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Original Article

Analysis of Education Systems Based on Open Education: Challenges and Opportunities for Learning

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Abstract

The present study aims at analyzing education systems based on open education as a modern method of education used in open universities, and considering its challenges and opportunities for learning. Due to the application of electronic and online devices, higher education has departed from its ordinary and traditional form, and is moving toward distant education and learning. This is a descriptive study, and utilized a qualitative method for data gathering. First, education systems based on open education were introduced, and the required data was gathered through documentary and library research among digital and printed resources. The gathered data was then descriptively analyzed, and the entire stages were analyzed by the authors, without seeking any software assistance. The obtained results showed that this mode of education first appeared in the first decade of 1700s, known as correspondence learning, and has so far evolved in five generations. Besides its advantages, open education also involves numerous challenges, which were categorized into 8 areas, and summarized into 80 issues. There is no doubt that in order to achieve open and favorable higher education, such challenges need to be addressed and resolved by eliminating limitations, turning them into opportunities, and thus taking a sizeable stride toward the development of higher education in an open manner.

Keywords

Educational system, open education, learning

Introduction

Attention to academic and higher education is a sign of social development and progress in any country (Keshavarz Afshar and Mirzayi, 2018), and its role has been increasingly highlighted in the creation and establishment of advanced societies (Shahmohammadi et al., 2019) and sustainable development (Amiri Farahabadi et al., 2018). Once human communities advance and develop, scientific and academic expertise receive higher attention and importance, as well as scientific progress (Siami et al., 2014). The need for further attention to such conditions can result in extensive changes in educational and academic centers (Kamkar Haghighi et al., 2011), which will then lead universities to depart from their traditional pedagogical role, and the creation of electronic and open education systems (Mirdamadi, 2003). Open education enables lifelong learning in any field, time and place (Kamkar Haghighi et al., 2011), and thanks to its structural features, can develop in different periods and places in terms of quality and quantity (Mirdamadi, 2003). This novel mode of education has transformed instruction and learning, and revolutionized the field (Farhadi, 2005; Ebadi, 2004).

Open (distance) learning and education is a modern method of education applied at open universities, which employs educational systems and technologies to provide the requisite education to students (Penalver, 1990). In the literature published in this respect, this type of

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education is known by various names, such as open learning, free education, open education, open-source software, free access, open educational resources, open educational methods, free educational market and expanded online courses (Aras Bozkurt, 2019).

In a general definition, virtual education can be defined as learning through technology (Uden et al., 2007). Distance learning or education based on open education includes any type of learning where the instructor and learner are geographically remote from one another. Distance learning is possible through modern facilities, such as e-mails, educational videos, cable TV networks, media, or any other technologies related to the internet, including message boards, discussion groups and chat rooms, and video or computer conferences. In fact, distance learning is a process-oriented or guided system that connects learners to remote resources, and can also serve as a tool for supplementary learning (Pomerantz and Peek, 2016; Tait, 2018; Smith and Seward, 2017; Peter and Deimann, 2013). In other words, distance learning comprises of organizing the teaching-learning process by an educational institution, through the application of educational technologies, multimedia facilities, communication and information technology, in order to provide for learning environment, establish interaction and transfer educational content between the parties involved (Ebrahimzadeh, 2006). Open or distant education is a novel educational system, and an additional feature to the in-person education, which uses features such as the physical and temporal distance between the instructor and student to offer a proximal relationship as a fundamental solution for this integrated system. This system involves a different role for the instructor and student than in-person education, where the instructor offers pedagogical messages to the learner through the educational medium, and in a wider coverage, but without enjoying the advantages of reciprocal action and effects between the teacher and learner (Farahani and Fardanesh, 2001).

Uthma et al. (2016) believe that due to the application of electronic and online devices, higher education has departed from its ordinary and traditional form, and is moving toward distant education and learning (Wasis, 2018). In this educational system, learning is autonomous and doesn't require the learner's attendance at the educational environment. Hence, the learners are completely independent in terms of time and location, and the learning materials and contents can be offered in offline, online, multimedia or other methods (Aras Bozkurt, 2019). Moreover, this mode of education better guarantees equal opportunities with regard to education, educational equality and lifelong learning opportunities (Daniel, 1996), as well as quality learning for higher number of learners at lower costs (Aydin et al., 2006). Universities based on open education using innovative and creative approaches to production and publication of educational contents can serve as examples for other higher education institutes and help traditional universities evolve to the next level (Aras Bozkurt, 2019). Considering the above, the present study aims at analyzing education systems based on open education as a modern method of education used in open universities, and consider its challenges and opportunities in the field of learning.

Research Questions

In this study, the review of previous scientific articles and academic publications related to the issue resulted in concentration on the following research questions:

1. When and why were open and distance learning used?
2. What were the growth and evolution stages of universities based on open education?
3. What are the advantages of open education in higher education?
4. What are the challenges and opportunities of open education in universities?

Research Methodology

The selection of method(s) capable of best analyzing and reporting the features and characteristics of the gathered data was of utmost importance, and it could be claimed that the

most significant section of each study is the operational work and method of gathering and analyzing the required data, as the results largely depend on the authors' methods and techniques for obtaining them. Hence, the present study aimed at reaching acceptable answers to the research questions. One method for doing so was a review of previous literature, which allowed for portrayal of values and beliefs of the society and individuals through vivid description of the issue (Marshal and Rossman, 1998).

This is a descriptive study, and utilized a qualitative method for data gathering. First, education systems based on open education were introduced, and the required data was gathered through documentary and library research among digital and printed resources. Hence, after visiting different websites, such as scientific databases, like the portal for Jahad Daneshgahi and Gigalib database, websites of universities using open education in the world, various scientific journals, numerous articles were extracted and studied in accordance with the key words and objectives of the study. The gathered data was then descriptively analyzed, and the entire stages were analyzed by the authors, without seeking any software assistance.

Findings

1. When and why were open and distance learning used?

Considering the information and data gathered, it could be stated that open education is a historically young educational system, which began as remote and correspondence education in the first decade of 1700s. Correspondence education happened in the form of correspondence between the students and schools or academic centers. In 1836, the University of London started a distance learning course, and Isaac Pitman in 1840 proposed short-term courses to be provided through correspondence to learners and students around Britain. In 1850, Gustav Schmidt commenced a language course through correspondence for adults in a self-learning method. The University of Chicago and University of Queensland were among the first educational institutes to provide distance higher education in 1892 and 1911, respectively. In 1921, the license for first academic training radio was issued, which is considered to be foundation for the development of e-learning. The year 1960 witnessed a change in distance education and technology with the evolution and progress of media, and universities began to rely on multimedia tools to support and teach students instead of postal services, in a manner that e-learning institutes appeared in not only the UK and US, but also other European and Asian countries (Pishbaz, 2021). Finally, the Open University of England was established as the first distance learning institute in the world in 1963, and began to flourish in full in 1969.

The open education system was welcomed and used for various reasons, such as the inability of traditional universities to respond to the lifelong demands for learning, the high costs of traditional higher education, low capacity for admission of students in such universities, increasing demand of society for such services, shortage of capable and competent instructors in the traditional educational system, advent of digital technologies, and the inclination of students toward activity away from the official environment of in-person classes due to the existing capacities in the employment market and environment (Hirsh and Weber, 1999); creation of more educational opportunities (Moosapur et al., 2009); favorable response to the growing demand for higher education and the necessity of lifelong learning without any limitations in time or location (Farajollahi et al., 2009; Etezadi et al., 2009); using novel educational methods (Tuncay and Zafer, 2010); possessing capabilities such as interaction, individual learning, educational organization support, and using multimedia facilities (Alhosseini, 2005); elimination of age limits or physical disabilities as barriers for continued studies, providing ample opportunity for interaction with instructors, other students and the course environment (Taylor et al., 2014); capacity for rapid qualitative and quantitative development in different times and locations (Dierov and Hilden, 2016); and provision of various and equal educational opportunities, lower traffic and environment protection, and the like, which paved the way for

the establishment of universities known as virtual or distance universities.

The establishment and opening of such institutions generally related to the special educational requirements of each country. In China and India, for instance, the main reasons for appearance and popularity of open or distance education were population density, insufficiency of capacity in the existing academic facilities, and limited educational budgets. In the same manner, vast territorial expanse and scattered population in Australia, the issue of education for adults and its continuity in US, UK, France, Germany and Japan, economic problems and shortcomings in African countries, and the high demand for academic education, the need for training school instructors, and providing opportunities for continued studies for working people in Iran played pivotal roles in the establishment and opening of distance learning institutes as a more economical replacement for the traditional educational system (Ostadzadeh, 2002).

2. What were the growth and evolution stages of universities based on open education?

Open universities have evolved through different generations, and passed the following five stages in their history (Moore and Kearsley, 2012):

1st Generation: Correspondence Systems. During this general and in the 1900s, printed texts were first made available to students, and thus be identified as correspondence education. This method is still the most prevalent in less developed countries. The package included a study guide in print, accompanied by audiovisual elements, such as cassettes, slides, etc., and interaction happened through letters or other written or printed documents sent through the post. In this method, correspondence comprised the written relation between the teachers and students (Garrison, 1985). The textbooks, study guides and other topics taught are designed with precision, and produced objectively through expert teams, which include individuals familiar with educational design and behavioral learning theories. One of the most significant features of the technology for the first general is maximized freedom and independence for the students to study as they prefer.

2nd Generation. The second generation appeared along the invention of radio during World War I, television in the 1950s, and the progress and prevalence of audiovisual media in them. By the late 1950s, channels were dedicated to education in many US cities. In the 1970s, educational television offered a new educational environment for access to rural and remote areas. Despite the vast US investment in transforming educational television in the Latin America, namely El Salvador, Brazil, Colombia and Mexico, the students' inclination toward such education and research results show that using the educational TV didn't necessarily result in higher knowledge among learners, which can be attributed to the extent of face-to-face interaction, its quality and support resulting from that (Prewitt, 1988). In some areas with sparse populations, training and education was realized through two-way radio systems,

3rd Generation. This generation started with the creation of computers and their application to educational materials, when different approaches to the pedagogical functions of internet and computers were observed. In the first approach, the technology awareness and knowledge is considered to be the final objective, and efforts are aimed at learning how to work with computers and internet. The second approach views the technology as a facilitator of the learning process, and the third approach combines the two approaches above, focusing on both promoting technological skills and the learning process with their assistance. Since 1995, the fast growth and development of internet has generated a new global aspect to education. According to Keegan (2000), the long-range communication technologies of the electronic revolution in the 1980s fostered the possibility of remote yet face-to-face education. A distinctive feature of this type of education is the replacement of non-personal communication with the personal face-to-face interaction. In the computer-assisted instruction, the computers were used as a pedagogical machine with all the tools and facilities to provide instruction in an efficient and distinct manner. The computer-managed instruction employed the separation,

storage and recovery capabilities of the computers in designing courses, following records and registering progress for students. Computer-mediated communication gave birth to e-mails, video conferences and electronic message boards, while computers with the computer-based multimedia features offered powerful, precise and flexible tools for education purposes. Different technologies related to sounds, images, prints, and graphics were simultaneously used to communicate and develop educational software that promoted distance learning programs. Moreover, the advent of internet and the possibility to access the worldwide web assisted the creation of online educational programs for virtual universities, and globalized education through extensive interactive opportunities (Farajollahi et al., 2010).

This generation enjoys the advantage of real-time or timed human interactions through a vast set of telecommunication technologies, such as audio, video and computer conferences (Moore and Kearsley, 2012). In short, this generation welcomed computers as a multi-dimensional tool that possessed the features of past technologies, and was at the same time a powerful and dexterous educational tool capable of managing graphic, audio, and text materials with word processors, desktop publication tools, and digital multimedia and video systems (Keegan et al., 2004).

4th Generation. The 4th generation coincided with the advent and development of online systems, and was able to integrate the 3 main and primary features of networks (namely, mass marketing of large content volumes, interactive communication capacity based on computers, and power of local processors) to be added into network capabilities. During this generation, multimedia materials, including texts, sounds, videos and computer files, were transferred via portable computers and mobile phones to people, along with access to databases and online libraries, and the interaction between schools and students, students and students (as one-to-one, one-to-many, and many-to-many transactions) was conducted in real time and timed manner through e-mails, video conferences, electronic message boards and the like.

5th Generation. The appearance of artificial intelligence (AI) helped the 5th generation reach a common meaning in activities, where human and non-human factors became able to search and process information within networks. In fact, each generation of distance learning pivots around the core, revolutionary phenomenon of that era. Today, after passing through five generations of open or distance learning programs, one witnesses hundreds of prestigious universities around the world offer their courses and curricula online in programs that provide a wide variety of subjects and fields. The number of such programs is growing every day, which utilize different educational technologies and media, such as teaching materials and textbooks, radio programs, e-mails, interactive TV, satellite, online features, like messages, chat rooms, and video conferences to guide and promote learners in remote areas (Lowry and Spector, 2014), and thus attracting huge numbers of learners around the globe (Dennis, 2005). A summary scheme of the open education generations is provided in Fig. 1 below.

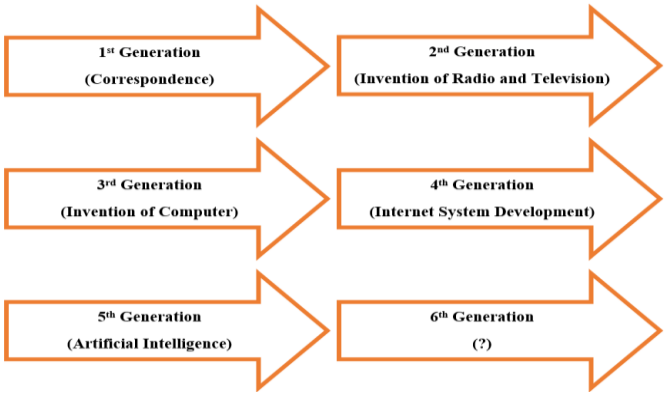

Figure 1 . Evolution of Open Education

3. What are the advantages of open education in higher education?

Thanks to its numerous advantages, open education is currently deemed to be among the most popular learning models (Castro and Tumibay, 2021), and face-to-face education has thus grown significantly in the recent years due to the elimination of barriers pertaining to time and location of education. The mentioned advantages include economic considerations (Çekerol and Öztürk, 2012); using novel educational techniques and capabilities, such as e-mails, web-based conferences, online learning sessions (Bersin, 2003); expanded learner-based programs, lower educational costs, production of timely and appropriate contents, subject coherence, flexible access, and easy use (Engelbrecht, 2005); facilitated interaction between instructors and students, wider access to learning and education, and promoted basic knowledge required for learning purposes (Zamani and Babadi Akasheh, 2021); higher general knowledge among instructors, better individual learning, flexibility, and lower costs (Bazghandi, 2018); accessibility 24 hours a day, 7 days a week (Pishbaz, 2021); higher educational equality, and equal opportunities for learning (Aras Bozkurt, 2019); possibility to record and replay classes afterwards (Jafari et al., 2020); comfortable learning environment (less noise, no space limitations, less exhaustion, free learning environment, no competition for better seats, no traffic to and from campus, possibility to remain at home with the family, and attending quality class experiences at home), regular and programmed progress of syllabus for the instructors, mental stability and easy presentation of materials, and lower transport costs (Shim and Lee, 2020); no time or location limitations, and less shyness of students compared to in-person courses (Alqudah et al., 2020); limited consequences of social interactions, less absenteeism compared to in-person courses, better student interaction in classes, and higher and quicker educational progress (Sindiani et al., 2020), protected personal health and safety through viral pandemic conditions such as COVID-19, being exposed to numerous forms of learning, and easy access to online resources (Dung, 2020); flexibility, self-motivation and independent work (more comfortable for introverted students) (Davis et al., 2019); learner independence, flexibility in online learning modes, higher opportunities for correction (De Paepe, 2018); adaptability of certain activities (such as performance assessment, continuous evaluation, and timed tests) with the online format without losing the content or interaction among classmates or instructors (Dumford and Miller, 2018); easy time and location for learning (Mohammadnejad Asl, 2021); better access of students and instructors to the electronic teaching materials (Ali Bahrami et al., 2021); uploading of and access to course materials during the semester, holding several surveys and receiving general feedback, message boards and chat rooms for interaction of students and instructors, weekly formulation of the course syllabus and uploading homework and announcements of the week, setting deadlines for homework delivery and not receiving them afterwards, better mental and operational structure for students to follow activities and deliver assignments, access to the students' portfolio and documents during the semester, continuous awareness of students of their educational progress, event announcement through e-mails or other social networks to the instructors and students, requirement for personal e-mail addresses to be informed about homework deadlines and other events, designing different multiple-choice and essay tests, higher IT knowledge among instructors and students, higher admission of students into programs, holding webinars, scientific positions, promotion and educational progress tests, training courses on system capabilities and features for instructors in order to promote their pedagogical skills (Azari, 2020).

4. What are the challenges and opportunities of open education in universities?

Results of different studies in this field show that besides the advantages of using open or distance learning systems, there are various challenges in the arena, which can be turned into opportunities in this field of education.

Among the disadvantages and challenges of open education, one could point to the absence

of in-person interaction and communication between the instructor and learner (Saeedpur and Tabasi, 2010; Alaf Behbahani, 2020); the need for technical devices, inability to maintain quiet at home during online classes, and insecure nature of online programs (Sindiani et al., 2020); low-quality access to internet, such as disrupted connection and low-quality voices during online classes (Dinh and Nguyen, 2020); no personal interaction, awkward education and learning without face-to-face interaction, low electronic learning skills among instructors and students, insufficient internet bandwidth (Alqudah et al., 2020); network instability (delays, instructor's voice not being in sync with the training materials, internet connectivity problems, and the class failure phenomenon), unilateral interactions (no direct interactions, problematic sharing of opinions and questions, unilateral progress, certain instructors' reluctance to use chat rooms, no feedback on questions and answers, no immediate feedback, and impossible after-class questions), reduced concentration (long class periods, lower attraction to the class due to lack of feeling belonging or company with the program), limited practice or testing (lower understanding due to insufficient practice, limited practical classes, problems with reporting on tests due to inadequate direct participation in tests), provision of insufficient information (no recorded speeches or educational materials, insufficient information about certain instructors), dissatisfaction due to replacement of homework with distance learning, limited team projects (impossible team work, too quick team projects, unpleasant group work, lack of belonging or participation in activities), lower educational progress (higher progress of attended lectures, lower activity of instructors in classes, worsening class quality, provision of old materials or speeches not so useful for class), unprepared class design (unsatisfactory blackboard activity in online speeches, insufficient use of systems, problematic reporting due to insufficient explanations or recorded videos in class), lower class comprehension (lower learning, compared to field speeches and activities), unsatisfactory assessment (additional burden of attending final exams without having attended mid-terms, ambiguous assessment process), unsatisfactory official process (class cancellation in scientific units despite tuitions being paid, lower usage of academic facilities like libraries, laboratories, etc.), unsatisfactory relations (nonexistent friendship opportunities, problematic information sharing with classmates), unsatisfactory educational environments (awkward class attendance at home or cafes, inconvenience of turning on the webcam at home, lower privacy) (Shim and Lee, 2020); staring at digital screens for long periods, lower physical movements, absent conditions for social interactions and skill growth, fear of online assessments, lower concentration, lower peer interaction in virtual classes, inaudible instructors' voices, insufficient time and opportunity for practice and consultation with students and instructors, difficult acquisition of educational materials, lower interactions with the instructors, problems with following study programs, lower personal discipline, individual learning complications, delayed response and feedback from instructors, high costs of material production, insufficient initial skills in communication and IT, lower communication skills, and shortage of budgets and infrastructures (De Paepe et al., 2018); issues related to cheating, and to excessive reliance on group feedback on tests and exams (Dumford and Miller, 2018); addiction of certain students to internet and mobile phones, excessive and inappropriate use of materials belonging to others (Rezazadeh, 2021); insufficient media literacy (Ali Bahrami et al., 2021); insufficient virtual teaching skills among certain instructors (uploaded materials disproportionate with credit numbers, files being uploaded haphazardly and in no chronological order, presentations in English and lower comprehension of teaching materials, certain instructors merely reading over the presentation slides without any explanations, designation of time slots for downloading the provided files, insufficient information to students regarding changed files, inappropriate use of virtual features by certain instructors, incomplete audio and test files uploaded), ineffective learning (harder comprehension of specialized topics, lower motivation in virtual education, reduced verbal and non-verbal interactions among students and instructors, ineffective presence of instructors in the learning process, insufficient questions and

answers or brainstorming with student for better understanding and clarification, instructor-oriented virtual education, problematic expression of opinions and questions to the instructor, insufficient use of educational accessories for specialized topics), difficult learning planning for students (insufficient management of learning, non-mandatory presence in classes and the resulting reduced learning, no defined framework for education, weakened students' role in class, unfulfilled nature of being a student, changes in student lifestyle), unreliable assessment (instructors not receiving student feedback, unrealistic student assessments, insufficient compliance of students with exam regulations, exam questions incompatible with syllabus volume and content, system inaccessible for submitting homework), software and hardware problems (no educational equality due to unequal access to internet and computer equipment, internet costs, internet connectivity problems, difficult downloading and uploading large files, structural problems, and virtual education systems and technologies) (Bakooyi et el., 2021); difficult or slow internet access for students and instructors, software and hardware problems, class disconnection and reconnection, site entry problems and high number of attendance in general or specialized classes, instructors'/students' unfamiliarity with educational systems and their features (Azari, 2020); lower human and emotional interactions, absence of face-to-face communication, absence of instructors in classes, inappropriate comprehension of the cyberspace (Badanara et al., 2018), low software skills among instructors, adverse impacts of excessive computer use for children, non-supervision of instructors on the learning process, internet and bandwidth problems, high costs of implementing virtual systems in different countries, and difficult effective interaction between instructors and students (Kamali and Abdollahzadeh, 2020); faculty members and students not trained on how to use the electronic classes (Reyes-Chua et al., 2020); low internet connectivity, insufficient access of students to communication and IT services, inadequate interaction among students during the program, and difficult access to computers (Jamtsho and Bullen, 2007); and absence of real-time feedback (Jeekim et al., 2005).

In summary, the results of these findings were categorized into eight areas (namely Learner (Student), Learner's Attitude, Interaction, Content (Learning), Environmental Factors, Internet, Instructors, and Assessment), and 80 issues, as provided in Table 1 below.

Table 1. Limitations of Open Education

Area	**Issue**			
Learner (Student)	Insufficient training about using online classes	Reduced concentration due to long periods of classes	Staring at digital screens for long periods and reduced concentration	Restrictions on training, practice classes and testing
	Lack of management of study programs and activities	Students problems in expressing their questions and ambiguity to instructor	Addiction of some learners to the Internet and mobile phones	Difficulty in report and presenting activities
	Reduced students roles	Change in student lifestyle	Decreased academic progress	Non-mandatory class attendance
	Weakened student planning in learning	Difficulty in acquiring course contents	Lack of personal discipline and physical movements	Lack of media literacy
Learner's Attitude	Dissatisfaction due to the replacement of distance homework with assignments	Decreased understanding due to lack of practice	Less motivation toward studying online	Lack of proper understanding of Cyberspace

Interaction	Lack of communication and face-to-face interaction between instructor and learner	Lack of conditions for development of social interaction skills	Lack of sense of belonging and participation	Difficulty in effective communication between instructor and learner
	Lack of interaction with peers in online class	Dissatisfaction with formation of relationships with students	Difficulty in sharing thoughts	Lower communication skills
Content (Learning)	Difficulty in reporting due to insufficient explanations, etc.	Lack of effective learning, especially in specialized courses	Lack of practical classes despite tuition payment	Not being able to use university facilities such as libraries, etc.
	Individual learning mode	Lack of supervision of instructor on learning process	Not providing educational contents	Lack of delivering recorded speeches
	Lack of questions and answers in class	Preparation and use of old contents	Reduced quality of classes	Reduced learning comprehension
Environmental Factors	Inconvenience of taking class by turning on camera at home, reduced privacy	Inability to provide a quiet environment at home when holding an online class	Insufficient access of learners to information andcommunication echnology services	Participation of a large number of students in general or special classes
Internet	Lack of basic communication and IT skills of students or instructors	Dissatisfaction with blackboard use during Internet lectures	Problem logging in to classes and websites	Non-use of the chat room by some instructors
	Insecurity of online classes	Problem of uploading and downloading large files	Lack of access to the Internet and equipment for everyone	Difficulties in hearing the instructors' voices
	Dissatisfaction with educational environments	Need for technical equipment and setup costs	Problem of fast and easy access to the Internet	Excessive computer use
	Internet connectivity problems, disconnection/ reconnection	Low speed internet	Lack of easy access to computer	Internet purchase cost
Instructors	Reading over presentation slides by some instructors	Incompleteness of some content of audio and text files	Lack of informing the student about changes in uploaded files	Insufficient online teaching skills of some instructors
	Being instructor-oriented during online training	Uploading files out of sequence	Ineffective instructor presence on learning	Inactivity of instructors in classes
Assessment	Over-reliance on collective feedback from tests and final exams	Inadequacy between exam questions with course contents	Not taking the mid-term exam and focusing only on the final exam	Lack of feedback on questions and answers and difficulty in immediate feedback
	Students' inappropriate use of other 's contents (cheating)	Problems of not accessing system in sending assignments	Lack of real-time feedback	Difficulty in asking questions after class
	Unreal assessment of students	Instructor 's delayed response and feedback	Insufficient compliance of exam rules by student	Fear of online assessment

Discussion and Interpretation

Open (distance) learning and education is a novel method used in open universities, a historically young educational system, which began as remote and correspondence education in the first decade of 1700s. Since then, this mode of education developed until the University of London (1836), University of Chicago (1892) and University of Queensland (1911) offered official distance learning as the first educational institutes in this path. The reason for the growth and development of distance learning has been different, considering the special geographical conditions and socio-cultural structures of each country. Open universities evolved in five generations: the 1st generation was known as correspondence education, while the 2nd generation coincided with the invention of radio and television, and the 3rd with the appearance of computers and their application to providing educational materials. The 4th generation occurred along the establishment and development of internet systems, and the 5th accompanied the advent of artificial intelligence. Such education and use of different educational technologies and media have resulted in growing numbers of students in different periods and locations.

Castro and Tumibay (2021) consider distance learning to be one of the most popular models of education. Open education possesses various advantages, such as removing time and place barriers, economic considerations (Çekerol and Öztürk, 2012), accessibility 24 hours a day, 7 days a week (Pishbaz, 2021), higher educational equality, and equal opportunities for learning (Aras Bozkurt, 2019), higher metacognitive skills (educational planning, monitoring and regulation), and cognitive skills (repetition, reviewing, expansion and comprehension) (Hasani Jafari et al., 2020), fostering educational motivation and interest in learners (Zarei Sarookalayi et al., 2020), students' satisfaction with education (Guest et al., 2018) and the like. However, distance learning in higher education is also confronted with challenges, which have been categorized and summarized into eight areas (namely Learner (Student), Learner's Attitude, Interaction, Content (Learning), Environmental Factors, Internet, Instructors, and Assessment), and 80 issues (Table 1), after reviewing and analyzing the results and findings of various studies in this field.

To achieve a favorable and satisfactory open higher education, one needs to consider the challenges, resolve limitations, turn them into opportunities, and thus take a sizeable stride toward the development of higher education in an open manner. Open education is entertained as a novel educational approach in attitude, skill and knowledge aspects of behavior, and the learning process of students (Tripathi and Jeevan, 2010), and requires understanding the characteristics of information era and effective life in the society (Saeedpur and Tabasi, 2010), as Routman (1994) believes the Third Millenium to encompass new liaisons in the social human life, and extensive changes would be necessary in the higher education system to adapt to such new conditions and environments. Changes in the educational and scientific structures of universities, and at the same time, attention to the educational and pedagogical conditions, capabilities, talents, and educational maintenance and promotion need to be included in the major missions of universities and educational institutes (Zare and Baradaran, 2018). With their special educational systems, such universities can be beneficial in the process of generating education (Vahdani Asadi et al., 2021), and the golden opportunity for disciplinary education (Thompson, 2011). In short, one could state that considering the results and assessments conducted in this respect, open education has greatly assisted traditional educational systems, in a manner that it can stand as a competitor for the traditional higher education, in most areas of the humanities. If performed in compliance with conditions and regulations relevant to its objectives, the necessary requirements are provided, and the challenges and barriers are minimized, distance learning can provide the best education in training instructors, promoting expertise among employees, increasing knowledge and awareness in society, and assist traditional education, even in medical and engineering disciplines as well. Thanks to the increasing developments in different scientific, education and technological fields, one could

even expect robots teaching classes in the near future.

Practical Proposals

Practical proposals for open education and promotion of status in this mode of education for the relevant learners are as follows:

- Higher interaction between students and instructors, as well as students with other students during virtual classes;
- Higher awareness and information of students about cyberspace, rank development, etc.;
- Consulting advisors and experts in the fields of psychology and IT by the relevant institutes;
- Reducing the number of students in each educational session;
- Increasing the number of class hours;
- Attention to education pre-requisite courses by the instructors and professors;
- Maintenance and promotion of students' motivation for learning and participation in classes on a regular basis;
- Engaging students with attractive and practical activities related to the subject in question;
- Full preparation of instructors in regard to instruction and being up-to-date on information and technology;
- Full command of instructors in regard to the field of instruction, and using integrated and meaningful teaching solutions;
- Instructors and professors using up-to-date educational videos and slides related to the subject in question;
- Using conceptual tests and presentations by students, for more precise assessment of educational progress during the course of study;
- Receiving regular and timely feedback (online and offline) from students; and
- Providing high-quality, stable, and economical (even free) internet connections to instructors and students.

Proposals for Further Research

- Considering the analysis of published articles regarding opportunities and challenges for open education, and the results obtained in this respect, a community questionnaire can be developed and used to collect information or feedback.
- The results of this study was qualitative, and could be employed in future studies as a basis for open education.

Limitations

Limitations of this research include:

- Method of gathering data and resources from scientific websites;
- Not conducting the research in a quantitative manner, or using statistical information; and
- Collecting articles within a limited time frame.

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