

E-Learning: Research and Applications

Shantanu Sharma¹, Shreeyanshi Gautam² and Ayushi Agarwal³

¹⁻³ABES Engineering College, Ghaziabad, Uttar Pradesh, India

Abstract— The goal of educational institutions should be to find effective ways to provide new and efficient learning opportunities based on their environment, student characteristics, teacher preparation, economic crisis, and advancing technology in an effort to make learning more efficient, equitable, and innovative in higher education. This study paper identifies the need for and possibility for developing new online courses in order to engage and motivate students in accordance with their demands (e-Learning, blended learning, mobile learning).

This paper presents the insights and harmonizes the acquired knowledge since the implementation of a mobile learning solution, reviews a few definitions of e-learning, explores the motivating factors behind its development, and provides an overview of the circumstances in which e-learning is a perfect option, as well as the main e-learning component types. It is concluded that e-learning is a useful tool for the growth of the Indian educational sector. Considering the idea of e-learning and examining the different types of e-learning are the key objectives of this research work.

Index Terms— Electronic Learning(e-learning); education; learning 2.0; higher education; success; learning; internet; survey; educational development; formal e-learning; informal e-learning;.

I. INTRODUCTION

E-learning is a crucial activity for each and every nation's advancement. Everyone involved in this new era is contemplating growth. We will achieve the desired outcomes if it is adequately planned. This research report examines the state of e-learning in India. Because of the great ease of use & accessibility, navigation, interaction, and user-friendly interface design of e-learning as in contrast to traditional learning, student satisfaction rates rise with continuous use. It has been determined that very few professional courses offered by higher education educators than that of the average national use e-learning, while few such non-professional courses are taught by teachers using e-learning. In recent years, there has been an increase in research into just how effective e-Learning performs. This is primarily due to greater opportunities for integrating IT and learning, but also because political and social focus on "what works" in learning is expanding.

II. LITERATURE REVIEW

[1] The use of any new technologies or International Journal of e-Education, e-Business, e-Management and e-Learning 40 Volume 6, Number 1, March 2016 applications in the service of learning or learner support has been deemed to be the operational definition of e-learning, according to f Laurillard's (2006) research. According to Marc Prensky's study, particular learning activities are more effective for teaching various learning outcomes. He asserts that everyone learns: a) attitudes through restriction, criticism, and practice. b) using play to foster creativity.

- c. learning information through drill, questions, associations, and memories
- d. language acquisition through imitation, social interaction, and impression e) using examples, puzzles, and dilemmas from the real world to reason.

III. WHAT IS E-LEARNING?

Internet-enabled learning is known as e-learning.

[2] E-learning is the process of delivering a wide range of solutions to facilitate learning and enhance performance using computer and Internet technology.

E-learning is the transfer of knowledge, skills, and information made possible by computers and networks. Web-based learning, computer-based learning, virtual learning possibilities, and digital collaboration are all examples of e-learning processes and applications.

It elevates the standard of learning and instruction. It addresses the demands and learning preferences of learners while also enhancing the efficacy and efficiency of the educational process. It enhances flexibility and user-accessibility for engaging students in the learning process.

E-learning incorporates a networked population of scholars, content providers, and experts as well as the delivery of content in a variety of formats and administration of the learning process. E-learning offers everyone involved in the learning process clear accountability, faster learning at lower costs, and expanded access.

Organizations which use e-learning give their staff the skills to use change as an advantage in today's fast-paced world. As people may now take charge of their own lifelong learning by removing barriers of time, distance, and socioeconomic status, e-learning will be the great equalizer in this new era.

IV. WHY DEVELOP E-LEARNING?

E-learning is utilized by numerous institutions and businesses since it can be more economical and efficient than conventional learning. Especially compared to starting to make materials and training instructors, developing e-learning is more expensive, especially when highly interactive strategies are used. E-learning delivery costs, however, are significantly cheaper than those for classroom space, instructor time, participant travel, and lost productivity from missing work to attend classes. Additionally, e-learning engages students who find it challenging to attend traditional classroom training because they are:

- occupied with family or work
- geographically remote with little access to travel resources, time, or both
- located in volatile regions Consequently, they are limited in their mobility for security concerns.
- less involvement in class due to cultural or religious convictions.
- experiencing communication issues (e.g. foreigner or shy learners)

A. Can any kind of talent be developed through e-learning?

A training/learning programme aims to improve several kinds of abilities, including:

- Cognitive abilities include knowledge, comprehension, the ability to follow directions and apply new ideas to circumstances in order to solve issues.
- interpersonal abilities (such as those required for active listening, speaking, presenting, and bargaining), as well as
- psychomotor abilities, which entail learning bodily senses and motions (e.g. making sports or driving a car)

B. How does e-learning tackle a variety of domains?

Since the cognitive domain is the one most suited to online learning, the majority of e-learning courses are designed to enhance cognitive abilities. Because thinking abilities can only be learnt and developed "by doing them," they may require more interactive e-learning activities within certain cognitive areas. To alter attitudes and actions, for instance, interactive games might be used in conjunction with suitable feedback.

C. E-learning is a wise choice if

- To a big number of students, there is a lot of material that has to be provided.
- Geographically spread places make up the student body.
- Learners have limited mobility.
- Learners have less time to devote to learning because of other jobs.

- The goal of learning is to acquire uniform background information about a given subject.
- Learners like studying at their own speed and are highly motivated to pick up new skills.
- The course emphasizes long-term training requirements rather than urgent ones.
- when it is necessary to get the information.

V. QUALITY OF E-LEARNING

- The quality of an e-learning course/training is increased by:
- learner-centered content: learner-focused material The curriculum for online learning should be precise, pertinent, and tailored to each learner's needs, responsibilities, and roles in both their professional and personal lives. Information, knowledge, and skills should be offered in the conclusion.
- granularity: To aid in the assimilation of new information and to provide the student flexibility in their learning schedule, e-learning content has to be normalized (broken down into manageable chunks).
- engaging content: In order to create an engaging and inspiring learning environment, innovative use of instructional approaches, methods, and tactics is required.
- Interactivity: To keep students' interest, encourage learning, and create a positive learning environment for them, frequent
- learner-teacher interaction is essential.
- personalization: Self-paced courses must be altered to take into account the needs and interests of the student.
- Tutors and facilitators in instructor-led courses need to be able to monitor each learner's development and performance.

VI. HOW IS THE EFFECTIVENESS OF E-LEARNING DEFINED AND MEASURED?

According to several studies, when suitable teaching methods and approaches are used during the learning time, e-learning may be just as successful as face-to-face training, if not more so.

Employee feedback - In the first place, it is crucial to get employee feedback that will allow us to gauge how effective the training and learning were. Staff members must be questioned on if the course/training was a worthwhile experience and whether they approved of the subjects, resources, curriculum, and teachers' methods of instruction. Another study looked at how e-learning affected students' behavior, attitude, and academic achievement. The results revealed that learners using e-learning had mean scores that were statistically considerably higher than those using traditional teaching approaches. The effectiveness of e-learning as a tool or approach to improve the delivery of teaching and foster the development of learning abilities through transfer of learning was well received by instructors and students. The primary takeaway is that e-learning may be regarded as one of the greatest current approaches and methods for use in teaching and learning.

VII. WHAT MAKES E-LEARNING SOLUTIONS EFFECTIVE?

[5]If this was mentioned or implied in the abstracts, then all of the abstracts utilized in this study were coded for whether the e-Learning was effective, ineffective, or somewhat effective. This was the situation for 61 of the 111 abstracts analyzed, as illustrated in figure 1.

Effective	41
Not effective	6
Partly effective	14

Figure 1 shows the effectiveness of e-learning

Only 10% (6/61) of the studies are labeled as "not successful," which calls into question the validity of the classifications given the difficulties and issues that e-Learning must overcome. A closer examination of the abstracts reveals that many of the empirical studies and reachers on efficacy were carried out by scholars who seemed to have an interest in e-success. The literature review currently does not support the examination into whether e-Learning solutions are particularly successful due to the issue of "effectiveness bias."

As seen in figure 2, this model depicts the crucial elements (in gray) that the review found to be important in determining how effective e-Learning is according to various definitions. There must be a positive and helpful

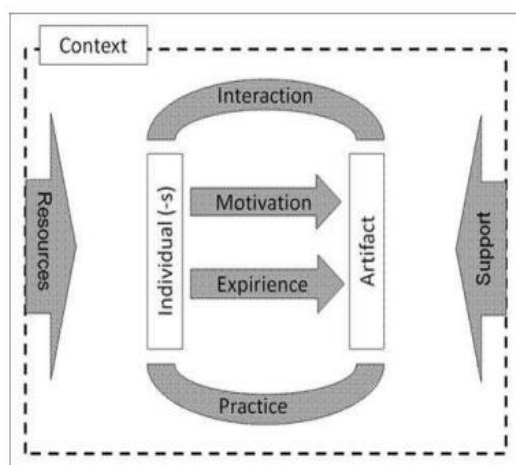


Figure 2 flow chart

learning atmosphere. The amount of motivation of the person(s) using the eLearning (artifact) affects how long they use it, and prior online or professional experience tends to have a generally beneficial effect on efficacy. Program designs that include peer and instructor interaction as well as opportunities for practise improve the efficacy of online learning. This model illustrates how the important variables that affect efficacy interact, however many studies in the literature review do not take into account the wide range of definitions.

VIII. INDIAN E-LEARNING

Understanding the idea and principles of e-learning in its entirety as well as looking into and analyzing the many types of e-learning are some of the goals of this study. Additionally, it highlights several points of view in relation to the contrast between conventional learning, classroom learning, and online learning. This essay attempts to provide some answers by examining the benefits of both learning styles while taking into account the limitations of the scenario. It intends to analyze the benefits and drawbacks of both learning styles in depth. Such an objective secondary approach is used to achieve it. Books, magazines, journals, and published materials relating to e-learning were used to gather secondary data for the study.

A. Indian Education Situation

For a long time, India's old educational system and practices were viable, but as educational demands change and a global education standard comes into force, the Indian educational system is being forced to make several adjustments. as seen by the Covid-19 epidemic. Though at a slower rate than in other nations, the idea of e-learning is undoubtedly growing in favor throughout the nation. The Indian Constitution aims to meet the country's educational demands, particularly for its many distinct communities and cultures. It also commits to provide high-quality education to all citizens. The development of the full person and the fostering of potential inherent qualities and features are what different educational categories such as elementary education, secondary school, higher education, adult education, and technical and vocational education are all about. The objective of education in rural regions may be achieved in India through the use of e-learning, which can also inspire students to pursue further education and empower women. Education must adapt to the new demands of the modern world, including the need to produce a workforce with global competency. The world is changing and evolving quite quickly.

B. Concept and Aspect of e-Learning in India

The term "e-learning," sometimes known as "digital learning," refers to the use of a computer to offer all or a portion of a course or programme, whether it be at a school, college, as part of training, or as a full distance learning course. E-learning is essentially a method of accessing educational materials outside of a traditional classroom by using electronic technology. It frequently refers to a fully delivered course, programme, or degree.

Education is what remains after one has forgotten what one has learned in school. —**Albert Einstein.**

Although Einstein may have meant his remarks as a joke, they represent the truth that successful and high-quality education is ongoing and always changing as technology advances. In actuality, during the past several decades, there have been many changes to how education is seen. Learning has changed from being

characterized by the old classroom paradigm to learning that is immediate, online, self-driven, and available whenever a student desires. There have been several turning points in the path of education in India. In plain English, e-learning is defined as education that is provided online, over the internet, and includes a variety of formats and styles, including remote learning, computerized electronic learning, online learning, and internet learning.

C. E-Learning and Government

The government can employ e-learning in a variety of ways, including the following:

- Effective policy and rule communication may aid the government.
- It can raise awareness among individuals about various programmes and goals.
- According to their demands, it will offer citizens/people a public forum for communication or education.
- Both unstructured and semi-structured information may be managed by it.
- It can carry out government policy.

The government may benefit from an effective e-learning system in many ways. The government may offer a learning portal centered on public private partnerships' (PPP) policies, rules, and regulations. A meaningful and worthwhile education among the populace through e-learning can help a government become more open in its governance.

D. E-Learning and Higher Education

Studies conducted on a worldwide scale indicate that, after the United States, India has the second-highest number of students enrolled in online courses, with more than 1,55,000 coming from the nation. 32% of the over 1.2 million students globally are from the United States, while 15% are from India (but keep in mind that both nations' populations are large). There is an increasing need in higher education to develop an e-learning programme in which all components of a course are controlled through a standardized user interface throughout the whole school. Many of these programmes have been launched in our nation; students must attend orientation sessions at institutions, but the course material is distributed online. The majority of colleges do provide online advising and registration, e-counseling, and student newspapers, among other online learning assistance and services. E-learning has the capability to overcome India's rural areas' lack of access to professors and teachers with the necessary qualifications. Live online coaching, streaming films, and virtual classrooms are a few of the answers that e-learning may provide to these issues. E-learning is the greatest choice even though there is no replacement for efficient and well-organized classroom instruction.

IX. CONCLUSION

According to the results of our study, we draw the essential conclusion that the fast expansion of internet connectivity is a key driver of the development of e-learning. Online learning will become more efficient and educational quality will rise thanks to a solid internet infrastructure with a wide range of regional and international actors. E-learning improves both the standard of education and the state of the economy in emerging nations like India.

Our research article addressed the following research queries: How are e-efficacy learning's metrics determined? How is the effectiveness of e-learning measured? Why are e-Learning programmes so effective? The benefits of taking into account and making clear how these notions are utilized in study and practice were emphasized in this article. The bulk of studies, according to this survey, employed quantitative and comparative methods. This paper argues that practitioners and academics are prevented from uncovering unexpected and unintentional potential reasons of error by utilizing only quantitative measurements to satisfy preset learning objectives. Open-ended qualitative survey questions can significantly increase the validity of such methods [8] The environment in which the e-Learning solution was employed and deployed as well as the users of the artifact were taken into account while categorizing these elements.

REFERENCES

- [1] Sharma, R. C., & Mishra S. (2013). International Handbook on e-Learning, Vol. 2
- [2] Harden, R. M., & Hart, I. R. (2002). An international virtual medical school (IVIMEDS): The future for medical education. Medical Teacher, 24, 261-267

- [3] Laurillard, D. (2006). E-learning in higher education. *Changing Higher Education: The Development of Learning and Teaching*, 71-84
- [4] Government of India. (2011). *Census Report*, 223.
- [5] Ministry of Human Resource Development, Government of India. (2014). *Annual Report, 2013-2014*.
- [6] Chandra, S. (2014). E-learning prospects and challenges. *International Journal of Research in Finance & Marketing*, 4(10)
- [7] Shinde, S. P., & Deshmukh, V. P. Web-based education in schools: A paradigm shift in India.