



E-Learning: Online Learning Platform

Mrinal Bhardwaj
Noida Institute of Engineering
and Technology, Greater Noida

Ajay Pradhan
Noida Institute of Engineering
and Technology, Greater Noida

Mohammad Kashif Mohiuddin
Noida Institute of Engineering
and Technology, Greater Noida

Swati Kumari
Institute of Engineering
and Technology, Greater Noida

Shruti Sinha Noida
Noida Institute of Engineering
and Technology, Greater Noida

Abstract :- Over the years, e-learning, also known as digital education, has gone through numerous stages and transitions. It uses one or more online instruction tools to supplement the use of technology in the classroom. Past and recent studies have revealed a number of limitations and flaws that greatly impede the online education system's inclusive performance and procedure. Many countries have had to adapt to new situations in various sectors, including education, as a result of the Covid-19 pandemic. This research backs up the necessity to plan and implement e-learning strategies, as well as transition to resilient e-learning technologies in the online educational system. This is accomplished by undertaking a complete and critical assessment of certain previous and recent related studies in order to gain a better understanding of its current state. Identifying related solutions to prepare and implement learning strategies to shift into resilience e-learning technologies and role in modern and sustainable society, in addition to determining which factors or barriers pose the most significant challenges and barriers to stakeholders implementing e-learning technologies.

Keywords: - E-Learning, online education, e-tutoring.

1. **E-Learning:** E-learning is a learning approach that is based on formalised instruction but uses electronic resources. While teaching can take place in or out of the classroom, eLearning is defined by the use of computers and the Internet. E-learning is a network-enabled transfer of skills and knowledge in which education is delivered to a large number of people at the same time or at different periods. It was previously not widely recognised because it was considered that this method lacked the human factor essential for learning.
2. **Online Education:** Online education is the process of obtaining skills and knowledge via the internet utilising electronic devices such as computers, mobile phones, and laptops. Tutors or mentors can reach out to all students more flexibly and teach them the relevant skills more efficiently using online education. Students who are unable to attend typical regular classes can now learn from anywhere via the internet.
3. **E-tutoring:** Online tutoring is known as e-tutoring. Academics, educators, instructors, corporate trainers, amateurs, facilitators, moderators, subject specialists, and learning support workers are all commonly referred to as tutors. Any person who supports and enables pupils to study efficiently online is referred to as an online instructor. E-tutoring relies heavily on communication: technology allows people to learn new things by providing a variety of ways to communicate with students.

I. INTRODUCTION

E-learning is an emerging method of digital education with a focus on the use of modern communication tools such as computers, networks, multimedia, and the internet to efficiently deliver educational materials to learners in a cost-effective manner while allowing the educational process management to control, measure, and evaluate learner's performance. The use of various e-learning tools can expedite the process of learning, and help to cater specific requirement of the learner. Depending upon the educational material and the choice of the learner, the use of text, music, video, photos, presentations with images etc. can be selectively employed to yield best results. By using a combination of different e-learning tools, additional flexibility in the scope and arrangement of educational content can be built in the learning process. Terms like virtual learning, computer-based learning, and remote learning via electronic channels are often interchangeably used to essentially mean e-learning.

In terms of the alternatives available to users, in an e-learning environment, the learner employs multimedia tools and adds to instructional content that is widely available and accessible via the Internet.

The student can design, construct, and alter current information to meet his or her specific knowledge demands, which vary from one learner to the next.

Educational content, whether developed by individuals or institutions, represents a characteristic of modern learners: cognitive strength arising from the availability and diversity of knowledge.

The era of population and knowledge boom imposed new demands on learners to be able to digest learning, including its media, means, skills, and suitable use and application.

Traditional ways of teaching scientific content are no longer the norm for teachers in the twenty-first century. Rather, they must stay abreast of worldwide advances in teaching methods.

Faculty members establish their own pages, as well as scientific resources for each subject they teach, and encourage students to produce and circulate the content of scientific materials from the pages, taking advantage of

global developments in communication via computer networks.

Our E-Learning platform streamlines the learning process by allowing for flexibility in lecture availability as well as the option to send a lecture request from anywhere in the world.

Our e-learning model isn't confined to bundled courses; it can deliver a single solution video or a slew of them.

We are attempting to deliver a smarter solution for smarter learning with well-maintained access to all available facilities in this evolving period.

II. Related Work

Alharbi et al. (2022) [1] presented a theory on the acceptance of e-learning techniques by explaining the requirements and acceptability of models to meet specific needs. The authors suggested the technological requirements for the successful implementation of the project by pointing out that the personalized model will be best suited for the optimal exploitation of the e-learning resources.

Aldammagh et al. (2022) [2] presented how the field of education has changed from teacher-centered to learner-centered. The status of various countries' adoption of online education is shown, as well as how they are evolving in terms of education using the advantages of online education. Acceptance of online education and individual perceptions of its consequences are discussed.

Pradipta Biswas et al. (2007) [3] proposed the evaluation standards used to assess the effectiveness and growth of the educational system. The necessity of evaluation and its significance for both students and teachers are discussed. It also explains how evaluation should be conducted and how it assists in identifying flaws and improving the system to get even better results.

Khalil et al. (2021) [4] presented how online education has grown in popularity and is now available to people all around the world. The impact of covid on the educational system was discussed, as well as how online education and tutoring aided during these times.

Sofie Bitter et al. (2012) [5] presented the use of e-learning and blended-learning (online + offline) strategies. It also demonstrated how courses and resources must be carefully managed in order to achieve a 100 percent successful result. It also used a research-based method to demonstrate how crucial e-learning is for the future in terms of workloads, accessibility, and improved impact and availability.

Sedio et al. (2021) [6] Proposed a strategy for improving subject understanding for open and distance eLearning approaches. This study revealed ways and tactics for improving the eLearning experience. They did this by conducting a physical survey to gain direct feedback from students about their eLearning experience, and then analysing the data to draw conclusions on how eLearning methods may be improved and how helpful they are, as well as how they can benefit more.

Alshboul et al. (2021) [7] proposed how E-Learning necessitates the use of information and communication technology to provide advanced E-Learning methodologies. It also showed how E-Learning has

progressed in terms of technology and approaches employed to deliver the greatest possible learning experience.

Sheena et al. (2014) [8] presented how different courses employ technology in different ways. And how critical is course customisation for a better learning experience and how E-Learning courses can improve a person's knowledge and abilities. It also suggests how E-learning might aid in the development of skills not only for students, but also for tutors and teachers, in order to improve the use of technology in online education methods.

AliaKbari et al. [9] presented how e-learning is based on the principle of education, regardless of location or time. It illustrates how e-learning has allowed people all over the world to participate in various learning programmes from any location. It also emphasised how the Covid issue demonstrated the power of online education and how the world may use it to make a difference.

Gaikwad et al. [10] presented E-Learning in India: Wheel of Change in this research paper is to understand concept of e-learning and to examine the type of e-learning. It also summarizes several opinions regarding the comparison between traditional learning and modern learning technique.

Zahor Ahmad [11] presented Impact of Online Education in Indian in this research paper is conceptual and Exploratory in nature. In order to meet such objective secondary method is adopted. The secondary data was collected through books, periodicals, and journal and published material related digital learning for the study.

Noesgard et al. [12] proposed The Effectiveness of E-Learning: An Explorative and Integrative Review of the Definitions, Methodologies and Factors that Promote e-Learning Effectiveness this paper analysed factors promoting the effectiveness of e-Learning. These factors were categorised according to the context in which the e-Learning solution was used, the artefact (the e-Learning solution itself) and the individuals that used the artefact.

M. Samir et al. [13] presented E-Learning and Students' Motivation: A Research Study on the Effect of E-Learning on Higher Education this research paper shows that the use of interactive features of e-learning increases the motivation of the undergraduate students for the learning process.

E-Learning [14] proposed a study of the concept of e-learning, a review of the literature on e-learning with the goal of bringing relevant aspects to the fore, and the suggestion of a set of important success factors for establishing an e-learning environment

Vanderbilt [15] presented The Effectiveness of Online Learning: Beyond No Significant Difference and Future Horizons examines the good, negative, mixed, and null findings of the effectiveness of online learning as compared to the traditional format.

Shivangi Dhawan [16] In the midst of the COVID-19 crisis, offered the idea of online learning as a panacea. The importance of online learning and a SWOC (Strengths, Weaknesses, Opportunities, and Challenges) study of e-

learning modes in times of crisis are discussed in this research paper.

Anna Sun et al. [17] presented Internet connectivity, improved technology, and a large market have all contributed to the rapid growth of online education. It has progressed from 19th-century correspondence programmes to active and well-designed institutional online offerings in the twenty-first century. We should expect online education will continue to grow in popularity and affect higher education as a result of a robust reshaping, refining, and restructuring process.

Yang Linda et al. [18] proposed Students' Perceptions towards the Quality of Online Education this research paper revealed that flexibility, cost-effectiveness, electronic research availability, ease of connection to the Internet, and well-designed class interface were students' positive experiences.

Maria et al. [19] proposed Trends in Educational Research about e-Learning this research paper was to analyse the evolution of educational research on e-learning.

Stephanie et al. [20] presented STUDENT EXPERIENCES IN ONLINE COURSES this research paper synthesis explored students' experiences with online learning. For example, some students were satisfied with their online courses but still struggled with balancing online courses and work responsibilities.

M.L.H. Khan et al. [21] proposed in this research article, the impact of E-learning on higher education perception, skills, critical thinking, and satisfaction is clearly demonstrated. E-learning courses can be done in an interesting and understandable manner.

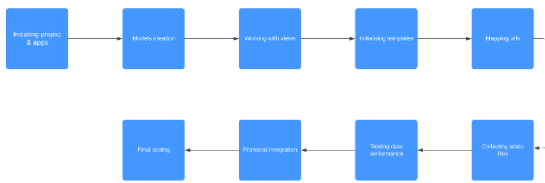
TABLE I. SET OF RESEARCH PAPERS THAT HAVE USED THE MENTIONED TECHNIQUES

References	Heading	Year	Summary	Task
Alharbi et al. [1]	Acceptance of E-Learning Techniques	2022	presented a theory on the acceptance of e-learning techniques by explaining the requirements and acceptability of models to meet specific needs.	How can more personalized model be delivered to enhance online education portal
Aldammagh et al. [2]	Adoption of E-Learning	2022	The adoption and acceptance of eLearning is explained with the evolution, and positive and negative impact of e-Learning.	How individuals' perception effects on learning are analysed.
Pradipta Biswas et al. [3]	Evaluation standard and effectiveness	2007	The necessity of evaluation and its significance for both students and teachers are discussed. And how it can impact E-Learning.	Assistance and evaluation in eLearning.
Khalil et al. [4]	Impact of covid on education and how eLearning aided	2021	The impact of covid on education and how eLearning aided and evolved the procedure of learning. eLearning benefits not only in times like this but also in regular life.	Benefits of eLearning and impact of covid in eLearning and education
Sofie Bitter et al. [5]	The benefits of blended learning	2012	Strategies to blend online and offline together to deliver best experience and 100 percent result.	Blended learning benefits and future benefits of it.
Sedio et al [6]	Distance eLearning approaches and improvements	2021	The tactics to improve distance eLearning and how feedbacks and suggestions can be utilized for greater learning are discussed.	Survey was conducted to draw out conclusion to improve eLearning.
Alshboul et al [7]	Progress of E-Learning in term or technology and approach	2021	Role of information and communication technology and other approaches to deliver the greatest possible learning experience	Technology uses and approaches required.
Sheena et al. [8]	Course customization and improvement in online education method	2014	Customization of courses to meet more user requirement and eLearning aids which can make learning better and several online education methods.	Content customization and eLearning aids for better result.
AliaKbari et al. [9]	Power of online education	2022	Emphasis on how covid impacted the online education. And how e-learning can help empower education globally.	Global benefits of E-Learning.
Gaikwad et al. [10]	E-learning wheel of change	2015	Difference between eLearning and traditional learning techniques is drawn and explained how eLearning has emerged.	Comparison between eLearning and Traditional learning
Zahor Ahmad [11]	Collection of data about eLearning	2017	Data about eLearning performance and improvements from various journal and published materials which explains how eLearning can impact	Data Collection about eLearning
Noesgard et al. [12]	Effectiveness of eLearning techniques.	2015	Review on factors, methodology and effectiveness of eLearning methods and how eLearning is a solution itself.	A review on eLearning methodology
M. Samir et al. [13]	Effectiveness of eLearning on higher and undergrad education system.	2014	Benefits of eLearning in education system during higher education and graduation. The motivation and ease of education eLearning provide.	Benefits of eLearning in university education
E-Learning [14]	Critical success factors for eLearning	2002	Success factors and qualities required to make eLearning experience the best.	Definition and factors for eLearning
Vanderbilt [15]	Future benefits, issues and effectiveness.	2015	Effectiveness of eLearning in future and what all challenges can eLearning face are discussed.	Effectiveness of eLearn for future.

Shivangi Dhawan [16]	Effectiveness of eLearning in covid and swoc.	2020	Strength, weakness, opportunity and challenges of eLearning are explained and discussed.	SWOC analysis of eLearning
----------------------	---	------	--	----------------------------

III. Methodology/Proposed Work

We began our project by developing a basic backend structure, which we then tested using Postman before moving on to developing a frontend that would better represent our model and make it more user-friendly.



1. Django Project and Apps:

An app is a submodule of a project, whereas a project represents the complete website. Numerous applications can be included in a single project, and an app can be used in multiple projects. Apps are the building elements of a web application, whereas projects are the plan for the full online application. A project in Django is a python package that represents the whole web application.

- A project in Django basically contains the configuration and setting related to the entire website.
- A single project can also have multiple apps in it that can be used to implement some functionality.
- An app in Django is a sub-module of a project, and it is used to implement some functionality.
- Now, you can refer to an app as a standalone python module that is used to provide some functionality to your project.
- We can create multiple apps within a single Django project. And these apps can be independent of one another. Theoretically, we can use an app from one Django project to another without making any changes to it.

In our concept, we developed an E-Learning project and categorise the features or modules we want to create as an app.

2. Model Creation in Django:

A model is the single, definitive source of information about your data. It contains the essential fields and behaviours of the data you're storing. Generally, each model maps to a single database table.

We began by building models with Django as the backend. Models are stored as data tables on the Django server, which builds SQL data tables for us utilising Django's internal capabilities as we compile our model. Django allows us to build all of the entities we need and all of the data we wish to keep in the form of variables, and Django handles the basic query work for table generation. We may use python code to add limits, verifications, and limitations to data entry, and that code serves as the command for python to apply it in the database we integrated with.

3. Views Creation:

The MVT (Model View Templating) architecture is used by Django. Models assist us in connecting to the database, allowing us to edit data, add features to our database, and describing how data should appear in our database.

Views are functions that return to describe how the model works with data entered, data modified, and modifications made by the user. Views describe how things work and allow us to connect frontend and backend actions. A view function, often known as a view, is a Python function that receives a web request and provides a web response. The view itself contains all of the arbitrary logic required to return that response.

4. Templates:

Django, as a web framework, requires a simple mechanism to dynamically produce HTML. The most frequent method is to use templates. The static components of the desired HTML output are contained in a template, as well as some special syntax indicating how dynamic content will be introduced. A Django project can have one or more template engines (or none if you don't want to use templates). Django includes backends for both its own template system, dubbed the Django template language (DTL), and the popular Jinja2 alternative. Third-party backends for different template languages may be provided. You can even develop your own custom backend (see Custom template backend for more information).

Templates include all of the frontend content, which is essentially all of the HTML structure required for our project. Here are the essential design files that must be rendered anytime a user accesses any of the features. The view features are used to render these templates into the browser.

5. URLs:

In a high-quality web application, a clean, attractive URL system is a crucial component. Django allows you to create URLs in any way you choose, with no restrictions imposed by the framework. You make a Python module known as a URLconf to design URLs for an app (URL configuration). This module is made up entirely of Python code that maps URL path expressions to Python functions (your views).

6. Static Files:

All of the design and custom files you include in your app will be saved in static files, or the static folder in Django. The static folder contains the images, representations, CSS, and all other styling and scripting files. All of these files can be placed wherever you want in your project, thanks to Django's jinja format. From here, you may manage everything of the design and scripts. All of the files we want to use in the frontend component of our project are stored in the static file's directory.

7. Testing using Postman:

Postman is a programme that is used to test APIs. It's an HTTP client that uses a graphical user interface to test

HTTP queries, allowing us to get various forms of replies that must then be validated. Many endpoint interaction mechanisms are available in Postman. Here are a few of the most commonly utilised, along with their functions:

GET: Obtain information

POST: Add information

PUT: Replace information

PATCH: Update certain information

DELETE: Delete information

We utilised Postman to see if our model's data transfer was performing properly. After we had completed all of the necessary clarifications, we merged our frontend with the backend, resulting in the smooth operation of our model.

8. **Frontend:**

The user interacts with the frontend, which is what makes the model easy and interactive to work with. We employed the most effective techniques to make our frontend simple to use and understandable for the user attempting to access it. We used it because it was easy enough for everyone to use and bright enough to catch the user's attention.

9. **Final Testing:**

The model's functionality was checked with the frontend to see if there were any flaws. With constant tweaking and modification, we arrived at a final model that met all of the requirements.

IV. Results and Conclusion

The purpose of this research is to examine and assess pre-existing online learning strategies from the past and present. The comparison here is between existing models and the newer concept we're attempting to introduce. After conducting research and analysing existing models, we have attempted to develop a model that allows the freedom to only request and look for a single lecture relating to the requirement, as well as a free-lancing type of experience for anybody who can teach. We also attempted to include similar attributes that currently exist so that the model does not become lost among the already existing models. And the newest properties we attempted to implement are things that will distinguish our model and make it valuable to the rest of the world.

References:

[1]. Alharbi, O., Alshammari, Y., & AlMutairi, A. (2022). Review Theories of E-Learning. *Advances in Social Sciences Research Journal*, 9(2), 428-434.

[2]. Ziad Aldammagh, Rabah Abdaljawad, Tareq Obaid (2020) Factors Driving E-Learning.

[3]. Biswas P and Ghosh S.K. (2007) *The Electronic Journal of e-Learning* Volume 5 Issue 2, pp 87 – 102

[4]. Joullan Hussain Khalil, Krishnan Umachandran, Estabraq Rashid (2021) *E-TUTORING Journal of Hunan University (Natural Sciences)*

[5]. Sofie Bitter, Gabriele Frankl (2012) *Evaluation of Blended Learning Courses-The assessment of the e-tutors*

[6]. Sedio, M.Z. (2021). Exploring e-tutors teaching of the design process as content knowledge in an Open and Distance eLearning environment. *Journal for the Education of Gifted Young Scientists*, 9(4), 329-338

[7]. JAWAD ALSHBOUL1, GHANIM HUSSEIN ALI AHMED, ERIKA BAKSA-VARGA (2021) *Semantic Modeling for Learning Materials in E-tutor system.*

[8]. Sheena Banks, Brigitte Denis, Uno Fors, Sebastien Pirotte (2014) *Staff Development and E-Tutors Training*

[9]. Aliakbari, M., & Hassen, Q. K. (2022). The Expectations and Reality of E-Learning. *Mediterranean Journal of Social & Behavioural Research*, 6(2), 61-66

[10] *E-Learning in India: Wheel of Change* (2015) Arun Gaikwad1, Vrishali Surndra Randhir2* 1 S.N. Arts, DJM Commerce, BNS College Sangamner, Pune, Maharashtra, India. 2 Ness Wadia College of Commerce, Pune, Maharashtra, India.

[11] *Impact of Online Education* (2017) in Indian Zahoor Ahmad Lone Assistant Professor Department of Computer Science Government Degree College Kulgam, Kashmir, India.

[12] *The Effectiveness of E-Learning* (2015): An Explorative and Integrative Review of the Definitions, Methodologies and Factors that Promote e-Learning Effectiveness Signe Schack Noesgaard1,2 and Rikke Ørngreen2 1 Kata Foundation, Sønderborg, Denmark & 2 ResearchLAB: IT and Learning Design, Dep. of Learning and Philosophy, Aalborg University, Copenhagen, Denmark.

[13] *E-Learning and Students' Motivation* (2014): A Research Study on the Effect of E-Learning on Higher Education <http://dx.doi.org/10.3991/ijet.v9i4.3465> M. Samir Abou El-Seoud 1, Islam A.T.F. Taj-Eddin1, Naglaa Seddiek1, Mahmoud M. El-Khouly2, Ann Nousseir1 1 British University in Egypt-BUE, Cairo, Egypt, 2 Helwan University, Cairo, Egypt.

[14] *E-learning* (2002): Research and applications.

[15] *The Effectiveness of Online Learning* (2015): Beyond No Significant Difference and Future Horizons Tuan Nguyen Leadership, Policy, and Organization Peabody College, Vanderbilt University Nashville, TN 37203 USA.

[16] *Online Learning* (2020): A Panacea in the Time of COVID-19 Crisis, Shivangi Dhawan, Department of Commerce, SGTB Khalsa College, University of Delhi, Delhi, India.

[17] *Online Education and Its Effective Practice* (2016): A Research Review Anna Sun and Xiufang Chen Rowan University, Glassboro, NJ, USA

[18] *Students' Perceptions towards the Quality of Online Education* (2002): A Qualitative Approach Yi Yang Linda F. Cornelius Mississippi State University.

[19] *Trends in Educational Research about e-Learning* (2020): A Systematic Literature Review (2009–2018) Jesús Valverde-Berrococo 1, *, María del Carmen Garrido-Arroyo 1, Carmen Burgos-Videla 2 and María Belén Morales-Cevallos.

[20] *STUDENT EXPERIENCES IN ONLINE COURSES* (2012) A Qualitative Research Synthesis Stephanie J. Blackmon and Claire Major the University of Alabama.

[21] *The impact of E-learning on higher education perception, skills, critical thinking and satisfaction to cite this article* (2019): M L H Khan and A Setiawan 2019 *J. Phys.: Conf. Ser.* 1375 012084