

E-Learning Model to Improve Students' Performance

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Abstract
The objective of this research is to determine the extent to which students' academic performance is affected by online learning and to develop a model that can be utilized by both students and those who educate them. The theory of e-learning, which is based on the principles of cognitive science, demonstrates how the implementation and development of educational technology can improve the effectiveness of learning. Adjustments need to be made to these three different types of load to get the most out of learning. Because the quantity of space available in working memory is limited, the brains of students will get overwhelmed if they are presented with an excessive amount of knowledge. To ensure that students who make appropriate use of technology do not have to waste their time thinking about things that are not essential, the rules were developed. In addition to this, they make certain that students are not required to contemplate matters that are very vital to them. These concepts, design techniques, and technology improvements are all things that are included in e-learning theory. The theory of e-learning is a subset of the connective grand theory because it focuses on how technology may be utilized and adapted to generate new forms of learning and to assist in the process of learning effectively. Investigate how students' learning is impacted by online education, as well as the factors that led to its implementation on students' learning platforms both during and after the pandemic. In addition, the research will investigate the connection between traditional classroom instruction and online learning, as well as the impact that online education, commonly referred to as e-learning, has on the learning outcomes of students. The courses can be completed either online or in a hybrid format, which mixes online learning with learning that takes place in person. A significant number of university courses include an online component that makes use of web-based technologies. This is done to either simplify the dissemination of course information or provide assistance with assignments and examinations.
Keywords: E-Learning Model, Students, Learning, Performance, Education.
DOI: 10.7176/ISDE/14-1-02
Publication date: January 31st 2024

1. Introduction
Law No. 20 of 2003 defines education as a conscious and planned effort to create an educational environment and learning process in which students actively develop their spiritual strength, identity, personal qualities, intellectual ability, noble character, and skills needed for themselves, society, nation, and state. Education perpetuates human civilization in society, the country, and the state by instilling ideals, self-potentials, and personalities that may be handed on. The greatest gift to human civilization is education. Education underpins human life in all areas. The seeming civilizations will disappear without education. This will never happen; the jungle rule will always apply. Multiple instructional methods are still used. Human society's basic needs, such as food, housing, and clothing, are comparable to humans' due to periods and patterns. Coronavirus is rapidly spreading worldwide and directly harming 33 nations.

2. LITERATURE REVIEWS
2.1. Concept and Definition of E-Learning
E-learning is a type of educational system that combines the use of institutionalized learning and technological resources. While learning can occur in or outside of the classroom, e-learning relies heavily on computers and the Internet. The Internet has emerged as one of the most important resources for professors and students to share and gather information for learning and research (Richard, 2009). Technology-based e-learning is defined as the process of creating learning materials, instructing students, and managing courses inside an organization all while utilizing the internet and other relevant technology. (Fry, 2001) What constitutes a common definition of the term "e-learning" has been hotly contested. According to Dublin (2003), existing definitions frequently indicate the areas of expertise and interests of the researchers. E-learning as a notion encompasses the learning of apps, instructional techniques, and processes (Rossi, P.G., 2009). According to Oblinger (2005) and (2006), it is

challenging to come up with a precise definition for the term "eLearning" because there is none at all (Dublin, 2003). Given these discrepancies, Holmes (2006) posited that there might be as many definitions of the word "e-learning" as there are academic studies on the research. The following questions were posed by Dublin (2003) to define "e-learning" consistently: For students who live on the other side of the globe, is e-learning an online course? Is it referring to using a virtual learning environment to enhance classes held on campuses? Is it a web-based tool for collaboration that strengthens, extends, and improves teamwork? Or is it a combination of blended and online learning?\

2.3 Adoption of E-Learning in Education

The use of the internet as a new teaching technique, as well as the expansion of multimedia and information technologies, have resulted in substantial changes in the traditional teaching process (Wang et al. 2007). Advancements in information technology, according to Yang and Arjomand (1999), have given today's students more possibilities. According to the goals of schools and educational institutions, electronic learning can transform individuals, knowledge, skills, and performance (Henry, 2001). According to Love and Fry (2006), in a quickly growing cybereducation industry, colleges, universities, and other institutions of higher learning are racing to expand their online course capabilities. In higher education institutions, e-learning is becoming more and more important. The development and dissemination of a variety of e-learning tools have prompted several changes in higher education institutions, particularly in terms of educational delivery and support operations (Dublin, 2003). There are many different types of e-learning and ways to use technology in education. In his analysis of E-learning's effectiveness and experience in Saudi Arabia (Algahtani, 2011) identified some approaches to applying e-learning in education, namely " merger e-learning, and purely online." (Algahtani, 2011) identified three methods for utilizing e-learning technology, which is described below. Merger e-learning, as defined by (Algahtani, 2011) and (Zeitoun, 2008)is a method of using e-learning in the classroom in which course materials and explanations are shared across traditional and e-learning methods. Purely online learning, the other alternative, does not necessitate traditional learning or participation in a classroom setting. The eLearning in this situation is self-contained, allowing the learners or students to be as self-sufficient as possible (Algahtani, 2011); (Zeitoun, 2008).

2.4 Effectiveness of Online Learning in Pandemic Covid-19

Various kinds of online learning research have been carried out throughout the COVID-19 pandemic. 2020 (Pakpahan) The study, "In the Middle of Corona: An Examination of the Use of Information Technology in Distance Learning on the Pandemic Virus COVID-19," was conducted by Rodia Pakpahan and Rodia Pakpahan. When it comes to implementing distance learning during the coronavirus pandemic (19), information technology is crucial. The learning process can continue as usual despite the coronavirus pvidemic19, thanks to the availability of rapidly developing information technology. Examples include e-learning, Google Class, WhatsApp, Zoom, and other communication media and internet systems that can connect lecturers and students. In a study titled "Effectiveness of Online Learning During the COVID-19 Pandemic Period: An Online Survey" of home learning policies, COVID-19 (Hikmat, 2020) introduced online learning utilizing the WhatsApp app to deliver lecture material and assignments for online learning media. The results show that combining Zoom and WhatsApp for online learning is only beneficial for theoretical courses, practicums, and theoretical courses; it is less effective for online lecture practice and course subjects. According to the study "Effectiveness of Mathematical Statistics Learning through WhatsApp Group Media Judging from Student Learning Outcomes (COVID Pandemic Period 19)" (Yensy, 2020), Student learning results after WA Group lectures are better than student learning outcomes before WA Group lectures, according to his research's findings when looking at student learning outcomes for the Mathematics Statistics Course at the Mathematics Study Program Department of Mathematics and Sciences Faculty of Bengkulu University using the WhatsApp Group medium.

2.5 Digital Learning Barriers

Although this has created opportunities for the expansion of eLearning—both content and eLearning platforms (a spike in the market during lockdown is expected to grow at a CAGR of over 14% during the period 2019–2025), budgetary constraints brought on by financial turmoil, a lack of infrastructure, and—most importantly—the lack of eLearning content and trainers with experience in remote training are slowing down its proper adoption. Additionally, obstacles to adopting change in digital learning include learners' inability to balance work and family duties, lack of familiarity with learning management systems, and general stress and fear brought on by the pandemic. There is a silver lining, though, when the rubber meets the road. After years of advocating eLearning and learning practices, the coronavirus pandemic has helped increase technology acceptance among learners and L&D specialists alike. A seat at the table for L&D executives is now being requested by executives all around the world, a seat that felt out of reach in the past. Whether it concerns simplifying budgets or understanding and having empathy with human resources, Josh Bersin believes it is vital to revisit the processes [2].

3.0 METHODS

3.1 Model Concepts

The three cognitive loads are intrinsic, relevant, and superfluous, as was previously said, depending on the amount of mental work. Intrinsic load is the amount of mental work known by the difficulty of the subject in your lessons, which is mostly influenced by your instructional goals (Clark et al., 2005, p. 9). The term "Germane load" refers to "mental work recognized by instructional activities that support the instructional goal" (Clark et al., 2005, p. 11). Extraneous load is defined as "the mental work that is not necessary to the learning goal and hence wastes limited mental resources" (Clark et al., 2005, p. 12). These components make up the term "cognitive load." The e-learning theory's guiding principles, which demonstrate "how educational technology may be used and constructed to promote successful learning," are equally applicable to curriculum strategies (Wang, 2012, p. 346). The following list of the model's eleven key principles helps promote effective learning.

3.2 Technique

Implementing a procedure necessitates specific actions and carrying out that function in language teaching following a specific methodology. Every procedure relies on these actions and habits as its techniques. In this way, techniques are fundamental to procedures. They are the actual, in-the-moment steps taken in the classroom to achieve a given result. Each procedure is carried out using a variety of techniques. They could be exercises or just about any activity that you need to perform to finish a task. For instance, teachers frequently employ the "silent viewing" technique when employing movies, which entails playing the video without sound and asking pupils to decipher what the characters are saying.

3.3 How Technology Can Support Student Learning

When learning online, there is seldom any face-to-face interaction between teachers and students. Assignments and lectures are frequently missed by students, which has an impact on online education. Although educational tools can aid in this, it also affect students' ability to interact with teachers and ask for help right away. For instance, the National Education Association (NEA) and the National PTA conducted a joint study on the effects of online education, and they discovered that while most students felt they had received a good schooling, they also felt pressured to learn because of stress related to their emotional, economic, and physical health. An enormous stressor that causes students to drop out of online courses, according to a 2001 research utilized by distance teachers, is the feeling of isolation. In these trying times, online courses provide students the ability to complete their education on their schedule and provide a sense of normalcy, which may reassure worried parents about the futures of their kids. Today, teachers may train their students how to communicate with them through a variety of online tools if they are unable to interact with them in person or share their difficulties, owing to enormous technological developments. While students take online notes that they may download and write in class, teachers can write on a digital whiteboard. Additional forms of contact between students, classmates, and teachers, such as online chats, emails, and video conferences, foster interpersonal interaction and minimize feelings of isolation. Today, teachers may train their students how to connect with them through a variety of online tools if they are not able to interact with them in face or share their difficulties, owing to enormous technological developments.

3.4 Online Learning Advantages

Improving learning outcomes is one of the simplest ways that online education helps kids recover. Through online learning, students have access to a time and place for education. Few students miss class when they take online courses that they can complete from home or another place of their choice. Online courses, on the other hand, give access to students who might never have the opportunity or want to attend lectures in person. Prospects are brightened by advances in artificial intelligence. In comparison to personal courses, online courses better fulfill students' needs, accommodate their learning styles, and help them integrate into higher education. Online courses claim to be accessible at all times, to redefine educational options, or at the very least, to improve the traditional classroom. With this online opportunity, students can receive education from instructors in any time zone at any time of the day. With a third of postsecondary students taking at least one online course and 30% of graduate students studying online, online learning is expanding at the same rate as it was before COVID-19. The ability for students to attend classes anywhere they choose is another advantage of online education. Additionally, it makes it possible for schools to reach a wide range of students without being restricted by geographic borders. Asynchronous online learning gives students more control over their educational process, allows for curricular flexibility for non-traditional students, and increases student accountability. Students can separate from one another through the use of online learning without risking coronavirus exposure, and online learning has numerous positive health effects for both students and their families.

3.5 Impact of Online Learning on Children

Online learning broadens children's access to education. Students must be very time-efficient, organized, and

motivated to participate in an online program. For mature and responsible students, online learning may be an excellent alternative educational medium. They are ineffective in learning environments where the learner is the main focus, though. In contrast to distant learning, which makes it difficult or impossible to learn in person, asynchronous online learning allows students to actively participate in high-quality learning settings. Teachers must make their online classes as clear, engaging, and interactive as possible if they want their students to pay attention to the material. Because of students' commitment to time, online courses are usually perceived as being less time- and effort-intensive than traditional courses. Online students can participate in assignments, essays, projects, and conversations in the classroom. This illustrates the negative effects of attending an online school and being unable to interact with other students and teachers. Students may acquire the required communication skills through online learning. Additionally, students need access to high-speed internet at home, which might be problematic if it is not provided. The challenges of online learning may have a considerable influence on children; among the most important effects are loss of interest, lack of self-discipline, and the need to study. The ineffectiveness of technology, the difficulty of explaining concepts to pupils, the social isolation brought on by online learning, and the failure of pupils to master crucial communication skills are some of the negative outcomes. How well a student's education performs in online learning is influenced by a variety of factors, including individual learning styles, learning settings, and the level of parental involvement.

4.0 DISCUSSION

4.1 Online Education (E-Learning) Model

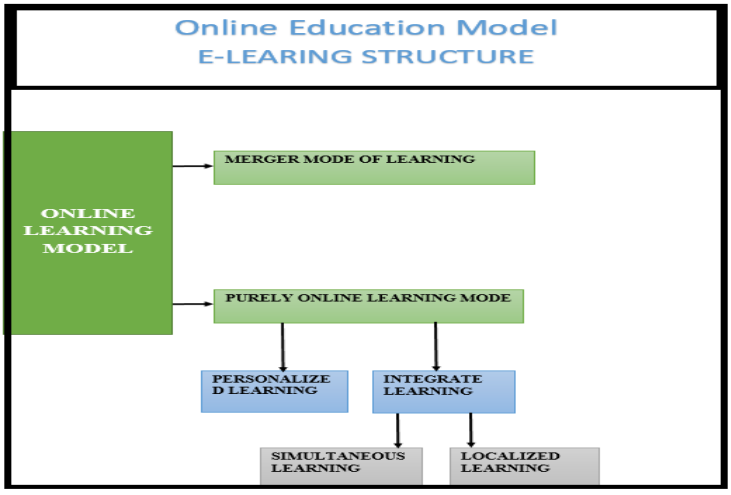

Fig. 2 Online Education (E-Learning) Model

By eliminating needless cognitive load and regulating relevant and intrinsic loads at the appropriate levels for each technology, e-learning theory seeks to design educational technologies that facilitate effective learning. It may be difficult for teachers to create tasks that are sufficiently challenging for students. Still, the e-learning theory model can help teachers understand how cognitive load can be categorized and linked to design principles to make technology-based learning more effective. This model has a variety of research and application possibilities. This model, for example, can assist researchers in understanding how to apply design principles to training to promote effective learning. Using the e-learning theory model, researchers may also conduct studies to define the design principles of learning environments. Using this model, researchers may additionally investigate the following concerns: how to design an effective e-learning course with research-based e-learning strategies; and how to regulate intrinsic and extrinsic classroom loads for effective learning.

4.2 Most effective design principles for improving student learning

The e-learning theory model might potentially be used by teachers to build effective e-learning courses for their classrooms. By splitting the content so that students may learn it in phases, teachers might, for example, help students manage their intrinsic load (Clark et al., 2005).

To provide students autonomy over their learning in a self-paced e-learning environment, teachers might scaffold learning by gradually introducing new content in tiny doses (Clark et al., 2005). In addition, teachers can explain learning content with basic digital tools for text, audio, and visual communication to reduce their pupils' intrinsic cognitive burdens. In addition, teachers can employ effective images, audio, and text to reduce redundant content, emphasize essential content, and increase students' external memory.

4.3 Benefits and Limitations of E-learning from a Student Perspective

Self-efficacy is a wide phrase that relates to an individual's capacity to organize themselves and take action to attain

their goals. It is not only a test of ICT skills (Bandura A, 1986dividual's capacity to organize themselves and take action to attain their goals. It is not only a test of ICT skills (Bandura A, 1986). Lee and Mendlinger (2011) study the relationship between perceived self-efficacy and other factors, such as perceived usefulness and learner satisfaction. The technology acceptance model (TAM) suggests that end users are more likely to adopt and continue using new technology if they judge its usefulness and ease of use to be high. According to the results of a study done among students at a Korean university and an American school, task-specific self-efficacy has a favorable influence on student satisfaction. At Central Michigan University, Xu H. (2007) conducted qualitative research on the status of online learning and presented their results on how online learning programs might be made more successful. As significant factors influencing the design and delivery and defining the evaluation of the online program's efficacy are discussed, assessment methodologies, advantages, and limitations are examined. Numerous studies have proven the benefits of e-learning and the favorable impressions of its learners. (Aithal P.S., 2016) discussed a variety of global education models and analyzed the advantages and disadvantages of online learning systems. Investigated are for-profit and non-profit online programs, massive open online courses, mobile learning, and other online education strategies. The capacity to access massive quantities of data at any time is regarded as a significant advantage. Working people value flexibility in work-life balance, travel, and other areas. Lifelong learning is another characteristic that students of all ages value. From the learner's perspective, convenience, time savings, and cost savings are all crucial factors in their decision to adopt and utilize e-learning. Conkova (2013) compiled an inventory of the advantages and disadvantages of business training programs. Blended learning can integrate, at least in part, the advantages and cons of online and conventional learning to increase corporate training performance and trainee satisfaction.

5.0 CONCLUSION

Both teachers and students must adjust to the new learning environment as a result of the move to online learning. Parents and teachers are taking note, and many are wondering whether the shift to online learning will have long-term effects on students when they leave the classroom. Students' sleep and health are negatively impacted by the transition to online learning, which is one of the most significant effects. This study seeks to assess the advantages of online education for both students and instructors, as well as the impact of online education on student learning. Identify the factors that contributed to the acceptance of online education on students' learning platforms during and after the outbreak, as well as its impact on students' education. This research looks at some of the contributions made by various academics and organizations to the use of e-learning, specifically in teaching and learning in higher education institutions. Through surveys and other observations, it illustrates some of the views held by individuals and organizations from across the globe regarding the usage and incorporation of e-learning technology in education. It examines the views of several academics on e-learning as well as the role of e-learning in the teaching and learning procedures of higher education institutions. This study enables us to appreciate the learners' perspectives on the primary benefits, limitations, and effects of online learning on program assessment. According to a recent study, learning purpose is one of the self-regulatory qualities shared by effective learners. This paradigm says, in essence, that the tactics of an approach should be driven by both the theory of language and the theory of learning. Methods are used to implement approaches. They represent the execution of theory in practice. Methods provide information to procedures, which in turn provide information to patients. They are predefined outcomes that are followed by successive occurrences. Procedures rely on methods to produce the intended effects.

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