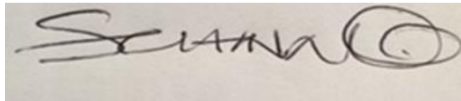
DECLARATION

I, the undersigned, hereby would like to explicitly state that the research article titled "__**Utilising the benefits of Covid-19 disruption for the betterment of open and distance learning (ODL)"** is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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Utilising the Benefits of COVID-19 Disruption for the Betterment of Open and Distance Learning (ODL)

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Abstract

The emergence of coronavirus (COVID-19) has affected the quality of interaction between universities and their students. As a result of this, the normal mode of teaching and learning delivery, as well as students' support systems, has been interrupted. As the world explores solutions, the objective of this paper is to harness the benefits of this painful disruption by shifting the current paradigm to a sustainable alternative paradigm in open distance learning institutions. The study examined the COVID-19 using the Bronfenbrenner Ecological System Theory as a lens to provide a better understanding of the students' environment and to identify ICT qualities, which could bridge the gap between how the students interact with their university environment. This paper indicates that the education system need to recognise emerging ICT devices, their qualities and the implications of adaptation. The study focuses

only on exploring in-depth knowledge on the effects of the disruptive nature of COVID-19 on the university and students' environment. The study makes suggestions as to how open distance learning institutions can adopt a more sustainable approach in the present or future pandemic. This information provided in this paper also applies to the education system that uses ICT to achieve the university objectives of reaching all students. Additionally, the value of this paper is the call for more focus on students' environment and the applications of knowledge derived from students' environment to design sustainable ICT programs in future.

Keywords: COVID-19, environment, harnessing the benefits of painful disruption, open distance e-learning, shifting the current paradigm, students, sustainable alternative paradigm, Unisa

INTRODUCTION

The new coronavirus is a virus that is affecting the lower respiratory tract of patients and causing breathing difficulty, fever, lung infection and pneumonia (Wuhan Municipal Health Commission, 2020) in patients in Wuhan, China in December 2019 (Centers for Disease Control and Prevention, 2020; Li et al., 2020; World Health Organization [WHO], 2020). The new coronavirus is commonly referred to as COVID-19 (WHO, 2020). There is evidence that the virus is in animals, and human to human transmission has been confirmed (Corman, Bleicker, Brünink, Drosten, & Zambon, 2020; Huang et al., 2020; Lin et al., 2020). The outbreak of COVID-19 and its pandemic nature led to the total lockdown of many nations of the world and their education systems. COVID-19 is a paradigm shift for higher education institutions. The COVID-19 pandemic has played a

major role in increasing the call for partial or full lockdown, which is deemed important in curtailing the risk of contracting and spreading COVID-19 (WHO 2020).

Lockdown, the act of staying at home is characterised by a significant focus on physical and social distancing together with hygiene practices (WHO 2020). Physical and social distancing entails staying 6 feet away from people (Vally, 2020) to reduce the number of people contracting and dying because of the virus. In addition, the social and health problems associated with COVID-19 are forcing institutions of higher learning to undergo a paradigm shift to accommodate more sustainable alternative means of engaging and providing needed academic support to students (Christine, 2020). This change in the academic paradigm is the principal disruption of the global education system due to the scourge of COVID-19 (Tara, Nectar, & Swarti, 2020).

Ilieva and Raimo (2020, p. 1) report that "more than half of the world's learners are affected (51%, 890.5 million students) by the impact of COVID-19." Likewise, Sharma (2020) identified that major international and national school examinations have been postponed. Given the ongoing nationwide disruptions that are creating delays and cancellations in the examination, Sharma (2020) poses that there may be enormous logistical difficulties when the schools resume, leading to frustrations in the staff and students. Martin and Furiv (2020) concur and suggest that to curb the frustration and disappointment experienced by staff and students, several higher education institutions have shifted to distance and online education. However, some institutions worldwide have found that they are ill-prepared and incapable of lessening the effects of COVID-19, resulting in complete closure. Yong (2020) adds that universities should strengthen confidence and harmony between individuals and cooperatively increase the human

potential to deal with future problems concerning online teaching and learning.

In the context of an open distance e-learning (ODL) institution, the effects have demonstrated the need to address the inequality between privileged and less privileged students, the geographic locations of the urban and the rural communities, and the learners who experience ICT problems. The concept of privileged and less privileged characterises the students by their socio-economic background and geographical location. The socio-economic background considers students' ability to acquire laptops and data bundles to access the internet (Department of Higher Education and Training, 2012). The geographic location explores the presence of students in extremely rural communities with limited access to the internet and academic resources, which reinforces academic failures and throughput. This group of students may benefit the least from the opportunity gained as an outcome

of the COVID-19 pandemic, especially the students in rural communities with limited access and funds to acquire data.

For several years, the education system has witnessed a social and health epidemic that disrupted the normal form of engaging students and attending to their academic needs. However, the institutions of higher learning failed to harness the benefits of these disruptions and to identify a sustainable alternative mode of engaging students that considers both privileged and less privileged students (Silinda, in press). Moreover, given the unpreparedness of the education system in many countries and the current problems with student support systems, there is fear that the COVID-19 disruption could aggravate students' need for support. This paper describes how harnessing the benefits of disruption in social and health issues can help the education system to redesign new and sustainable alternative means of teaching and provide web support

to students during a social and health crisis. Such a sustainable alternative must envisage and accommodate the constant interruptions of the social and health issues that influence and determine the functioning of the institution, the experience of students and the challenges of students as they strive to navigate these interruptions in the teaching and learning space.

Challenges from interruptions in the functioning of the institutions influence students' emotional, physical and social lives (Joyce, 2020), thereby affecting their academic performance negatively. This could result in students' delay in graduation or withdrawal from their studies, encouraging the perception that institutions do not provide adequate support to improve students' academic performance. Altbach and de Wit (2020, p. 1) examined the post-pandemic outlook for higher education and identified that the "fundamental elements of the global macro-environment in

general and of higher education are being threatened by the COVID-19 crisis. This might negatively impact on support for internationalisation, while international cooperation is needed more than ever." This assertion of Altbach and de Wit (2020) is largely due to the global transformative attack on humans and the economy.

With the pre-existing challenges of inequality within the education system, COVID-19 may exacerbate the disruption in four major ways: reduce the opportunities to access education using online platforms for disadvantaged students; widen inequality by increasing access to education of advantaged students with purchasing power to acquire laptops, data and internet; increase the need for learning materials, data and internet for both advantaged and disadvantaged students in rural areas (Department of Higher Education and Training, 2012); and increase the dichotomy of students' conversant learning environment such as the university

and the emerging learning environment. Consequently, the understanding of students' pre-existing challenges can ensure the suggestion of sustainable alternatives to minimise any difficulties and lasting impacts for students in any educational crisis. In this line, the paper discusses South African higher education to deepen the understanding of the pre-existing teaching and learning contexts of students.

South African Higher Education context

The legacy of apartheid in South Africa has promoted inequalities in the South African education system. The apartheid system denied access to educational opportunities for disadvantaged students (Department of Higher Education and Training, 2012). However, there has been an increase in the number of students from less privileged backgrounds accessing higher education in post-apartheid South Africa. According to the Department of Higher Education and Training (2018), between 1994 and 2016, enrolments in institutions of higher learning in South Africa reached 1.1million. Although access to higher education has increased among students from less privileged backgrounds, their throughput remains relatively low (Scott I, personal communication; July 17, 2014). Students who persist to strive to adjust because of inequality (Carvalho & Hares, 2020; Langella, 2020), may experience several challenges at university because of inequality.

The prominence of online interventions and the reliance on them strongly correlate with the increasing inequality and exclusion throughout the world (Castells, 1998). Inequality can be in the form of access to resources such as the internet and data, even including technology such as laptops, tablets and advanced cell phones (Li, & Lalani, 2020). Another form of inequality can be seen in the skills required to

operate information technologies. Studies have shown that many students enrol in the university without technology skills (Li, & Lalani, 2020). Now that the University of South Africa (Unisa) has adopted the online approach in offering its programmes, this approach is not without challenges. Some of the challenges include students' access to technology, their basic skills to operate technologies, and their emotional state to study online. Although numerous students have access to technology, it is worth noting that access to a computer does not imply inclusion and meaningful access to ICT in the South African context (Czerniewicz & Brown, 2009). Inclusion requires deeper notions of access incorporating the full range of resources in which informed understanding of access and use require meaningful value. Inclusion also means an informed understanding of the factors that enable and constrain ICT take-up within higher education. This means a deeper understanding of what access entails to understand the challenges that students encounter. Understanding these challenges will assist universities in alleviating anxieties experienced by students and encouraging meaningful online learning experiences. For example, students who live in remote areas and who have limited internet access may encounter challenges in the programmes for which they are enrolled and, therefore, may undergo a negative learning experience.

Students with limited access to technology or who lack basic computer skills may experience low self-esteem when required to participate in online learning. Self-esteem is the overall emotional evaluation that individuals have of their worth. Thus, such experiences have the potential to force students to abandon their studies. Hsieh, Rai and Keil (2008) conducted a study to determine the digital inequality and reported that students' satisfaction, confidence in using ICT, access and perceived behavioural control are key factors

in shaping the continued use of ICT in the disadvantaged. Crawford and McKenzie (2011) assessed the SMARTS outreach programme of the University of Western Australia to determine the advantages and disadvantages of online learning. Crawford and McKenzie (2011) found that the location of students' residences and the types of schools they attended had an impact on the reliability and speed of their internet connections and their confidence and ease with using computers and the internet. This indicates that students who have access to wireless internet due to the location of their residences and students from well-resourced schools may feel more confident in using computers than their counterparts. This suggests that students from less privileged educational backgrounds generally enter higher education with gaps in their knowledge and skills for studying. As a result, many students from less privileged backgrounds find it challenging to have meaningful learning experiences in their educational settings (Silinda, 2017).

Online Education: Advantages and disadvantages

South Africa is still addressing the inequalities of the country in its higher education sector. To help alleviate the anxieties experienced by students during this challenging time, management at Unisa may use both the disadvantages and advantages of online learning. Online learning involves conducting the learning of students via electronic media, particularly using the internet. Compared with face-to-face learning, online learning is firstly convenient, that is, it reduces the amount of time needed and the costs for a student to travel to and from campus. Secondly, different students have different learning styles and, thus, they may use learning materials that are suitable to their learning styles. Thirdly, students who are

not campus bound can study anywhere if they have access to a computer and the internet (Rohleder, Bozalek, Carolissen, Leibowitz, & Swartz, 2008). In addition, students can learn at their own pace and can interact freely with their online tutors. Finally, students can develop skills during the process of studying their online courses. These skills involve computer and internet skills that students can use in their daily lives and careers. This is in line with the statement of the Department of Education (Department of Education, 2001) that information technologies serve to develop the type of graduates and citizens that are required for the current information society.

However, online learning also has disadvantages. Some students who lack motivation or discipline may find it challenging to study their courses online and may, therefore, fall behind (Sahin & Shelley, 2008). Students who are new to studying their courses online may feel isolated from their online tutor or peers because the

online tutor and peers may not be available online when the student needs help or encounters challenges. It is believed that when students work in groups or face to face, they learn much from the interactions and discussions. Therefore, online learning for such students means isolation. Also, students may feel frustrated when they encounter challenges with the internet or when they must download files from various servers (Zembylas, 2008). Finally, there are also inequalities among students who do not have the necessary skills and resources to participate in online courses (Rohleder et al., 2008). Such inequalities can be frustrating to students and may encourage students to abandon their programmes. This may be linked to the delivery methods for programmes, which differ between programmes. For instance, the delivery method for a Mathematics or Accounting course will be different from that of an English programme. The same applies to the skills required to participate in the various courses. Mathematics

and Accounting students will require different skills from English students to participate actively in their online courses.

Although COVID-19 is a novel disease that affects humans within different environments, how to utilise the benefits of the disruptions in a higher education setting has not been studied in detail. This study tried to fill the gap using Bronfenbrenner's (1979) Ecological System Theory.

THEORETICAL FRAMEWORK

The Ecological System Theory was developed by Urie Bronfenbrenner to offer a better understanding of the way systems interact to promote or hinder humanity's progress (Bronfenbrenner, 1979). According to the Ecological System Theory, human development is embedded in their relationship within different environments "resulting in change, growth and development" (Swart & Pettipher, 2011, p.3). This theory states that circumstances that affect individuals have effects on the systems because of the interaction and relationship within and among the systems (Bronfenbrenner & Evans, 2000). The circumstances from the direct environment (within systems like the university or home) and indirect (external environment such as the society) could affect systems, individuals and development (Bronfenbrenner, 1979). This implies that disruptions or struggles in one system will affect the other systems. A key characteristic of the Ecological Systems Theory is that it provides an opportunity to study humans, institutions and society critically to understand how reciprocal relationships contribute or hinder the progression; this thorough examination of both human and environment guides the design of an appropriate solution to an identified problem (Stokols, 1995). The five systems identified by Bronfenbrenner are the

microsystem, the mesosystem, the exosystem, the macrosystem and the chronosystem (Bronfenbrenner, 1979, Paquette & Ryan, 2001) and the five systems are discussed in the following section.
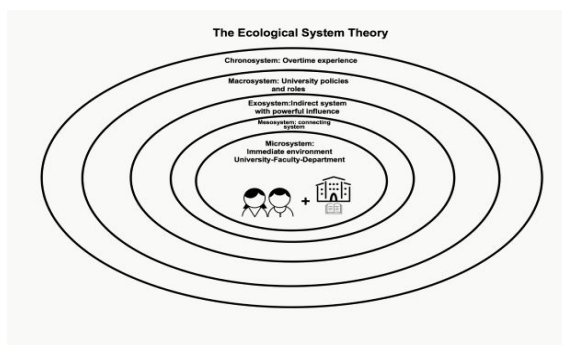
Figure 1. The proposed conceptualisation of the ecological system theory.

The microsystem: The microsystem is the first and immediate environment of the individual and consists of interaction and relations between the structures such as university-faculty and academic departments (Berk, 2000). The microsystem is where students interact with the university through the faculty and academic department to acquire

the necessary skills to graduate (Bronfenbrenner, 1979). The university provides students access to knowledge, skills and resources in addition to any other support that the university offers to students (Radhe Shyam, 2015). The university also provides relevant innovative, modern e-learning tools and standards that students require to graduate.

The microsystem is also characterised by activities and roles (administrative) that occur daily to ensure the progress of the university and students (Paquette & Ryan, 2001; Swart & Pettipher, 2011). The microsystem could become a system characterised by pressure and overwhelming emotions when challenged with disruptions (Lerner, 2005). The microsystem is also expected to provide support to individuals when there are problems that interfere with their normal daily activities (Bronfenbrenner, 1979) because it is the environment in which the organism (students) functions and relate with the external issues distinct from

intrinsic 'genetic' factors that affect the student's development or behaviours (Coleman, 2015). COVID-19 is affecting the microsystem by disrupting the traditional model of teaching and learning, introducing online learning that is producing challenges for the universities and students (Burns, 2020; Chaudhary & Aanya, 2020; Dawit, 2020). COVID-19 has also made students' environment as their living abode a prominent learning environment. This is because the home is where local realities and experiences could motivate or demotivate students from effectively accessing the structures of the university.

The mesosystem: The mesosystem comprises the system in which interaction and relationships occur between two or more settings to ensure development, for example, the university and the home (Bronfenbrenner, 1979). The mesosystem connects the activities and experiences of one microsystem to the other, for example, students' homes and the university. Swart and Pettipher (2011) explain that experiences of the mesosystem could expose an individual(s) to problems if there is limited support and nurturing. COVID-19 is disrupting the activities of the university, which is affecting the students online learning process because of access to laptops, data and the internet.

The exosystem: The exosystem refers to the social system in which the individuals do not function which, influences their ability to succeed or fail (Berk, 2000). The exosystem is described as an indirect system with powerful influence because the exosystem reflects societal influence in the functioning of the university. An example, problems in society can affect levels of students' interaction and the use of university structures to acquire graduate skills. Disruption can be local, when it involves common challenges within the institutions (Glass, 2014), for example, strike action by employees and students (Muswede & Sebola, 2018) that

disorganises the academic calendar, and students' problems such as learning problems (Chen, Heritage, & Lee, 2005). Disruption can also be global, for example, the COVID-19 pandemic, which is causing deterioration in the functioning of the education system and negatively affecting the mental, physical, emotional and social lives of humans (WHO, 2020).

COVID-19 pandemic is a societal health pandemic with a powerful influence on the functioning of the university. Studies reported that COVID-19 is disrupting the education system, affecting over 98.5% of students (Burgess & Sievertsen, 2020; UNESCO, 2020) and educators (Bao, Qu, Zhang & Hogen, 2020). The novel COVID-19 virus is from an indirect environment with consequences on education. COVID-19 is a disruption, an interruption in the normal course of an activity or the continuation of some issues (Merriam-Webster.com Dictionary, 2020). COVID-19 is an exosystem

induced problem (societal health epidemic) but has an overwhelming effect on education institutions and students (Tarasawa, 2020). With the impact on disadvantaged students (Driessen, 2017), and the nation's striving to develop technologies such as "digital, video, and audio content for students (Vijay, 2020). Thus, highlighting the importance of technology as a disruptor (Arnett, 2020; Christensen Aaron & Clark, 2002; Clayton, Aaron & Clarke, 2007), when adopted by universities (Julia, 2020) to promote teaching and learning.

The macrosystem: The macrosystem is characterised by given principles, ideologies, forms of information, material resources, customs, lifestyle structures, hazards and life course options that are embedded in broader systems (Berk, 2000; Bronfenbrenner, 1993). The macrosystem is often regarded as the outermost system in an individual's environment; the policies influence the activities of the systems (Bronfenbrenner, 1979). The macrosystem of this

study is influenced by the COVID-19 virus which led to the closure of the universities. The societal belief that COVID-19 is deadly and a pandemic requiring to protect people (WHO, 2020) has framed the action policies, types of physical and material resources universities are using during the lockdown. The macrosystem encourages institutions to innovate the policy to accommodate the COVID-19 disruptive pandemic.

The chronosystem: According to Bronfenbrenner (1994), the chronosystem encompasses to change over time not only in the characteristics of the person, but also of the environment in which that person lives (e.g., changes over the life course in family structure, social and economic status, employment, place of residence, or the degree of hecticness and ability in everyday life. (p. 40). The ecological theory helped to understand the importance of reciprocal relationships in the learning environment.

Understanding COVID-19 Using the Ecological System Theory's Reciprocal Relationships

According to Bronfenbrenner (1979), Ecological System Theory, reciprocal relationships between the university environments and students promote support. The environment must acquire the structures that are vital for the consistent progress of students. This section explores the university and the student's environment to extend the knowledge of how universities can innovate ICT devices to support students effectively in disruptive moments.

The reciprocal relationships

On March 26, 2020, President Cyril Ramaphosa imposed a national lockdown in response to the COVID-19 pandemic in South Africa. The lockdown is affecting the reciprocal relationships

between the university and students (Brooks, Smith, & Webster, et al., 2020). The purpose of the reciprocal relationships between the university and students is to collaboratively achieve national and international development (the Federal Republic of Nigeria, 2004). The teaching and learning function of the university is to develop human capacity for the achievement of the national goals of education (Igbafe, 2009). To enable universities to achieve national goals, the university should build a relationship with the students to influence their development (Rochford, 1998). However, COVID-19 has disrupted the functional relationships required to achieve teaching and learning, especially in the provision of educational materials and immediate support to the students (UNESCO, 2020).

A reciprocal relationship defines the process of interaction in which an individual(s) and the environment such as the university actively listen, addresses the problems without delay and support each other (Bronfenbrenner, 2001). Reciprocal relationship advances teamwork (Montgomery, 2020) and promotes synergy between the students and the university resulting in success in solving problems (Swart & Pettipher, 2011). According to Ainscow (2007), ideologies and principles are a strategy to build relationships and targeted support for individuals within the systems (Bronfenbrenner, 1979). Given the COVID-19 pandemic, the lockdown has disrupted the relationships between students and the university, shifting learning to the home environment. The universities are trying to maintain the interaction between the students and their departments to ensure they obtain the needed learning materials and support. The study sought to understand the relationships between the university and student environments to enable the harnessing of the benefits of the COVID-19 pandemic.
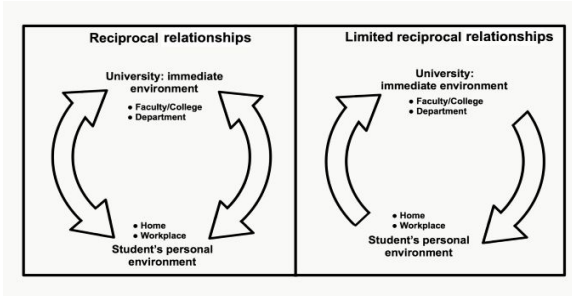
Figure 2: The reciprocal and limited reciprocal relationships.

A reciprocal relationship is illustrated in figure 2. This relationship between the university and students is guided by effective governance in the provision of quality teaching and learning, regardless of problems (Rochford, 1998). The relationship is expected to be characterised by quality communication in the provision of educational experiences and support to ensure students respond with appropriate behaviour (Sung & Yang, 2009). To build a quality relationship with the students, the university provides academic (libraries and learning material) and social resources, innovative services and physical environment (Arpan, Arthur & Zivnuska, 2003; Dukerich, Golden & Shortell,

2002; Kazoleas, Kim & Moffit, 2001; Paden & Stell, 2006). The university through the faculty/college or department provides opportunities and services that the students access and respond to, the feedback from the students enables the universities to redefine the services. Studies have shown that the relationships between the university and students are reducing because the lockdown is affecting physical interactions (Eames, Tilston, White, Adams, & Edmunds, 2010; Hens et al., 2009), resulting in "larger equity gaps, substantial learning loss for many students, and continued economic turmoil for our most disadvantaged families" (Tarasawa, 2020, p.1). According to Nganga, Waruru, and Nakweya (2020), the COVID-19 pandemic has forced educational institutions to turn to online learning to ensure that students finish their courses on time, but preparedness varies from one institution to the next. Nganga et al. (2020) add that most students do not have laptops or the money

to buy internet bundles to sustain a three-hour online course.

Limited reciprocal relationship in figure 2 with one-point arrow illustrates the direction of the relationships in the access of university structure for learning resources and basic information. One-point arrow depicts possible challenges because of inadequate access to university resources using ICT devices. One of the common prominent problems disrupting reciprocal relationships is that students who live in remote areas and do not have access to the internet are expected to come on board (Nganga et al., 2020). Martin and Furiv (2020) suggest that universities should adopt flexible learning pathways (FLPs) to meet the needs of various students in the continuing COVID-19 pandemic. The strong emphasis on online learning is also increasing the gaps in education because only an estimated 29% of countries characterised as low income can afford Distance Learning (Carvalho & Hares, 2020). There are lots of

technologies educational institutions are adopting in response to the need to bridge the gap between the universities and students, created by the COVID-19 pandemic. The study explored a few of these technologies currently used in teaching and learning delivery to navigate the COVID-19.

Teaching and learning delivery approach to navigate the COVID-19 pandemic

Worldwide and locally, education institutions are experiencing challenges in education deliveries because of the COVID-19 pandemic. Information Communication and Technology (ICT) is communication devices such as radio, television, cellular phones, computers, satellite systems (Carvalho & Hares 2020; Martey, 2004; Sakshi, Matt, Nicolas, & Suguru, 2020) including WhatsApp (Igbafe & Anyanwu, 2018) for the teaching and learning delivery approach, particularly in several open and distance learning institutions. With

the invasion of the COVID-19 pandemic, several new trends in ICT have emerged such as reviewing videos and audiotapes recorded by online learning platforms together with slides and interactions with instructors through Blackboard, Facebook, WhatsApp, Zoom, Webinar and Skype. Existing Massive Open Online Course (MOOC), Platforms and Open Educational Resources (OER) have improved to accommodate more learning platforms (UNESCO, 2020).

Huang (2020, p. 5) provided an example of a more advanced action plan implemented for addressing the effects of COVID-19 in China for the Education Sector in Wuhan, such as the provision of free-of-charge three-month digital resources (e.g., e-textbooks). Also, the National Center for Educational Technologies delivered 6808 state-of-the-art online courses through its national resource platform to education institutions in Hubei. The core, enduring, practical solution initiated by the Chinese

education sector in resolving the education problems of COVID-19 comprise a) launching of the Disrupted classes, Undisrupted Learning initiative, b) providing flexible online learning to over 270 million students from their homes, c) The Open University of China is a free service programme to support Home Study Initiative, d) opening of the online learning platform, National Online Cloud Classroom (www.eduyun.cn), to facilitate home study, including epidemic prevention education, moral education, course learning, life safety education, mental health education, family education, classic readings, studying and learning audiovisual and digital textbooks,) issuing of guidance for the protection and support of teachers (Huang, 2020, p. 6).

According to UNESCO (2020) e-learning devices have been introduced such as digital learning management systems, systems built for use on basic mobile phones, systems with offline functionality, MOOC Platforms and self-directed

learning content to ensure distance learning in COVID-19 lockdown. Digital learning management systems are software applications for documentation, reporting, tracking and management to facilitate knowledge, skills and attitude, seminar/workshops, or knowledge and progress programmes (Ellis, 2009) and include the following:

- CenturyTech: This is individual learning pathways with micro-lessons to bridge the gaps in knowledge and to challenge students. This intelligent learning device promotes long-term memory retention and supports teacher interventions.

- Edmodo: This is an e-learning device that enables educators to manage their classrooms by sending messages, sharing class materials and making learning accessible anywhere. It helps educators to engage learners remotely in diverse languages.

- Google Classroom: This device helps classes to connect remotely, communicate and to maintain focus.

- Moodle: This is a community-driven and globally supported open learning platform.

- Paper Airplanes: This device is to match students with personal tutors for 12−16-week sessions through video conferencing platforms.

- Schoology: This learning tool is to support teaching and learning in addition to classifying, collaborating and assessing results or marks.

- Seesaw: This device permits collaboration and the sharing of digital learning collections and learning resources.

- Skooler: This tool employs Microsoft Office software as an education platform.

- Zoom: This is cloud-based videotelephony and online chat service for video conferences of up to 100 participants. The platform is free, with a 40-minute time limit (Graham, 2020).

Additionally, UNESCO (2020) identified systems that have been built for use on basic mobile phones to include the following:

- Cell-Ed: This is a phone-based, learner-centred, skills-based learning platform with offline options.

- Eneza Education: This device provides revision and learning resources for basic feature phones.

- Funzi: This is a mobile learning service that supports teaching and training for large groups.

- KaiOS: This software gives smartphone capabilities to inexpensive mobile phones and helps open portals to learning opportunities.

- Ubongo: This device uses entertainment, mass media and the connectivity of mobile devices to deliver learning on a small scale at a low cost to African families.

- Ustad Mobile: This device enables students to access and share

educational content offline.

There are systems with offline functionality to enable lifelong learning such as Kolibri, a learning application to support universal education (available in more than 20 languages) and Rumie, an educational tool that delivers digital learning resources to underserved communities (UNESCO, 2020). MOOC Platforms and self-directed learning content is a massive open online course (MOOC), an educational technology that uses computer hardware, software, and educational theory and practice to facilitate unrestricted involvement and access via the information system (Kaplan, Andreas; Haenlein, & Michael 2016; Robinson, Molenda, & Rezabek, 2016). Although the lists of old and emerging teaching and learning modes are inexhaustible, this paper purposefully sought to select the above ICT devices aiming to provide a link to the point of delivery in response to the COVID-19 disruption.

HARNESSING THE BENEFITS OF PAINFUL DISRUPTION

In this paper, harnessing the benefits of painful disruption in education entails shifting the current paradigm to a sustainable alternative in ODL. Harnessing the benefits of COVID-19 is a topic the authors of this paper developed to explore the impacts of the COVID-19 pandemic, using the lessons for the new ICT products to transform the educational system. The painful disruption produced by the COVID-19 pandemic highlighted the importance of a student's environment, an environment that is completely outside the university environment. Hence, ODL institutions need to merge the present and the emerging ICT devices successfully to accommodate the student's environment and avoid future disruptions. However, to harness

the benefits of the painful disruption caused by the

COVID-19 pandemic, institutions need to be conscious of emerging ICT devices and the quality thereof:

1. The first quality is that the ICT device must meet the needs of students in their environment without unnecessary restriction of networks, especially the needs of students in rural communities. The assumption is that unrestricted networks should enable students to access learning materials and supportive information. This implies that harnessing the benefits of COVID-19 would entail further documentation of students according to their environment of origin (permanent stay/living) and choice (current stay/living).

The aim is to ensure that the university effortlessly connects and delivers learning materials during disruption moments such as the COVID-19 pandemic. Documentation of the place of abode (labelled personal environment) would readily provide information on network availability in the region. Knowledge of network availability would help universities to strategise the mode of delivery of learning materials in such locations. Enabling students in locations without network access to download resources from the university website would bridge the dichotomy between the university and the student's environment.

2. The second quality depends on the student's

economic status. For less privileged students living in rural communities without access or funds to purchase data, the university should consider using ICT with offline devices or drones to ensure the delivery of learning materials to students. The universities should also explore ICT devices with the capacity to act as assistive devices to ameliorate the challenges of reaching the students. Possibly one of the greatest fears of students is the inability to access learning materials. The aim is to reduce inequality in access to learning material caused by economic and geographic location.

3. The third quality is that the ICT device should be easy to use to ensure students' adaptability and adjustment cognitively, affectively and physically. This device should reduce the anxiety and frustration that students experience as a result of trying to adapt to new technology. The application reality should be more personal environment orientated in the overall quality assessment. Hence, the quality of ICT to be used should no longer consider only the university environment; ICT devices should be acquired based on mutual benefits, with further consideration of the students' environment during disruptions.

4. The fourth quality is that the ICT devices must ensure easy communication and interaction between the

students and their lecturers and tutors. This will enable the students and the lecturers and tutors to gain an understanding of each other's problems and challenges to enhance mastery of the learning materials, to complete the assignments and obtain responses without delays. An analytical consideration of the qualities of the ICT device from the student's environment will enable shifting the present paradigm of teaching and learning delivery to a more inclusive ICT approach with larger functional activities.

Points 1-4 align with studies that discussed inequalities in education and how to incorporate ICT in teaching and learning to address the needs of students (Carvalho & Hares, 2020; Department of Higher Education and Training, 2012; Igbafe, 2009; Khirwadkar, 2007; Langella, 2020; Silinda, 2017). These studies also highlight the importance of understanding student's needs in their environment and their university experience for students to feel a sense of belonging in the university environment. When students' needs are addressed, they will feel a sense of belonging in a university environment and will be more likely to feel motivated to study and adjust to the university requirements and thereafter perform well in their academics (Silinda, 2017).

The COVID-19 pandemic is characterised by sudden disruptions in usual activities leading to the increasing gap between universities that offer online courses and those that do not; between students that are privileged to have laptops, access to data and internet and those that do not, particularly students in the rural environment. COVID-19 has further buttressed the need to recognise the students'

environment which is completely different from the university environment. COVID-19 highlights the importance of ICT, the present and the emerging ICT devices that have successfully exposed the dichotomy of the vulnerability of the students by considering its qualities and implication for adaptation. This could potentially breach the gap between the students' environment and the university environment, thereby leading to less impactful future disruptions. To ensure the above qualities are not ignored or undermined, this paper hereby suggests implications for ODL with a special focus on Unisa.

IMPLICATIONS FOR ODL

The idea of harnessing the benefits of COVID-19 disruption, shifting the current paradigm to a sustainable alternative in open distance learning discussed in this paper reveals that institutions need strategies to help students navigate

through this time of unprecedented change and compulsion to respond quickly to the demands of teaching and learning. For many ODL institutions, the COVID-19 pandemic is a challenge that demands the combination of all the resources of the entire teaching community. The challenges include acquisitions of modern ICT devices, developing and strengthening the capacity of the university employees as a crucial strategy to ensure dissemination of teaching and provision of support with limited hindrance as well as vital step to bridge the gap in the interaction between the university and students. These challenges are intensifying the existing problems in educational institutions with limited resources to address them as such the paper thus presents the following implications for ODL:

- The acquisitions of new ICT devices, developing and strengthening the capacity of ICT employees could face challenges because of COVID-19 induced budget cuts to

higher education institutions. Studies have confirmed that COVID-19 is affecting university budgets and the acquisition of new ICT devices for emergency online classes and building the capacity of instructors (Naidu & Dell, 2020; O'Malley, 2020). The implication is that the understanding of the disruptions of the COVID-19 pandemic and the impact on students' support helps to identify the capacity needs of the ICT users. Thus, there is a need for the development of diverse and alternative long-term and short-term goals and plans by ODL institutions. The ODL institutions should begin with exploring the disruptions produced by COVID-19 lockdown of educational institutions as relates to availability and unavailability of required ICT devices to meet the demands of the university,

the financial power of the institutions to acquire the needful ICT devices to promote eLearning and support students. The ODL institutions must focus on a process that includes phase by phase acquisition of ICT devices and strengthening the capacity of ICT users to ensure quality and affordability. The process must enable institutions at faculty or departmental levels to identify their specific needs based on the diversities of their students. The ODL institutions at faculty and department should "get political and build support among the general electorate by organising seriously well-funded campaigns in schools, shops and community centres and the media to show people the value of science and technology" (O'Malley, 2020, p. 1). This campaign will aim to raise awareness and advocacy to address

the challenges of acquiring new ICT devices, financial and capacity needs of the users and students created by the COVID-19 pandemic.

- COVID-19 lockdown created a gap in the pattern of interaction between the university and students. Harnessing the benefits of COVID-19 disruption implies that there is a need for the ODL institutions to provide opportunities for families to learn about ways to support their family members studying at the university. The involvement of the families is because COVID-19 has made the home environment the new learning environment provoking needs for family support in scheduling study time amidst house chores to help them manage pressure and adjust effectively. Family involvement could inspire investment in

students' learning materials, encourage working on assignments and submitting on time. Family involvement will help students' transitioning to emergency online classes. According to Gale and Parker (2014, p. 737), transition "as the capacity to navigate change' in addition to the university's support to the students, family support will reduce pressure during interruptions such as the COVID-19 pandemic lockdown.

- Students have become the central focus of teaching delivery as COVID-19 continues to ravage educational institutions. The ODL institutions are making efforts to revisit the quality of ICT access, the supply of students' learning materials and the support in moments of interruption that challenges regular ICT procedures. There is a need

for ODL institutions to engage in an examination of students' experiences in the home environment to provide information that will aid the institutions to commit to improving ICT quality in future strategies. The ODL institutions should also integrate the present with the emerging devices and envisage a future of online, blended and e-learning approaches. For the students to adjust to ICT devices introduced by ODL institutions, there is a need for institutions to build and strengthen the ICT capacity of their students to harness the full potentials of the ICT to improve learning.

☐ In collaboration with academics, the ICT department should guide university management in acquiring new quality devices aimed at bridging the gap between the university environment and

the student's environment. The ICT department should encourage the formation of several committees to discuss the change. Representatives at faculty/college and departmental levels should influence the practical implementation.
Information obtained from researching students' experiences and influences of their environment should guide institutional ICT decisions.

LOCAL ADAPTATION

In harnessing the benefits of the COVID-19 pandemic for the local level, there is a need to address the issues of COVID-19 presented in this article as the effects on students and their relationship with the university discloses the need for local application of strategies to include

the disadvantaged students. For many universities and students, consistent access and use of technology for learning have become a basic need (Chaudhary & Aanya, 2020). COVID-19 is compelling universities to adopt ICT devices as learning tools, reinforcing the need to consider the implications for local adaptation. As such local adaptation of ICT devices should include the following:

- Universities should engage in learning pathways that can increase the inclusion of disadvantaged students to connect locally, access learning materials with limited interruptions. The universities should identify vulnerable students, their locality to target sustainable support to students.

- The universities should also determine the assessment criteria for disabled students.

- The universities should acquire appropriate ICT devices for inclusive online learning, implying the universities should identify ICT devices that are available, accessible and cost-friendly in rural communities to establish clear and operative functional procedures. There is a need for the universities to acquaint themselves with students online learning challenges to reduce the disruption students experience. There is also a need for universities to set up students' platforms. The information generated from the platform should be used by the university and academic department to address student

The local adaptation should include:

- Universities should liaise with the government, private institutions and

local communities to design means of resolving electricity problems to meet the needs of students in the rural communities. There is a need for the government to encourage investment in electricity generation using wind, biofuels and solar as a means of power plants. These are renewable energy and economic friendly in production,

⬜ The government can decide to manufacture batteries with a longer lifespan or solar energy radios for students to use for aired programmes. The government can negotiate with battery manufacturers through tax reduction to enable mass production of quality cost friendly lifelong batteries,

⬜ Students should be encouraged to develop a self-study method of learning, personal libraries

and a conducive corner at home as the reading environment. The reading corner can act as a motivator to increase attention and improve study habits and,

⬜ Telephone counselling services should be encouraged to address the transitioning and adjustment issues of students, to reduce the problems created by isolation, alienation, unpleasant experiences and other personal-social problems (Igbafe 2009, p.9-10).

CONCLUSIONS

The ICT department of the university should have well-trained professionals who inform university management of the emerging ICT devices that have been developed and improved to enable institutions to adjust to the

COVID-19 pandemic. Local adaptation must fit students' present experiences, using the COVID-19 as a strategic sample to mitigate future disruptions and as an example of how ICT should address students' needs. Several university students were unable to manage the issues and problems of the disruption in their environment. The current paper identified the students' environment as the determinant of how ICT should address disruptions. Thus, this paper suggests that information gained on students' COVID-19 experiences and on the role that their environment played in intensifying their experiences is used to challenge and change the existing ICT structure to accommodate any future pandemics.

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COVER PAGE

Research Paper Title: Exploring new pathways to increase learner's engagement with special reference to e-Mentoring in the field of ODL : Experiences from KKHSOU, Assam

Theme of the Paper: Utilizing educational technologies for ODL

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DECLARATION

I, the undersigned, hereby would like to explicitly state that the research article titled "**Exploring new pathways to increase learner's engagement with special reference to E-Mentoring in the field of ODL : Experiences from KKHSOU, Assam"**   is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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Date   : 30-07-2021

Exploring New Pathways to Increase Learner's Engagement with Special Reference to e-Mentoring in the Field of ODL: Experiences from KKHSOU, Assam

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Abstract

Worldwide, the education systems today are in a position to take up the challenge of the new information and communication technologies. If we look at the present educational environment, we shall witness a mass advent of digital solutions, which have changed the way information is disseminated to the masses. Open and Distance Learning has benefitted a lot from the different ICT tools because it led to the establishment of a more collaborative learning system. However, a few challenges persist which are reducing the student dropout rates, increasing student retention, training the students on use of new tools, etc. Therefore, a lot of emphasis is given on collaboration, both between teachers and learners and between education partners. Introducing new ways to engage the learners within the ODL system has been kind of a challenge considering the fact that most of the learners tend to feel isolated at some point of time and then eventually dropout. Fortunately, the continuous advancement of IT support systems are merging student's virtual learning environments with the administrative support services, to the benefit of both.

Keywords: open and distance learning, e-Mentoring, information and communication technology, dropout, retention

INTRODUCTION

We are all aware of the role played by education in every sphere of our life. Benjamin Franklin, a noted American polymath, had once said, 'An investment in knowledge pays the best interest.' It goes without saying that education is one of the building blocks of a strong society. However, not many are fortunate enough to reap the benefits of higher and professional education due to certain constraints. More so, it becomes difficult to provide quality education at this level due to fund crunch, shortage of human resources, poor accessibility to online learning, etc. Open and Distance Learning has emerged as an answer to this challenge. Open and Distance Learning institutes and other open universities all over the world have been constantly providing quality education in order to prepare the learners to help them face the challenges of tomorrow. Over the years, one of the burning problems of open and distance education has been student dropout rate, which can be attributed to a number of factors such as geographical distance, inadequate contact with the instructors, inability to understand the online tools through which learning is provided, and so on. Therefore, providing learner specific support services along with building a mechanism for learner's engagement is the need of the hour. ICT tools and other technologies not only help reduce the student dropout rates to a large extent but also help build a sense of trust and belongingness as far as the learners are concerned. Krishna Kanta Handiqui State Open University, the first and the only open university of India's North East, has been taken as a case study by this researcher to explore different pathways to learner's engagement by specifically focusing on e-Mentoring.

OBJECTIVES

The main objectives of the present study are:

- To assess the ways on developing a better learner engagement system as far as ODL is concerned

- To analyse ways and means on how to reduce student dropout rates and increase student retention

- To address the pros and cons of e-Mentoring in the field of ODL

METHODOLOGY

The present study is basically a qualitative analysis on the importance of exploring new pathways for engaging the learners in the field of open and distance learning. Document analysis of a few secondary sources (journals, books, magazines, etc.) was done in order to substantiate the importance of incorporating a blended learning environment into the folds of ODL. The researcher's own observation was considered while analyzing the different ways in which learners can be engaged in the learning process and thereby lowering the student dropout rates.

THE PROBLEM OF STUDENT DROPOUT RATES

Student dropout rate is one of the common problems that can be seen in both the conventional and distance educational systems. This problem is more prominent in the field of open and distance learning. The main reason of this problem is that, unlike in traditional universities, the learners in open and distance learning institutions are not in constant touch with the teachers/instructors. As a result, they become demotivated and on certain occasions drop out of the academic programme. From the point of view of efficiency, dropout is a concern in at least two dimensions. One, at the aggregate economy level, education is known to be an important determinant of economic growth and high premature student dropout rate

means loss of potential productivity. And two, within the education sector, student dropout rate raises the cost of achieving a targeted proportion of the population having some level of schooling. The other area where student dropout rate is a problem—and perhaps the more important one—is from the equity perspective. Now, let us look into the problem of dropout with reference to Tinto's model of Student Integration (1975).

Tinto has said that student dropout rate is the sum total of a variety of factors taken together. When a learner enrolls into any academic programme, he or she definitely comes with a certain set of preconceived notions in his or her mind. Most importantly, a learner enrolls to obtain a degree, get good grades, interact with peers, and enhance knowledge. In the process of accomplishing his goals and commitments, if he feels left out or alone, then the motivation to further continue with his studies declines and he tends to drop out.

This very fact is evident from the Tinto's model which is given below:
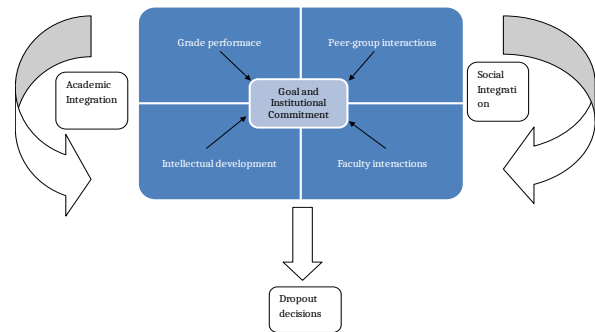
Fig 1: Adapted by Stephen W. Draper from Tinto's Dropout from Higher Education: A Theoretical Synthesis of Recent Research which was published in the Review of Educational Research, Vol. 45 (pp. 89-125)

Thereby, it becomes pertinent to keep in touch with the learners at various stages of the learning process and reassure them of providing help (academic and administrative) during the course of their study at the respective institution.

THEORETICAL BACKDROP OF THE RESEARCH PROBLEM

Learning when disseminated through proper ICT based platforms makes

learning interactive and interesting. In fact, it helps a learner to better absorb the content; a fact which has been backed by Siemen's (2005) *theory of Connectivism*. Technology has indeed helped people to share information and contribute to new avenues of learning. *The Engagement theory* espouses this very fact which says that students must be engaged in learning activities by way of interacting with others. Knowledge when shared among each other leads to better understanding of concepts and other issues as has been propagated by *social constructivism theory* which is a sociological theory of knowledge. Thus, having a Social Constructivist Learning Environment in an online setting provides a platform for the learners to actively construct their own understanding through interaction with their peers. This theory also says that the instructors should come up with a well-designed learning activity that can bring out the best in the students. When

learning takes place through online mode, it stimulates the minds of the learners.

BUILDING A SOLID LEARNER ENGAGEMENT SYSTEM WITH SPECIAL FOCUS ON E-MENTORING: EXPERIENCES FROM KKHSOU

In the light of the above discussions, we can say that student retention has occupied the top-most priority in most of the educational institutions, more specifically distance learning institutions and open universities. Even though instructors provide the basic support to the learners, what is needed is a strong smart learning environment which makes it possible to interact and keep in touch with the learners virtually. Krishna Kanta Handiqui State Open University (KKHSOU) has been striving to provide such online platforms with the help of which the learners can keep in touch with the instructors or the mentors and keep themselves updated about various academic and administrative related news.

Established under the provision of the 'Krishna Kanta Handiqui State Open University Act, 2005' enacted by the State Legislature of Assam , Krishna Kanta Handiqui State Open University has always prided itself on mentoring the learners through different platforms while living up to its motto of 'Education Beyond Barriers.' Even though certain support services such as library facilities, counselling classes, radio phone-in programmes, laboratory facilities, etc. are provided to the learners, these are not sufficient enough to keep the learners continue with their education and dissuade them from dropping out of the respective programme. That is why a proper technological framework must be in place so as to keep the learners engrossed in their studies and encourage them to carry on their commitments without fail. In other words, it would not be wrong to say that a blended approach is the key to attain balance in the teaching–learning process where face-to-face interaction can be combined with e-learning technologies. Some of the commonly used tools and platforms are:

a) Learning through community radio station (Jnan Taranga)**:** The community radio station of the University, known as Jnan Taranga, broadcasts a number of programmes pertaining to the areas of health and hygiene, social evils, environmental issues, women empowerment, sports related issues, etc. Even though the aerial distance of the radio station is about 15 km, yet the different programmes have been well appreciated and liked by its listeners residing in and around the 15 km radius. It is worth mentioning here that Jnan Taranag had started live steeaming its various programmes from 2021 onwards. One can get access to the different programmes at *https://i-radiolive.com/live/channel/Jnantaranga*

which is accessible across all devices and platforms.

b) Services provided by the Digital Library: The Central Library of the University maintains links to various e-resources such as Journals, Dictionaries, Thesauruses, Encyclopaedias and e-books. One can access the different online journals at JSTOR and JGATE databases. The Central Library of KKHSOU had recently launched the Online Public Access Catalogue (OPCA) for the users in March 2021. The OPAC of KKHSOU Central Library was designed using an Open Source Software named 'Koha.' The main advantage of OPAC is that users can search and view the available documents online.

c) Learning Management System: A learning management system (LMS) by the name of **eBidya** has been designed so as to upload the study materials of various programmes for the learners. This is because if a learner misses any online or offline classes, then he or she can just log in to the respective site and access the materials (E-SLM, audio media, audio-visual media). The contents of the Learning Management Systems are delivered in four quadrants: e-tutorial, e-content, discussion forum and self-assessment.

d) Delivering information through social media platforms: Learners can keep a tab on the activities of the University by following the home pages on Facebook and Twitter. Such activities also include details about the examination schedule, examination results, information about the functioning of the University, old question papers, etc. Learners can also post comments or

any queries the various pages of the University.

e) Providing e-Mentoring to learners through online platforms: In order for the learners to not feel isolated, different departments of the University formed mentoring groups, specifically in WhatsApp and Telegram. The main objective of forming such mentoring groups was to provide the much needed guidance to the learners as far as their academic learning is concerned. Presently such groups exist for the Bachelors Degree, Masters Degree, Diploma and Post Graduate Diploma Programmes. The mentors also discuss about the online class schedules, examination related matters, admission related issues and so on.

f) Provision of online classes**:** Online classes (mostly through Google Meet) are regularly conducted by

the faculty members belonging to different disciplines.

g) Provision of online study material: The University has made arrangements for the availability of E-SLM (soft copies of the self-learning materials). The most important advantage of E-SLMs is that one can access it irrespective of time and place.

h) Availability of online audio and video lectures through University's YouTube channel: A number of audio-visual pre-recorded programmes are uploaded in the YouTube channel of the University for the benefit of the learners. These are some supplementary learning tools which help the learners to understand the different concepts in a better way.

i) Dissemination of information through Android App: The University has come up with an

Android App that a learner can browse for any information related to the academic or administrative matters. However, this app can only be used on Android Devices (2.3.6 and above version).

One of the ways in which the University has made efforts to reach out to the learners is through mentoring groups. Usually there are different mentoring models that are used extensively by most of the organisations such as Dyads, e-Mentoring, Group mentoring, Multiple mentoring, Peer mentoring, Reverse mentoring, Team mentoring and Triad mentoring.

KKHSOU has made mentoring a priority keeping in mind the needs and preferences of the learners. E-Mentoring is widely used along with Group and Multiple mentoring. Apart from having separate mentoring groups for the learners belonging to different programmes and semesters, there are also different mentoring groups (in both social media platforms) for learners

belonging to various study centres situated in different parts of the State of Assam. In the groups belonging to different disciplines, there are more than one mentors whereas in the groups which consist of only the learners from different study centres, there is only one single mentor. Usually, under distance education, learning is provided through various study centres under state government recognised colleges. However, due to certain constraints, very often the learners are not able to attend face-to-face counselling classes. Therefore, mentoring is provided to the learners irrespective of the study centre he or she belongs to.

For instance, in case of Mass Communication, there are programme-specific groups – for Bachelor of Arts in Journalism and Mass Communication, Diploma in Journalism and Mass Communication, Post Graduate Diploma in Mass Communication and for Post Graduate Diploma in Broadcast Journalism.

Accordingly, groups are created in WhatsApp consisting of the learners belonging to different programmes semester-wise. The faculty members of the discipline acts as the admins of the respective groups (in WhatsApp and Telegram) and keeps the learners posted of any updates from the University, be it in the field of examination, question papers, course curriculum, scheduling of online classes, etc.

This is shown in the following diagram:
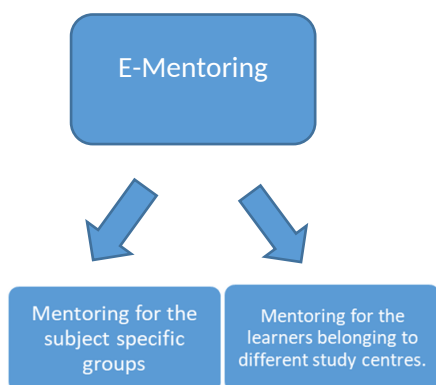
It is not that only the queries of the learners are answered in the respective mentoring groups. Rather, the mentors guide the learners on how to analyse the

learning materials and make use of different audio-video tools. This helps create a bond between the mentor and the mentee. Such engagement proves to be rather fruitful in the long run as the learner feels encouraged to pursue their respective programmes leading to low student dropout rates.

In a way, Krishna Kanta Handiqui State Open University have time and again laid emphasis on blended learning where it makes use of both the conventional self-learning materials and the online learning tools for dissemination of information to the learners. Even though the present pandemic situation has disrupted the smooth conduct of the face-to-face counselling classes at the respective study centres, the University has been conducting such classes through online mode.

With every passing day, new technologies and tools have been incorporated into the teaching-learning environment by different educational institutions. This is done so as to widen the

learner's network, build a networked community and most importantly provide an interactive environment for both the learners and the instructors to interact and deliberate on a variety of issues. Ubiquitous Learning Environment (ULE) is not something that is of recent origin, but it is less utilised in the field of open and distance learning. This is because to develop such an environment one needs to have a robust infrastructure in place as Web Pads, PDAs, Smart Phones and Tablets are widely used along with technologies such as Cloud Computing, Artificial Intelligence, GPS, GIS and Sensors. Even though such a learning environment is yet to be implemented in K. K. Handiqui State Open University, the University makes use of a unique blended learning environment where online learning platforms are combined with offline learning resources.

RESULTANT ANALYSIS AND CONCLUSION

It goes without saying that technology can aid in strengthening the ties between a learner and the organisation and between a learner and an instructor. This helps the learner to feel motivated to continue with their studies and not feel demoralised to discontinue. Incorporation of technology into the teaching-learning framework also helps in providing collaborative learning, leads to development of cognitive skills and attitude, increases productivity and performance, and most importantly provides motivation (Based on John Keller's ARCS model of Motivational Design). An educational institution must make efforts to render various support services to the learners, especially to those who are pursuing their studies in distance mode. Unlike the Western countries, the utilisation of such IT based technologies and tools are still in a nascent stage in India.

Nevertheless, the changes we have seen in the past few decades have been immense. The transition from postal correspondence model to an Intelligent Flexible Learning Model is immense. It has not only benefitted the learners but also the instructors as well as the organisation itself. The right form of technology for any educational institution depends on the right amount of resources that are available (capital, human resources, infrastructure, etc.). What might be suitable for someone living in an urban area may not be feasible for someone residing in a rural area. Therefore, one must look into the pros and cons before incorporating any learning system into the academic fold.

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COVER PAGE

Research Paper Title: Adapting to ODL in times of COVID – 19

Theme of the Paper: Faculty development in ODL

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DECLARATION

I, the undersigned, hereby would like to explicitly state that the research article titled "**Adapting to ODL in times of Covid – 19**" is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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Adapting to ODL in Times of COVID-19

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Abstract

On a global scale, distance education is a bright vision in the field of education & knowledge. Online distance education is always a better option for students but before 2020 it was always under a suspicious eye about its validity. During the Pandemic, the whole perspective about Online Education has changed and it has created a very strong relation between Lockdown and all the stakeholders of the education system. The Changed Situation has made a major effect on the worldwide education system making the students realize the importance of their mentors and their responsibility. Earlier, online education was a secondary option but, looking forward, nowadays it is the best and only way to acquire knowledge and education; however, there are challenges to be faced.

Keywords: Online Distance Learning - Necessity of online education – Lockdown - adaptability, and applicability - Impact on the students - Impact on mentors and teachers - issues and challenges.

OBJECTIVES OF STUDY

1. To understand how online lectures and seminars can play a vital role and the opportunities available.

2. To recognize the challenges faced by students and mentors.

METHODOLOGY

In the present study, secondary data have mostly been found from various journals, magazines, articles, e-newspapers, etc. The research is also based on various referred sources published, unpublished and electronic.

INTRODUCTION

As envisioned and mentioned by Dr. A.P.J. Abdul Kalam, [i] half of our population being in their 20s is one of the greatest strengths of our country. The minds of these younger generations will help us transform into a developed country. However, it will only be possible if quality higher education reaches each and every person of the young generation. Quality education will not only develop an individual's mental and physical intelligence but also provide skills to ensure his own as well as the country's well-being. [ii]

As we all are aware of our country's situation, most of the part of our country is not much developed, keeping in mind there is a lack of education institutes due to various reasons, Students have fewer options for universities and colleges, so couldn't have the knowledge and skill-based learning. Perhaps, Online Distance Learning (ODL) made it easy and possible

for students to learn and develop themselves without relocating. The reason why ODL is playing a crucial role in the development of the country's youth is by improvising their knowledge and skill with limited resources and making education within reach for everyone (Sheeja 2016). iii

Two decades ago, online distance education was still in its neophyte stages; however now it is accepted and updated into technology-enabled learning environments, where e-Learning scenarios, ubiquitous technologies, Cloud Computing, simulation, gaming, and personal learning environments have become the best options for the education society which contributes towards productive knowledge and learning for the citizen of the country and also which brings rewarding changes in the life of young growing generation and country which resulted in strong economical and social improvement along with that cultural

and political advancement of the society and country.

The online education platform helped and empowered the learner without any hesitation and without affecting the usual lifestyle and their requirements. Hence, ODL is a ray of hope to learn positively and accepting with an open mind and without any kind of time restriction and money. It is also known as Flexible "Independent Learning," "Flexible Learning," and "Self-Learning." iv

In an era of lifelong learning, distance education has become a natural choice for millions of people who would like to upgrade their knowledge from time to time to keep up with the drastic and revolutionary changes that are occurring in every field of study. ODL is a fantastic option that allows participation of a vast majority of the society without any partiality

of gender discrimination or age factor, which made them equipped with the necessary prowess to possess the standard of comfort in all the sense. [v]

An unexpected pandemic led to a forced lockdown worldwide and has affected education institutes majorly. The lockdown that came in force more than a year ago has caused many issues for humans or say learners. In such a scenario, ODL was the only path left for all the stakeholders of the education society, which was the saviour system for the learning youth to grow in the circumstances and this pessimistic situation turned the table toward the continuation of learning. Online training offers a secure and convenient way to develop important skills for one's future. Professional development is nearly endless, and a wide range of online courses are a boon for them; it also adds benefits such as training at their place.

Earlier many universities and colleges were conducting online courses but there was always a doubt about its validity, but now-a-days online education systems or distance learning are helpful not only for professionals and college students but also for school-going students. After almost a year of shutdown, schools and colleges were finally reopened not for the lectures but for the professional exams and physical exams conducted in October and so on. With no access to face-to-face training, dispersed workforces have shifted their attention to the web, with health, safety, and wellbeing courses topping the agenda. As businesses return to work, this trend is set to continue.[vi]

Today Education, right from junior KG to the highest degree, is available online. Also, the teachers and mentors are learning to teach online. This is a necessity or can say compulsory qualification and

quality for them. Online study cannot be imagined without Learner Support.

Learner support plays an essential role to support the learners. All the traditional supports have now been replaced by functions such as multimedia, audio, video, radio, e-book, software for distance education, interactive portal, telephonic and video conferences, etc. Especially for a new learner or user who needs constant guidance from scratch to access the classes and study, these functions prove to be vital. [vii]

As mentioned by Sheeja (2016), "These types of innovations in mainstream education may even have effects beyond the realm of education itself. In this age of globalization, institutional and intergovernmental cooperation is growing, and the concept of a 'global classroom' has become a reality." The democratic governments have adopted mass education as their motto. Distance education, in this context, plays a critical role in the global knowledge-based society. Distance Learning takes on added significance in a country such as India, where traditional educational institutions with limited seats frequently fail to meet the rising demand for higher education.

E-learning is now much more accessible as a result of our significant investment in making our platform as user-friendly as possible. People whose mother tongue is not English, profoundly deaf or physically challenged people, can use ODL with comfort at home.

The development of information and communications technology is playing a vital role in today's scenario. It is not only providing high standard education for the Learner but also helping them stay armed to survive in this competitive world, and has opened choices to select subjects as per convenience.[viii]

Massive open online educational courses (MOOCs) are only a small part of the long-established distance education and online course delivery landscape. The pandemic is refocusing attention on the potential for MOOCs to democratize higher education by making it affordable or free to anyone on the planet. As rightly said by Gabriel Kabanda, "Traditional Higher Educational Institutions can question the merit and validity of degrees or MOOCs or such micro-credentials but the reality is that employers are gradually shifting their recruitment preferences for proven skills without any particular bias on the source of certification of those skills." [ix]

REVIEW OF LITERATURE

Online distance education has become very necessary given the impact of the current situation on the education system and its effect on all the stakeholders, especially on the students. There are many research papers reported in this area.

Kabanda (2014) mentioned the strategy for massive enrolments and e-learning is developed and this includes mobiles and ICT and has become an important pillar in open and distance learning. E-learning encompasses supported learning, blended learning, and learning that is delivered entirely online. The emergence of massive open online courses (MOOCs) has changed the landscape of quality assurance.

Bordoloi (2018) observed that ODL is the best option that prepares the students to be skilful and get affordable education at their own pace and place. In addition, ODL provides a wide option to select the subject and entitles them to the degrees and education which transforms and empowers the nation's youth.

Chattopadhyay (2019) showed the case study of IGNOU, and analysed many factors and effects on all the stakeholders,

especially how students are facing the issues along with their whole team or say many people's involvement.

Verma (2020) explored how the new way of education changed everyone's perspective and way of learning, and also that along with this people adopted technology and the English language with very ease. Earlier they used to be scared but now it has become an important part. He explored how the mobile became a boon for all the students.

David (2020) revealed how online learning is important at a time when COVID affected the students, teachers as well as everyone's family. He focused on the impact on student life and also how a student should try to be 'atmanirbhar' and try to be a support for their family in this horrible situation. Along with that, they should be more focused on the academics and also he agrees online teaching is no easy task for anyone but if students should

take it as a challenging opportunity, it can lead them to a bright future but with a condition that they should cope-up with this and should become a good survivor.

Thomas (2020) observed online education is useful for any kind of disability, so technology is the biggest boon for all and especially people with special ability who give lectures and interaction at their place and make it possible to continue to study in this weird situation.

ISSUES AND CHALLENGES OF ODL

Online distance learning, like all other things, does not come without its set of limitations. Some of the major limitations are as follows:

Ø In India, we don't have proper infrastructure for the internet and electricity, especially in the interior parts.

The connectivity issue is the biggest hurdle for online education.

Ø Many students can't afford gadgets and don't even have mobile phones which are compatible with the software which is used by the institutes and universities. Due to this, the students can't attend and participate in the same or if they can attend then maybe missing important features of the application which is used for online education.

Ø Many universities and institutions are yet to select the right pedagogical approach and the selection of support tools for effective learning with well-developed IT infrastructure is of great relevance.

Ø Lack of research about factors that affect the learning of students through ODL and the role of technical support systems in it.

Ø People are still habitual of traditional ways of learning and due to that, they expect interpersonal relationships. Due to lack of personal attention, face-to-face learning, and teaching system, both students and teachers face issues in monitoring and observing body language, verbal response, eye contact, etc.

Ø In a distance learning setting, instructors have little or no knowledge or contact with the audience when they prepare and deliver instructional lessons. Online instructors also experience limited interaction with students whether the class is taught synchronously or asynchronously. Most of the faculty members are generally trained in 'hand to hand' teaching, so it has become difficult for them to adopt to ODL.

Ø Large enrolment was considered as the goal and achievement of distance education institutions while the question of quality was not given as much attention as

it deserved. This kind of attitude deteriorated the quality of many distance education institutions.

Ø Increase in the number of dropouts is a very serious problem experienced by most distance education centres. Many students complain that it is difficult to stay motivated without having to attend a class every day. Since most online programs are self-paced, it can be easy to lose motivation, and dropout rates tend to be higher for distance education.

Ø There is a lack of motivation and follow up and, as a result, ODL is taken for granted. Hence, education becomes the last priority due to a lack of monitoring or push to them, which is neither beneficial for the student nor the teacher.

Ø As compared to the courses of traditional colleges, the degrees obtained through Programmes offered by some leading distance education institutions are not well recognized by the employers.

Ø For teachers, it is very difficult to find out a student's work authenticity, i.e. to confirm whether students have submitted assignments honestly or fraudulently. Just as in other fields of social life, the emergence of fraudulence impedes the effective delivery of education and a great threat to our higher education system.

Ø Another concern for teachers and institutes is the copyright of the course and material. Due to this concern, course material is given in such a way that it can be installed or read in a specific software and on only one gadget where the student installs it and not on their other gadget or not in mobile. It should not be like that because it creates a difficult situation for the students to study wherever they want.

Ø Many times, teachers or the institute are not equipped with technical support, not even aware of the issues faced by the students while studying and accessing the study material. Distance education institutions are more satisfied with administrative support services than with interactivity-related support services.

CONCLUSION

Distance between human beings is the only way in which this universe can wipe out the virus known as coronavirus, which has created a "pandemic." The most important question here is how one will cope up with the knowledge and learning process. The answer to this question would be through technology that can make wonders. The only requirement is the foundation of incorporating the said architecture in such a way that it can reach everyone worldwide. Although distance learning would be preferably advantageous because students would have the access to the entire world by seating at home in their comfort zone. In this way, along with the students of their own country the Foreign Universities would be able to interact with students of different countries, and even students can pursue their dream career through this route by connecting to Foreign Universities. [x]

For ODL, the main arm is the technology that should be adopted by everyone in this pandemic situation, which is the most important need for online work and online education. Adoption of technology is very much beneficial as it makes work more efficient, perfect, and easy and also can help reach the largest audience effectively. For the virtual meeting and virtual education, it is important to connect with the students, keeping them engaged with the lectures and also making them understand the subjects and increasing their participation in the

lecture. In order to help students and teachers cope with the changed education scenario, various tools and softwares have been developed. Google Classroom is one such tool, which helps in almost all aspects of learning and teaching, from giving an assignment to grading them and from sharing notes to solving student's doubts. Students are using various tools of MS-Office such as PowerPoint, Word, etc. to present their assignments. Teachers are conducting classes on applications such as Zoom, MS teams, WebEx, and many more. Due to this pandemic, all the exams are conducted online, therefore it leads to learning technology very much in detail and fluently so everyone can access the exams and appear well-mannered. [xi]

The outcome of ODL is to bring a positive transformation in society, to the nation, and by not judging any casteism of an individual. However, to spread the benefits of education, differences have to be reduced to a certain amount in the Indian Education Society. As a result, ODL should present more innovative ways such as reaching all over the world. Positively speaking, ODL is a platform where our nation can stand lifted and students can grab and approach more and more possibilities of learning.

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COVER PAGE

Research Paper Title: The changing face of ODL in India

Theme of the Paper: Online learning methodologies in ODL

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The Changing Face of ODL in India

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Abstract

United Nations Educational, Scientific and Cultural Organization (UNESCO) considers ODL as a system, which is free from traditional educational constraints where anyone can utilize it as an opportunity to learn new things at any age.

With a considerable increase in Internet usage in India and abroad, e-Learning is taking the next step every day. Banking & Travel sectors being ahead in the area of e-Business, the Education sector is closely following them. The current pandemic has changed the way the world looks at Education and ODL has taken a front seat. We have a strong base of Educational systems in India and only the methodologies are changing.

Keywords: Education, Methodologies, ODL, Online Learning, Distance Learning, e-Learning

WAYS OF DELIVERING E-LEARNING

Around 2001, many Universities and Institutes started Distance Learning courses

but many institutes followed a standard mechanism of taking admissions by submitting a DD (Demand Draft) and appearing for the exam in person at the nearest examination centre. The course material was sent through the post office earlier and then by courier.

UNESCO mentions four primary ways of delivering distance learning: Correspondence delivery, Educational television and radio delivery, Multimedia delivery (includes text, audio, video and computer-based materials) & Internet-based systems.

Let us see step-by-step how is it working for a student in India:

Online Course Enrollment:

Enrollment or E-Registration for Course & Exam is becoming common in India along with e-payments (payment through Bank sites, Credit / Debit card, e-wallet or by electronic fund transfer – ETF), making it convenient to take admission as a first step. Payment Gateways are playing important role in these transactions. The Unified Payment Interface (UPI) which is developed by the National Payments Corporation of India has made it much easier to transfer online funds and has given a boost to Mobile Banking**.**

Teaching/Learning:

Educational Institutes (mainly concentrating on higher or professional education) and Corporates are working on Teaching or Learning Management systems where the student can take each course from the comfort of his or her home or office. Virtual Classroom is a new concept introduced for the same, where the teacher is

teaching somewhere in his own home/office/institute and the live video is broadcasted over the internet to the remote students. This is one way of e-learning.

Web conference and Webinar were familiar words in Corporates but now even School students are aware of these words. A Webinar is a web-based or Internet-based Seminar where a presenter presents some subject and also gives a live commentary simultaneously. Once the presentation is over, you can even ask questions through the tool provided for this session and the presenter or trainer can answer those questions.

Web sites like Khan Academy or YouTube are ready platforms for anybody to upload audio/video content over the Web and people can see those contents 'on demand' which means as and when they want to see them. These tools or sites can be very effectively used in online or e-learning. Khan Academy provides subject-wise sessions on various topics including basic science, mathematics and so on, whereas YouTube is a collection of multiple videos and you have to browse through the same to find the content on a particular topic.

A well-prepared video is worth a hundred slides or pictures! Needless to say that these sites are becoming very popular day-by-day and are becoming a common source of sharing any kind of knowledge or information across the Globe!

As the Researcher has mentioned earlier, some websites which are storing these videos have a lot of material that may not be of interest to you. The World Wide Web or Internet has opened the doors of knowledge and a lot of information is available to us free of cost. Now, with such vast information available to us, it is a big

task to obtain the right information that we need.

Though Google search engine has made our job much easy, there are some tools used for 'Content filtering' which is one way to filter the information and access only the one that interests you. Most of the Organisations have implemented Content Filtering on their Gateway or Firewalls. Content filtering is done at multiple levels such as national level, browser level, network level, e-mail level or search engine level, etc. where only appropriate content is delivered to the users. It is also used as a censorship mechanism.

Queries can be resolved through the helpline, searching on Organisation portal for FAQs, sending a query to concerned departments and get a reply from them, online chat, etc.

Assessment:

After admission and training, student comes to the assessment and the 'Assessment Engine' softwares are readily available for the students to access and even certify them online. The online examination results can be delivered to the students via e-mail or can be displayed on the portals. The beauty of these online examinations also lies in the On-Demand mechanism! Online availability of Grade books can be viewed at any stage.

Example:

Let us take an example of how this works in real life today: I wanted to give my Project Management Professional (PMP) exam. This examination is conducted by Project Management Institute (PMI) which

has its head office in the US and also has country-specific offices.

The membership was taken through the website by filling up an e-registration form and making e-payment through a Credit Card. All that data was entered on the website and once you qualify for the exam, you are given options to choose for your exam centre. At present, if you are in any major city, the exam centre will be very close to you and you do not have to travel long distances to appear for this exam.

The exam cannot be given from your home as it is not an 'open book' exam and should be given in a monitored environment though it is online. Once you reach the exam centre, the supervisor at the centre provides you with a computer and enters his/her password to start your exam. Your online exam starts and a clock starts at the same time showing how much time is left! Once

you answer all the multiple-choice questions, you can still review/change your answers if time permits and then you need to click on 'submit.'

Here you have to wait for a minute with your heart rate increased while the computer assesses your paper and calculates the marks. After a minute or so, the result 'Pass' or 'Fail' is displayed on your screen and the result sheet is printed immediately and you are out of the centre with a happy or a sad face depending on your result. It is as simple as that with the technological evolution we had over the last twenty years.

STANDARDISATION

As the scope of Open and Distance Learning (ODL) is increasing day-by-day, various technical ways are being invented to conduct online/off-line teaching and get

more and more students attracted from different parts of the world. Similar to any other sector, the fear which the educational sector has over the increasing use of technology in ODL is the Quality of Education. We will talk separately about the quality of e-Learning but the question raised is the standardization of teaching methodology for e-Learning. Though this is not across the globe yet, some organizations are moving ahead in this direction.

For example, 'Western Cooperative for Educational Telecommunication' (WCET), USA, is a membership cooperative of institutions and organizations dedicated to advancing access and excellence in higher education through the innovative use of technology. Its goals are to meet the growing need for higher education institutions across the 15 Western states to integrate distance learning and educational technology into their academic services.

Slowly, many organizations would join such standardization moves so that some standard well-proven methods and technology are adapted by these institutes to provide good quality teaching to their students.

QUALITY OF EDUCATION

You must have seen surveys such as – 'Can e-learning be an option for traditional learning' or 'Can teachers get completely replaced by smart computers?' The answer so far is 'No' because of the major concern raised by everybody all over the world as Quality of Education. Can a video prepared by somebody unknown be a replacement for a professor teaching the same subject for thirty years? Can the session be as interactive as a classroom? Can the sharing across a physical classroom happen over a virtual classroom?

The expressions and body language contribute today a lot to the traditional teaching; can that be replaced by the presenter's expressions in the video? Because the answer to all these questions is not necessarily in favour of e-learning, there are some limitations to the growth of e-Learning and use of technology, but in future, just because of 'demand' the 'supply' could be in the form of e-training although some aspects or required features may not fully available.

ADVANTAGES AND DISADVANTAGES

Concepts such as Flexible Learning, Work-Life Balance, and Earn While You Learn are a reality with ODL. The traditional educational system will normally have an age limit and strict criteria for admission, whereas ODL does not have this type of criteria and you can learn several new things with no age bar. Time and resource utilization are at their best because of ODL as your travel, fuel, and money can be saved which you otherwise would be spending for taking a traditional education. ODL is always considered inexpensive compared to traditional ways. Modular or short-term courses to suit the need of an individual student is yet another advantage.

Quality of education, as mentioned earlier, is of some concern. Human touch to the education profession, gestures, body language, physical proximity are also some other concerns raised on ODL. Technology Infrastructure is also a major factor in providing good quality e-Learning. Hardware equipment, software, network, Internet bandwidth could be the limiting factors for increasing the use of e-Learning

in India, especially in semi-urban and rural areas.

LEARNING MANAGEMENT SYSTEM (LMS):

LMS is a comprehensive way of conducting online learning. As years passed, LMS is advancing in terms of look and feel (User Interface), User Experience (UX) as well as the content. The content delivery has become very smooth with a single solution and the user experience has become very good. Technology platforms such as Moodle, WordPress and custom-developed platforms in recent years have contributed to this development. The use of Open Source Software has given a boost to this development.

A modern LMS has multiple features such as:

- Multi-lingual Support including local languages

- Involves different views for Admin User, Faculty, Student & Parent

- Personalized Dashboard for each Student

- Lecture Calendar & Class booking

- Conducting Virtual Classes with automatic attendance marking

- Making Archived classes available to students

- Provision to upload e-content, e-Library

- Student Progress Tracker for Faculty

- Discussion Forum

- Facility to take poll during lecture, Quiz & Assignment

FUTURE TECHNOLOGIES

Mobile Applications, Playback of recording on mobiles, Tablets, pre-recorded lectures, On-line lecture archives, Game-based learning, TV Applications, Internet-based online and offline learning, Virtual Classrooms & Chat, Web portals, Blogs, On-line Video library, Message boards, e-Mentoring, Virtual campus including e-Library are already being used as COVID-19 pandemic has given a hard push to e-Learning! The next big thing which is getting implemented in ODL is the use of Artificial Intelligence (AI).

ODL IN INDIA

Though ODL is offered by multiple universities & institutes in India, you can refer to the website for Distance Education Council formed by the Government of India.

The ODL system is divided into two major categories: The National Open University which is also known as IGNOU (The Indira Gandhi National Open University) and the State Open Universities listed below* (SOU) where the Central Government & various state governments have taken initiatives in promoting Open and Distance education for anybody and everybody in India.

These universities offer multiple courses and they are getting well known day by day. Though almost every University has started promoting Distance Learning, institutes like SNDT, Symbiosis, and MIT are promoting ODL on a large scale and students are getting the benefits of taking courses of these universities from their homes. Premium institutes like IIMs have also started few e-learning courses.

Some of the well-known Open Universities in India:

- The Indira Gandhi National Open University (IGNOU)
- Dr. B.R. Ambedkar Open University, Hyderabad, A.P.
- Vardhman Mahaveer Open University, Kota, Rajasthan
- Nalanda Open University, Patna, Bihar
- Yashwantrao Chavan Maharashtra Open University, Nashik, Maharashtra
- Symbiosis Centre of Distance Learning, Pune, Maharashtra
- Madhya Pradesh Bhoj Open University, Bhopal, M.P.
- Dr. Babasaheb Ambedkar Open University, Ahmedabad, Gujarat
- Karnataka State Open University, Mysore, Karnataka

- Netaji Subhas Open University, Kolkata, W.B.
- U.P. Rajarshi Tandon Open University, Allahabad, U.P.
- Tamil Nadu Open University, Chennai, Tamil Nadu
- Pt. Sunderlal Sharma Open University, Bilaspur, Chhattisgarh
- Uttaranchal Open University, Haldwani, Uttaranchal
- K. K. Handique State University, Guwahati, Assam
- SNDT Women's University, Mumbai, Maharashtra
- M.I.T. School of Distance Education, Pune, Maharashtra

CONCLUSION:

Despite all the concerns raised, ODL is moving ahead with the increasing advantages of technology like tablet PCs, Laptops, Tablets and Smart Phones. Taking corporate advice or collaboration between Educational Institutes and IT Industry can take the ODL in India to new heights.

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COVER PAGE

Research Paper Title: "New Normals of Effective Online Learning Methodologies"

Theme of the Paper: Online learning methodologies in ODL

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New Normals of Effective Online Learning Methodologies

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Abstract

Imparting online distance education right from its inception turned out to be challenging for the teachers when it comes to adapting to the new methodologies. Open and distance learning offers many professional and skill-based courses across the globe for upbringing the learners to cope up with changing scenarios. Distance education primarily focuses on imparting knowledge and skills. Skill-based education is now essential in every field. There is a cry in society about the lack of skilled people. Bridging the gap between knowledge and skill has become a necessity in these changing normals. As per UNESCO, one of the apex organizations, "Distance education is a way of teaching and learning culture where trainer and learner are at a distant location and work out the knowledge propagation effectively." The essentials of distance education are organized planning, elegant courses, and special instructional techniques with well-versed approaches of

communication by electronic and other technologies. Distance education is compulsorily linked to its mode of delivery and its effectiveness. This paper is an attempt to explore the distance education modes, models, and methodologies.

Keywords: online distance learning (ODL, modes, methodologies, skill outcome

DISTANCE EDUCATION: MODES AND MODELS

Online distance education has become new normal in the recent past. Not only for the working professionals but for our students also the online distance education has become mandatory due to the pandemic situation. The stalwarts in the field of education suggested some effective methods of communication and data transfer as far as imparting knowledge to aspirants is concerned. There are several predominant trends through various online or distance education methods of conveyance. To understand it and take it further, there are numerous curricula associated with each online education method that may have different eligibility criteria, limitation, interval, institute, and motivations and with no defined time and location. The possibilities are that some are classroom-based, while some are preschool kind of courses and few may be conducted after school timings or even during school holidays. There are distance education "Groups" or teams who have deviated interests in comparison to each other like, types of interactions, way of teaching, timings, and mode of delivery. To meet these expectations is quite challenging. Teachers are the point of attention in print or televisual or web-based approaches. Interactive radio

instruction (IRI) is a distance education system that combines radio broadcasts with active learning to improve the educational paradigm, primarily targeting students. Few modes may avail benefits such as rich content and may facilitate delivery to teachers and students at the same time. Let us have a look at various categories of distance education and corresponding techniques which are used to deliver content.

and quite useful for those who are geographically at a distant location and are with a limited budget, inadequate setup such as classrooms and limited manpower. This method has its pros and cons. The study material in printed form can be referred to any time and quite useful as a ready reference but for understanding the concepts, one-to-one interaction between teacher and student is not possible in many scenarios.

TYPES OF DISTANCE LEARNING CORRESPONDENCE MODELS

Printed study material

Printed material is always useful for learners as it provides them a ready reference and even provides easy access. Under-qualified or aspirant teachers always take the benefit of print-based material for enhancing their qualifications. These courses are comparatively cheaper

Audio-based Distance Education: Learning by Listening

The following list is some methods broadly followed for this model:

- Broadcast: IRI (Interactive Radio Instructions)

- Narrowcast: IAI (Interactive Audio Instructions) (Via magnetic audio tape or CDs, DVDs, USB Pen Drives)

- Duplex communication: Two-way radio

- Audio conferencing and telephonic interaction, Mobile Communication

- Broadcast radio

Audio instruction is the most suitable mean of propagation of knowledge for trainers, tutors to their remotely located students. May be due to geographical constraints they may hold at distant and remote locations. Audio-based information exchange has the above-listed techniques such as radio broadcasting or audiotapes, CDs, DVDs, etc. The audio interaction happens in real-time and even it creates an imaginary world where concepts could be visualized in virtual mode. Here the skill of teacher/trainer is vital. There are many methods under this category where both the communities would not require to undergo any sort of pieces of training. This is one of the effective and inexpensive methods.

Overall, even a learner with very little bookish knowledge and with restricted resources can take the benefit of this method. Illiteracy will also not stop any enthusiastic learner from taking its benefits. In Duplex i.e. two-way communication, both teacher and student can talk and exchange views and thoughts. Radio broadcasting is (through certain assigned frequencies) transmission of audio (sound), sometimes with related metadata, by radiofrequency waves intended to reach a wide audience. This method is quite effective for information exchange and develops a habit of good listening.

Televisual-based Distance Education: Learning by Seeing

For better delivery and understanding of concepts, this method is widely followed where some commonly referred techniques are:

- Broadcast television (Educational and instructional)

- Interactive Videoconferencing

- Videos/ Animations

Generally, we keep faith in what we see. Learning by observing with all focus and concentration will help you learn many new concepts. Young or budding trainers will always get motivated and feel supported when they see other trainers work in new and innovative ways. Videos or animations always help understand difficult concepts more thoroughly. It will reduce the stress of imagination and makes it perfectly visuals to take it further. It even develops faith and promotes innovative ideas. Internet Protocol Television (IPTV) and Video case studies are setting new trends under this model. The use of TV sets for education is now proven its importance in the recent past. The Corona Pandemics taught us a lesson of "Learning by viewing, observing." The benefits of Televisual-based Distance Education are listed out as follows:

- Provides teacher a platform to provide effective means of propagating ideas which are difficult through text or audio.

- A most efficient and attractive method of communication.

- Many critical and difficult to understand concepts can be taken care of through video and animation support and demonstration.

- Students can utilize the learned concepts innovatively.

- Can impart skills by providing effective inputs.

Computer-based multimedia models: Most interactive method

Under this model, the commonly referred modes are:

- Text, Audio, and video storage (Multimedia)

- Animations

- All sort of digital storages (CDs, DVDs, Hard Disks, server storage)

Over the past two decades, the use of computers in every field has gone common. Rather it has become the need of the hour. How can online distance learning keeps itself away from this revolutionary change? CD-ROMs, DVDs, VCDs, Pen Drives are the most effective ways of data exchange. Teachers and students are using these mediums very effectively for teaching and learning. Multimedia is a buzzword today and everyone is aware of it as a media that comprises text, audio, and videos with high and ultra-high-definition images and AR/VR-based contents with some encrypted data for security reasons. Group Teaching and Learning Software (GTLS), or computer-aided learning (CAL), computer-based instruction (CBI)

is needed to be tapped in the broad sense for ODL. Multimedia as a Distance Learning Tool will help even tutors for the perspective of apply, analysis and synthesis, and very well organized evaluation methods. This mode offers benefits such as being more powerful and flexible, user-friendly, effective, innovative ideas and game-based learning pedagogy and useful for students with varied learning styles.

Web-based models: New Normals of learning

The list of models under this category is as follows:

1. Use of online platforms (Zoom, G meet, WebEx)

2. Access to internet resources

3. E-courses /online learning courses (e.g. Coursera, Solo learn, Udemy)

4. Web-based interactive courses

5. Live seminars, webinars

6. Virtual classrooms

- It is one of the most popular and fasted grown modes of distance education. The obvious reasons for that are:

- If a user is having internet access then learning becomes simple as "anytime, anywhere, as per convenience" without any stringent constraints.

- Exchanges multimedia information such as text, audio, video, animations, etc.

- Communication and propagation of data can happen in real-time

Online coaching, tutoring, mentoring, virtual schools, tele research, webcast, webinars, growth of online learning communities, and web-based distance teaching and learning is a popular trend of ODL teaching, learning pedagogy. Use of

social media, avatars, pseudo images and videos, cheap and user-friendly software.

Mobile models: User-friendly flexible: E or µ learning

The most recent trend which affected ODL comprises of:

- Mobile phones, Smartphones

- I pods

- Palmtops/ Tabs

- Battery operated handheld devices

M-learning (mobile technology-based learning) refers to e-learning through small, mobile networked devices—cellular or cell phones, smartphones (android or Mac platform), palmtops, tabs, and PDAs so that learners can access information, the study material, and resources ubiquitously. Similar to radio, television, and desktop computers before this, mobile tools have provided unconventional means to participate

teachers and students in the training and erudition process. Relatively inexpensive technique because of affordable cell phone prices; anytime, anywhere, (provided internet access) availability; trainer and learner-friendly; no need of any specialized pieces of training are some positive aspects of this methods. Poor internet connection; high bandwidth requirements; limited life span of mobile devices; and the threat of loss, theft, and damage are some negative aspects of this model.

The Excursion of Methodologies and Modes:

If we focus on some key points, the ODL will lead to a win-win situation for both teaching and learning communities. We explored few concepts and these may be considered as guidelines for the development and growth of ODL:

- Impart skill/competency-based education with prime focus on

aiding teachers to develop the information, skills, boldness, and temperaments perceptibly shown to improve teaching methodologies.

- It should take into consideration needs and associated work culture/environments.

- Project & Skill-based contents need to be addressed with applicable demonstrations

- Emphasize extending teacher's content-based knowledge and allied competencies.

- Teachers centric models to showcase their mastery, skills in their classrooms

- Provision for rehearsal, investigation, and replication

- Based on analysis of inputs related to student, the teacher should go for content development & mode of communication (Student-centric)

- Methods should lead to non-stop support and conduction over a pre-framed duration.

CONCLUSION

The effective delivery of distance learning resources and fulfilment of outcomes is strongly dependent on the mode of delivery and its usefulness. Well-established and defined teaching-learning pedagogy with ample scope or flexibility to adapt to changes always ensures better results. The student and teacher-centric modes of communication and methodologies always serve the purpose. Workshops, Skill-based projects, project-based learnings, learning by doing, demonstration of concepts, video animations, and well-defined multimedia support has become the need of the hour. Every Open University and institute imparting online

distance education should have a broad approach along with a high degree of freedom to students and teachers for variations which include the types of media or technology used.

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COVER PAGE

Research Paper Title: Educational Research Methodologies in Online and Distance Learning

Theme of the Paper: Educational Research Methodologies in ODL

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DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, "EDUCATIONAL RESEARCH METHODOLOGIES IN ONLINE 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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Educational Research Methodologies
in Online and Distance Learning

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Abstract

Educational research involves a systematic attempt to gain a better understanding of the educational process, for improving its efficiency. It is resolution with scientific method to analyze the educational issues. The major objective of educational research is basically to discover the existing body of knowledge with providing solutions to different gaps in pedagogy though enhancing teaching and learning practices. Educational researchers also pursue solutions to issues creating hindrances on learner-motivation, development, and (virtual) classroom management. The twenty-first century has seen the level of education rising up through educational research, along with the technology advancement.

Other names of Online Distance Learning (ODL) are e-learning, distance-education / online learning, which provides a methodology of education activity in which both teachers and students are located at different places during the teaching-learning process. The computer-based learning is known as e-learning whereas internet-based e-learning can be treated as on-line learning. Implementation of emerging technologies enables to integrate and assist the seamless

communication between the both teacher-student as well as student-student that opens new avenues for educational research.

The educational research methodologies are involved to resolve the teaching-learning issues. The nature of method and involvement of technology makes the teaching-learning issues related to ODL different and more challenging than conventional learning. In this paper, the evolving educational research methodologies over conventional educational research methodologies and enabler technologies were reviewed with its applicability specific to ODL.

Keywords: Online Distance Learning (ODL), Educational Research Methodologies, Technology, Pedagogy, Ubiquitous Learning.

INTRODUCTION

Generally any research involves collecting new data from primary or first-hand sources or using existing data for a new innovative purpose. Research is based upon either observable experience or empirical evidence. Research demands accuracy in observation and description which is applicable to educational research also.

Each student has a his own learning curve, which differs from student to student in terms of time taken to learn and the methodology adopted (Dyer, Thomas; Larson, Elizabeth; Steele, John; Holbeck, 2015) this facts must be considered while elaborating the concepts of lesson in an meaningful manner that motivate and appeal the students is not easy task. The educational research is performed with the aim to develop new body of knowledge about the

teaching-learning situations to enhance educational practices accordingly. In general, to improve the educational methodology means to constantly encourage, sustain and increase individual and joint knowledge and understanding of specific areas of study, skills as well as expertise.

There is a sudden upsurge in on-line courses with exponential growth rate in it due to COVID circumstances, having restrictions on conventional classes and face-to-face learning. However, this situation has elevated the expectations and demands from on-line classes that include visual, kinesthetic, textual and auditory delivery in ODL; accordingly the selection and implementation of applicable integrated technologies enabling to meet these increasing demands.

Hence educational research methodologies specifically in ODL differ from conventional educational research methodologies.

LITERATURE REVIEW

Guidance document for Good Academic Research Practices (GARP)-September 2020 provides the research life cycle as a framework for quality, impactful and ethical research (Patwardhan et al., 2020). According to this document the research needed to avoid the malpractices in terms of fabrication, falsification and plagiarism to increase the public trust, specifically for research institute, funders, producers, publishers and products in research. The values underlying the Research Integrity such as ethics (with dignity and safety), rigor (by adopting methods), relevance, transparency, respect, impartiality, independence and accountability plays vital role in GARP. The three stages of research

life cycle are suggested to focus for good research as follows

1. Research Design: which includes all planning related activities

2. Conduct of Research: includes execution, documentation and storage related activities

3. Research Dissemination: consist of selection of appropriate medium for publication

Subsequently the good research should always have following objectives

1. Contribute new knowledge

2. Solve the challenges

3. Correct errors / gaps in the existing literature

4. Develop new methods for conducting research

They suggested the following two applications / systems accordingly

1. Clarivate ^{TM}: This platform (https://clarivate.com/industries/academi

a/) provides the Master Journal List for the researchers to find the appropriate journal for the needs across multiple indices hosted on the Web of Science platform which will have following benefits:

- Optimize your existing resources in the institution, infrastructure and future investments to explore the new opportunities

- Ensure effective benchmarking to get the betterment in the institutional performance, positions, research environment and total transformation in quality of education

- Enhance the institutional efficiency and productivity with better collaboration, higher profitability with the skilled and talent resources

- Comprehend the consolidated value of research with business benefits, and building the organization's

knowledge and intellectual property with its safety

2. Web of Science ™: An application on website that provides subscription-based access to multiple databases that provide comprehensive citation data for several academic disciplines. It was originally created by the Institute for Scientific Information and is presently maintained by Clarivate Analytics.

In the paper which elaborate the research areas identification and further research design approaches specifically in distance education in India (Passi & Mishra, 2004) explained. The numerical data was collected on processes for identifying the areas for research, accordingly research design, and appropriate methodologies specifically in distance education. The process-oriented research approach which involved observing media and technology, learners and related learning methods, and unique distance

learning assessment is included with the conclusion that a mixed approach which consists of both quantitative as well as qualitative methods are proven appropriate for research in distance education in India.

Dyer et al (2015) elaborated the integration of technology with collaborative approach with adopting major features which includes objectives sharing, forming the inquiry cycle which will be rigorous, constant communication, effective decision making, productive activities and value assessment. He further stated that the technology determines the type, location and method of information to be communicated to students to obtain more learning approaches, high level of students involvement and high students result.

The three essential elements explained in the teaching-learning generic model (Wang, 2008) as 1. Pedagogy: Instructions 2. Social interaction: Public Communication and 3.

Emerging Technology required for interacting with defined interfaces. It was specified that the effectiveness of technology is depends upon its value and its usability.

On-line learning is made possible using Internet connectivity, however doing the courses which needs laboratory is still remains challenge (Ndahi, 2006), the approach suggests innovative methodology for the laboratory courses that can be planned, scheduled and delivered in the Distance Education environment. As stated in the article distributing the learning-kits the support service and demonstration labs can be able to conduct even laboratory courses remotely. This is unique approach applicable for all professional courses.

The significance and real use of Information and Communication Technology (ICT) in understanding the learning and application of unique assessment applicable to ODL is

described in the article (Chinchorkar, 2010) which elaborate the role of Technical and Vocational Education and Training (TVET).

In the paper 'Introduction to Online Teaching and Learning' major types of distance learning were identified (Stern, 2018) as follows

- Correspondence course: conducted through mails

- Tele-courses: application of broadcasting using radio and TV

- CD ROM base courses: applications using static computer

- Actual Online Learning: Connecting the computers to Internet Network

- Mobile learning: using cellular phone and devices like PDA

The educational research methodologies are revolved around these types of distance learning.

Across following five key levels of education the Technology can be applied:

1. Presentation level: Basically involved navigation and look and feel

2. Demonstration level: Includes the actual contents

3. Drill and practice level: Consist of collapsible information arrangement

4. Interaction level: For effective communication

5. Collaboration level: Formation of framework for teamwork

Various types of research methodologies are being adopted to achieve the advantages of technology application in those specific levels.

The development in distance learning application (Marsap & Narin, 2009) explained which was initiated in year 1840. Isaac Pitman tried to teach remotely his staff-steno located far away using the letters.

He stated that the distance learning visual approach with the letterings is needed for managing, participation and creativity enabled by applying the relevant Technology.

The constraints such as time and place (Beldarrain, 2006) association is being achieved by adopting social media application like blogs, wikis, podcasts in addition to technologies such as chat-room, discussion boards, podcasts including vblogs and audioblogs, An RSS (Really Simple Syndication) feed which is an online file that contains details about every piece of content a site has published. The strong association between interactions and technology was established. The paper further explained how various technologies maintains the records of an individual like performance, accomplishments and related information. The perception of belonging provides the feeling of security to faculty and students

while communication with each other. According to them, the technology should be adopted with the seven principles as:

1. Motivate the students and faculty relations.

2. Create mutual cooperation within students.

3. Adoption of techniques like active learning.

4. Provide quick response.

5. Give importance to time on task.

6. Share the expectations.

7. Admire assorted abilities and methods of learning.

He stated that learning outcome is basis of the instructional theory, whereas the theory about learning is all about the learning process and technology impact social dealings and its impact on learning process. The system that focuses on learner is emphasis on content on demand rather than

the standardization of content. The cultural diversity, learning priorities/preferences and individual aptitude level is basis for further improvement.

The reviews and annotated bibliography collection on e-learning specifically in Africa (Lodhia, 2006) is explained with the higher education environment and related challenges.

The boundaries differentiating between online, e-learning and virtual learning is going to be blur is explained (Traxler, 2018) with the dissimilarity between campus and distance education. In which he narrated the difference between formal and informal learning with reference to the factors such as pedagogies, delivery modalities, epistemologies and cultures. He further mentioned that in the formal learning major activities involved are accreditation, qualification, assessment and ranking and

claimed that there is lot of scope for research in this area.

The three-part taxonomy of technical framework originally recommended by Gibbons and Bunderson was explored further (Picciano, 2017) as an integrated model on the basis of explore, explain and design. The methodology got enhanced further with name as Bloom's taxonomy. The approach is developed around six key elements which are creating, evaluating, analyzing, applying, understanding and remembering. The three innovative models further suggested by him are as follows:

- Community of inquiry model: Consist of three elements as cognitive, social and teaching

- Connectivism model: Includes the application of techniques like MOOCS

- Online Collaborative Learning Model: Idea generation, idea

organizing and intellectual convergence are the building blocks of this model

Unique research methodologies are applicable to each of this model.

OBJECTIVE

The objective of this paper is to explore the existing body of knowledge in educational research methodologies specifically in ODL by analyzing the various solutions provided for various problems identified in pedagogy with intention to improving the teaching and learning practices and filling the gaps in knowledge due to technology evolution.

Because reliable researches are important to make use of them and the relevant methodologies as a result help to make it valid and useful to the topic and in a generalized manner. Several methods help researchers formulate the research area and

to improve their knowledge in the sector of education.

METHODOLOGY

The conventional types of research method are social surveys, experiments, interviews, participant observation, ethnography and longitudinal studies which are applicable for educational sector also.

The approach adopted to critically evaluate a study's overall validity and reliability includes identification, selection, processing, and analyzing the information about a topic for which the base is taken as secondary data from Internet. This approach includes literature review of existing literature on internet relevant to the topic. Specific search conducted for latest developments in the teaching-learning process such as 'ubiquitous learning' (learning anywhere and anytime). New technological

development in the sector and its applications are recognized.

DISCUSSION

The educational research methodologies are categorized based on seven elements of philosophy of education as Essentialism, Perennialism, Progressivism, Social Reconstructionism, Existentialism, Behaviorism, Constructivism, Conservatism, and Humanism.

The data collected during the surveys in the conventional educational and existing study papers are collected with the help of various tools of investigation. The tools and techniques of investigation generally involves questionnaires, optionnaires, attitude scales, schedules, conducting interviews, collecting data and case-studies, applying the rating scales, and expert's observations.

Educational research refers to a systematic endeavor to obtain a better realization of the educational process, generally with a view in improving its efficiency and quality. It is an application of scientific methodology to analyze the problems in educational sector. Conventional Educational Research can be classified into Five Types as follows

1. **Correlational Research**

   A correlational study is a research method that includes a two or more quantitative variables from similar groups of subjects while attempting to establish an association between the two variables. Theoretically, correlation of the two quantitative variables is possible as long as the scores from similar participants are there.

   However, it may prove of no use to collect and analyze the data when there is insufficient cause to propose

the two variables are related. The data can be gathered using actual testing activity, i.e., a collection of marks in a knowledge test, e.g., math exam or test.

Additionally, you can also carry out a psychological test or a survey and questionnaire among other data gathering methodologies where you'll get quantitative responses. The collected data can be used if is in numerical type.

2. **Experimental Educational Research**

   The key feature that segregates this Experimental Educational research from other types of research is that the researcher would be able to control the independent variables. In this research, there are numerous design groups for experiments out of which some of them succeed as

research analysis.

In actual experimental research, the researcher would not only control the independent variables but would also assigned individuals randomly to diverse treatment categories. In quasi-experimental research the subjects would not be randomly allocate to control groups and treatments, i.e., the treatment would not be disseminated among the participants randomly.

In certain situations, the researcher will assign an entire group randomly to treatment path and another group to control path. Thus this experimental research would consist of the use of treatment groups in the experiment instead of random assigning of individuals to investigate state of affairs.

The causal-comparative study research consists of the research involving the groups which have already been formed. This research does not fulfill the initial norms because there is no control of independent variable therein.

3. **Quantitative Research**

Quantitative educational research is a research method that focuses on statistical, measurement, and numerical analysis by collecting the data through surveys, polls, and questionnaires by controlling pre-existing statistical information based on computational techniques.

The primary objective of conducting this research is to establish the relationship between one thing and another within a population. The study research design is in only two forms narrative or experimental.

A descriptive research study defines

an association between variables while the experimental one would define the causality. A qualitative research is related to actual stance numbers and logic to differentiate and classify.

The research focuses on the numeric detailed fixed data and convergent rational. Its key characteristic consists of the gathering of data by help of structured research instrument.

4. **Qualitative Research**

A qualitative educational research is an exploratory research study that is applied for obtaining knowledge of underlying reasons, motivations, and opinions. The study research proposes insights into the problem or assists in further developing ideas or hypothesis for future quantitative research.

This research study can also be used in discovery of trends in opinions polls and thoughts and micro level into the problem. Additionally, the research method differs by use of unstructured and semi-structured techniques. Also, it is used in numbering the issue by creating data which can be converted into real statics.

The research consumes quantifiable data in framing facts and discovery of patterns in research. The data collection methodology adopted in the quantitative research is more structured and systematic than qualitative ones.

This research method includes various forms of conducting the surveys, e.g., questionnaire based, online, mobile, paper and kiosk surveys. Other methodologies

involve face to face, telephone interviews, online polls, website interceptors, and longitudinal studies.

5. **Mixed Educational Research**

The mixed research method consists of the collaborating the qualitative and quantitative data, paradigms, process, and various methodology in study analysis or set of studies related.

This research is a particular case of multi-method study. The research can be further enhanced through the use of several methodologies, standpoints methods, facts, and perspectives.

The learning approaches adopted in future (Georgiadou & Siakas, 2006) were explained in which the research focus and methodologies applicable can be as follows:

1. Funding factor: These are based on the funds availability and institution policies

2. Learner's requirements: Every student have unique learning needs, to be prioritize

3. Stakeholder's expectations: The needs of the parties involved should be considered

4. Career prospects: The gap between career and corporate need to be minimized

5. Norms defined by Quality Standards: The specifications of frameworks need to be adopted

6. The learner's needs and stakeholder's demands should be select first, over the career opportunities and policies. Quality standards should be configured to suite these approaches.

CHALLENGES IN ODL RESEARCH

The Online Education got developed by resolving several challenges faced in every generation of development. The relevant research methodologies with technology for these challenges were got developed accordingly for every stages like data generation, collection, analysis and conclusion.

The First Generation (1850-1960) of Online Education consist of simple print, radio and TV as media (Sadeghi, 2019). The print media got the issues such as delayed response, and the media like radio and TV were live but restricted to unilateral direction.

The Second Generation (1960-1985) involves many technologies except computers; examples are audio cassettes, fax and mix-media. Scalability and maintaining the status updated were major challenges for these set of technologies.

The Third Generation (1985 onwards) is build on the Internet technology. Integration of devices brings many more advantages than earlier generations achieved; examples are Ubiquitous Learning; it saves large amount of time and money required for traveling, gives lot of flexibility for time and location.

The limitations of Third Generation of Online Learning are realizes as

- High chances of distraction: Disturbance due to issues like poor connectivity due to over dependence on Internet.
- Complex technology: An online platform becomes intricate due to availability of various features and functions of different.

- Lack of social interactions: The restrictions on social interactions cause hindrances because social interactions are vital in learning. In online education there are.

- The unusual interactions with instructors: There are serious limitations on natural contact which is essential.

- Online education treated as inferior qualification by the job market: Hand-on skills which are difficult through online education are preferred by industries.

To overcome these challenges and respond the specific requirements, several solutions and research methodologies got developed as follows

- Identify the requirement with scope of training to teachers and students on the technology

- Application of virtual class-rooms and transform the internet technology to 5G

- Use of frameworks like Moodle for distribution of the learning material

- Inclusion of simulations techniques, virtual reality, game-based learning etc.

- Implement adoptive learning with personalization and data-driven methodologies

- Creation of asynchronous audio-videos and make it available to students

- Application of proctored tests for advanced assessment and evaluation

- Comprehension of COVID-19 situation, research and justify the online education

The emerging technologies like Ubiquitous Learning (UL) can be considered as new invention of Information and

Communication Technology (ICT) that allows students to be in suitable environment useful for learning. The main purpose of UL is to provide the flexibility to teachers and students where to study and when to study, which is essential in the current situation.

Therefore the objectives of educational research methodologies in ODL should align with such emerging concept like UL also known as 'anywhere and anytime learning'.

LIMITATIONS OF EDUCATIONAL RESEARCH METHODOLOGY IN ODL

An educational research methodology specifically in ODL is subset of educational research methodologies as a whole.

Additionally research methodologies in ODL need to take care of issues related to ODL such as misuse of technology, a lack of student support services, alienation or isolation, cost effectiveness, quality of instruction, and problems with equipment.

The major limitations of educational research methodology specifically in ODL can be as follows:

- **Difficulties in observation**: Observation of human behavior is more subjective than the observation of physical or biological phenomena. The subjectivity on the part of the observer has a direct impact on the interpretation and findings on which he bases his conclusions. In ODL situation it becomes difficult to get the feedback received through body-language (which communicate more than 80% message). Hence the methodology is depends upon the data received through formal communication only.

- **Misuse of Technology**: The misuse of application such as bots created can mislead the faculty. Proctored

examinations also have its limitations.

- **Dependency on Internet Network**: It becomes difficult to conduct the research work remotely where the network coverage is poor.

These are few representative limitations that give opportunities to explore the educational research methodologies in ODL environment.

FINDINGS AND CONCLUSION

Education is treated as engine of growth. The capability of applying the knowledge and creating the value during teaching-learning is magnified by adopting the ODL approach.

The perpetual inventions in technologies make it essential to recognize the changes regularly and improve the educational research methodologies accordingly. Online Distance Learning is specific class of academics where high degree of application

of technology is involved hence the need of education research is significant. Because of the unique teaching-learning approach in ODL, the same traditional research methodologies may not be applicable to ODL environment as it is. Development of "Ubiquitous Learning" is typical example of such changes, where impact of technology and accordingly methodology need to consider for educational research.

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