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Research Article

VICTIM IDENTIFICATION, IDENTIFICATION DEVICES, LEAD INFORMATION AND COMMUNICATION TECHNOLOGIES IN TEACHING AND LEARNING THROUGH OPEN AND DISTANCE EDUCATION SYSTEM: A PARADIGM SHIFTFOIL

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A B S T R A C T

Education, a socially oriented activity, is a significant factor in the building of any society. Traditionally quality educationists were dependent on the teachers having higher degrees. But in today's world there is shift towards digital information, globally, and with ICTs in the education sectorits role is becoming significant and the extent will only continue to grow and develop as the use of ICTsin education amplifies accessibility, resulting in higher number of enrollments of deprived students.

This article discusses the role of ICTs in education, with special reference to open and distance learning education (ODL). ICT at present has alteredevery aspect of our lives. They are recognized as catalysts for change. ICTs is a part of our day to day lives of work, information, communication, entertainment and also in the field of education. Therefore, the present article also attempts to explore the promises and the key challenges of integrating the tools of ICT with the ODL system of education as the impact of ICT on each sector of life across the past twodecades has been enormous. Through these last twenty years, the use of these technologies has practicallytransformed human life. ICT has begun to have a presence in the ODL education sector, but unfortunately we are lacking to achieve its desired impact. This paper also attempts to highlights the various advantages of ICT in ODL education and also discusses the advantages along with the scope it offers for future developments.

INTRODUCTION

Information and Communication Technology has changed and revolutionized the lives of people. It has redefined the way people seek, broadcast, create, display, share, exchange, communicate and store information. Globally there is a revolution in dissemination of knowledge through the advancement of forms of technology (radio, television, telephone, computer, etc) popularly known as the Information and communication Technologies (ICT). ICT has been defined as a "diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information" (Blurton, 2012). Though this definition of ICT offers an alliance with the most sophisticated, updated and expensive technologies, however the United Nations Development Programme (UNDP) provides a very useful definition of ICT referring to not only the latest technologies but also the simpler and older technologies such as recorders, cassettes slides, transparencies etc. According to United Nations Development Programme (UNDP)

'*ICTs are basically information-handling tools- a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information. They include the 'old' ICTs of radio, television and telephone, and the 'new' ICTs of computers, satellite and wireless technology and the Internet. These different tools are now able to work together, and combine to form our 'networked world' – a massive infrastructure of interconnected telephone services, standardized computing hardware, the internet,radio and television, which reaches into every corner of the globe'.*

These older and more familiar technologies are referred to under the collective heading of "analogue media" while the newer computer and Internet based technologies are called the "digital media".

ICT is a tool that has changed the way we live today. If comparison of such fields of our daily life like, medicine, tourism, business, law, banking and education is drawn, the impact of ICT has been immense. The way these important sectors of our lives operate today areevidently different from

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the way they were functioning in the past. Due to the increased blending of the science and technology and with the fusion of computer and the satellite, the dividing lines between various media forms are blurring and as a result the manner in which ICT is defined and referred to,is also getting blurred.

Though ICT as a technology today is known for its versatility, but initially it was used as a major tool in bridging the social and economic divide that existed in most developing countries, including India. For developing countries ICT's represents a potentially equalizing strategy as Tinio (2002), states the potentials of ICT in increasing access and improving relevance and quality of education in developing countries.

Tinio further states the potentials of ICT as follows

ICTs greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance higher educational systems, improve policy formulation and execution, and widen the range of opportunities for business and the poor. One of the greatest hardships endured by the poor, and by many others, who live in the poorest countries, in their sense of isolation, and ICTs can open access to knowledge in ways unimaginable not long ago.

Developing countries like India have the ability to exploit the potential that ICT hands out where these technologies are seen as having the potential to advance human development and multiply these capabilities to benefit from such potential. To address the needs of the vast numbers of poor and uneducated people in India ICT can be used to provide a vision for development of knowledge society and adopting policies and strategies to encourage this development. The use of ICT (computing, networking and internet) can support the spread and reach of education in India by developing resources which in turn will strengthen the ways in which students, educators and facilitators learn as well as gain knowledge with the help of ICT. ICT in today's world plays a central role in everyday life; societal, economical and technical but having its lesser impact on the educational sector which is of vital importance in the knowledge societynot onlyas a source of basic skills providing strong foundations for development of new knowledge and innovation, but also as an engine for socio-economic development.

Education consists of culture appropriation, and it is understood in a wider way, involving knowledge, information, values, science, art, technology, philosophy, rights, customs, that is, all the things that man produces to transcend his/her nature (Paro, 2010).Education is, therefore, a critical requirement in creating knowledge societies that can stimulate development, economic growth, and prosperity. It is not only the means by which individuals become skilled participants in society and the economy, but is also a key driver expanding ICT usage.

It certainly takes time and courage for the teachers and policy makers to break old habits and discover the advantages, if any, of the new technologies and exploit their potential. Educators are more comfortable to teach in the manner that they have been taught traditionally, i.e., one to many lectures and discussions. In a traditional system the process of educating people was undertaken in a school where a single educator divulged lessons to the learners on diverse subjects. In this system the knowledge, information and skills flow from the teacher to the students and this flow is and was dependent on how best the lessons are communicated to the student by the teacher. This has continued to be the principal way of imparting education, but with the passage of time things have revolutionized. These traditional approaches were replaced by virtual learning environments (VLEs) or other e-content courses. It is therefore not surprising that e-learning products and services are used primarily to support traditional teaching and learning strategies, as clearly demonstrated in an investigation into the use of VLE in a US university (Dutton, Cheong & Park, 2004).

Ict for Education

The rapid expansion of ICTs and given its malleability in meeting the human needs in different contexts has made it an important policy issue for the government in India in many sectors, especially education as it has the potential to alter the educational landscape in the diverse social and economic settings of India. Earlier it was slides, projectors, radio and television which revolutionized the education system in India, but with ICTs newer and finer modes of dimensions of education like online learning, online interactions between the learned and the learner, virtual Universities (not in India), virtual classrooms and other aids of teaching/learning and training have emerged. These technologies are usually a combination of three sections, *Hardware, Software and Connectivity or networking*. Hardware refers to the physical elements of a computer commonly known as the equipment of the computer such as the keyboard, the monitor, the mouse and the **central processing unit (CPU)**. Most of this hardware cannot be seen as it is not an external element of the computer, but rather an internal one covered by a cabinet. Software on the other hand consists of all the instructions that tell the hardware how to perform a task. This software is further divided into two major classes; **System software which h**elps run the computer and includes operating systems, device drivers, diagnostic tools and more and **Application software which**allows users to accomplish tasks. This includes word processing, web browsing and almost any other task for which you might install software. And finally connectivity in which the network of computer is an essential mechanism for passing data in a technology based environment. Such network composes of several computers connected by a wired or wireless medium enabling data, information and other resources to pass through for dissemination. This is the most significant aspect of ICT as theconvergence of computer-multimedia-communication based technologies in the education sector arenot only changing the technologies themselves but their application as well, overhauling the educational scenario, at a very rapid pace. This has made the teaching-learning process more learner centric, interactive and more productive. Societies that have willingly accepted, implemented and have become ICT compliant have taken a lead in the race by taking the initiative to promote new practices and paradigms in the education sector by transforming the roles of stakeholders. Teachers have become facilitators and students have become learners. Now learners play the role of active participant in the teaching learning process and teachers conduct classes based on experiment and practice using simulation, role-play, dramatization, strip story, group work, pair work, elicitation and project work, instead of simply giving speeches (Subedi, 2005). Therefore, teachers today have assumed a more vital role in the classrooms by

being facilitators and inspirers rather than just be mere teachers.Today a teacher is not only a source of knowledge, but a facilitator. These days, an instructor is also considered as an inspirer who is supposed to inspire learners by creating a favorable learning environment. Now as it is believed that knowledge is constructed by learners from experience, the instructor needs to "be a guide on the side, rather than a sage on the stage." If teaching is a professional job, facilitating is the role of the teacher.

Having penetrated into all spheres of our lives in every possible manner, ICT has become an essential part of our daily routine. Similarly it has been used as a medium to educate and instruct using the 'convergence of three strands of technologies, namely computer, microelectronics and communications' (Arora 2009). Due to the assistance through this convergence, ICT in the domain of education has been able to make accessibility to educational resources simpler and easier. ICT has acted as a perfect **motivating tool** as well, since using it as a media to teach includes usage of videos, television and multimediacomputer software that combine text, sound, and colorful. This allows the students to get more engaged in the learning process (Addison 2010

India being one of the largest education systems globally,the Kothari Education Commission (1964-1966) had recommended an allocation of 6 percent of GDP on education, which unfortunately has never been achieved. India as per 2011 Population Census also has the largest illiterate population in the world, as the literacy rate of India is 74.04%, with male literacy rate at 82.14% and female at 65.46%.The needs of the people with regard to education are also diverse and they have different learning styles. Another major problem in India is language with regard to teaching and learning.This clearly implies that we lack in providing the means and resources for formal education to the remaining population. Similarly the growth of educational institutions in India is slow and we cannot hope to quickly make a dent on the base line educational status of the poulation at this rate of growth. Unless, alternative routes are opened and made popular it seems very difficult to bridge the gap and achieve full utilization of human resource potential. Therefore the conventional approach must not only be strengthend, but also in order to come to grips with the herculean task ahead, it is imperitive to have an alternative education systemof Open and Distance Learning, aided and supported by the technological interventions through ICT and make available the knowledge resources to every learner as per his/her convenience and time.However we must understand that today the information and communication technologies or the ICTs have permeated the business environment and strengthened the success of modern corporate sector providingthe government with resourcefuland ingenious infrastructure. Similarly the use of ICT in education sector can assist in adding value to the learning processes and also to the organization and management of such institutions.

Past Initiatives

In India the economic resources are still scarce. There is immense pressure on institutions of learning especially those, following the traditional system of education. All do not have access to schools due to various reasons (social, cultural, economic etc). And those who have access may not find our pedagogy attractive enough to continue in the system and loose interest. But this problem was soon recognized and addressed by our government and the Open and Distance education system was introduced in for schools as NIOS and IGNOU for higher education in which has now grown up as a national Institutes. Similarly recent advances like educational satellite Educational TV and microwave transmission have made it convenient to adopt newer, advanced technologies.But the face of distance education today has been transformed by the use to Integrated media approach, multisite learning, e-learning, virtual classes, massive open online courses (MOOCs). Though a non-traditional approach to education, learning through these systemsis not only monetarily affordable but provides the learner that chance to come in the mainstream and compete without going through the hassles of traditional educational system.

In India, ODL system of Higher education is around 30 years old. At present, ODL system in India consists of Open Universities (OUs), Institutions and Universities offering distance education and also includes Correspondence Course Institutes (CCIs) in conventional dual mode universities (Overview, 2012). Among the OUs in India, Indira Gandhi National Open University (IGNOU) is the largest and leading, which also falls in the category of Mega University. It has been declared as the largest institute of Higher Education in the world by UNESCO in 2010. IGNOU, at present is catering to more than two million students in India and abroad. IGNOU was the first to adopted various ICT tools, such as radio, television, tele-conferencing (TC), compact discs (CDs) and web based content to cater to students (VC Report, 2013).One of the most characteristic facets of ICT is its capability to go beyond time and space(explanation). This characteristic feature of ICT has the ability to contribute towards universal access to education, equity in education, the delivery of quality learning and teaching, teachers' professional development and more efficient education management, governance and administration (UNESCO 2012). The world of today is a world of expertise and skills. Technology performs a pivotal role in day to day affairs which also embraces the education sector. The utilization of ICT in education sector not only can advance the traditional classroom learning-teaching methods, it can also majorly enhance and contribute and to the open and distance learning system by conveniently rendering education to thousands of those who cannot avail its benefit given to various constraints of time, cost, location, age etc. ICT has enhanced distance learning (Kumar 2008). These constraints can only be overcome by using innovative methods of ICT and its tools that have the potential to provide flexibility to learners.

Ict and Odl in India

In India there is a need to make adequate provisions for education in small towns and rural areas and far flung areas. There is a need to provide education at the learner's doorstep how so far the learner may be. It is a challenge that can only be overcome by making use of evolving technologies. The different tools of technology are very useful means and open and distance education becomes more significant with usage of all these effective and attractive tools. The world today has become a smaller place with the advent of different technologies. And with this the world is on the verge of becoming a global village where physical distances will no longer be a barrier. The technologies related to computers and

specially the usage of internet, form a small part of ICTs and through these technologies dissemination of mass information is possible with just a few clicks. The ODL system not only reaches a wider student group but also those who are unable to attend the traditional educational system. The use of ICT in ODL is also effective as it not only creates/provides opportunities to such students but also does not hamper students learning even when physical distance between teacher and learner is required. The advanced tools of these technologies are used to bridge the gap between the two, successfully allowing the students to interact with the outside world, which otherwise would not be possible. Further, the tools of ICT have the power to link learners from different back ground.ICTs can and to an extent has proved their significance in almost all facets of open and distance learning.Today technology is not only limited to the use of machinery. The emergence of technologies specific to the field of education has opened new horizons for the learners and the teachers. It has the ability to offer several new techniques for both, the teachers and the learners in the learning process. In providing education to all, ICT has the ability to modify the traditional teaching learning process by transforming the old and boring as interesting, interactive and active
ity based.

The present generation is born and growing in a digital or new media age and not an age where technology simply was understood to be a replacement of hand tools with power-driven tools/machines. Though ICTs are restructuring the social as well as economic equation in India, the unequal access to ICTs has led to digital divide not only in India but globally as well. Primarily, a country like India whose population's concern is fulfilling their most basic needtechnologies and their accesswill always be a last on their list of priorities.But the justification of being a third world country and lacking of basic infrastructure for the use of these ICTs is not only invalid but a fear to make a choice. Also that constraint such as availability and access of these technologies are uneven and vary from state to state may be a fact, but should not deter teachers and the students to update themselves as per the changes in the technology. ICTs in education can be implemented in two different ways; teaching of ICT itself and using the tools of ICT. In open and distance learning ICTs can be taught as well as involved in generating and disseminating knowledge.This digital divide can be bridged through the use of ICTs in distance and open learning by teaching and employing ICTs in ODL system. This will facilitate in narrowing the digital divide in India. But here the focus should be to literate learners beyond gaining computer skills. As digital divide reflects segmentation in societies at various levels, the use of ICT in ODL system of education can contribute significantly to addressing such problems and also enable learners to utilize tools of ICT and interpret the content available.Learners should be able to access content, analyze its value, and apply it to their needs.Alexander and McKenzie (1998) state that the major 'benefits of online distance education are an improved quality of learning; an improved productivity of learning; an improved access to learning; and an improved student attitude to learning'. One of the advantages of new online distance education is interacting with others and gaining a more sophisticated and global understanding of complex international issues.Though it is this flexibility and ease of access that might attract learners to educate themselves through ICT enabled ODL system, there are other benefits. One of the other advantages of online distance education is continuous and lifelong learning that has been more accessible for all people. 'Lifelong learning has been perceived as both a social ideal, involving personal growth and active citizenship, and an economic necessity in a knowledge economy… (That) requires people to undertake continual retraining and the acquisition of new skills in response to technological and structural economic changes,' (Flew, 2002).

Ict in odl

The equalizer for educational opportunities

The pace and the nature of a nation's development is closely associated with the integration of ICT and their employability in the various sectors like, Health, Governance, Banking, Education, Empowerment etc. Technology and technological changes are viewed as autonomous factors impacting on society from outside, and determinism focuses concern on how to *adapt* to technology and not on how to shape its development (Davison, 2004; MacKenzie & Wajcman, 1999). Though recent developments in ICT have opened a plethora of opportunities for development in every imaginablesector, a related question is that to what extent ICT in education, especially ODL can be used to provide the benefits in our country. We must understand that development is generally associated with economic growth, higher or better standards of living. But fundamentally it is education which is inherently a development process that provides for quality life and minimum basic needs. One of the major criteria and an essential driving force for development is education. ICT as an enabler has broken all boundaries and the fusion of computers and communications technologies, especially with the internet has shrunk the world into a single village, which is connected globally. McLuhan's (2003) proposal of the global village can be described as determinist in character when he discussed the elimination of time and space barriers in communication processes.

A very comprehensive document entitled "Open Learning" by Mackenzie, Postgate and Scupham which was brought out by the UNESCO in 1975 describes open learning as follows: "Such systems are designed to offer opportunities for part-time study, for learning at a distance and for innovations in the curriculum. They are intended to allow access to wider section of adult population, to enable students to compensate for lost opportunities in the past or to acquire new skills and qualifications for the future. Open learning systems aim to redress social or educational inequality and to offer opportunities not provided by conventional colleges or universities." The open and distance learning provideseducation to those who wish to improve their qualifications, skills or knowledge while either being employed (studying part time) or those who are home and cannot or hesitate to attend traditional educational system. In this system of ODL, learners belong to all age groups and are faced with no obstacle to restrict them from learning. ODL is not rigid like the formal system of education and provides flexibility to learners in age, eligibility for enrollment, medium of instruction, time of examination, choice of subjects etc. Distance education refers to the mode of education where the interacting learner and teacher are separated by space and time, while open learning focuses on removal of many restrictions and rigidities in opening the doors of education for the needy

learners (Koul 2000). The ODL system is designed to be learner centric based on inclusive learning and is aimed to provide all an opportunity to learn. According to Sherry (1996), components that are included in a definition [*of ODL*] includes: a learning process, the teacher and the learner are separated in terms of space and time; communication between the two is mediated by print media or ICT; and learning is under the control of the learner rather than the teacher. Therefore ODL is the integration of distance education (i.e. the ability to study from the distance) and open learning (i.e. the ability for *anyone* to access the educational offer) mediated through the advanced tools of ICT.

ICT has the potential to be used in support of these new educational methods, as tools enabling student learning by doing. Confucius, a Chinese social philosopher said *"I hear and I forget. I see and I remember. I do and I understand."*The moral of this famous Chinese proverb as given by Confucius could only be that when you try/do it yourself you understand it, as you take active part in learning. Similarly, ICT can make it possible to engage students in self-paced, self-directed problem based or constructivist learning experiences: and also test student learning in new, interactive and engaging ways that may better assess deep understanding of content and processes (Strommen & Lincoln 1992). Technology has assumed an interestingly important role and ODL can today be thought as education or training delivered to learners at their door steps. The ODL system of learning has considerably evolved through a number of generations, ever since the first Open University in the world- UK Open University was established in England in 1969 and owes much of its growth since then, to its responsiveness to evolve and cater to the needs of learner by allowing then to overcome their disabilitiesin terms of *Access, Equity, Flexibility and Cost-effective quality education for all*, at the door step.Taylor (1999) has suggested five generations of distance education: *First*, the Correspondence Model based on print technology; *Second*, the Multi-media Model based on print, audio and video technologies; *Third*, the Tele-learning Model, based on applications of telecommunications technologies to provide opportunities for synchronous communication; *Fourth*, the Flexible Learning Model based on online delivery via the Internet; and *Fifth*, Intelligent Flexible Learning Model based on the interactive nature of the Internet.

By 2020, India will have the largest tertiary-age population in the worldand will have the second largest graduate talent pipeline globally, following China and ahead of the USA (British Council, 2014). This will create a huge pressure on the economy and the education system. Technology has the capability to address all these issues. The Indian Prime Minister realizing this has emphasized on the Digital India campaign which looks to increase the scope of technology across the country. Creating adequate infrastructure across the country would be a huge step towards overhauling the educational sector digitally. The acute shortage of quality institutes and teachers can easily be addressed the courses are offered through ODL and the course content (study material) is available online through relevant technology,and made accessible to everyone, especially in the remote areas.

A report titled "India E-Learning Market Outlook to FY2018 – Increasing Technology Adoption to Drive Future Growth' estimates that Indian e-learning market will grow at CAGR of 17.4% over the period FY2013 to FY2018. Indians are among the most aggressive users of the massively open online courses (MOOCs). In March 2014, of the 2.9 million registered users of Coursera, more than 250,000 were from India. The Indian registrations are second only to those from the USA.This clearly indicates that Indian student's ability to adapt to digital technology is no less than anybody else in the world.In fact, many educational Institutions in India today use e-education solutions and are way ahead of the technology adoption curve than many other schools in the US, Singapore and even Japan.The National Mission on Education through Information and Communication Technology (NMEICT) Scheme of the Ministry of Human Resources Development meanwhile aims to exploit the potential of ICT for teaching and learning processes. The NMEICT has two major components - content generation and providing connectivity along with provision for access devices to the institutions and learners. Under the NMEICT Mission connectivity to 419 Universities/ University level Institutions and 25000+ colleges and polytechnics in the country have been envisaged. Under this scheme the idea is to leverage the potential of ICT in providing quality, interactive and personalized education through different modules over the internet to learners, anytime and anywhere according their convenience.

Knowledge is growing and accumulating at a very rapid pace and the use of technology plays a very vital role in addressing the issue of education for all, its quality, quantity and the resources. Use of ICT can greatly facilitate class less instruction particularly where conditions are not suitable for the users to have access to more traditional resources. ICT as tool has tremendous potential and offers abundant opportunities to learners. In this knowledge era, societies have begun to promote new practices and paradigms in the education sector through ICT based education. The future of education (conventional as well as ODL) is heavily dependent on these new tools of technology as they not only promote but strength education at all levels.

CONCLUSION

The Benefits of Ict in Odl Education

The impact of ICT on education is currently in relation to use of digital technology to enable teaching and learning. It has the power to transform the nature of education: where and how the learning takes place and the roles of students and teachers in the learning process has undergone a shift. Technologies in their various forms are indicating how the learning process can be made more constructive, productive and interactive without having to be dependent upon the convenience of a teacher. Whereas in the past the students or learner had no flexibility in terms of the manner of time and place and were practically forced to follow and accept the rigid, traditional delivery system. ICT and its application tools on the other hand provide the learners with ample flexibility in terms of the manner, *any*time learning and *any*place learning, creating competitive edges for the learners through technology aided teaching and learning.Though a non-traditional and innovative approach to the dissemination of education for all, the ODL system of education when, blended with ICT can make the offered courses effective, *academically* and relevant, *socially* contributing to the broader development of our country. The use of ICT in open and distance education is

essentiallydependent on certain factors. Large countries like India, having dispersed population and diverse communities have an additional drive or motivation to use communications technologies to deliver educational services cost-effectively. For this the policy on telecommunications i.e. the Internet, use of information technologyin Education, privatization/ liberalization of/in telecommunications sector can help in refiningthe quality by making the costs affordable and accelerating development of infrastructure in the country. Although ICTs have begun to establish themselves in almost every aspect of educational system, their consistent use in open and distance educational system can help in reshaping the entire organizational and functional structures of our educational institutions. Use of these tools in the ODL system can change the state of teaching and learning with regard to enrollment, curriculum development, expected role of a teacher, learner's involvement, and need based curriculum structure and managing the learning environment. Through the integration of ICTs in ODL education system we can reap its innumerable benefits and make teaching and learning more reachable, interactive and effective.

The tools of ICT possess the potential for extending educational opportunities in both formal as well as the non-formalsector. Having established themselves in the formal educational sector, these tools can be used to deliver lessons/courses/study material, assignments etc in an efficient and easier manner in ODL education system by making use of computer-internet based technologies for the scattered and rural populations, individuals traditionally excluded from education, girls, women, working professionals, persons with disabilities and the elderly. Using this integration the benefit of education can especially be extended to those who for reasons of affordability or of time constraints are unable to enroll themselves in the formal education system.

ICTs have the potential to provide improved and increased access for education among people. It enables the institutions of ODL to provide knowledge within the reach of all those who desire it. Besides providing education to the deprived students it also provides a flexible system by offering the opportunity of conducting classes anytime, at the place of their convenience, as per their need. For example IGNOU at the higher education and NIOS at school level.

One of the most important aspects of teaching is pedagogical and course design skills. Pedagogy has been defined as the art and science of teaching. Though pedagogical knowledge is most essential while course delivery at any level of education, the use of ICT tools can offer flexibility in arranging, designing and organizing courses along with curriculum in a manner that suites and effectively enablesthe development of knowledge, skills and competences among the desirous learners.

Besides making education available for all, there are many areas of educational administration that can use the tools of ICT at different levels. At every institution (school and universities) there are different platformsthat can be provided for smooth, step by step and hassle free enrollment process without the learner to be physically present for the same. The course material can also be made available online allowing the learner access with the help of unique login and password, individually. Usage of ICTs not only improves and encourages interaction between teachers and learners but also among learners themselvesin the distance education creating unexpected opportunities for the learning.

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