EFFECTIVENESS OF ONLINE TEACHING OF A SPECIFIC INDICATOR ON LEARNING OUTCOMES OF SCHOOLS AND COLLEGES

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Abstract
Online learning is referred to as the use of information and communication technology (ICT) or improving and facilitating learning. It is a form of education and learning that uses internet technology in the school setting to communicate and collaborate. This includes web-based elements that supplement traditional classroom teaching and learning environments for online access to the educational process. The pandemic of COVID-19 influenced education systems all over the world. Schools, universities, and colleges worldwide were almost entirely closed to avoid the spread of COVID-19 with no pharmaceutical and preventive measures, including social distancing and self-insulation. About 72 percent of the world's student population will be affected by these closures. In response to school closures, UNESCO recommended that schools and teachers use distance learning programmes, open applications, and educational channels to access students and reduce disruptions in the classroom remotely. During the pandemic, several solutions were introduced in various countries worldwide to maintain the education process. All was made available via digital libraries, television shows, instructions, tools, video tutorials, and online platforms.
Consequently, several schools have moved over channels such as Zoom to online distance learning as a consequence of the pandemic. However, several problems were found globally during the online learning process, according to the literature. For example, if thousands of students simultaneously study, Internet access can be unreliable; some teachers find it difficult to find the most suitable online resources to teach and learn online; some teachers and students do not have the technological skills to teach and learn same time. This would disadvantage the online experience of teaching/learning. Online learning is an excellent option, particularly when it is hindered by traditional learning. There are, however, such inconveniences which should be considered in future.

Keywords: ICT, Traditional Learning, Online Learning, Distance Learning, Study Schedule, Cognitive Abilities, conceptions of learning, distance education, online education.

Introduction
The new coronavirus is rapidly spreading worldwide with its associated COVID-19. Attempts to stop COVID-19 spread by using non-pharmaceutical therapies and protection steps like social separation and self-isolation led to the widespread closure of primary, secondary, and tertiary schools worldwide [1]. About 72 percent of the world's student population will be affected by these national closures (UNESCO 2020). Several other countries have enacted localized closures that would affect millions of students. Thanks to school delays, the pandemic had impacted nearly 1,725 billion students by April 27, 2020. According to UNICEF, 186 countries have national closures, and eight have local closures, affecting 98.5 percent of the world's student population. On March 23, 2020, (UNESCO 2020) [9][10].
The "Education Response to Crises and Emergencies" was the priority of international organizations. Countries should 'provide alternative forms of learning and education for both children and young people who are not in primary and secondary schools, and implement state-recognized equivalence and bridging programmes to ensure the use of flexible learning both in formal and non-formal environments,' according to the UNESCO education 2030 Incheon statement and framework f. (UNESCO 2020) [14]. Several countries in their education systems have adopted different versatile

teaching and learning methods, with online education one of the most important approaches according to COVID-19 emergency development. Online education has always been about accessing educational opportunities that are at least more flexible in time and space than campus education utilizing different forms of technology. During the pandemic, several solutions were introduced in various countries worldwide to maintain the education process. All was made available via digital libraries, television shows, instructions, tools, video tutorials, and online platforms. To contain the COVID-19, the Chinese Government also prohibited most personal practices, including teaching. To provide hundreds of millions of students with versatile, online learning opportunities from home comforts, the Chinese Minister for Education has launched a program known as "disruptive classes, unscripted learning." Online learning has become more and more dependent on training. Teachers and students can access resources not found in textbooks by using advanced technology in various formats and in ways that span time and space (OECD 2020).

Many schools switched to online distance learning platforms like Zoom in response to the pandemic [5]. The Organization for Economic Co-operation and Development (OECD) has established an education structure in response to the COVID-19 pandemic [2].

To establish a remote learning strategy, schools should take into account 10 UNESCO recommendations to ensure a continuous education during the 19 pandemics [9][10]:

- **Prioritize solutions to address psychosocial challenges before teaching**: Use the available tools to link colleges, parents, teachers, and students. Enabling social care intervention and solving possible psychosocial challenges students can face when isolated build communities to guarantee daily human connections.
- **Plan the study schedule of the distance learning programmes**: Organize meetings with stakeholders to decide whether or not the course should be focused on teaching new knowledge or better understanding the previous lessons of pupils. Plan your schedule around the situation in the affected countries, your level of research, your student's needs, and your parents' availability. Depending on the state of school openings and home-based quarantines, choose the appropriate learning methodologies. Avoid learning methods that necessitate interpersonal interaction.
- **Provide support to teachers and parents on the use of digital tools**: If monitoring and facilitation are essential, organize brief training or guidance sessions for teachers and parents alike. If teachers want to broadcast lessons live, help them prepare simple settings such as Internet data usage solutions.
- **Blend appropriate approaches and limit the number of applications and platforms**: Combine synchronous communication and lectures and synchronous learning using instruments or media readily accessible to most students. Avoid overburdening students and parents by asking them to download and test many applications and websites.
- **Develop distance learning rules and monitor students' learning process**: Found ground rules for parents and students for distance learning. Creates formative questions, evaluations, and exercises to monitor the advancement of learning for your students closely. Try using software to help students provide feedback and prevent overloading parents by asking them to check for and send input from their children.
- **Define the duration of distance learning units based on students' self-regulation skills**: Combine synchronous communication and lectures, as well as synchronous learning, using instruments or media that are readily accessible to most students. Avoid overburdening students and parents by asking them to download and test many applications and websites.
- **Create communities and enhance connection**: Create teachers, parents, and school manager groups to resolve the loneliness or impotence feelings and encourage sharing knowledge and student coping strategies (UNESCO 2020).
- **Examine the readiness and choose the most relevant tools**: The teachers and students determine whether to use high-tech or low-tech solutions depending on the efficiency of local

power, internet connectivity, and digital skills. This could include digital virtual television networks, online lessons, MOOCs, radio, and television.

- **Ensure inclusion of the distance learning programmes**: If only a small number of students can use digital devices, take measures to ensure access to programmes in distance learning for students with disabilities or low-income families. Consider moving such computers to households temporarily from computer laboratories to provide them with Internet connectivity.
- **Protect data privacy and data security**: Consider data security when uploading and exchanging information or educational resources into online spaces with other organizations or individuals. Make sure you do not violate the protection of your personalized details by using applications or websites.

Table 1: Methods in online learning/teaching system

Expositive Methods	Application Methods	Collaborative Methods
Presentations	Demostrations-practise methods	Online guided discussion
Case studies	Jobs aids	Collaborative work
Worked examples	Case-based exercises	Peer tutoring
Demonstrations	Role plays	
	Simulations and serious games	
	Guided research	
	Project work	

Table 2 depicts different types of methods used in the e-learning methods. They have the opportunity to learn from each other's work and to practice tutoring methods.

Table 2: Various Learning Contents

Types of Learning contents	
Facts	Unique, specific information that answers the questions: who, where, when? Facts are shown, exhibited or indicated. Examples: data, lists, historical events
Procedures	A procedure is a series of clearly defined steps, aiming to perform a task. Procedures answer the question: "How to …?" Example: "instructions for creating a table in Microsoft Word"
Concepts	A concept is a group of objects, entities or ideas that: are defined by a single word or term; share common characteristics; differ in unimportant characteristics; require a definition; and answer the question: "What is …?" Example: the concept of "climate change"
Principles	A principle (or rule) describe a relationship between two concepts. For example: "As price increases, the supply increases". Some principles can be translated into strategic guidelines which can guide decisions and complex tasks. Example: "guidelines for facing price volatility"
Interpersonal skills	Verbal and nonverbal skills for interacting with other people. For example, content related to "negotiating" or "solving group conflict"
Attitudes	Predispositions to behavior. Example: content related to appreciate the "importance and urgency of adopting measures for limiting the negative impacts of climate change"

Application methods involve the learners in practical activities which can range from simple exercises (such as the demonstration-practice method) to more complex methods like simulations or research activities [3]. When using these methods, it is helpful to have a tutor or instructor to provide guidance and facilitate reflection for learners.

Online shopping is an emerging shopping trend for young people. The internet provides a convenient facility for the users to access the web sites. The growth of online shopping in worldwide is increasing very fast. The TAM model is famous in twenty first century. The internet markers are facing non acceptance from the internet users. This model analyzed perceived usefulness, perceived enjoyment and perceived ease of use. This study shows perceived use and enjoyment impact more on online shipping (Umair Cheema et. al., 2012).

Review of Literature

In the last decade, several research projects have been launched and completed in online learning systems. Several scientific journals were published in this respect. We look at a few of them and their great accomplishments.

The researchers presented in Ajayi, I.A. (2008) [11] a summary, along with comments on their relative advantages and disadvantages, of commonly used online learning procedures. The focus was placed on the value of multinational learning. Some executions have also been addressed to predict online learning combinations operational.

Barajas, M. (2002), Online schooling gives you versatility, as e-learners can read from anywhere at any time, allowing those who could not adapt to their regular apprenticeships to learn. "The demands of juggling employment, the family, and learning make online learning an important option for an increasing population of adult learners," Castañeda, Selwyn, (2018) said.

Whatever their caste, faith, color, sex, faith, or disability, the students are treated equally in online education and learning. Instead, online learning is a gift for learners with disabilities with difficulties commuting or for people living in rural areas with distant schools.

The importance of engaging with other students is emphasized by Buterin, (2014) and their soleness as a major downside of online education. As a result of technological changes in modern times, a child's social development has taken a back seat. Students use WhatsApp, Instagram, and Facebook to talk to online people in wide-ranging places, but they have difficulties meeting people and welcoming them. This tenderness helps to make people feel lonely. Studies indicate that immense stress in their decision to drop out was isolation among the students.

While the Internet makes sending and receiving information of all kinds to your audience easier, assessing those types of input and information for students often becomes difficult.

Online students fail to be inspired by other activities while they study. It is disadvantageous for students who have difficulties controlling their time and are inclined to work at their own pace. These students have a higher chance of success in the context of traditional schooling.

Barajas, M. (2002), online learning removes the opportunity for face-to-face teacher interaction, which is essential to build a student-teacher relationship. Online learning can trigger confusion between students and professors, as published in the International Review of Open and Distance Learning Studies, which can have a detrimental effect on the learning process and students' results due to mismanagement of work.

Kontzinos et al., (2019), during class, the student has a burst of creativity. Until teachers teach about a subject in an offline course, they research the minds and behavior. They also teach students based on their ability to understand or absorb. Teachers cannot do this in front of the camera. Teachers may encourage, but they cannot use the camera to generate creativity.

Y.Z. Pei et al. (1999), as there is a lot of freedom for students to do anything they want without worrying about an instructor or professor, online education needs a lot of autonomy. This type of release can easily derail the focus of a student. Therefore, it is up to you, since you can easily drop, to be careful enough to prevent yourself from falling or fallen behind.

However, the particular features of online learning, education, and learning vary from person to person. These features characterize the heterogeneity of online learning. It also helps people to continue to learn. Dringus, L.P. (2000), the technology allows students to study outside the classroom and their daily scheduled classes in education. Increasingly, the Internet has changed the

way education is delivered and conducted. The Internet's advancements and applications not only have made it possible to cooperate with teachers and students in various ways, both in synchronous and asynchronous form, as well as a wide range of educational resources. This enhances the teachers' imagination and enables them to learn more online. Because of the risk of the pandemic, districts, schools and universities must choose how their teaching and learning continues. Hence, their teachers, staff, and students are safe from an emergency in public health increasingly changing and recognized. Several universities agreed to cancel all face-to-face lectures, including laboratories and other learning activities, to help prevent the spread of the virus causing CoV-19 and have demanded that professors move their courses online. Moving online training gives teachers and students the right to learn from anywhere and at all times.

- **Concepts of online education/learning**

There are several advantages and advantages compared to traditional schooling. Tasks such as accessibility and appropriateness are taken care of during online learning. This is the case due to personalized learning.

The word 'online education' applies to internet-based learning. On the other hand, online learning is a single mode of 'distance learning,' the umbrella term for any long-distance and beyond classroom learning [11]. The need for a growing group of students who cannot or do not want to participate in traditional classes is addressed through online training [4]. Online education. Those who cannot attend conventional courses cannot find a certain level in their favorite school, those who live in remote areas, those who work full-time and can study only during or after work, and those who genuinely want individual learning are among those who cannot attend classes. Persons with insurmountable education obstacles as a result of the growth of online training have the ability to benefit from online education. A computerized education tool or framework that enables learning from anywhere is an online learning system. Today, online learning is largely provided via the Internet but historically provided using computer-based techniques such as CD-ROM [5][6]. Technology has advanced so much that the geographical divide can be crossed utilizing tools to feel like you're in the classroom. Online training enables students to share content, including images, slideshows, text papers, and PDFs, in various formats. Users can host and link webinars via chat and message boards with professors. Since the beginning of the Internet, some of the greatest progress has been made in education. As students today know the smartphones, text messages, and the Internet, it's easy to register and manage an online class. Online learning means training with computers and technology for communication, including the Internet, CD-ROMs, personal numerical assistants (PDAs), mobile telephones, and other electronic devices that provide training or education.

The method presents information in three layers so that learners can access the contents in a hierarchical order. Before moving on to the next step, students must grasp one principle. The highest level in the hierarchy is that of the body, followed by that of ecological processes, and finally that of physical burial. The information is presented in a non-threatening manner thanks to the hierarchical structure. As a result in figure 1, the amount of information stored in the software does not confuse users.

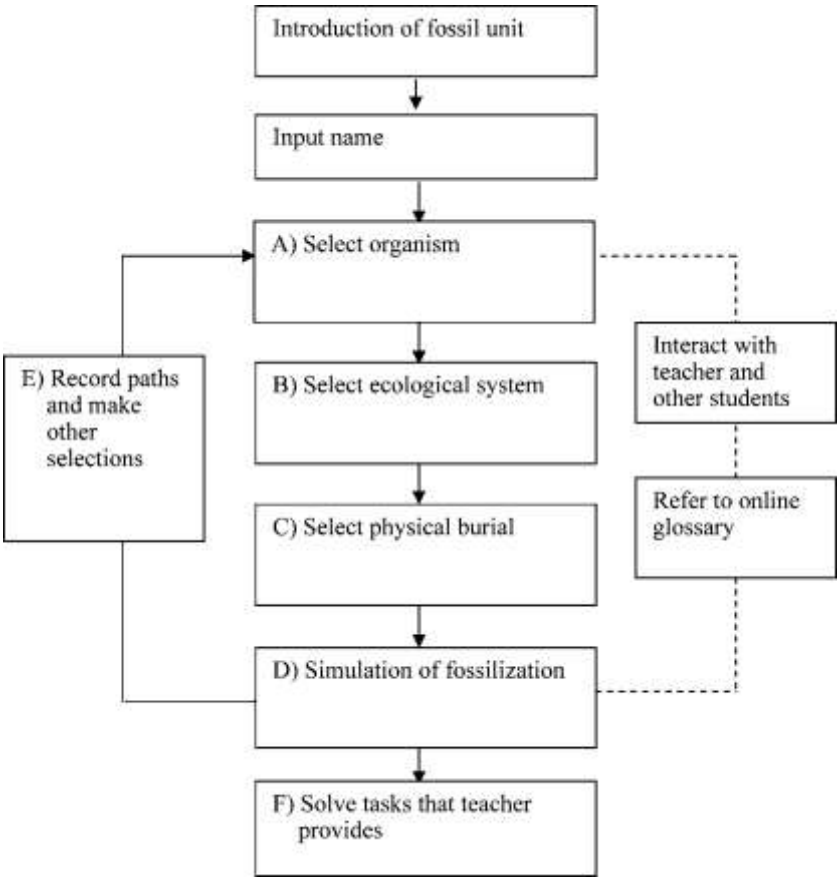

Fig. 1. Flow chart of the learning process.

The team used simple graphic templates and contrasting colors to illustrate keywords and vital messages in order to convey the most important information. The visual weight is balanced by the interface such that no specific parts of the panel stand out.

Online education includes not only training and education in the classroom but also personalized learning. There have been various terminologies for defining online learning, making it difficult to establish a common meaning [7]. E-learning and Internet learning are some of those words commonly employed for online education, remote understandings, networked learning, distributed tele-learning and telematics, interactive learning, computer-assisted training, Web-based learning, and telecoms (Castañeda, Selwyn, 2018). Examples are Internet, Intranet and Extranet content delivery, satellite transmission, audio-video tape, interactive T.V., CD-ROM ,Singh, V., & Thurman, A. (2019)[15]. All these terms mean that the learner is isolated from the instructor, that the teacher uses some technology to access the learning material (usually a computer), that the teacher uses technology to interact with the mentor or instructor and other students, and that students are assisted in some way, for learning to be improved and supported, the use of information and communication technology (ICT). However, this includes many programmes, from email students to fully online programmes, when you take your course on campus and view course material online. It mainly involves communication skills and knowledge through networking (Ally, M.) (2004)[12].

In the field of online education, electronic information and networking systems are used (ICTs). The use of such facilities in computer-based operating networks, videoconferencing and audio conferencing, internet worldwide portals, and computer assisted guidance, according to Hameed et al., 2019, involves many tools, including a system input device.

Learning in a synchronous or asynchronous environment using various devices (e.g., cell phones, laptops, etc.) with Internet connectivity is referred to as online learning. Students can learn from and communicate with teachers and other students in those settings (independence). (Singh and Thurman, 2019)[15].

- **Develops cognitive abilities**

An online learning environment can all be used to assess and process your learning style, content, objective, expertise, and skills. In this way, various learning styles can be created to provide tailored training for individuals. People can plan and direct their learning online. It can inspire, generate trust and self-esteem, meet many of the challenges facing learners, personalize their learning experiences, improve access, and enhance their learning experience while helping people grow their ICT skills [9].

E-learning has been shown to improve pupil teachers' cognitive abilities in a study, Paul J and Jefferson F (2019)[21]. E-learning students were found to outperform their students in academic performance. With one press, a student can access an endless quantity of information. Some of the world's leading universities offer a range of online programmes. The student is enrolled in an online course that helps his cognitive skills to improve.

1. **Globalization**

Thanks to emerging technology, geographical obstacles to education are eroded. The world has shrunk into a small town, and knowledge of other countries is now easily accessible. Since the digital Internet connects the world, it is important to test scenarios for electronic learning. Students exchange ideas and instruments, access current events and historical data, interact with experts and use online databases.

2. **Maximize Physical Resources**

The worldwide outbreaks of pandemic diseases and natural disasters have affected people's health and the education sector. In the past, outbreaks of infectious diseases have led to extensive school closures worldwide with other successes [10]. Closing schools have shown that mathematical modeling delays the spread of the disease. However, contacts that children retain outside of school decide the program's effectiveness. School closures can be advantageous if enforced rapidly. If school closures are implemented late in the outbreak, they will have little impact and less effectiveness [12].

In the 1918-1919 influenza pandemic in America, school closures and public meeting ban were associated with lower overall death rates. Wheeler CC, Erhart LM, Jehn ML (2010) [16] Closure of schools has been shown to minimize Asian influenza morbidity by 90% in 1957-58 and by up to 50% in 2004-2008 in the U.S. Influenza management in the United States (2010).

The H1N1 influenza pandemic in 2009 effectively slowed the spread of the virus during school closures in many countries. The decline from 29 percent to 37 percent in influenza transmission at obligatory school closings and other social distancing measures has been associated. Owing to early school close-offs, the peak of the 2009 H1N1 flu pandemic was delayed [13].

3. **Guidelines for online education during covid-19 pandemics**

The mission of the Virtual School is to continue learning even though the school has been closed. The objective is to continue learning, but not exactly like a normal day of school. Students should be able to extend their education under the guidance of the teacher freely. Please note that in the course of the pandemic or some other disaster causing school closures, in preparation for Online Education and learning for students.

- **Focus on active learning**: The course will combine text and possibly short video lectures with a spring of interviews, collaboration, video clips, and hands-on activities to involve students who are not in the course.
- **Develop learner motivation**: There cannot be an overestimation of the value of learner motivation in online learning. One or more concrete advantages or material interest should guide the learner. The explanation also helps to concentrate the attention of the student and enables them to remember them.

- Training units should be structured to allow the learner to bookmark the last company they visited and return to it.
- The learning event should be closely linked to the learning objectives and necessary to achieve the learner's goal.
- Students should clearly and in a way that students will understand the course or the subject's learning objectives.
- For review, the course curriculum should be complete and easy to understand.
- Develop questions and inquiries that allow students to include their personal experience and context in any assessed content. Since the students are in different locations, it is easier to find out when they compose their setting.
- **Designate an online learning hub**: You and your work can be found online, like in your classroom or office. Within the LMS, you can have your own space, a personal website or forum, and even a hyper doctoral brochure. This hub should include links to key tools, your favorite communication methods, and a calendar or course guide. What is important is that the students have the skills they need. Can you give your students a single connection to where they can go online? The operation is a wonderful one.
- **Create opportunities for asynchronous connection**: When the school is closed and spread through various time zones, it's still possible to connect students asynchronously. Teachers use LMS panels or tools such as the Padlet and Flipgrid to allow students to respond and debate for a particular period, recognizing that not all students are online at once. Post a prompt based on a reading or playlist previously assigned and give students a certain time to post and answer each other. Students collaborate on community assignments using applications like Google Drive asynchronously.
- **Think creatively and strategically about assessment**: Assessment is one of the most complicated elements of online teaching. EdPuzzle, an effective way to construct fast, interactive, online content-based reviews for students, such as EdPuzzle, is used for online understands.
- **Create more assignments that are collaborative**. It is also easier for the teacher to watch what the students do and check their understanding when the teacher interacts with student groups.

Constraints of Online Education During COVID-19 Pandemic

Online education has become a viable choice for uninterrupted learning in the 19-month pandemic era. However, several problems were found globally during the online learning process, according to the literature. Some examples of these constraints are as follows [14][15]:

- A single Internet connection can become unreliable if thousands of students study at the same time.
- Cheating during online exams is difficult to prevent.
- Some teachers may find it hard to find online resources best suited to their educational needs.
- There is a shortage of technical skills for teachers and students in an online world. This would disadvantage the online experience of teaching/learning.
- The communication skills between online students are poorly developed.
- Some students do not have the vital training skills necessary for effective online learning, such as adaptation, self-recognition, and motivation.
- Technologically uneducated persons cannot attend online learning.
- Many trainers provide simple direct advice and do not consider essential elements of online learning such as interaction, social presence, and cognitive presence.
- Stimulation: Because online pupils are more vulnerable than traditional pupils, electronic content should be planned and flowed to sustain the pupils' attention throughout.

- Online learning is limited to certain subjects: Online learning is more suitable for the social sciences and sciences than science, for which several practical skills are essential.

Research Methodology

Research Philosophy: The researcher used a positivism research philosophy while collecting the relevant information regarding the factors that affect the online learning (Ally, M. (2004).). It helped the researcher to gather actual facts and evidence regarding the research topic through observation and measurement.

Research Approach: In this research project, the researcher used deductive research approaching method for representing the relevant facts and data regarding the research topic (Azungah, 2018). It helped the researcher to collect the relevant information from the existing resources developed by other researchers to achieve the objective of the research.

Research Design: The researcher used a descriptive research design to describe the actual phenomenon behind the research regarding the main factors that influence the online learning (Adkins, 2002). It helped the researcher to accurately and systematically describe the actual facts, phenomenon and situation to describe the actual facts behind the research topic.

Assessments of the Review

The paper looked at a variety of online learning techniques, and related research in this area was presented in various reviews with the application and encouragement of further development and the enhancement of multi-model instructional approaches for better results. Table 3 compares and contrasts a few techniques as well as the tools used to evaluate them. It also highlights the advantages and drawbacks of the methods used.

Table 3: Comparison of various methods (with their merits and de-merits)

	Method	**Domain**	**Measuring Parameters**	**Advantage**	**Disadvantage**
Expositive methods	Presentations, case studies, worked examples, demonstrations	Facilitate knowledge acquisition (mainly conceptual and factual knowledge), orientation, motivation, attitudinal change	Simple learning resources (documents and PPT presentations)	Quick to develop	No interactivity-passive learning
			Interactive e-learning lesson	Flexible: allows the use of various instructional techniques	Low/ medium interactivity-risk of passive learning Correct use of instructional techniques and media elements is needed to avoid this risk
			Webcasting (video lessons and podcasts)	Quite easy to develop	No interactivity-passive learning
			Webinars (video conference, audio conference, chat-based)	Allows interaction between instructor and learners Requires low effort to convert materials	Need to consider available learners' Internet connection

			Virtual classroom		The instructor must be prepared to teach online and use adequate supporting materials Need to consider available learners' Internet connection
Application methods	Demonstration-practice method	Develop procedural skills	Combination of animation and operational simulation	Allows learners to practice	Mainly used for software and simple medical procedures
			Virtual classroom (using application sharing)		Need to consider available learners' Internet connection
	Job aids	Provide just-in-time information and guidance	Printed documents such as checklists, technical glossaries, templates, manuals	Promote transfer of learning to workplace performance	Sophisticated expert systems require complex design
			Online help and expert systems		
	Case-based exercises	Develop job-specific cognitive skills	Interactive e-learning lesson	Good level of interactivity	Quite time-consuming to design
			Electronic simulation based on branched scenarios	Highly interactive	Time-consuming to design Multimedia simulations can be costly to produce
			Individual tutored activity	Highly interactive +personalized feedback	Need support of an online tutor or instructor
			Online group activity	Highly interactive + social dimension	Time-consuming to design Need support of an online tutor or instructor
					Need to consider available learners' Internet connection
					Time-consuming to design

					Need active support of an online facilitator
					Need to consider available learners' Internet connection
	Role plays	Develop interpersonal skills Stimulate attitudinal change	Interactive e-learning lesson	Good level of interactivity	Quite time- consuming to design
			Electronic simulation based on branched scenarios	Highly interactive	Time-consuming to design Multimedia simulations can be costly to produce
			Online group activity	Highly interactive + social dimension	Time-consuming to design
					Need for considering available learners' Internet connection
					Need active support of an online facilitator
	Simulations and serious games	Develop deep understanding of complex system	Symbolic simulations	Highly interactive Allow to practice high cognitive performance level (apply, analyse)	Time-consuming and costly to design and produce Need active support of an online tutor or SME
			Learning games	Highly interactive Allow to practice high cognitive performance level (apply, analyse)	Time-consuming and costly to design and produce Need appropriate design to be effective
					Need active support of an online tutor or SME
	Guided research	Active knowledge construction	Discussion forum, e-mail, chat, audio and video conference	Allow to practice high cognitive performance level (analyse, create)	Need active support of an online facilitator to provide help and feedback
			Wiki, blog, shared documents		

	Project work	Active knowledge construction	Discussion forum, e-mail, chat, audio and video conference	Allow to practice high cognitive performance level (analyse, create)	Need active support of an online facilitator to provide help and feedback
			Wiki, blog, shared documents		
Collaborative methods	Online guided discussion	Stimulate critical thinking and reflection Facilitate communications among learners Develop interpersonal skills	Discussion forum, e-mail, chat, audio and video conference	Allows for reflection, socialization and knowledge sharing	Less effective than collaborative project work to achieve learning objectives Need to consider available learners' Internet connection
		Stimulate attitudinal change			
	Collaborative work	Stimulate critical thinking and reflection Develop problem solving skills Develop interpersonal skills	Discussion forum, e-mail, wiki, blog, chat, audio and video conference, shared documents	Allows learners to make their knowledge explicit through argumentation	Need active support of an online facilitator to provide help and feedback Need to consider available learners' Internet connection
		Stimulate attitudinal change			

	Peer tutoring	Stimulate critical thinking and reflection Develop interpersonal skills Stimulate attitudinal change	Discussion forum, e-mail, wiki, blog, chat, audio and video conference, shared documents	Good for train-the trainer projects	May need to be facilitated Need to consider available learners' Internet connection

Table 3 also shows the efficacy and efficiency of various online learning approaches across multiple domains.

Gaps and Gainsays in Online learning/teaching

The following recommendations can be applied to ensure effective online learning before or after the pandemic.

- The online learning experiences should be designed to choose appropriate interactive study resources for students. Interactive help for interactive learning such as online micro-courses, e-books, simulations, videos, questionnaires, and games should be available. The selection of digital learning tools should account for licensing, accuracy, interactivity, ease of adaption, cultural relevance/sensitivity, and suitability for content, difficulty, structure, media, and organization[17].

- The provision of synchronous online learning via video conferencing, immersive learning (video, play, etc.) (seeing, downloading, uploading), and connecting with peers through social networks requires a safe network infrastructure that can simultaneously handle millions of users [20].

- With the online learning of students, states, companies, and schools should work together to ensure high-quality learning materials, a wide range of training activities, and effective learning findings.

- To develop smooth communication networks, choose suitable learning materials, provide convenient training resources, encourage diverse learning methods, and endorse online forms, Government should play a variety of roles in policy direction, overall coordination, and efficient monitoring [21].

- Online teaching skills should be developed since most teachers are unfamiliar with synchronous and asynchronous online teaching tools. The program covers online teachers, I.T. applications, classroom pandemic prevention, and local teacher training cases, all of which are designed to allow teachers to improve their online teaching skills rapidly [18].

- As depression influences the emotions of the online student, the teacher should be working towards encouraging them and motivating them by increasing their self-esteem and success expectations.

- In order to weigh and incorporate a range of questions objectively, teachers and students need to synthesize information from many issues. They must inspire students to improve their research, innovation and critical syntheses, creative expression, self-awareness, and intentionality in the process of virtual spaces of learning.

- Schools should cooperate to avoid teachers overloading students and parents by asking them to use too many apps or platforms.

- The use of effective learning methods that can be used individually or in groups must be instructed. The use of online communities, such as social networking, to provide everyday human interaction and solve potential online problems such as feelings of loneliness or helplessness for students should explicitly include online education practice [19].

- Reinforcement of cooperation between states, companies, and schools. Governments should also collaborate with companies, universities, research institutes, and families to establish effective communication networks to exchange vital information and keep everyone safe.
  According to a literature review, modern traditional teaching methods outdo other existing effectiveness and success methods. In addition, the literature review showed that the vast majority of published studies ignored such concerns as the majority of existing techniques are focused on online domains; hence online teaching could be less effective. Improper lighting hurts key measures of success such as approval status and examination performance by type of school, district, and subject.

Results and Discussion

Learning online Reduce campus infrastructure pressure; reduce campus and parking traffic. Students can learn technical skills via online education by using ICT (ICT). These skills would probably be helpful in your work life and all future undertakings and may be marketable aspects of your education. Learning that includes the use of ICT helps students acquire a range of computing skills and capabilities, according to Laurillard (2004).

E-learners can read from anywhere at any time, making learning easier to access for those who could not match their day-to-day apprenticeships. "The demands of the balance of labor, family, and learning make online learning an important alternative for the growing population of adult learners," wrote Oblinger and Hawkins (2005).

The Internet is a great way to give your audience all kinds of material, but it also makes it harder to estimate those kinds of input from students.
Online students fight to be inspired as they study so other things are easily distracted. Working at its own pace is a disadvantage for students who have problems with time management and tend to procrastinate. These students are more likely to excel in traditional schooling.

Because students are very flexible about what they choose to do without considering a tutor or teacher, online education requires self-discipline. This type of release can easily derail the focus of a student. Consequently, it is up to you to be careful not to delay or fall behind, as you can drop out quickly.

The mind of the student is full of new ideas throughout the lecture. Teachers analyze the minds and behaviors of students before teaching the subject in offline classrooms. The students are then conducted based on their ability to absorb or read. Teachers can't do it in front of the camera. Teachers may provide instructions, but the camera cannot be used to generate creativity in students' minds.

It is said, rather than dialogue-based learning, that online education produces a monologue. The importance of direct communication between pupils and teachers cannot be exaggerated. This is an important matter. If you feel diminished,

You can watch a teacher before you and make sure you remain concentrated and when something distracts you if you don't have a concept or are not interested in a subject. You can learn your language from a teacher before you. Nothing is possible when you study online. To attract and maintain their interest, physical educators may also use their direct contact with students. This is a great challenge since online education provides little chance.

Online teaching and learning specifications include hardware, software, and internet access. Without any of these, online learning cannot achieve its aim. Some people don't have convenient access and don't feel they can't use a machine and an internet link.

Conclusion

Online training uses a range of technologies to include learning, including on the Internet, Email, talk, new groups, messaging, and audio and video conferencing on computer networks. It allows the student to move quickly and at leisure. Online learning requires considerable time and money commitment, and careful preparation. Health authorities try to prevent Covid-19 from being introduced and disseminated in populations worldwide. The pandemic has affected students' lives in many countries worldwide and has resulted in the full closure of schools. An alternative form, such as online learning, has been used to ensure uninterrupted understanding. However, several problems have been found during the online learning process worldwide, according to the literature. For instance, the internet connection can be unstable if thousands of students simultaneously study. Since thousands of resources are available online, it is challenging for some teachers to find the ones best suited to their learning circumstances. Many teachers and students lack the digital skills they need in an online world to teach and learn.

As a consequence, you can find the online experience of teaching and learning uncomfortable. Some students do not have the basic learning skills needed to be adapted, independent study, self-regulation, and encouragement to learn effectively online. Various trainers offer straightforward instruction without considering essential aspects of online learning, such as interactivity, social presence, and cognitive presence.

There have been several shortcomings based on Chinese practice, which will have to be considered in the future. For example, all universities should rely on televisions remotely free from the Internet or cable T.V. to give learning experiences accessible to them. More affordable devices should be installed to provide learners with offline digital learning resources, especially in remote areas. In addition, researchers and practitioners should meet numerous usability guidelines when developing their digital learning resources programmes, applications, and devices (e.g., WCAG 2.0). This helps create a practical approach to accessibility, a variety of functions, and e-inclusion in educational environments. Finally, more inclusive writer resources should be developed (which operate with a range of functional diversity) so that educators can use them to build accessible digital learning materials. I want to conclude by stating that online learning is a great option for education, especially if traditional learning situations hinder it. Students may maintain a teacher-student relationship from different locations and at other times in online learning environments. Teachers in online education programs need to be informed about information technology and the Internet in order to engage with their students in virtual schools. You must also manage all applications successfully and keep abreast of progress in e-learning and distance learning in leading countries. This contributes to the development of a practical strategy for addressing availability, capacity diversity, and e-consideration in educational settings. Finally, more robust author assets should be developed (that function across a range of practical applications) so that teachers can use them to build open

computerized learning materials. I'd like to conclude by stating that online education is an incredible option for education, especially when traditional learning environments impede it. Understudies can maintain an educator-understudy relationship from various locations and at a variety of times in online learning environments. Instructors in virtual schools should be informed about data innovation and the Internet to connect with their students.
Additionally, you should have the ability to manage all applications efficiently and to keep informed about advancements in e-learning and distance learning in driving nations. I agree that online instruction's quality and impact on advanced education will continue to grow due to a sustained cycle of reshaping, refining, and rebuilding. However, conventional advanced education cannot be fully replaced; it must be supplemented. Regardless, online learning is gaining popularity due to its adaptability, accessibility, and affordability, especially among individuals who may be unable to obtain training due to physical distance, scheduling difficulties, or low costs. I assume that online education will continue to increase its presence and impact in higher education due to a strong reshaping, refining, and restructuring phase. But mainstream higher education cannot be entirely replaced; it will instead be used as a substitute. Online education, however, is gaining popularity because of its versatility, access, and affordability, especially among those who would otherwise be unable to get an education because of physical distance, conflict scheduling, or inexpensive costs. Integrating information technology and connectivity in transferring learning from traditional to online would create a new hybrid education paradigm and speed up education, with online learning being an integral part of education.

Future Scopes

The Covid-19 pandemic has brought schools around the world to a halt. As a result, online learning, where education and learning take place remotely and on digital platforms, has undergone major transformations in education. The question is whether this pattern will continue after the pandemic and how such an adjustment will impact future global education systems with its sudden shift away from traditional education systems and into online learning in many parts of the world.
The transition to remote instruction in the education sector is in many ways consistent with the growth of homework enterprises. For instance, video conferencing tools WebEx and Zoom are often used. Covid-19 has already shifted distant study into the mainstream due to the novel coronavirus pandemic. The learning process is refurbished on an accelerated schedule.
There would be major advantages in the use of asynchronous teaching and training (Canvas, Blackboard, D2L) and synchronous (Zoom) tools for the future. It is likely that the organization's focus is online education and that it is recognized as a key component of the institutional preparation and academic continuity strategy of a school.
The pandemic in 2020-19 would impose on the future a generation of new laws, politics, platforms, and tactics that better prepare countries, governments, and people than they are at present. Online learning examinations and homework tasks should be rearranged to an open book concept that has yet to be developed and embraced. Further efforts will be required in all areas for the preparation of new forms of such tasks. If students stay out of school, graduation is a risk, and new technologies must be considered for anti-plagiary and fraud prevention. More research is needed for the quality of online learning. The quality assurance online teaching framework was currently restricted, as the primary objective of this was to save and continue the education process in all possible formats.
There are few doubts about the continuing development of online education, which is likely to increase steadily. Because of this probability, further study should be carried out on the effectiveness, efficiency, and advancement of Online Learning. There is, however, a considerable gap at present, and future research should maybe focus on a more in-depth analysis of online training practices, phased implementation, and the best practice in online training and design.

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