The Importance and Comprehensive Analysis of Distance Learning in the Covid-19 Pandemic

Yashar AKYUZ
Business and Technologies, International Blacksea University, Georgia

Abstract. As a result of the recognition of technology's ability to improve efficiency and productivity, it has been incorporated into practically every aspect of modern life. This has been achieved in particular in the educational sector, where technology has been employed not just to enhance learning but also to enable learning from remote areas. However, it should be noted that e-Learning is still a developing activity in which schools are experimenting with various technologies. This study examines the notion of distance learning, often known as e-Learning, in order to determine its benefits and limitations, as well as trends and varied formats.

Keywords: e-Learning, Information and Communications Technology (ICT), Intelligent Tutoring Systems (ITS), Learning Management Systems (LMS), Artificial intelligence (AI)

Introduction

In terms of the evolution and development of contemporary society, the importance of technology cannot be overstated. It is well known that technology aids in ensuring increased efficiency and lowering the cost of supplying goods and services. The fact that the world of technology has been extremely dynamic, with the development of more advanced technologies allowing for their assimilation into various sectors of society, is particularly noteworthy. Distance education is defined by way of the Distance Learning Association refers to the use of satellite, audiovisual, graphical, digital, and multimedia technologies to provide access to education. Distance education sports include multimedia-based whole instruction, interactive mastery training, and support, keyboard control, e-Learning knowledge of unbiased time and area, interactive school room management, virtual switch, and checks. Distance mastering, it is able to be argued, offers vast blessings over regular study room training. Educational knowledge and coaching practices at the moment are crucial indices of social development. It's possible that societies that are privy to these signs and symptoms used net-based totally virtual spaces to behavior commands all through the Covid-19 pandemic.

Teachers' perspectives, which are one of the most important variables in remote education, were used in the current study to thoroughly investigate this tendency. In order to reach a wider demography of students and instill better efficiency and flexibility in learning, an increasing number of educational institutions are creating platforms for e-Learning. Of course, since students are not required to use the physical learning facilities of a particular educational institution, this may be considered a component of globalization. Instead, once accepted, individuals can access the lessons remotely and even complete the exams or lessons from the convenience of their own home. Apart from the fact that there would be no physical access to one's peers, instructors, or even the classroom itself, e-Learning would be similar to traditional, brick-and-mortar classrooms. However, it should be noted that, as a relatively new idea, the concept of e-Learning has yet to be fully grasped. In this study, we want to comprehend and outline the various types of e-Learning as well as the various definitions that have been proposed. Furthermore, we intend to investigate the various trends that have been embraced as well as the various technologies that are used in e-Learning. COVID-19 is clearly transforming people's lifestyles all around the world.

This outbreak will have an impact on our future; the issue is determining how it will occur and preparing for the changes.

This environmental virus isn't the primary of its kind, however it's far the primary to unfold globally at such a speedy fee. This virus wreaked havoc on healthcare, the economy, education, and even religious beliefs all around the world, with little regard for developed or developing countries. For our own protection, we were all turned off, and all of the systems were put to the test. Coronavirus disease, typically referred to as Covid-19, is an international health problem that has a full-size effect on humans' daily lives, offices, and educational structures. It initially surfaced in Wuhan, China, in December of this yr. On January 30, 2020, the World Health Organization (WHO) designated Covid-19 a worldwide emergency, and on March 11, 2020, it turned into declared a worldwide pandemic. Specific barriers and tactics, including tour restrictions and the closure of restaurants, enjoyment venues, theatres, and cinemas, have been enacted occasionally to fight the unfold of this existence-threatening disease. The lack of face-to-face training is one of these limitations. Distance education has been utilized to limit contact while yet allowing students to finish their education.

Distance education has begun to be applied in this manner, ranging from preschool to higher education. Institutions, directors, educators, students, and even dad and mom have observed themselves unprepared within the remote training technique because of the Covid-19 pandemic. Schools were pushed into a waft of gaining knowledge of this is full of complexity and restrictions as they transition from face-to-face coaching methods to greater oblique methods (Panigrahi et al., 2018). The school, teachers, and kids have all benefited greatly from this procedure. Individuals have invariably encountered distinct difficulties and hurdles in institutions during this process. School closures, a lack of equipment to engage in classes, and the inability to get online resources from teachers have all had a negative impact on students. Also, the inadequate technological infrastructure of educational institutions can be considered another thing to examine is educational institutions' insufficient technical infrastructure. Such elements are a barrier to the educational program's success (Owusu-Fordjour, Koomson, & Hanson, 2020).

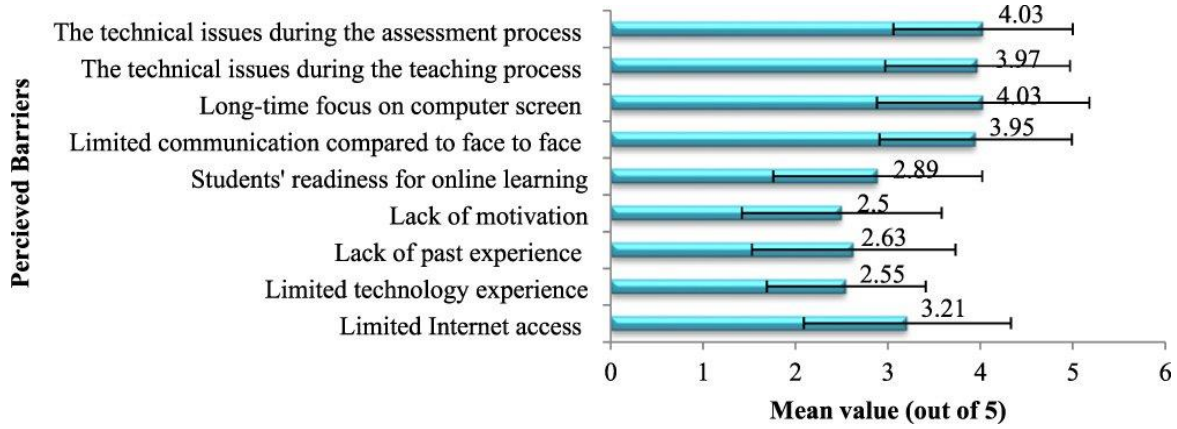

Figure 1. (OECD, 2018)

Many research has been devoted to online gaining knowledge of for the reason the emergence of COVID-19. During the COVID-19 epidemic, the majority of research determined that online learning turned into a hit. Secondary college students may additionally advantage from online, indoor, and desk-primarily based studying if you want to permit them to study effectively and constantly in the course of the COVID-19 pandemic lockdown. During the COVID-19 epidemic, online learning using the Community of Inquiry framework could dramatically raise pupil involvement in gaining knowledge of, as well as improve getting-to-know fulfillment and team education. Medical college students were willing to look at using a web and synchronized version, indicating that this is the future version of clinical education, whose efficacy will be confident the usage of a rigorous framework.

Although online getting to know allowed Ophthalmology students to learn from everywhere, at any time, and on any device, it still had a number of drawbacks. Various influencing aspects in online learning can also be noticed by using online instructors. Undergraduates' tension becomes negatively associated with foreign language enjoyment in online mastering for the duration of the pandemic. During the epidemic, their coping mechanisms, terrible and nice feelings had been strongly linked and coexisted in online mastering. Their coping techniques and stressors were strongly encouraged by online assets, as well as retrospective and general amusement. As a result, it's far crucial for online course designers to pay near interest to those intertwined factors. However, online mastering may additionally have unfavorable effects on college students' fitness and attitudes.

Children may additionally experience eye stress as a result of their frequent participation in online mastering throughout the COVID-19 length (Panigrahi et al., 2018).

Defining E-Learning

E-Learning, as a relatively new idea, lacks a broadly agreed definition. Indeed, existing definitions of the idea of e-Learning have been based on and tend to show the scholars' and researchers' interests and specializations. The idea of e-Learning is commonly understood to embrace a wide range of procedures, applications, and learning methodologies. This emphasizes how difficult it appears to be to come up with a single, universally agreed meaning of the term "e-Learning." E-Learning, also known as e-education, remote learning, or online learning, is a type of online learning. "A broad variety of applications and methods for delivering vocational education and training using accessible electronic media and capabilities," according to the definition of e-Learning. According to the paper, e-Learning is defined as "the use of various technology tools for education that are web-based, web distributed, or web capable." E-Learning has gained in popularity year after year as a result of several advantages such as flexibility, internet accessibility, and cost-effectiveness. These advantages have the potential to turn education into a lifelong process of learning. Students can more effectively re-calibrate their learning by having access to lectures at any time and as many times as they require (Yoon, 2019).

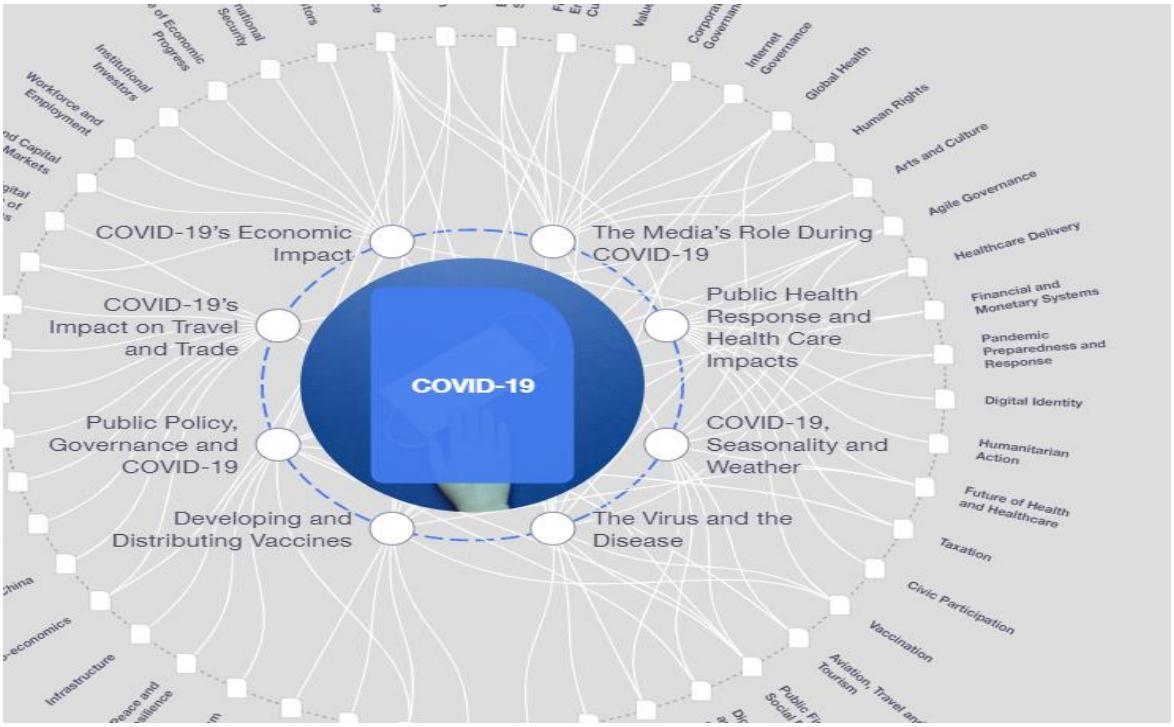

Figure 2. (WEF, 2019)

It could include the utilization of an e-Learning environment to make campus-based education more accessible. It could also include online tools for expanding, extending, and enriching collaboration between students and teachers, as well as other players in the sector. E-Learning, at its most basic level, refers to the use of information and communication technology (ICT) to facilitate online access to lessons and teaching resources. Although the term has been reduced to comprise learning empowered via the use of digital technology, or even learning that is based on the web and enabled by the internet, it may also include learning that has been aided electronically.

On the same point, the notion of e-Learning is accepted to be used in a variety of ways, including hybrid learning, dispersed learning, and online distance learning. As a result of this realization, the definition has been refined to emphasize the use of ICT in various educational processes and to promote and improve learning in academic institutions. It includes using ICT to supplement traditional classrooms and online learning, as well as integrating the two methods. Others have classified e-Learning as reliant on networks and computers, while it is expected that it will evolve into systems including several channels, such as satellite and wireless, as well as technology such as cellular phones (Mackey, 2019).

According to them, e-Learning procedures are primarily cantered on the internet, learning resources, and global sharing technologies, with knowledge and information broadcasts moving through network courses. Perhaps most significant is the fact that e-Learning is based on the concept of distance learning, in which lectures would be broadcast via video presentations to faraway locales.

Furthermore, summaries relevant to the elements of e-Learning can be used to understand the notion. First and foremost, it would be a multimedia environment.

It would also combine various types of information, in addition to supporting collaborative communication in which users would have complete control over their own learning conditions. Furthermore, e-Learning would include networks that are utilized to access information, as well as the ability to easily and freely install the systems on a variety of computer operating systems.

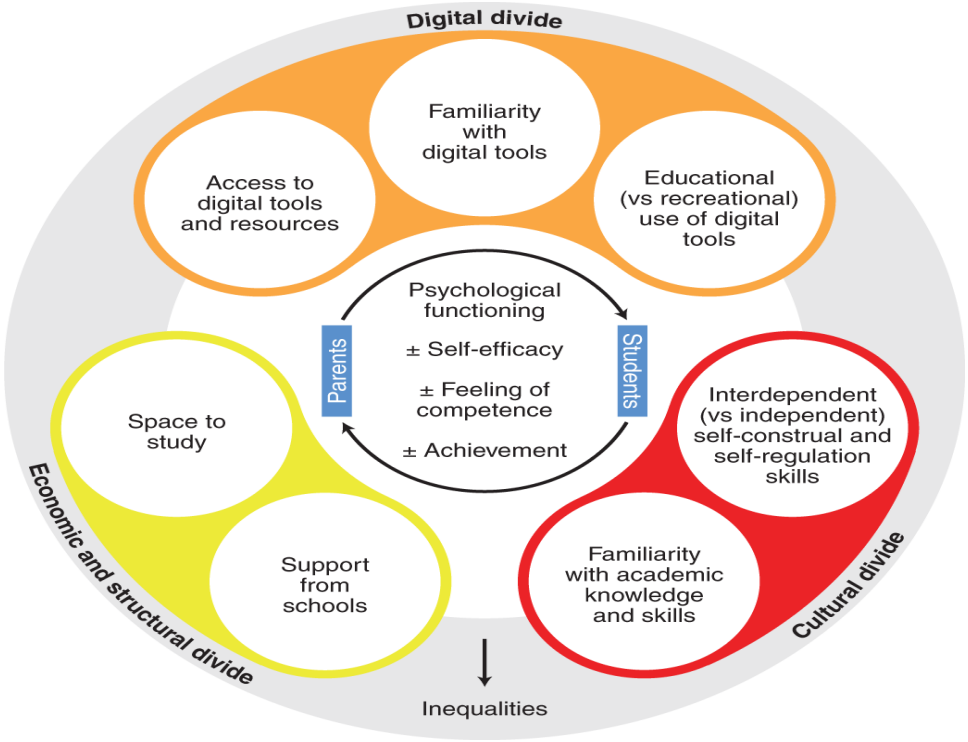

Figure 3. (Zhag, 2016)

Distance Education

Scholars have recognized that new learning environments based on electronic networks have enabled learners in higher education institutions to receive individualized or customized support, as well as incorporate learning schedules that are significantly more suited to them and distinct from those of other learners (Mackey, 2019).

In essence, compared to a traditional learning environment, this would allow for greater cooperation and interaction between students and their lecturers or instructors, as well as their peers. E-Learning that integrates the use of multi-media frameworks has been acknowledged by academics as improving the notion of learning by making it more fun, active, and intriguing. This has been aided by factors such as cheaper costs, improved quality and speed, and a higher level of service. It has long been recognized that e-Learning has the potential to enable students, particularly at higher levels of education, to get degrees while pursuing their personal goals and safeguarding their professions without having to adhere to a tight timetable. The e-Learning strategy was hurriedly implemented in response to the coronavirus pandemic's significant developments.

The prerequisites for this national project, on the other hand, have not been analyzed. Today's challenge is to comprehend and manage the procedures and regulations that regulate information in real-time. We must choose which technologies can be used, how they will be used, how we will control them, and how we will be able to trust them.

These are just a few of the issues addressed in this research, which are classified into four categories: economic, psychological, social, and environmental.

Financial elements encompass infrastructures, systems, hardware, software program, gear, the Internet, connection debt, and so forth.

(ii) The mental impact of the transition from traditional to online training.

(iii) The social measurement: how we use era, manipulate it, control it, agree with every other, and protect ourselves as people, companies, and governments can have an effect on our country-wide and worldwide behaviors.

(iv) The environmental dimension: from domestic to home, figuring out which discipline, prescriptions, comments, and so forth (Basilaia et al., 2020).

Importance and Comprehensive Analysis of Distance Learning Applications during the Pandemic Period

Students' motivation, enjoyment, and learning can all benefit from distance learning. It is based on a review of comparative studies of online and face-to-face versions of the same course, which found that distance learning can provide learning outcomes that are comparable to or better than face-to-face learning.

A new systematic study has added to the growing body of evidence that online learning is at least as effective as in-person training. E-Learning is a technique of schooling that includes the use of information and conversation technologies (ICTs). Teaching and mastering methods have been modified as a result of the incorporation of technological sources and creative educational techniques. Various e-studying and online gaining knowledge of methodologies are beneficial for teaching and studying in the disciplines of fitness professions, inclusive of dentistry, in keeping with a prior take a look at. In phrases of statistics gain and pupil overall performance, e-studying has been discovered to be comparable to face-to-face approaches. Blended learning combines classroom and online distance learning to allow students to learn independently, interactively, and cooperatively.

Blended learning, on the other hand, restructures courses that are designed, organized, and delivered using a combination of physical and virtual learning activities. Blended learning has already been shown to improve student satisfaction, motivation, engagement, and performance. This approach encourages energetic, self-directed studying and is extensively

used as a supplement to conventional education in colleges. COVID-19 has forced faculties all around the world to shut.

Over 1.2 billion children are out of school around the world. As a result, education has experienced considerable changes, with the emergence of e-Learning, which allows students to receive instruction remotely and through digital platforms (Mulyanti, Purnama, & Pawinanto, 2020).

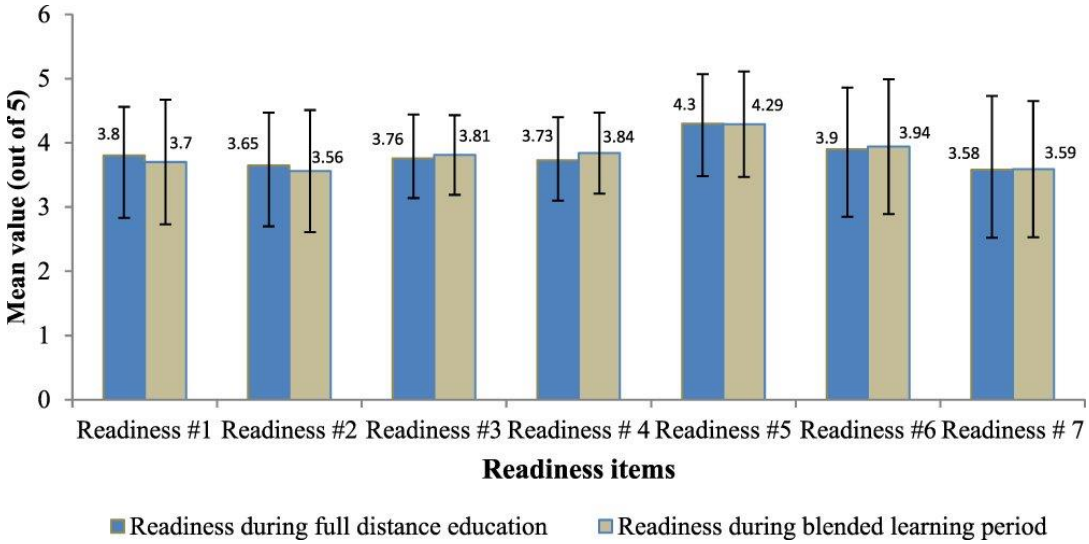

Figure 4. (Paul & Jefferson, 2019)

According to research, online distance learning increases information retention and takes less time, implying that the alterations created by the coronavirus are here to stay. Distance education is a deliberate style of teaching and getting to know that takes location outdoor of the traditional schoolroom and relies on generation to facilitate communique and organizational structure. Interactive telecommunications, facts, sound, and video change (getting to know studies), and trainer-student separation on a business-to-commercial enterprise basis are all part of the definition of remote schooling.

Distance training refers to a notion that targets to improve education first-rate in an effort to help students take a look at it more correctly. Thanks to era enhancements, distance training, which became initially focused on mail communication technologies, has persisted to evolve with the use of pre-recorded media, -way audio, pix, and one-manner video. The internet has introduced the concept of electronic getting to know by using revolutionizing the manner humans study and percentage information. While there are semantic versions among ideas like distance education, digital studying, net-primarily based schooling, and online studying that have gained favor in the literature over time, they're all linked. Online learning, for instance, is a type of far-flung education. New educational possibilities, including open educational assets and large open online publications, have advanced as a result of the evolution of digital technology-focused at imparting remote publications. Online getting to know, combined gaining knowledge of, social media, and open getting to know are all vital improvements in the state-of-the-art digital age for effective education. Furthermore, the increasing use of cellular getting-to-know tools has given distant learning an entirely new dimension.

Student motivation, self-law, control, and studying environment modification are all progressed while mobile getting to know gear are utilized in faraway schooling. Educators ought to learn in a way to utilize those devices and include them into their personal implementations due to the fact teaching with the current generation necessitates a number of talents that most educators lack. Distance education sessions, which are widely available and designed in a range of ways, should also be prepared and motivated for students. Problems

have to be diagnosed so as to achieve distance training. Exposing those issues is essential for destiny distance schooling deployments to minimize, lessen, or cast off boundaries. Furthermore, pre-carrier teachers may be asked to offer their guides thru online schooling within the future. Their views on future distance education may be swayed by their distance learning experiences. As a result, it's vital to look into the process of distant learning. The goal of this study is to bring attention to the personal, technological, and financial obstacles that pre-service teachers in teacher-training institutes faced during the Covid-19 pandemic. What challenges pre-service instructors faced during this emergency remote teaching time are unknown.

It would be beneficial to hear about the experiences of pre-service teachers in this situation for this purpose. COVID-19 has caused the closure of instructional establishments everywhere in the international as a result of its proliferation (Abdullah & Mirza, 2020).

This put university students to the test in terms of their ability to address a disaster involving the utilization of a superior era, inclusive of hardware and software programs, to facilitate online studying. The development of online learning environments has increased as a result of this closure, ensuring that learning is not hampered. Many colleges want to know how to offer course information online, engage students, and conduct evaluations in the most efficient way possible. As an end result, COVID-19 has developed institutions to put money into online studying, regardless of the reality that it is a threat to civilization. An online gaining knowledge of device is a piece of web-based totally software program that allows you to distribute, music, and control courses over the Internet. It includes putting technological improvements to paintings in an effort to direct, generate, and transmit mastering facts, as well as permitting students and instructors to communicate in a -way manner.

Many studies have recently been conducted in multiple countries to evaluate distant education during the COVID-19 period (Abdullah & Mirza, 2020). Majority of them have shown that school closures have clarified a number of concerns affecting educational access as well as other socio-economic challenges that affect people from all walks of life, although their impact is disproportionately felt by low-income families. In this case, switching from traditional to online education would be the best option. Access to information technology equipment, as well as Internet coverage and speed, is, however, essential. Because almost all of the studies were completed in the initial few weeks of the outbreak, it appears that establishing the quality of online learning will demand more study, as the major goal was to keep teaching in any way possible. They arrive at the conclusion that in the future, internet education would be useful. As a result, pupils will be able to work more independently, which will help those master new skills, especially for children with special needs. As an end result of shifting their duties to the brand new manner of coaching and becoming extra studying facilitators, instructors' qualifications progressed.

The authors underline that the effectiveness of these changes in selling open gaining knowledge of efficacy is notably dependent on the upward thrust of records and communication technologies. They've confirmed that technology cannot replace effective coaching or a teacher; it can simplest be used in sure situations, such as COVID-19. During the COVID-19 section, the endeavor makes a specialty of the gateway for digital learning in arithmetic education. Acceptance of digital mastering in mathematics, consistent with the authors, would pace the status quo of virtual studying in mathematics and might be an optimistic response to this kind of circumstance.

Due to crisis conditions, emergency faraway education (ERE) is a brief adjustment in the shipping of schooling to an exclusive mode of transport (e.g., pandemics, wars, nearby conflicts, and other sorts of natural screw-ups). This includes enforcing complete faraway getting-to-know solutions for teaching and schooling that would otherwise be introduced face-to-face, via blended or hybrid sessions, with the goal of returning to this layout once the crisis

or emergency has surpassed. As a result, the key purpose in those situations is to present transient get right of entry to schooling and teaching aids in a more well-timed manner, that is, to installation and cause them to available rapidly and reliably in an emergency or crisis. Some countries are responding to school and university closures all through times of crisis by means of imposing fashions such as cellular learning and analyzing the important thing factors influencing the aim to apply cell studying packages primarily based on an assessment of university adopters and non-adopters, radio, combined learning, or different contextually extra viable answer, amongst others (Abdullah & Mirza, 2020).

Most academic guides had collaborative additives earlier than the epidemic and have persevered to achieve this after the net learning approach became implemented. Synchronous conversation (on-line chat, messaging platforms, virtual classrooms, and so forth.) is one technique to teach collaboration thru distance getting to know. All individuals can actively have interaction in speaking from extraordinary geographical places. The teacher can stimulate the learning manner through the use of online quizzes, shows, or different sports, and the trainer can use various options together with video conferencing and screen sharing to permit all individuals of the institution to make contributions. This technique of operating is turning more and more popular around the world and can be used at a reasonably-priced cost in a worldwide putting.

Asynchronous communication is another strategy used in remote gaining knowledge that offers students extra flexibility and can train them in different tender abilities like time and workload management. Before the mission is absolutely merged and finished, students discover ways to collaborate through delegating different obligations and taking obligation for wonderful sections of the mission (Fujita, 2020).

Figure 5. (Statista, 2019)

Advantages

As a result of the COVID-19 pandemic, instructional sports in the classroom where quickly halted.

Students of their closing years of excessive college and university are confronted with a remarkable circumstance that makes it difficult for them to see simply into destiny.

The length of the epidemic and its influences on daily existence, in addition to costs and different economic worries, can all have an immediate effect on university and excessive college students' ability to complete their research. Disturbances within the instructional ecosystem are pretty dangerous. Undergraduate and postgraduate students' instances have created tough conditions, along with the need to drop out of school. The epidemic created a feeling of exclusion, emphasizing a misguided photograph of educational training. By increasing distance educational opportunities, remodeling student populations, and inspiring the development of the latest pedagogical techniques, distance schooling has the capability to convert the education machine, making the mastering system greater dependable, green, and much less worrying for both teachers and students. Despite the reality that studies display that online and traditional education provides similar mastering effects, it's far extensively acknowledged that remote learning is less participative than schoolroom instruction.

To acclimate to a situation of isolation, students had to change their regular schedules at the commencement of the COVID-19 outbreak. Those studying abroad were forced to return home, but due to the airport and border closures, many of them were unable to do so. As a result of their lack of socializing, students' socio-emotional stability deteriorated, especially among young people with pre-existing difficulties. The most important repercussions of loneliness, according to students, are worry and despair. Distance getting to know is a kind of training wherein instructors and college students are bodily separated in the course of the getting to know and instructing method. It is likewise known as distance education, e-mastering, cellular mastering, or online studying. It's also an academic approach that makes use of a number of tools and technology to enhance scholar studying, as well as pupil-school and pupil-scholar communique. Hardware along with a computer, mobile tool (mobile phones), or webcam, as well as a few shape of listening devices, video conferencing programs including WebEx or Zoom, and Microsoft Windows or Apple operating structures, are all vital for a successful distance mastering. It's difficult to make distant gaining knowledge of work for all students.

Even if the excellent sources are in location, it will likely be impossible to in shape the in-man or woman gaining knowledge of revel in on line until all college students have truthful get admission to the gear, teachers have suitable preparatory time and schooling, and present curriculum or new course syllabi are adapted. As an end result, there are various problems regarding distance gaining knowledge of, together with whether it gives the same value as school room studying.

The continuously transferring monetary weather compels organizations to become extra adaptable, which has an impact on premiere personnel profiles and necessitates nicely–set up skills to regulate to numerous responsibilities. It is becoming increasingly more obvious that exertions market mobility is increasingly dependent not most effective at the technical knowledge of a certain career but also on smooth competencies. "Interpersonal, human, people or behavioral abilities required to apply technical capabilities and information within the place of work" are classified as "tender abilities." In the professional discipline, crew collaboration, conversation capabilities, sharing statistics and enjoyment with others, and private tradition are all regarded as important for keeping advantageous relationships with customers, coworkers, and superiors. Research has discovered that soft competencies are becoming increasingly critical in figuring out an employer's and individual's achievement in the task market. Thus, research findings suggest the relevance of such as the improvement of competencies which

includes conversation, group functioning, and hassle-fixing competencies in education. Due to aggressive pressures and technological advancements, graduates are predicted to illustrate new capabilities, with nontechnical capabilities and talents turning into increasingly critical in enabling experts to efficaciously practice their diploma. (Fujita, 2020)

Despite its apparent advantages, distance gaining knowledge is plagued through a slew of technological and societal issues. According to a few experts, educational establishments and instructors are still grappling with how to construct getting-to-know content in a faraway format that develops students' talents and continues them engaged inside the training. Furthermore, online collaboration and communication necessitate typing responses and causes, that could take a long term and be useless in a few situations. Written messages have to be cautiously written to save you from transmitting an unwanted message or insulting the recipient accidentally, which takes longer than an oral talk. Communicators have to use extreme caution when sharing their minds so one can avoid verbal exchange's surprising repercussions. Finally, there can be generational gaps in collaboration and communication patterns (Gavira, 2018).

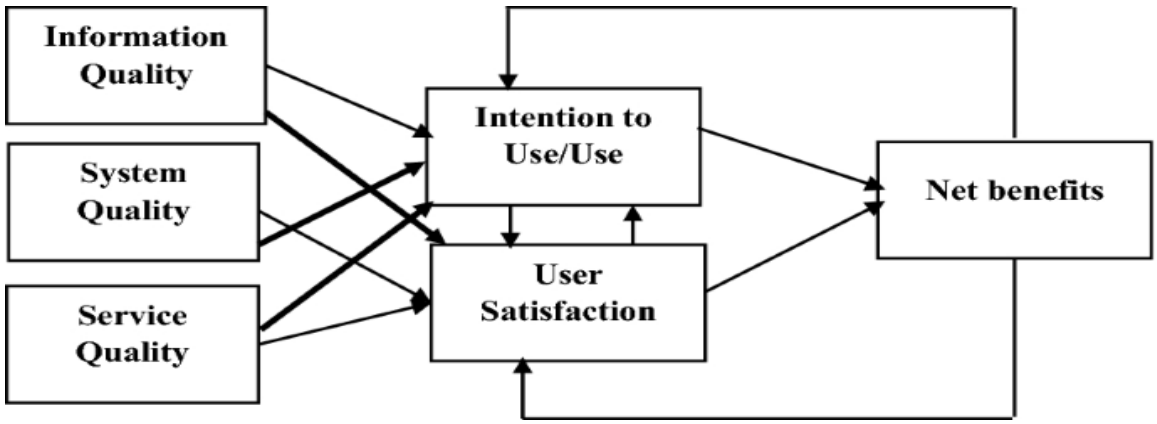

Figure 6. (Gavira, 2018)

Benefits and Drawbacks of E-Learning

The rising acceptance and implementation of e-Learning is based on a greater understanding of the multiple benefits it provides. One of the most important advantages is the huge cost and time savings.

Different stakeholders, such as students, teachers, and educational institutions, would benefit from these cost savings and savings. In the case of students and teachers, it's important noting that they'll be able to access and provide course content from a variety of locations (Skala, 2019). This means that students and teachers will save a significant amount of money and time on accommodations, course materials, trainers, and travel or commuting time from one location to another.

Educational institutions, on the other hand, would not have to invest as much in physical facilities to accommodate the increased number of students, resulting in significantly more finances and resources for genuine research and development work in the long and near term. Perhaps even more important is the fact that instructors and students would not have to spend as much money on textbooks, or even on updating outdated textbooks (Mackey, 2019). Teachers and educational institutions are likely to have digital copies of these books, which means students will not have to spend more resources on books or updated editions of the same because several students can access the same copy of the book over the internet at the same time. This saves money for everyone because just the initial cost of the internet and computer or internet-enabled gadgets is incurred or necessary.

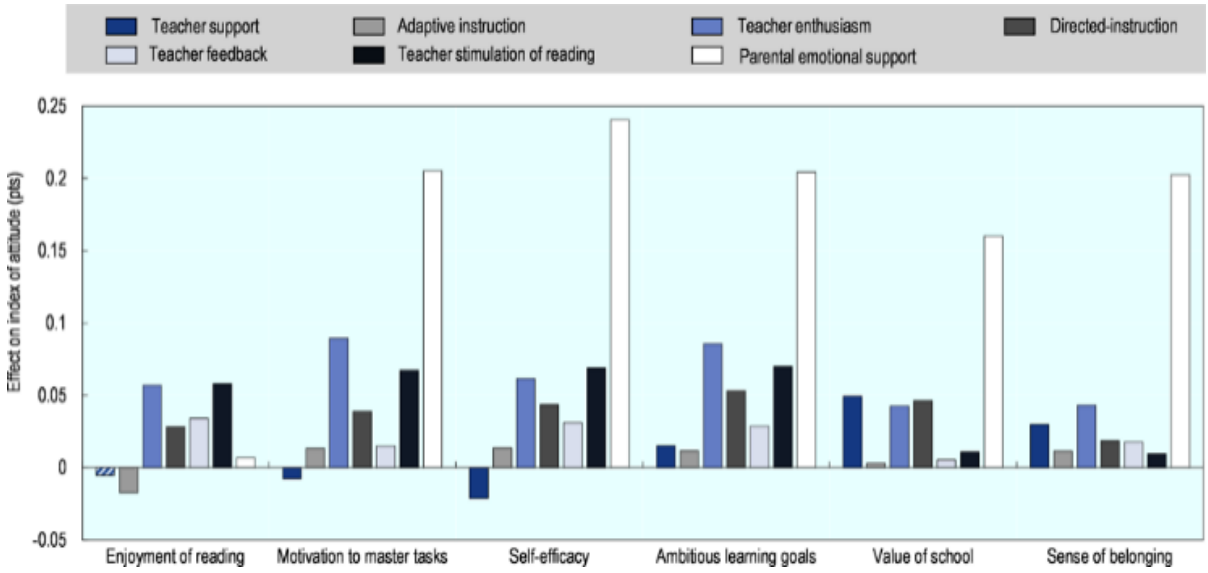

Figure 7. (Statista, 2019)

Furthermore, because of its ability to improve interactivity, e-Learning leads in far improved retention. Learners now have access to a plethora of content as a result of increased technical development and access to various technologies. This also implies that they have a very short attention span. Any sort of teaching or learning approach that has the ability to achieve the desired results in this scenario must not only be bite-sized but also include interactive content. This indicates that they prefer interactive content such as videos and podcasts delivered through e-Learning platforms over traditional lectures delivered in brick-and-mortar classrooms (Zeigler, 2018). The higher the amount of information retention for the learners, the more engaging the content is supplied. Their ability to recall knowledge or concepts learned in class and, more importantly, apply them at work improves as a result of their enjoyment of learning (Yoon, 2019).

In the past, the benefits and drawbacks of distance learning were a hot subject matter of discussion. Due to the COVID-19 epidemic, the hassle of distance learning has these days emerged as more applicable and urgent. Higher schooling establishments have been pressured to transform to both distance learning and a hybrid coaching technique because of COVID-19.

The natural ecosystem of conventional mastering environments, wherein students live and examine in near proximity, has been disrupted as a result. Variation in the excellent of educational commands, college students' unequal get right of entry to vital distant mastering tools, and college students' technology preparedness has all been cited in past studies approximately remote mastering. According to one survey, 20% of college students reported having issues having access to critical distance gaining knowledge of era consisting of laptops and high-pace internet. Furthermore, college students who had been already struggling academically in face-to-face classes are much more likely to acquire decreased grades in distance studying. Despite the limitations, this abrupt and unanticipated trade in the getting to know surroundings provides a possibility for academic establishments to reimagine creative studying paradigms that make use of modern technologies. As a result, the obstacles and opportunities of transitioning from in-man or woman schooling to far-flung/distance instruction must be carefully taken into consideration. This study will study the blessings and drawbacks of distance mastering from the attitude of students (Müller et al., 2021).

One of the most important and essential aspects of e-Learning has long been recognized: the ability to customize lessons and teaching methods to meet the individual needs of students.

This personalization not only guarantees that the teachings are delivered in the most appropriate model or method for the learner, but it also ensures that the students are more

engaged in the classroom (Cheung, 2019). Increased activity is likely to improve retention of information or knowledge learned in class, resulting in more formidable consequences.

Even more extremely good is the kids' extended level of consistency. Scholars have referred to those conventional classrooms with face-to-face classes entail that every teacher may have his or her very own teaching style (Gunnlaugson, 2019). The many techniques, patterns, and techniques would vary, and they might be susceptible to mistakes. However, e-Learning allows educators to cowl a much wider range of topics, permitting them to pass on information or facts to their meant audience in a steady manner. This could be useful in making certain that each learner receives the same type of training.

E-Learning reduces irregularity and can provide uniform schooling at any time, making sure that every learner has the identical revel in no matter the place from which they take the direction.

Furthermore, e-Learning caters to a variety of learning styles while also allowing students to set their own pace and motivation. Of course, various people have different learning styles, with some preferring to study through videos and others preferring to learn through written notes.

Some kids, on the other hand, may require practical opportunities for practice before completely learning new concepts. E-Learning has the particular advantage of allowing for a variety of material formats, such as games, movies, notes, info graphics, and other types of information that raise the learners' level of involvement. This is reinforced by a variety of evaluations, such as case studies and quizzes, which allow each learner to be more involved based on their increased comprehension level as they advance through training. The greater level of engagement could indicate a student's ability or propensity to finish their course (Yoon, 2019)

At the start of the course, it's unlikely that everyone will have the same amount of expertise and information.

This means that certain employees may be slower or faster than others, not to mention that others may be more familiar with certain aspects of the course. When students are taught through e-Learning platforms, they will be able to learn at their own pace and according to their specific or unique learning needs. Of course, the primary idea is that the pupils would not be subjected to undue stress, which could exacerbate their anxiety (Cheung, 2019). This is enhanced by the fact that the lessons are tailored to their individual learning styles and paces, not to mention the fact that the lessons can be recorded so that students can return to the classes or lessons and revise under the guidance of the teacher, just as they would in traditional classes.

Furthermore, e-Learning has a much longer lifespan and almost endless learning resources. It goes without saying that e-Learning provides significantly more flexibility than traditional methods of learning in regular classrooms. This is due to the fact that there is no timetable rigidity; rather, after the courses have been properly configured, students will be able to access sessions at their leisure (Yoon, 2019).

Of course, this implies that students will not be under the strain of inflexible structures, and instead will be able to rewind lectures or sessions to ensure that they understand the concepts in accordance with the timetables and goals that they have established for themselves. Perhaps most important are the nearly limitless learning tools available to both students and teachers. As previously stated, the student's level of involvement in e-Learning is increased due to the variety of formats in which the content is provided. It could be infographics, notes, movies, or even podcasts (Zeigler, 2018). This is enhanced by the fact that lecturers or instructors frequently upload supplementary content to aid students in their revisions and knowledge of the material.

Additional information, such as films, tutorials, and other textbooks that expound on the subject, is available to students to ensure that they understand the content. Even more

impressive is the ability for students to construct chat rooms and discussion forums in which they can improve class subjects with the help of their professors.

All of these tools, as well as the length and flexibility of e-Learning programs, boost the likelihood of achieving learning objectives in the classroom.

Our studies specialize in the educational approach of distance getting to know.

As a result, we're particularly interested in the function of era inside the engagement concept, that's to facilitate all elements of student participation. "The usage of e-mail, on-line conferencing, Web databases, groupware, and audio/videoconferencing appreciably will increase the scope and convenience of interaction among all individuals, in addition to access to information," authors write. With this have a look, we hope to feature new communications and collaboration tools to the ones said above, in particular social media, to provide new insights into the "relate" part of the engagement theory (Fujita, 2020).

Drawbacks of E-Learning

Despite its particular advantages, e-Learning has a variety of disadvantages. One of the most important is the possibility of learners being isolated. While the convenience, duration, and ability to access classes at the learner's leisure are all appealing features, they may also lead to feelings of isolation. This is especially true given that learning is primarily a solo activity, which may give the impression that the learner is completely alone in the classroom (Skala, 2019). Of course, as technology advances, virtual courses will become a reality, with tools aimed at giving students the most authentic experience possible.

However, because technology cannot replace human contact from one-on-one interaction, this is unlikely to erase feelings of loneliness. Furthermore, there are concerns about the effects of e-Learning on one's health. It's worth noting that e-Learning frequently demands the use of technological devices like computers and phones for extended periods of time.

As a result of eyestrain, poor posture, and other physical issues, this could have serious health consequences. Obesity, high blood pressure, and heart disease, as well as respiratory illnesses and asthma, have become more common in modern culture (Yoon, 2019).

All of these diseases have been linked to the rising adoption of sedentary lifestyles, in which people engage in very little physical exercise. It should be understood that traditional classrooms require a variety of physical activities, such as walking to class and carrying heavy goods such as books, as well as ascending stairs. Because calories are burned in such circumstances, they tend to enhance individual health (Skala, 2019). E-Learning, on the other hand, eliminates all of these physical tasks because students and instructors do not need to move to access the classrooms; they can even access them from their beds.

E-Learning Systems and Intelligent Tutoring Systems

Frequently, the term "e-Learning" has been interpreted to include intelligent tutoring.

Nonetheless, even though they share much of the same architecture, the two are vastly different. Learning activities enabled by online technologies such as Learning Management Systems, discussion and conferencing systems, as well as rich multimedia content, are typically included in e-Learning. Critics frequently perceive these products as lacking in controlled assessments, as well as psychological and pedagogical validity. Intelligent tutoring systems, on the other hand, focus on scaffolding and aiding problem-solving in learning (Wormeli, 2019). In general, they are based on specialized and rich knowledge representations, and they employ cognitive diagnosis and user modelling tactics to develop a formidable response to the needs of the learners.

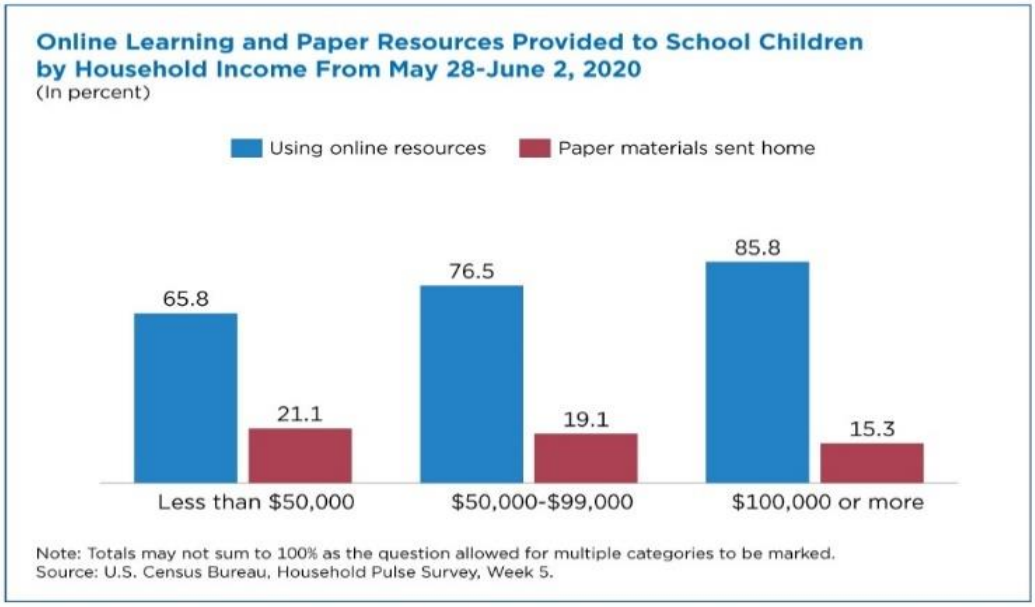

Figure 8. (Census, 2020)

Intelligent tutoring systems arose from artificial intelligence, education, and cognitive psychology, and have mostly focused on the construction of domain-dependent specialized research systems targeted at improving school education. Given that the field is mostly driven by research, the implementation appears to be one-of-a-kind in terms of the capabilities it provides, using hand-crafted ontologies developed by a few developers and lacking in interoperability. This is in contrast to E-Learning systems, which are frequently technology-driven businesses built by institutions for job training and higher education. Such institutional communities are more inclined to be risk adverse in this instance. The primary motivation for intelligent tutoring systems is to improve interoperability through widespread deployment and standardization. In essence, the elements of re-use, writing material, component interoperability, and integration with other software in companies form the foundation for traditional e-Learning research.

Learning Management Systems include capabilities for managing various entities in a course, such as learners, administrators, authors, and instructors, as well as connecting learners through chat systems and discussion forums, and providing and managing content access.

In general, the systems provide basic levels of monitoring as well as feedback mechanisms (Law, 2019). Instructors, on the other hand, can only get coarse-grained views of the content that students have accessed or even the discussions that they have participated in, but students can receive pre-scripted simple feedback as well as restricted branching that alternates content from the teacher. These learning systems use browsers and the Internet to deliver and enable self-paced, time-based, and location-independent learning. Although there have been suggestions regarding the effectiveness of multimedia in attracting attention and understanding complex material via multisensory channels, multimedia and hypermedia would be used in this situation to increase the motivation of the learners (Law, 2019). Apart from the systems' rich material, there is a lot of opportunity for leveraging web technologies to allow for adaptability and customization, especially as awareness of the importance of Intelligent Tutoring systems in E-Learning grows.

Incorporating Artificial Intelligence in E-Learning

Artificial intelligence (AI) is a critical component of learning. Its advancement opens up the possibility of using technology to enable personalized, intelligent, and adaptable services for both students and tutors.

Artificial intelligence mechanisms are not present in learning management systems such as Moodle. Scholars have remarked that artificial intelligence has yet to be integrated into LMS systems, implying that artificial intelligence systems must be developed for use in e-Learning systems. Artificial intelligence-based applications have yet to play a large role in education, at least not to the same extent as they have in other fields like military applications, space exploration, and business, to name a few. It's worth noting that the development of intelligent e-Learning systems is hampered by the fact that it takes longer, not to mention the difficulties associated with intricate programming, as opposed to other supporting modules such as databases and user interfaces. In order to protect their intelligence, the research community must spend in the field to improve the currently available e-learning systems. In recent years, various enhancements have been integrated and proposed. The use of an intelligent agent in an intelligent tutoring system for Learning Management Systems like Samurai is one of them.The agent sends learners effective adaptive messages, and the Learning Management System includes a decision tree that analyses the number and type of material that learners have already read, as well as the amount of time that they have spent reading it from the beginning. Scholars have also suggested that effective computing be used in intelligent teaching systems. Indeed, they show that using impact in intelligent tutoring systems is useless in improving student performance significantly. They have, however, specified and emphasized the possibility of the "persona effect" in circumstances when the intelligent tutor system has been programmed to respond using emotional intelligence. Scholars have also recommended the construction and deployment of a virtual machine operating system aimed at supporting e-Learning with an effective intelligent tutoring system (Jaisingh, 2019). The system employs a variety of client devices, including a bio-mouse, affective sensors, and a camera, all in an attempt to isolate the student's affective state. It is recommended that the system be evaluated in order to determine its contribution to the learning-teaching process.

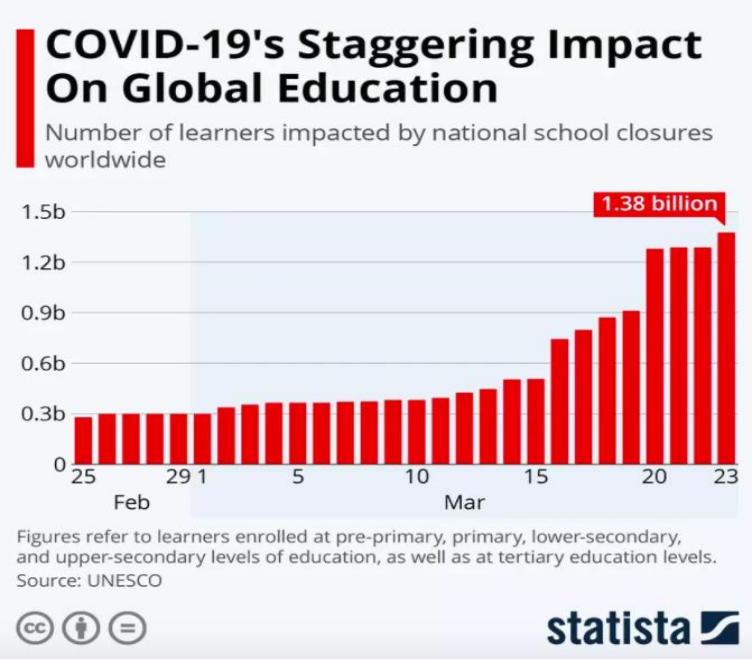

Figure 9. (Statista, 2019)

There have also been suggestions that DTEx-Sys be included in intelligent tutoring systems. This emphasizes the architecture of an asynchronous distributed tutor expert system, which assumes that intelligent tutoring systems are separate from the knowledge base and user interface. Researchers have also developed intelligent tutoring systems with the ability to recognize emotions. Its method is based on the recognition of facial expressions as well as text recognition techniques. The system then tries to include emotional stimulation and emotional instruction while also taking into account the emotions associated with the perceived emotion.

Other E-Learning Trends

The acceptance of e-benefits learning's has resulted in the introduction of new technologies that are intended to improve the practice's efficiency in the long and short term. The incorporation of artificial intelligence is a key new trend in e-Learning, which is based on the need to adapt the learning environment and teaching to meet the unique characteristics of each user.

Artificial intelligence algorithms would be used in the creation of e-Learning environments in this situation, allowing for such individualized learning experiences (Jaisingh, 2019).

Artificial intelligence would be a complimentary assistance rather than a primary kind of educational practice, which is worth noting. Artificial intelligence techniques can be used to supplement learning and teaching in both the long and short term.

It has ties to traditional computer science research, interactive interpreters, time-sharing, automatic storage management, and linked list data types. GUI, Object-oriented programming, and integrated Programmer development environments are some of the essential parts of artificial intelligence (Jaisingh, 2019). Perhaps most importantly, AI and education have a complementary relationship in which education helps learners to improve their accumulated knowledge about society and technology, while artificial intelligence aids in the understanding of mechanisms that predispose intelligent tendencies and thought. In essence, educational institutions are increasingly relying on artificial intelligence-based e-Learning scenarios to provide improved learning and teaching experiences across their training operations (Hofhues, 2019). Perhaps most importantly, artificial intelligence enables for the development of a wide range of AI tools in both practice and theory.

In addition, there has been a rise in the adoption and use of big data in academic settings. Volume, variety, and velocity are the three V's that make up the concept of big data. It emphasizes data that is so complicated, huge, and quick that processing it using traditional methods would be impossible or difficult. Organizations or corporations are known to gather data from a variety of sources, including social media, transactions, minute gadgets (Internet of Things), videos, and industrial equipment, among others (Hofhues, 2019). Due to a lack of space and the cost of storage, such data would have been difficult to store in the past. Nonetheless, recent technical advancements have resulted in more affordable storage platforms, easing the storage load. In terms of speed, the rising adoption of the Internet of Things idea has enabled the delivery of data to commercial organizations at previously unheard-of speeds, necessitating quick processing.

Smart sensors, DFID tags, and smart meters have all increased the need to process vast amounts of data in real time (Hofhues, 2019). Data comes in a variety of formats, including quantitative and structured data stored in traditional databases or unstructured text documents, stock ticker data, films, emails, and audios, as well as financial transactions.

Overall, recent technology advancements have improved the ability to collect and maintain complicated and vast amounts of data from various sources and in various forms. Furthermore, the complicated data is valuable and includes analytical tools capable of transforming or changing the mold (Blackburn, 2019).

The significance of big data in education stems from the fact that it allows for the adaptation or customization of education to meet the needs of individual pupils, allowing teachers to tailor or personalize their teaching strategies. Student data gathered from online learning systems would be studied and evaluated in this example in order to construct predictive models using educational data-mining approaches that categorize and relate the various data sets (Blackburn, 2019). The models are crucial in shaping interventions and modifications on the basis of model predictions in an effort to foster adaptive learning systems that may be utilized in informing learners about other aspects of their education and their environment apart from the academic services, thereby shaping their experiences.

Blended learning, which combines online and other modes of learning, is another notable development. This implies that students will be able to blend face-to-face and online learning, giving them the ability to manage their own learning pace. The connection between a technique in a particular subject or field, according to scholars, should be included in the definition and foundation of blended learning. Blended learners make a big contribution to education since the technique allows for a better learning experience by allowing for different learning contexts. Furthermore, it promotes reinforcement and improves access to learning materials, as well as fostering a sense of cooperation and community through forums for sharing communication and collaborative platforms, as well as learning experiences (Blackburn, 2019).

The mix of traditional and online learning is centered on student learning processes and is based on technology's ability to offer a far more effective and engaging learning environment. Individualized computer-assisted learning, collaborative teaching, direct teaching, and indirect teaching concepts are all part of blended learning. It has the benefit of expanding accessible options and areas of learning, as well as ensuring the provision of resources and information to students, facilitating course administration activities, and inspiring students through collaboration and interaction (Hofhues, 2019).

Similarly, e-Learning has embraced micro-credentials, which are focused on the requirement for teachers to create experiences for students and experience competency-based learning. Micro-credentials are recognized for their ability to let teachers develop personalized and competency-based learning modules and to be recognized for a variety of important and meaningful learning experiences. Micro-credentials have an impact on the learner's presentation and evaluation (Shonfeld & Gibson, 2019).

They emphasize competency-based delivery that is focused and brief. In this situation, students acquire complete information and understanding about a certain issue and demonstrate how they can use it. It is built on the idea that all instructors and learners have different needs, and that digital technologies may help with this type of learning anywhere and at any time.

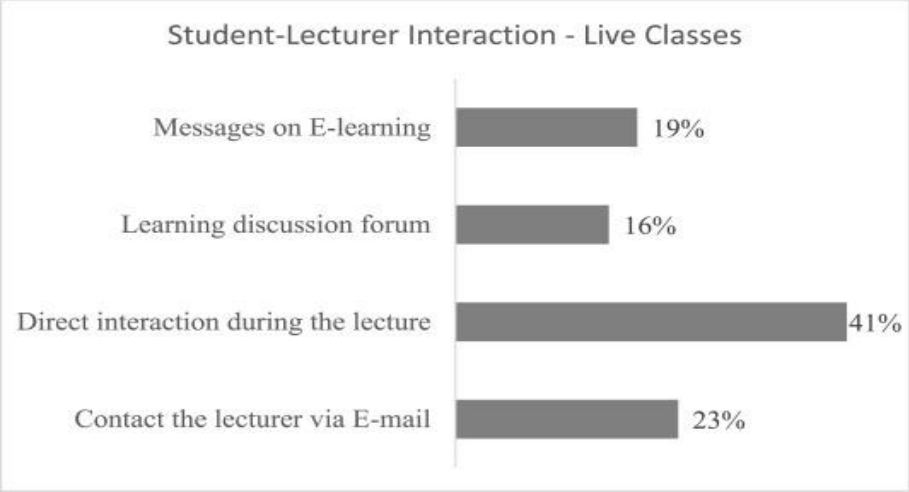

Figure 10. (OECD, 2018)

Gamification, which emphasizes the use of pedagogical techniques generated in game design and applied in non-play environments, is perhaps one of the most fundamental developments in e-Learning. Although they are two different educational strategies, game-based play and learning are sometimes used interchangeably. Instead of introducing the ideas of game design into traditional learning teaching, game-based learning would invite learners to participate in playing games that are designed to increase their learning (Mackey, 2019). Apart from concentrating on playing games, these pupils are certain to pick up on some course-related notions. The addition of game features has been credited with the enhancement of the levels of motivation for less-motivated students' learning processes, as well as their levels of interaction with other learners.

The Internet of Things (IoT) in the context of e-Learning. At its most basic level, the Internet of Things concept entails connecting everything to the internet and allowing for interconnection and "communication" between them. It consists of a variety of devices ranging from simple sensors to wearables, cellphones, and other gadgets. The combination of linked devices and automated systems would allow for the collecting of data, analysis of that data, and, ultimately, the implementation of actions that would assist a human in completing a task or learning from a process.

Of course, this reflects the fact that the Internet of Things is based on data, devices, and networks, and that any electronic gadget may be turned "smart" by improving its internet connectivity. In this situation, the devices can talk with one another not only within a certain location or silo, but also across different networking kinds, creating a more connected environment. In this case, the term "Internet of Things" refers to a type of network that connects things to the internet via information-sensing equipment that facilitates or allows for information exchange as well as communication in order to provide intelligent location, management, recognition, and monitoring. With the introduction of the Internet of Things, internet connections can now be used to connect to other physical items that do not have computational capabilities in the traditional sense and accomplish other tasks. Microwaves, ovens, and refrigerators, for example, would have internet access. The Internet of Things (IoT) aims to secure the efficient connecting of everything to everything, including any network, location, person, or service.

It is based on a shared understanding of devices and their users, as well as software architects and distributed communication networks for communication and processing (Visvizi, 2019). Contextual information would be relevant in such settings, providing analytical tools focused at independent and intelligent inclinations. The fact that the Internet of Things is steadily replacing chalkboards, papers, and pencils as educational techniques and learning opportunities improve underscores the rising adoption of the Internet of Things in education. IoT has the potential to improve or create solid education in a variety of ways, including boosting security through the use of smart cameras, smart HVAC systems, and climate management (Shonfeld & Gibson, 2019).

IoT solutions are aimed at making educational institutions smarter and ensuring their success. It has the potential to change the way administrators and teachers engage, as well as how students use gadgets and technology in the classroom, while also boosting their learning outcomes. IoT has been used in e-Learning in a variety of ways, including the usage of smart whiteboards and other interactive digital media that may collect and analyzes data for students and teachers to use in class or elsewhere, thereby optimizing instruction and improving learning outcomes.

Methodology

A thorough survey and analysis of scientific and literary works on the subject is carried out. These include journal articles and books published in the last 20 years, as this was the

period during which the internet's exponential growth around the globe was witnessed. EBSCOHOST, Ebsco, business source ultimate, emerald insight, and Gale Academic One file are among the databases used in this case. Various keywords, such as e-Learning, electronic learning, distance learning, the role of e-Learning, and distance learning, were utilized to find relevant literary works. After receiving the necessary books, a thorough inspection was carried out in order to gain the information required. Distance learning has been round for a long time in higher training. When there is a physical distance between the student and the teacher, it refers to gaining knowledge of mediated with the aid of the era system. Distance getting to know is a ways from a brand new phenomenon; tracing its records, it started in the early 18th century as correspondence observed to allow formidable newbies out of doors of the town to similarly their training while not having to be on-website. Since then, it has advanced and grown in reputation, especially with the fast rise of technological innovation.

Simultaneously, new distance education modules have emerged, along with blended getting to know (or hybrid-mastering), which describes a combination of face-to-face and technology-mediated instructions, ensuing in a resilient, accessible studying experience. Many educational establishments were pressured to appoint remote mastering on the way to maintain up with the prevailing COVID-19 state of affairs. When the World Health Organization first declared COVID-19 a global pandemic on March eleven, 2020, governments have been forced to put into effect preventive measures to stem the virus's spread, consisting of suspending school and university attendance indefinitely. Higher training speedy answered to this massive transition by means of launching remote schooling, making use of current getting to know guide structures like Blackboard and Moodle.

Conclusion

Finally, as a result of the greater absorption of technology in the education sector and other parts of current life, e-Learning has gotten a lot of attention. It is widely acknowledged that e-Learning has yet to be fully and uniformly defined, despite the fact that it largely entails the use of electronic technology or information and communication technology (ICT) resources to access and disseminate course material.

Lessons would be held from remote places, with students accessing them via internet-connected devices from their homes. It's worth noting that the rising use of e-Learning is based on a variety of benefits. One of the most important is the flexibility of e-Learning and its timetables. Students can access the lectures at any time, either in recorded or live format, removing the strain that comes with strict schedules. This is supplemented by the greater use of a variety of forms that are more likely to meet the specific needs of pupils. Some students, for example, prefer video formats, while others prefer class notes and podcasts, among other things. The variety of forms allows learners' attention and engagement levels to be maintained. Scholars have also pointed out that e-Learning provides for greater levels of engagement for students, particularly those who are nervous in public settings. With the Internet of Things and big data, E-Learning allows tutors to focus on each individual student, allowing for analysis of information about the student and customization of the lessons to the students' unique needs. The increasing cost reductions and time benefits for all parties involved are even more notable. Commuting from the classroom to home or obtaining textbooks for students takes a substantial amount of time and money.

E-Learning eliminates all of these charges, allowing students to receive lessons at the lowest feasible cost. Of course, there are several disadvantages to e-Learning, the most notable of which being the isolation and health risks. There has been an increase in the number of cases of lifestyle diseases, the majority of which are caused by most people's sedentary lives. In this scenario, e-Learning may help to increase the number of cases because it encourages minimal movement. Commuting from the classroom to home or procuring textbooks for pupils takes a

substantial amount of time and money. All of these expenditures are eliminated with e-Learning, ensuring that students may access lectures at the lowest feasible cost. Of course, there are certain disadvantages to e-Learning, the most significant of which being the isolation and health risks. There has been an increase in the number of cases of lifestyle diseases, many of which are caused by most people's sedentary lives. In this scenario, because it promotes less activity, e-Learning could potentially increase these cases. Of course, e-Learning is still evolving and experiencing considerable adjustments in order to keep up with technological advancements.

References

Abdullah, N. A., & Mirza, M. S. (2020). Evaluating pre-service teaching practice for online and distance education students in pakistan: Evaluation of teaching practice. *The International Review of Research in Open and Distributed Learning, 21*(2), 81-97.

Basilaia, G., Dgebuadze, M., Kantaria, M., & Chokhonelidze, G. (2020). Replacing the classic learning form at universities as an immediate response to the COVID-19 virus infection in Georgia. *International Journal for Research in Applied Science and Engineering Technology, 8*(3), 101-108.

Blackburn, A. C. (2019). Emerging trends in cyber ethics and education. In A. C. Blackburn (Ed.), *Emerging trends in cyber ethics and education.* Houston: IGI Global.

Census. (2020, JUNE 2). *E-Learning and Covid-19 Pandemic*. Retrieved from schooling-during-the-covid-19-pandemic: https://www.census.gov

Cheung, S. K.-K. (2019). Blended learning. *12th international conference* (pp. July 2-4). ICBL.

Fujita, N. (2020). Transforming online teaching and learning: towards learning design informed by information science and learning sciences. *Information and Learning Sciences, 121*(7/8), 503–511.

Gavira, L. O. (2018). A comparative evaluation of undergraduate accounting students in Spain and England. In L. O. Gavira (Ed.), *Perceptions of the usefulness of virtual learning environments in accounting education* (pp. 445–466). Accounting Education.

Gunnlaugson, O. I. (2019). Second-person approaches to contemplative learning and inquiry. In O. I. Gunnlaugson (Ed.), *Catalyzing the field.* New York.

Hofhues, S. (2019). Inquiry-Based Learning with Digital Media. In S. Hofhues (Ed.), *Inquiry-Based Learning with Digital Media.* New York: SAGE.

Huang, R., Liu, D. J., Tlili, A., Yang, J. F., Wang, H. H., Zhang, M., ... & Hu, X. (2020). The Chinese experience in maintaining undisrupted learning in COVID-19 outbreak. In R. Huang et al. (Eds.), *Handbook on Facilitating Flexible Learning During Educational Disruption*. Beijing, China: Smart Learning Institute of Beijing Normal University.

Jaisingh, P. (2019). Build cutting edge professional SCORM compliant and interactive eLearning content with Adobe Captivate. In P. Jaisingh (Ed.), *Mastering Adobe Captivate.* Birmingham: Packt Publishing.

Law, P. (2019). How directing formal students to institutionally-delivered OER supports their success. *Journal of Learning for Development, 6*(3), 262-272.

Mackey, T. P. (2019). Metal literate learning for the post-truth world. In T. P. Mackey (Ed.), *Metal literate learning for the post-truth world.* Chicago: ALA Neal-Schuman.

Müller, A. M., Goh, C., Lim, L. Z., & Gao, X. (2021). COVID-19 emergency elearning and beyond: Experiences and perspectives of university educators. *Education Sciences, 11*(1), 19.

Mulyanti, B., Purnama, W., & Pawinanto, R. E. (2020). Distance learning in vocational high schools during the COVID-19 pandemic in West Java province, Indonesia. *Indonesian Journal of Science and Technology, 5*(2), 271-282.

O'Malley, J., & McCraw, H. (1999). Students perceptions of distance learning, online learning and the traditional classroom. *Online Journal of Distance Learning Administration, 2(*4), 1-9.

OECD. (2018, March 13). *OECD*. The OECD redefining distance education for the 21st century. Retrieved from: https://journals.sagepub.com

Owusu-Fordjour, C., Koomson, C. K., & Hanson, D. (2020). The impact of Covid-19 on learning-the perspective of the Ghanaian student. *European Journal of Education Studies, 7*(3), 88-101.

Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome—A review of literature. *International Journal of Information Management, 43,* 1-14.

Paul, J., & Jefferson, F. (2019). A comparative analysis of student performance in an online vs. face-to-face environmental science course from 2009 to 2016. *Frontiers in Computer Science, 1,* 7.

Shonfeld, M. &. Gibson, D. (Eds.) (2019). *Collaborative learning in a global world.* Charlotte: Information Age Publishing.

Skala, A. (2019). Challenges for management, entrepreneurship and education. In A. Skala (Ed.), *Digital startups in transition economies.* Cham, Switzerland: Palgrave Macmillan.

Statista. (2019, July 16). *E-Learning and digital education.* Retrieved from e-Learning-and-digital-education: https://www.statista.com

Visvizi, A. L. (2019). Policies and practices for teaching and learning excellence. In A. L. Visvizi (Ed.), *The future of innovation and technology in education.* New York: NY: Routledge.

WEF. (2019, April 11). *The Global Competitiveness Report 2019.* Online distance education and learning. Retrieved from: https://www3.weforum.org

Wormeli, R. &. (2019). 60 innovative, tech-infused strategies for deeper student learning. In R. Wormeli (Ed.), *Summarization in any subject.* Alexandria, VA: ASCD.

Yoon, J. S. (2019). Educational technology and resources for synchronous learning in higher education. In J. S. Yoon (Ed.), *Educational technology and resources for synchronous learning in higher education.* New York: Cengage.

Zeigler, B. P. (2018). Integrative modeling and simulation. In B. P. Zeigler (Ed.), *Value-based learning healthcare systems.* Stevenage: Institution of Engineering and Technology.

Zhag, K. (2016, March 13). *A discriminative approach for learning and distance education.* Retrieved from https://www springer.com