

## **Role of E-Learning in Boosting Learner Competency in Developing Countries**

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### **ABSTRACT**

*E-learning is a modern way of learning that occurs through electronic mode. The rapid growth of digital technologies is facilitating e-learning in many developing countries. Learners can take classes from their homes with the help of e-learning tools. This research has focused on the role of e-learning in enhancing learners' competencies, such as critical thinking, problem-solving, communication skills, and creativity in developing countries. In this research, India has been chosen as a developing country to be focused on. In the literature review section, it has been found that the growing use of smartphones and computers is driving the adoption of e-learning in the chosen developing country. E-learning is a significant strategy for the education, fashion, construction, and hospitality sectors in India. It helps to improve the engagement of learners and enhance their skills and knowledge effectively.*

*There are many advantages of e-learning. Learners can learn new skills cost-effectively from e-learning platforms such as Coursera, Udemy, and LinkedIn. Moreover, learners can go through a concept multiple times as recordings are available on such e-learning sites. Gamification is often used to make e-learning attractive for learners. In contrast, learners cannot have real-life training in e-learning methods. This is a major disadvantage of this learning method. Also, learners may face health issues with e-learning methods since they sit in front of computers or laptops for hours. Distraction is also an issue in e-learning for learners. Learners are likely to be distracted while learning as they learn from their home environment.*

*However, the usage of e-learning is increasing as people have strongly perceived its usefulness. As per the Technology Acceptance Model (TAM), perceived usefulness and perceived ease of use are two factors that influence the adoption of new technology by individuals and organisations (Nyathi and Sibanda, 2023). Various factors, such as image and subjective norms, play an important role in shaping individuals' perceived usefulness of a technology. Learners finding the benefits of learning through e-learning platforms are accepting this learning method.*

*Apart from perceived usefulness, perceived ease of use is another factor influencing learners' decisions to accept e-learning. The easier it will be to use an e-learning platform, the higher the acceptance that an e-learning platform will have in the market. Thus, TAM has been relevant to the topic of this research. A secondary qualitative method has been used to carry out this research. As part of the qualitative method, non-numerical data such as views and the opinions of people have been collected from secondary sources. Secondary data related to the use of e-learning in India has been collected from online libraries, government reports, and newspaper articles.*

*All the gathered secondary data have been analysed using a thematic analysis framework. This research has shown that e-learning has effectively improved learners' competencies. It has been found that learners receive flexibility in e-learning while saving costs (Aldraiweesh and Alturki, 2023). However, it also needs to be added that distraction and lack of motivation work as barriers for learners to improve their competencies in e-learning mode. Furthermore, a lack of practical knowledge has been identified as a drawback of e-learning. Besides, the lack of internet penetration in rural areas is another issue in e-learning mode.*

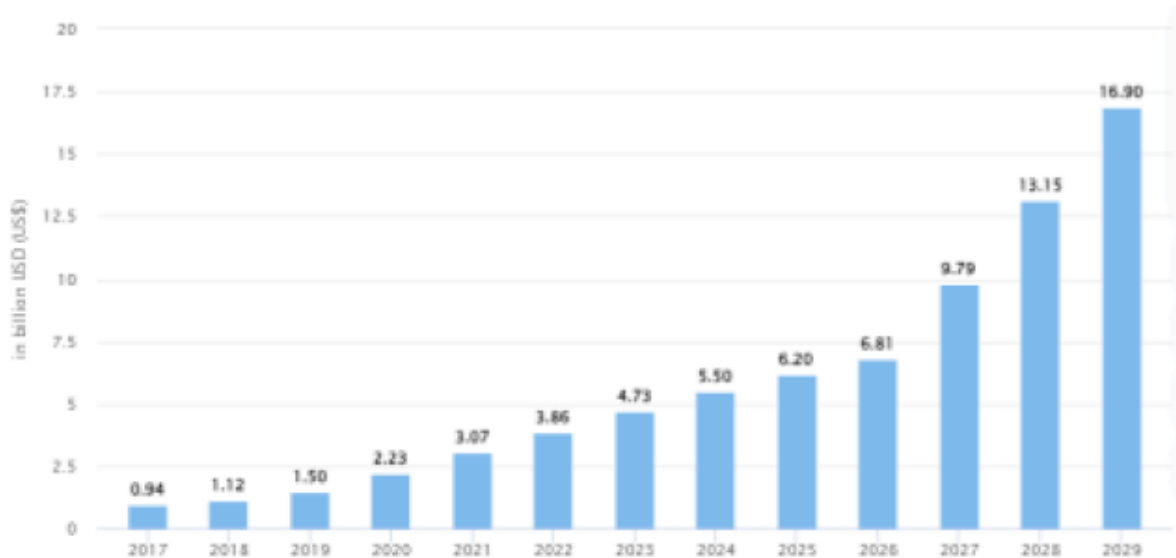
*The e-learning platforms have many advantages for developing countries along with a few challenges. Relevant recommendations have been provided to reduce the challenges in adopting e-learning programs by learners in developing countries.*

Keywords: Online learning, online learning platforms, TAM model, benefits of e-learning, issues in e-learning

### **Introduction to research background**

E-learning has become a new normal in the post-COVID era, as many educational institutions have adopted it. Learners are interested in e-learning as they obtain many benefits from it. These benefits include flexibility and cost-effectiveness (Pallavi et al. 2022). Not only educational institutions but also learning platforms are helping people with their skill development through online learning. Scalability is an advantage for learning platforms as they adopt e-learning.

It can be observed in the above graph that revenue from online learning in India was over US\$ 4 billion in 2023. By 2029, revenue from the online education sector is projected to be close to US\$ 17 billion (statista. 2024). Hence, e-learning as a sector is likely to keep growing in India in the future. E-learning as a sector will make an important contribution to the country's GDP. Therefore, it is crucial to assess the effectiveness of e-learning. It needs to uncover how effective e-learning is in proliferating the competency level of learners located in the chosen developing country.

**Figure 1: Revenue generated by the online learning sector, in India**

(Source: statista. 2024)

The Government of India's New Education Policy (NEP) 2020 represents a new educational landscape in the country. The eLearning methodologies and digital learning are significant factors of NEP in India. The necessity of building a digital infrastructure for e-learning is necessary to manage educational policy in the country. Digital libraries, virtual labs, and the development of high-quality e-learning content are associated with digital learning strategies (Kovtoniuk *et al.* 2022). Digital devices and internet connectivity are required for students in rural and underserved areas to manage the e-learning process effectively. Different social, economic, and geographical students can gain the same quality of education through the e-learning strategy. Teacher training and development are improved by the e-learning processes and flexibility is gained by the students to learn new things as per their requirements in India.

The fashion industry is one type of emerging sector throughout the globe and it helps to develop the global economy successfully. Indian students get an opportunity to access international fashion courses and tutorials effectively due to e-learning platforms. The digital infrastructure allows the industry to improve the skills of fashion professionals and develop the productivity of the industry. Fashion entrepreneurs can learn and start their businesses with the help of online learning in India (Agarwal *et al.* 2020). The usage of carbon footprint and traditional classroom learning are reduced through digital learning and it helps to maintain sustainability effectively. Learners get an opportunity to improve their skills and knowledge about fashion through digital learning capacity in the country. Digital learning strategies are cost-effective as the cost of

traditional classrooms tends to be zero for the fashion industry in India.

The hospitality industry is developed with the impact of digital learning strategies around the globe. ICT, AI, ML, and other modern technologies are used in e-learning processes to improve guest experiences. Learners can identify the needs and requirements of tourists due to online platforms and supply them with better services. E-learning helps hospitality professionals to enhance their skills and knowledge and these individuals can develop better customer service and guest experiences. E-learning in the hospitality industry can reduce operational costs and training time of learners (Eze *et al.* 2020). Learners of the sector can develop efficiency, reduce staff workload, and minimise the cost of training due to digital learning strategies. Personalised experiences are provided by the hospitality sector with the help of e-learning processes in India.

E-learning in the retail industry is beneficial to improve employee training programs effectively. The retail workforce deals with the customers directly and employees need a training session to understand the characteristics and behaviours of customers in India. Employee knowledge and skills are developed with the impact of e-learning strategy in the retail sector (Aspeling and Mason, 2020). Digital platforms are essential for the industry to enhance customer satisfaction and sales successfully. Product knowledge and awareness of the retail industry are developed among employees through e-learning strategies in India. E-learning strategies are valuable for the industry to improve efficiency and productivity. Different types of retail companies are available in the country and a highly competitive market is experienced by the companies. E-learning strategy is valuable to maintain the competitiveness of the sector.

The construction sector in India tries to follow e-learning strategies to learn about the usage of sustainable and green raw materials on the site. Learners can understand safety standards and quality improvement in the construction sector. E-learning helps to improve knowledge about machinery operations and hazard protocols (Popchev and Orozova, 2020). Learners can maintain safety regulations effectively with the usage of digital platforms on the construction site. Practical and theoretical knowledge is gained by the students with the help of e-learning strategies in the construction industry. The risk of accidents on construction sites is reduced through education and awareness in the sector. Quality checking and improvement are required for the sector to develop project infrastructure effectively (Parsamehr *et al.* 2023). E-learning platforms are essential for the industry to enhance efficiency and adopt sustainable practices. Digital learning platforms are essential to empower workers and achieve positive outcomes for these individuals in India.

This research aims to evaluate the impact of e-learning on boosting learner competency in developing nations. The objectives of this research are mentioned below.

- To examine the effects of e-learning in boosting learner competencies such as critical thinking, problem-solving and decision-making
- To point out the challenges existing in the e-learning practices in India
- To suggest suitable strategies to improve e-learning to boost learner competencies in the developing country further

This research is significant as it will help discover the effectiveness of e-learning in promoting the competencies of learners in the chosen developing country, India. It will also unveil the advantages of e-learning in the global context. Learning platforms and educational institutions located in the chosen countries will receive valuable insights through this research to improve their e-learning processes for students.

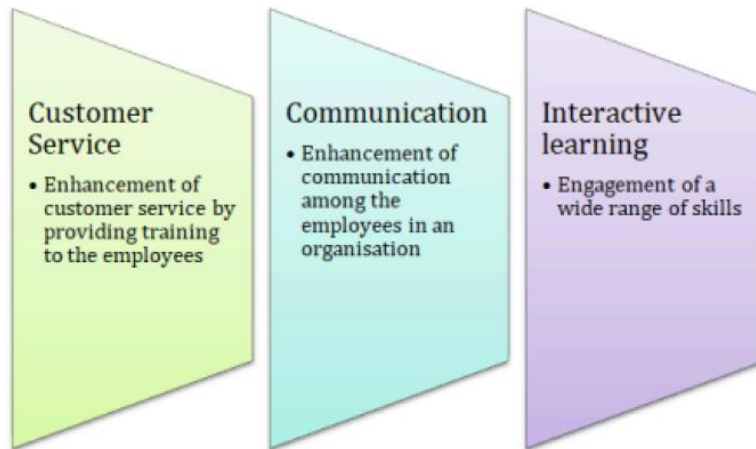
### **Existing research**

In developing countries, there is a meteoric rise in e-learning in this era of digitalisation. The growing access to digital technologies such as smartphones, laptops and high-speed internet is facilitating the surge of e-learning globally (Haleem et al. 2022). The emergence of the COVID-19 pandemic worked as a catalyst for a drastic rise in e-learning. During the pandemic, the concept of e-learning was adopted at a large scale in India (Mathivanan et al. 2021). It is electronic learning which includes using the online platform to gain knowledge. This type of learning module can be accessed anytime anywhere as knowledge is imparted with the help of online learning platforms. Learners need to have a suitable device and access to the internet. It is different from traditional learning in the way that in the case of traditional learning, learners need to be physically present in the place where knowledge is imparted (Encarnacion et al. 2021). On the contrary, in the case of online learning, learners simply need to access the online platform for gaining knowledge with the help of the internet and a suitable device.

Owing to its significant benefits, learners can be people of any segment, starting from students to working employees to housewives and more. In the initial years of the introduction of the concept of e-learning, this learning module was used to deliver knowledge to school and college students (Nie *et al.* 2020). This implies that the application of the e-learning module concept has been limited to the education sector only. Nowadays, the application of the e-learning module has been extended to a wide range of sectors such as *customer service, communications, interactive learning, professional development* and more. The E-learning module is beneficial for both students as well as people who want to develop themselves professionally to secure a better career prospect. The rapid evolution of information technology has made the use of e-learning modules easy (Valverde-Berrococo *et al.* 2020). E-learning, initially being the learning option in

the education sector during the Covid-19 pandemic has now become the learning option in a wide range of sectors and the upcoming years, the application of the e-learning module will be expanded.

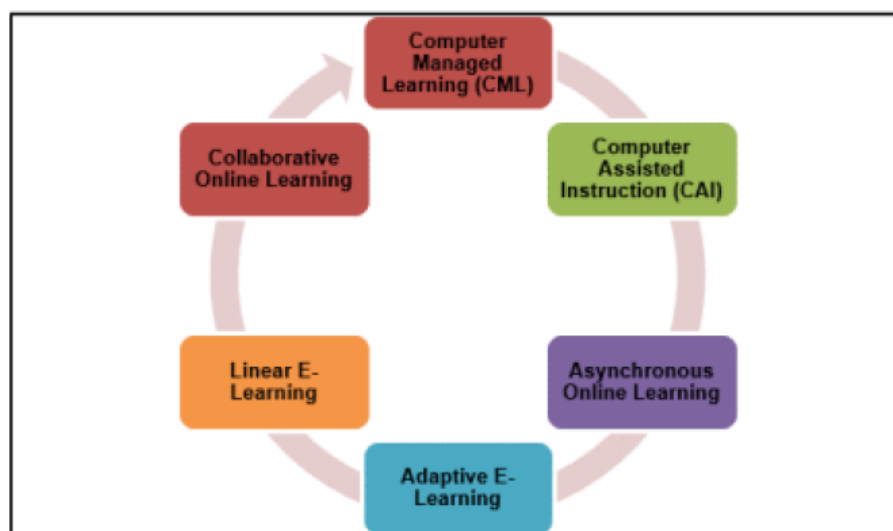
**Figure 2: Areas of application of e-learning**



Source: Self-developed

The advantages of e-learning are also contributing further to the growth of e-learning in many developed and developing states globally.

**Figure 3: Types of e-learning**



Source: Self-developed

### **Computer Managed Learning (CML)**

One type of modern technology is CML and it helps to access and manage learning processes effectively. As mentioned by Ahshan (2021), an administrative framework is developed by computer learning strategies to improve the interaction and activity of learners. The computer system provides different types of tasks to enhance the engagement of learners in CML such as enrolment, module selection, assessment, feedback, and provision of study material. Information databases are operated with the help of CML and students must learn this information and improve their skills and knowledge successfully. As per Lacka *et al.* (2021), CML helps to develop the efficiency and knowledge base of learners in the global market. The e-learning strategy is valuable for the learners to maintain scalability and flexibility and the process is cost-effective for every individual. Hence, learners can follow the strategy to manage e-learning.

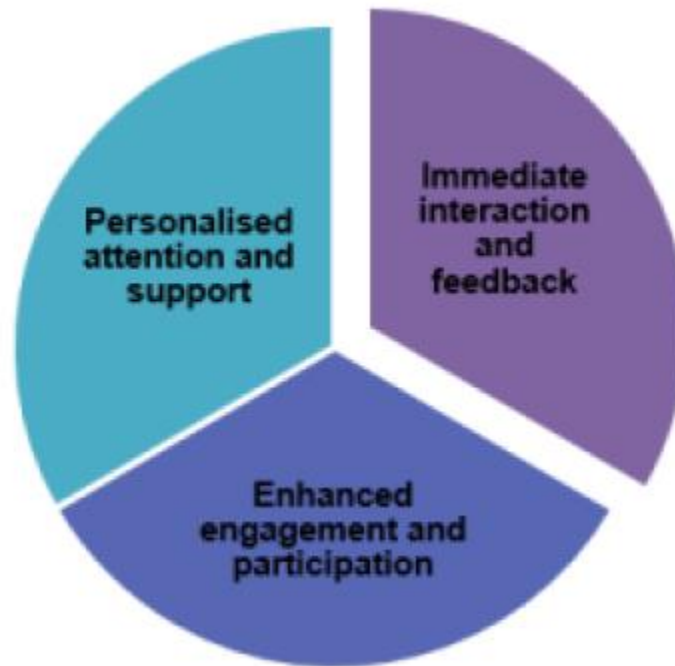
### **Computer Assisted Instruction (CAI)**

Interactive tutorials and lessons are associated with the CAI and it is one type of e-learning strategy. Simulation, practice, drill, and modelling exercises are essential for the learning strategy in the global market. According to Checa *et al.* (2023), virtual labs, experiments, educational games, puzzles, online resources, and references are included with CAI. It helps to improve personalised learning strategies and the engagement of students in the learning category. CAI helps to enhance retention, accessibility, and understanding among students to boost their learning capability effectively. As per Guan *et al.* (2020), data-driven instruction, and efficient use of instructional time are developed through the usage of CAI among students. Remedial education, supplemental instruction, test preparation, professional development, and distance learning are applications of CAI in the study.

### **Synchronous Online Learning**

A group of students participated in the online learning strategy at the same time from different places throughout the world. From the viewpoint of Deepika *et al.* (2021), different types of tools have emerged with online learning such as online chats and videoconferencing. These tools are essential to ask and answer questions instantly and it allows training participants and instructors to maintain a strong relationship between them. These individuals can communicate with each other effectively through the online learning activity. According to the perspectives of Ngubane-Mokiwa and Khoza (2021), community-oriented online learning helps to develop online learning technologies among students and instructors. Live simulations, virtual field trips, online discussions, and virtual classrooms are included in synchronous online learning. It is the most popular and growing type of e-learning strategy to reduce social isolation, student-to-student, and teacher-to-student relationships successfully.

**Figure 4: Advantages of Synchronous Online Learning**



Source: Self-developed

### **Asynchronous Online Learning**

Self-paced online learning experiences are gathered by the students with the help of this online learning. Students get an opportunity to complete their schedules as per their timings and the learning method does not depend on real-time interaction with instructors and teachers. As mentioned by Wahab *et al.* (2022), pre-recorded video lectures, self-paced tutorials, online quizzes and assessments, E-books and digital readings are included in the online learning strategy. Flexibility and convenience are managed by the learning strategy and it helps to motivate students for self-paced learning criteria. Flexible schedules are maintained by the students through the learning strategy and it allows to reduce scheduling conflicts among learners.

### **Adaptive E-Learning**

An innovative and new e-learning strategy is adaptive E-Learning and it can redesign learning materials for each learner. Different types of parameters are considered to reshape learning materials such as student performance, goals, abilities, and skills. As per Islam *et al.* (2022), a student-centred and individualised learning strategy is developed through adaptive e-learning.



Students' skills and knowledge are developed through the learning strategy. Difficult and complex content can be understood by the learners with the help of this e-learning strategy. The learning strategy helps to improve efficiency and effectiveness among students. Adaptive e-learning helps to gain better student outcomes and achievement in the learning environment. AI, ML, and Learning Management Systems (LMS) are essential e-learning technologies to gain clear learning objectives and outcomes.

### **Linear E-Learning**

Linear E-Learning is a traditional and sequential approach to online learning and it helps to maintain structured, and chronological content of learning materials. Linear e-learning is a limiting factor and it does not allow two-way communication between teachers and students in the learning environment. Learners focus on content delivery rather than learning outcomes. According to the perspectives of Santally *et al.* (2020), fixed assessments and evaluations of learners are developed with the help of an e-learning strategy. Students cannot manage different types of learning styles due to linear e-learning activity. These individuals can maintain links between various sources, and formats of linear e-learning strategy. Different types of learning styles are not adapted by the learners due to these learning processes.

### **Collaborative Online Learning**

A modern learning method is collaborative online learning and it allows students to achieve common learning goals. From the viewpoint of Hao and Yang (2022), it is one type of modern learning activity with traditional methods to encourage engagement and active learning of students successfully. The teamwork and communication skills of students are developed through the e-learning processes in the study. The learning style helps to support diverse perspectives and inclusivity among students. As mentioned by Chatterjee and Correia (2020), online debates role-playing, and virtual group workspaces are different types of collaborative learning strategies. Online collaboration platforms, video conferencing tools, and online brainstorming and mind mapping tools are used by the learners to manage collaborative learning strategy. A sense of community, clear goals and expectations of learners are improved with the help of collaborative online learning.

### **Applications of e-learning in various fields**

E-learning is widely applied in a wide range of fields. A popular field is *online courses*. These are a wide range of e-learning tools that create a significant impact on companies in terms of training their employees. The application of this module of learning creates opportunities to improve their methods of operation and training. Training can be provided at any point of time and any place besides the day-to-day operation of the company. Employees of various

departments such as sales, management, IT and HR should be given proper training to improve operation level. Further, in the present competitive business world, it is important for e-commerce companies to keep their websites up-to-date and must be inducted with advanced features that will make it easy for their valuable customers to access and place orders of their desired items (Encarnacion *et al.* 2021). Knowledge on this can be obtained easily with the help of online learning which will make the learners familiar with the latest technological tools and features.

E-learning also contributes to designing solutions to problems that may occur due to the technical glitches that may occur in the websites of e-commerce companies. Another popular area of implementation is *customer service*. Such companies can achieve a competitive edge in the market, that can provide exceptional service to their valuable customers. Enhancement of the customer base in the present business scenario is challenging. However, with the help of an e-learning module, this has been made easy and possible. With the application of this module of learning, employees can be trained on the same so that they can create a better experience for their customers in terms of shopping experience. Online training has become an indispensable part of the corporate sector to train their employees and the same has been facilitated with the help of technological advancement (Castiblanco Jimenez *et al.* 2020). Popular online training platforms are equipped with technologically advanced tools which can host the training programs with engaging and impactful content such as photos, video, documents, audio clips, surveys, quizzes and more. The chat feature is also made available on these platforms so that learners can ask their doubts to the trainers and get them cleared easily.

The introduction of e-learning has been possible with the application of the same in the *education sector*. Computer technology is used in the education sector in various subjects such as Mathematics, Physics, Chemistry, English and more subjects. PDFs for the respective subjects based on the course module including respective images and added to the platforms. Trainers use an online pen tab to mark things. With the rapid advancements in information technology, the application of e-learning is sure to expand in other fields, such as *marketing and promotion of e-learning projects, content marketing* and more (Ayu, 2020). For the application in the case of marketing and promotion of e-learning projects, presentations and other types of content are created in the case of e-learning projects. This is helpful in the development of useful and impactful content which can be used for marketing and promotion of services. In the case of content marketing, e-learning is essential because content marketing is done by doing research on a topic and presenting it in an e-document with the integration of impactful images and other types of presentations (Klašnja-Milićević and Ivanović, 2021). This content is published on online platforms, and learners access it and gain knowledge by going through it.

**Figure 5: Tools of Collaborative Online Learning**

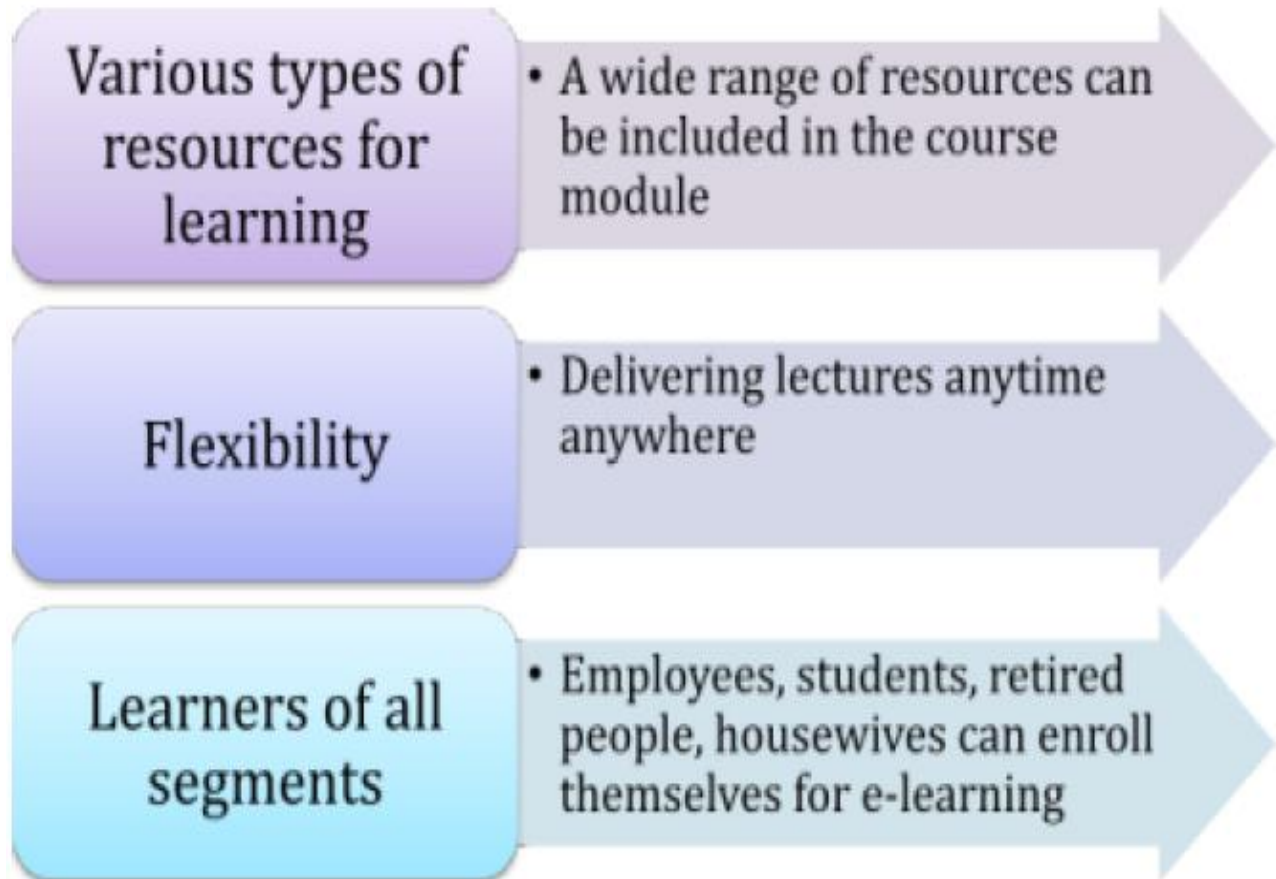


Source: Self-developed

### **Advantages and disadvantages of e-learning**

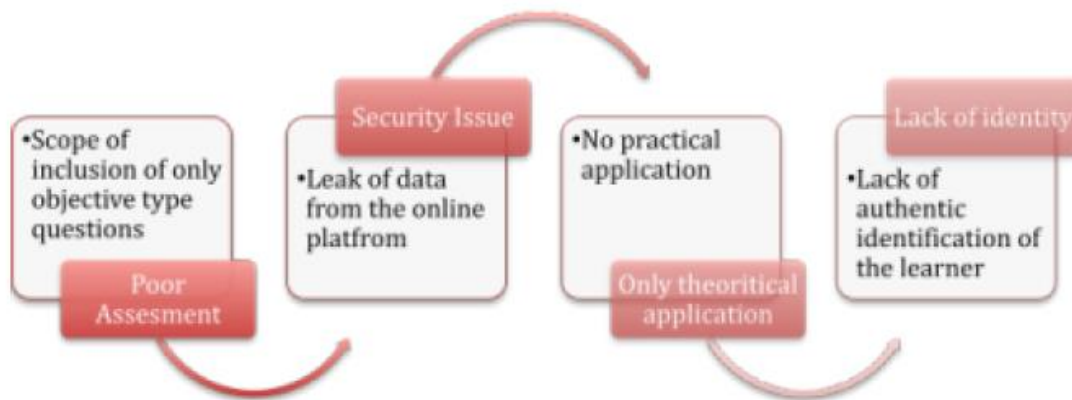
The implementation of the e-learning module can be both prospective as well as challenging in nature. Due to the technological advancement of the online platform that is used in the case of e-learning, a *wide range of learning resources* can be integrated into the course module. Technological advancements have enabled trainers to *deliver knowledge anytime anywhere*. Owing to its flexibility, the resources included in the course module can be *accessed at any point in time* (Kotrikadze and Zharkova, 2021). Further, *learners of all segments* can participate in this process, which includes students, working people, housewives, retired people and more. The concept of *online and independent learning* is promoted in the e-learning module. After the classes are over, recordings are made available at the same place which can be accessed by learners at any point in time, so that in the case of any doubts or queries, *recording of the explanations* can be viewed time and again.

Figure 6: Advantages of e-learning



Source: Self-developed

Besides the opportunities available in the case of online learning, there are various disadvantages which learners can face during their online classes. The online assessments that are conducted after the completion of the course are mostly *limited to objective-type questions*. The *security of the online learning platforms* can be challenging (Dung, 2020). This states that, unlike such websites which are dedicated to the collection of information associated with customers, these websites have been designed to impart knowledge to the learners. Hence, there exists the risk of data leakage. *Identification of the authentic identity* of the student while the classes are going on is also another significant challenge. This means that someone else using the login credentials of the student may access the course module (Chistyakova *et al.* 2021). The knowledge imparted in the online learning module lacks *practical application and only theoretical application* can be witnessed.

**Figure 7: Disadvantages of e-learning**

Source: Self-developed

Cost-effectiveness is one of the key advantages of e-learning. The overall cost of learning is reduced when the concept of e-learning is followed (Bordoloi *et al.* 2021). Apart from cost-effectiveness, students in e-learning receive the option to rewatch a particular class as recordings are done in e-learning. Students and specially-abled teachers can benefit from e-learning as they do not need to travel for education. Students and teachers can also save their time by participating in e-learning. Moreover, learners in e-learning receive lots of flexibility in their learning processes (Kurian *et al.* 2021). One can attend a class anytime by going through a recorded class.

Many e-learning platforms help people enhance their skills through virtual learning. However, it is argued that loss of attention is an issue in e-learning (Abdur Rehman, 2021). Also, learners may lose their motivation in e-learning or online learning mode. There is a lack of personal bonding between teacher and student in e-learning. Students can learn a lot about body language in offline learning.

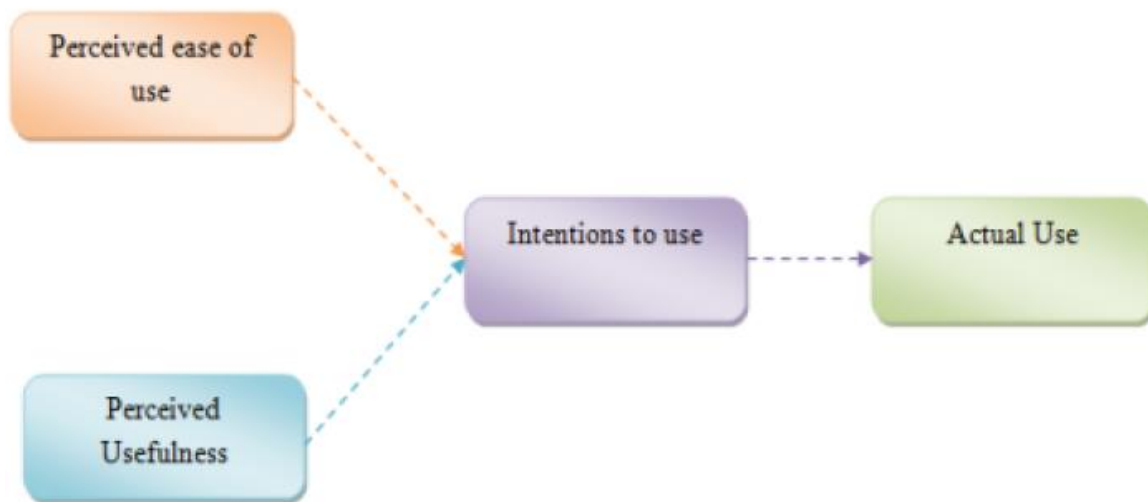
### Theoretical underpinning

The concept of e-learning matches best with the *Technology Acceptance Model*. This theory states that the behaviour of an individual related to technology can be best outlined by the use of modern technology and the benefits that the individual can derive from the use of the same. To further outline the concept of this theory, when advanced technology is launched in the market, individuals tend to be curious about it. Initially, they explore the features available in it by using it. By using it, they tend to determine the *usefulness* and *ease of use*. Usefulness is the determination of the significant benefits that can be derived from the use of the same and ease of use is the determination of the feasibility of using the same seamlessly (Alfadda and Mahdi,

2021).

These two are crucial elements and determine the intentions of an individual in terms of using the technologically advanced tool.

**Figure 8: Technology Acceptance Model**



Source: Inspired by Zaineldeen *et al.* 2020

Based on the usage, the behavior of the individuals towards the modern technology can be witnessed and their acceptance level towards the technology can be interpreted. The same scenario can be witnessed in the case of e-learning. When the concept of e-learning was first introduced due to the advent of the COVID-19 pandemic, people started implementing the same to carry on the learning process. As e-learning was widely used in the education sector in the initial years, this concept was implemented by educational institutes. With the flexibility and ease of use, the module became widely popular. In the later stages, this concept was widely implemented by other organizations to meet their business goals (Singh *et al.* 2020). The widespread use of e-learning modules and the prospect of the same is due to the significant benefits that can be derived from the successful implementation of the same.

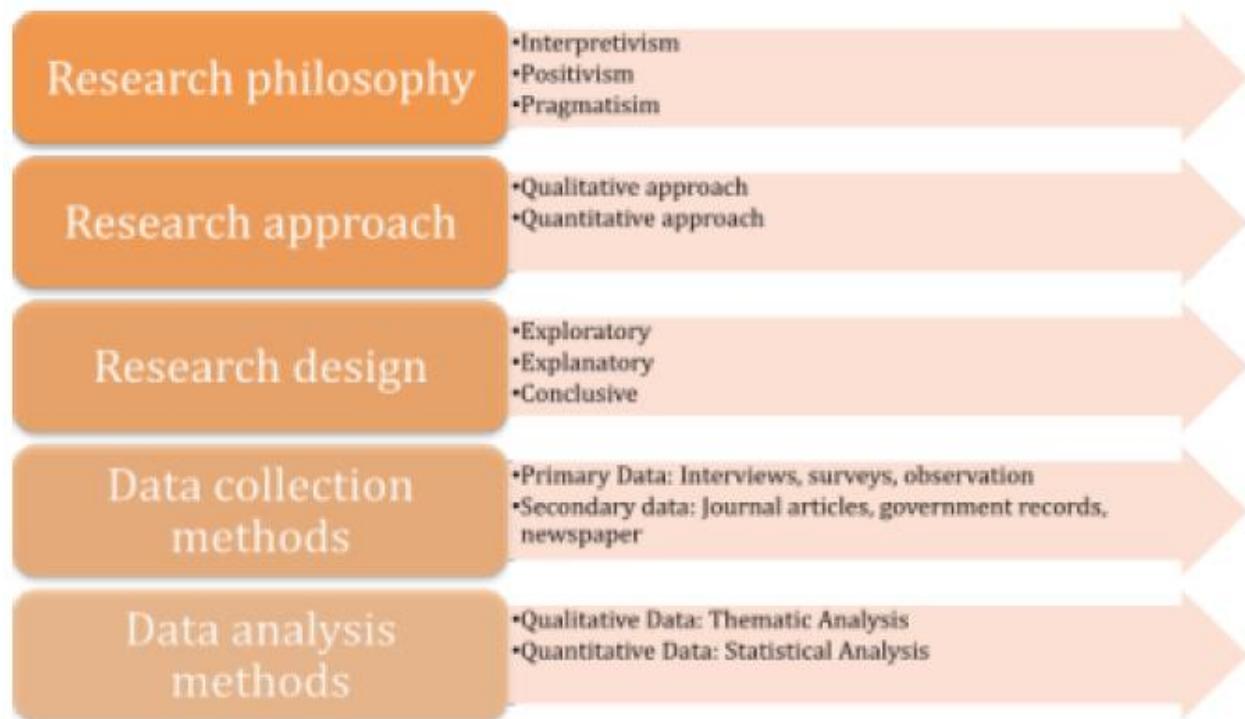
This literature has been successful in identifying the relevant literature works based on the topic of research. As the research aims to explore the role played by e-learning in the enhancement of learning competency in developing countries, the concept of e-learning with the advent journey has been explored. Further, the types of e-learning platforms that can be used and even used in the present scenario of the business world have been explored in detail. Going further by this literature work, the areas of application of e-learning and the prospect of the same have been

explored. Going further by the same, the advantages and limitations and relevant theories have been identified and applied to the topic of the research. However, this literature work has failed to identify more than one relevant theory and only one theory has been mentioned and aligned with the topic, which stands to be the *literature gap*.

### Research materials and approaches

Before beginning with the research work, it is important to determine the strategic method or process. Methodology refers to the adoption of a process which includes methods, techniques, sources of data collection and performing analysis of the same to obtain strategic answers to the identified research questions. Research methodology is the integration of various elements such as *research philosophy, approach, design, sources of data collection* and *analysis of the same*. Research philosophy is the set of principles that determine the process of the research work. With the selection of the right research philosophy, the research study can be completed successfully (Cho and Glenn, 2020). However, the selection of the type of research philosophy depends on the nature of data that has been collected and analyzed.

**Figure 9: Research Materials and Approaches**



Source: Self-developed

There are three main types of research philosophy namely, *interpretivism*, *positivism* and *pragmatism*. Interpretivism research philosophy is based on the application of research hypotheses and the identification of strategic answers to research questions. This type of philosophy enables the researchers to identify deep insights into the collected data, based on the research objectives. Deep insights based on the topic of research can be obtained based on the topic of research. The application of this type of research philosophy is also based on the collection of qualitative data. Positivism research philosophy on the other hand is the paradigm which is based on measurement and reason (Namestovski and Kovari, 2022). Knowledge is obtained based on quantitative measurements and observations. This implies that quantitative data is collected under this type of philosophy. Lastly, the pragmatism research philosophy is based on the assumption that the best method will be applied which will enable the researchers to obtain answers to the research questions.

The research approach, on the other hand, is the methodology that is inducted in the process of conducting the research study. This includes methods of data collection and analysis of the same.

Based on the nature of data, there are two main types of research approach, namely *qualitative approach* and *quantitative approach*. The former is based on the collection of qualitative data and the latter is based on the collection of quantitative data. Methods of interpretation depend on the nature of the data. Lastly, the research design is the integration of strategic components to obtain answers to the identified research questions. A proper type of research design will enable the researchers to identify answers to the research questions properly. There are three main types of research design namely, *explanatory*, *exploratory* and *conclusive research design*. Explanatory research design is based on the assumption that knowledge of the reason for the happening of any event or phenomenon is obtained instead of obtaining answers (Choudhary *et al.* 2022). The application of exploratory research design is based on the principle that such research questions which have not been identified and explored earlier are explored in detail and answers are identified. Lastly, the conclusive research design is based on the assumption that a conclusion needs to be obtained and strategic decisions can be made based on the same.

Data collection methods refer to the process of collecting data for the research study. Data needs to be collected based on which experimentation will be done. However, the nature of the data collection method depends on the type of data that has to be collected for the study, which must be specified before beginning with the study. There are two main types of data, namely *primary* and *secondary data*. Primary data can be referred to as the data which are collected directly from the sources. This type of data is first-hand and hence contains errors and irrelevant pieces of information (Williams *et al.* 2021). Hence such pieces must be removed and the one which is relevant needs to be taken. Hence a lot of time, effort and expenditure is involved in the process. This type of data can be collected from sources such as interviews, surveys,



observations and more.

On the other hand, secondary data is the type of data which is available in ready-to-use conduction. This implies that the data is collected from reliable and valid sources and can be used easily. Sources of this include journal articles, newspapers, website pages, official records and government records (Longpre *et al.* 2023). Secondary information can also be collected from such research studies which have been already conducted and the results have been published. Thematic analysis of the qualitative data has been done in this research study.

Ethical principles are guidelines for conducting the right and wrong practices. These are a set of principles which must be strictly applied while conducting the research study. The application of ethical principles is inevitable. There is a wide range of ethical principles such as *integrity, honesty, objectivity* and *reliability of the sources of data*. These state that a research study must be conducted with utmost integrity, strictly sticking to the research objectives and free from any sort of biases. Data must be collected from authentic and reliable sources and the analysis process must also be free from biases (Awad *et al.* 2020). In this research study, ethical principles in terms of the authenticity of data collection sources have been followed. Such sources have been taken into consideration and have been published from the year 2020 onwards.

A qualitative approach has been used to carry out this research. In a qualitative research approach, researchers are encouraged to gather non-numerical data such as views and perspectives of people on different subjects. As a result, an in-depth idea about a topic can be received (Ruslin *et al.* 2022). With the use of the qualitative approach, it has been possible to unveil the role that e-learning has in enhancing the competencies of learners in the selected developing country that is India. Secondary qualitative data have been collected from online libraries as part of the qualitative approach.

Articles, journals, books and government reports have been used as secondary quantity data in this research. Gathering secondary data is easier and more convenient than primary data (Mazhar *et al.* 2021). Hence, secondary data have been chosen over primary data. Also, collecting primary qualitative data from India could be challenging. Following a qualitative approach, it might be necessary to conduct interviews, which could be tricky since there has been a focus on a large nation with diverse cultures and varied education systems in different states. All the gathered secondary qualitative data have been analysed using the thematic analysis framework. This particular framework is applied when qualitative data needs to be evaluated.

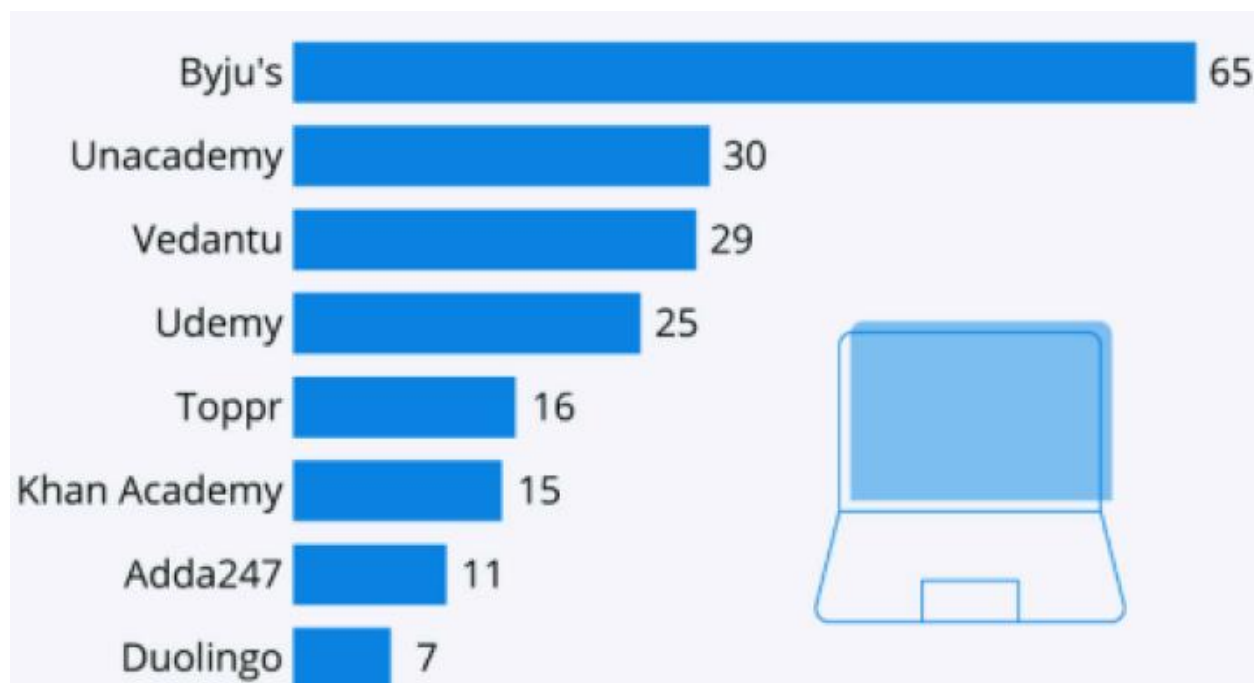
## **Findings**

All the collected secondary qualitative data have been analysed using a thematic analysis framework. Relevant themes have been formed to receive findings in this research. **Theme 1:**

**Expansion of e-learning in India enhancing competencies of learners** The chosen article has emphasised the spread of e-learning in India and its effectiveness in enhancing learners' competencies. Secondary research has been conducted in this chosen article.

Data from various e-learning platforms and web portals have been collected as secondary in this chosen article. The results have shown that multiple e-learning platforms such as Coursera, Byju, Khan Academy and Ask IITians operate in the country (Joshi and Dewangan, 2021). It has been seen that these e-learning platforms are helping students, teachers and professionals to improve their skills and knowledge. The findings also mention that the traditional educational system in the country may be entirely substituted by e-learning. Yet, it has been suggested in this article that the government should focus on expanding e-learning in the country while spreading awareness about the same. Traditional or offline learning will still be relevant, considering its benefits, such as personal bonding between teachers and students. Isolation can be an issue for students in e-learning.

**Figure 10: Most popular e-learning platforms in India in the field of formal education**



Source: Buchholz, 2020

The above figure shows the popular e-learning platforms used in India. It can be noticed that Byju was the most popular e-learning site used in India for education (Buchholz, 2020). Online learning in India is having a positive impact on learners in terms of boosting their competencies.

Learners can manage their time effectively due to online learning. They can access their learning materials anytime as per their need in the online learning mode. Learners no longer need to follow strict schedules for their education or learning of a course as they switch to e-learning. It is also useful to enhance the technical skills of students as they need to use digital tools and platforms to participate in online learning. Web-based platforms and applications are often used in online learning mode. Hence, learners develop competencies to use such digital tools while gathering knowledge regarding solving technical issues they face during their online learning. Learners can also improve their communication skills through digital channels as they are required to interact with their instructors and peers in online learning mode. This mode of learning can improve self-motivation among learners as they learn to work independently. In e-learning, there is no one to push a learner to take part in the daily learning process. Learners need to stay motivated and follow their schedule each day. Thus, students or learners can learn to stay motivated in this mode of learning.

### **Theme 2: The adoption of digital collaboration platforms is increasing in higher educational institutions in India**

In this chosen article, the focus has been on analysing how the TAM model is amplifying the adoption of digital learning tools for online education by higher educational institutions in India. A quantitative method has been used to collect and analyse relevant data for this research. This research uses a survey as an instrument for quantitative methods. A total of 324 responses were received from students studying in India (Singh *et al.* 2021). The analysis of the responses has shown that e-learning platforms with high interactivity can enhance the satisfaction level of learners. In the years to come, higher educational institutions in India are going to use digital platforms for online education more following the spread of information about online learning.

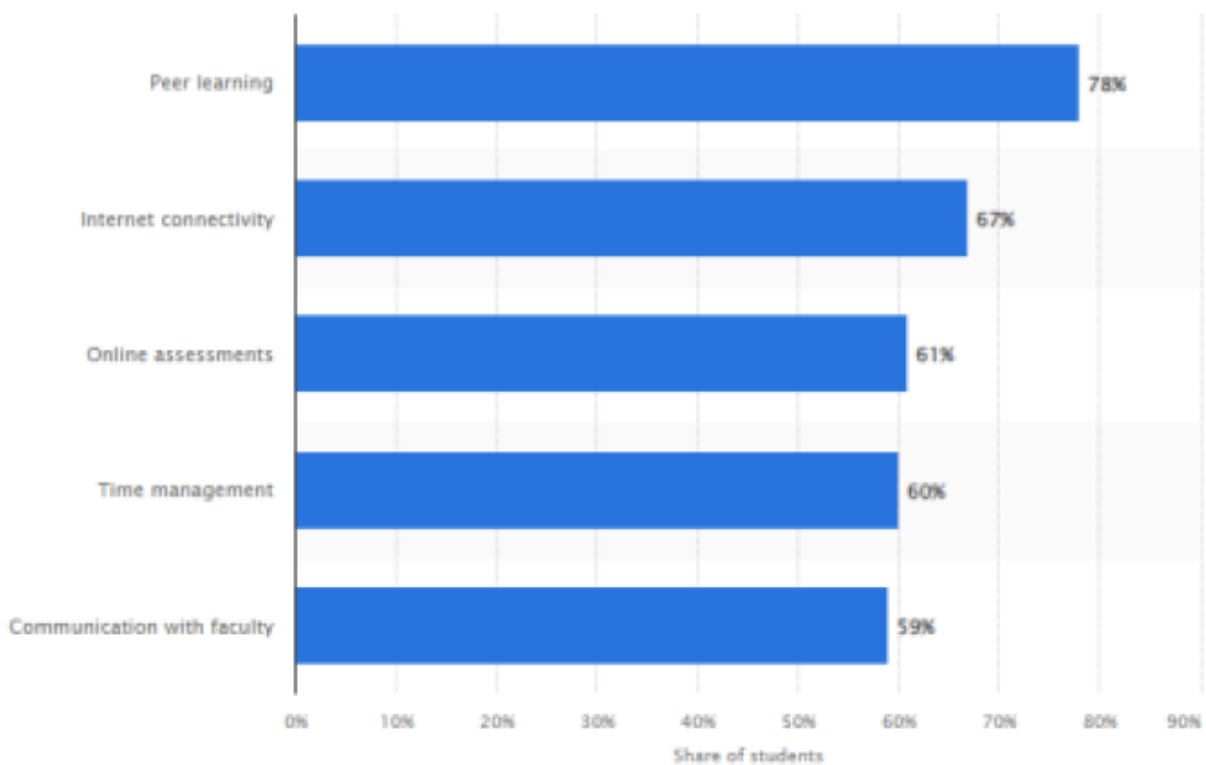
Higher educational institutions in India are realising that they can improve their learning processes by adopting digital collaboration platforms. In other words, the adoption of e-learning can be beneficial for educational institutes in India as they can scale their learning process. With the use of e-learning, educational institutes can help teach thousands of students at a time which may not be feasible in the traditional learning mode. In this way, the learning process can scale while delivering knowledge to a lot of students. There is a growing awareness about e-learning in India as people are realising the perceived usefulness of switching to e-learning from the traditional learning method. Learners in the country are also becoming aware of the potential benefits that they can have as a switch to an e-learning method. Apart from the perceived usefulness of learning, ease of use is another aspect which is also playing a role in the rapid adoption of digital collaboration platforms by higher education institutes to promote online learning. People in India are becoming more tech-savvy which is helping the promotion of online learning in the country. Digital tools such as smartphones and laptops are being heavily used in

India. Therefore, educational institutes are seeing the opportunity to penetrate e-learning in the country.

**Theme 3: Challenges of e-learning faced by learners in India**

The chosen articles have focused on portraying the issues and challenges learners in India face with e-learning. A primary quantitative method was used in this chosen article. A survey has been conducted with 364 engineering students studying in India (Thakker *et al.*2021). Statistical methods have been applied to analyse all the quantitative data collected in this chosen article.

**Figure 11: Issues faced by learners in online education in India**



Source: Rathore, 2023

It can be noticed in the above graph that internet connectivity is one of the key issues faced by learners in India (Rathore, 2023). In rural areas, there is a lack of access to high-speed internet services, restricting learners from opting for e-learning. Also, the findings have revealed that learners belonging to rural areas lack the technical skills to operate laptops and e-learning systems.

Affordability can also become an issue for learners residing in rural areas of the country. In such areas, the prices of internet plans can be more than those of cities. Internet service providers may charge higher prices in rural areas as there are a limited number of customers for them. Therefore, learners in rural areas of the country may find it challenging to have a reliable source of high-speed internet service to support their online learning. Also, there is a lack of infrastructure in rural areas to support high-speed internet services. This limits the penetration of high-speed internet services in the rural regions of India. On top of this, rural regions may be geographically isolated creating challenges to have smooth access to internet services. Apart from high speed and reliable internet services, lack of digital literacy is another issue that works as a barrier for learners in e-learning mode. Learners in rural areas of the country may not have the necessary knowledge to use online resources and digital tools effectively. As a result of this, they may not find e-learning effective for their personal and professional development.

#### **Theme 4: Massive open online course (MOOCS) trends in India**

The chosen article has focused on highlighting the growing use of massive open online courses (MOOCs) in India through various online platforms. An increased use of digital tools and technologies is promoting the use of MOOCS in India. Coursera is one of the common online platforms used globally for professional learning and development. This platform is also being used heavily by Indians. The chosen article has used descriptive research methodology to analyse the MOOCS trends in India (Pant *et al.* 2021). It has been found that the application of online platforms such as Coursera is increasing in India as people can improve their professional development by taking various courses. There are different types of professional courses available on Coursera. In this platform, one can learn machine learning, Microsoft Excel, Python and even Chat GPT. Language training is also offered by the online platform.

There are various reasons associated with the growing use of MOOCS in India. First of all, such online courses are cost-effective for people. In traditional learning mode, one needs to pay a lump sum to learn a professional course. On the contrary, being the e-learning method, such online platforms charge less money from people. Individuals can go through their learning multiple times as all the lectures are recorded on such online platforms. Indians can use online learning platforms in their free time to improve their skills and expertise. Online platforms such as Coursera are being used by Indians to improve different types of skills. It is not only about Coursera, there are numerous other online platforms such as SWAYAM and edX that help Indians to learn different types of skills whether it is cooking or dancing.

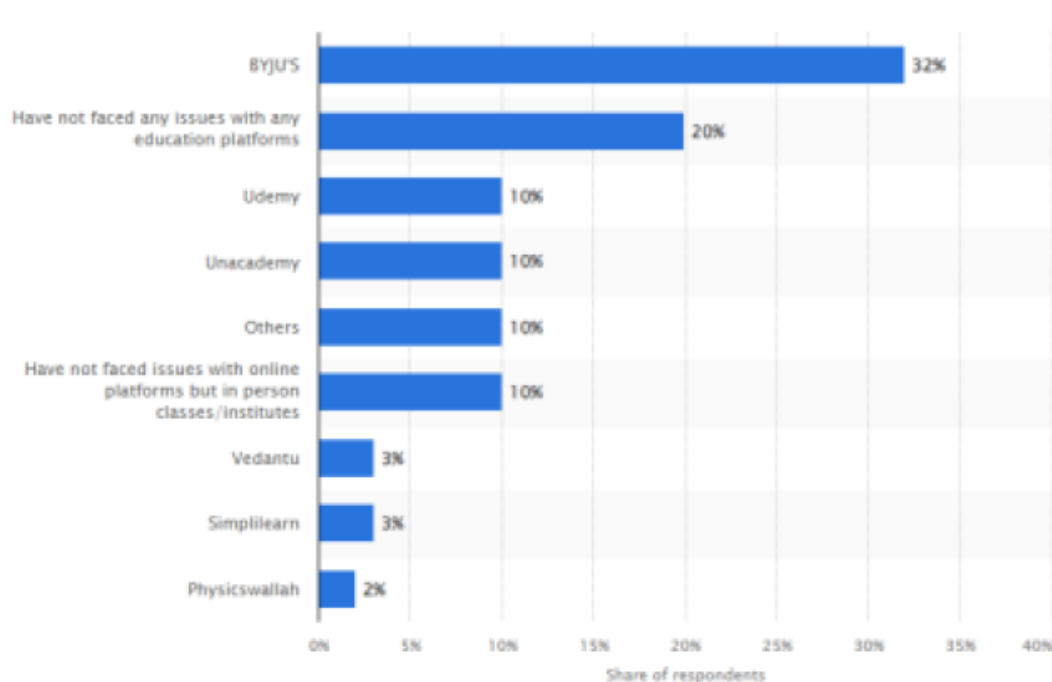
The online learning platform also offers necessary learning materials so that individuals can improve their overall learning process and be effective in their academic or professional fields. However, the findings in this article have also highlighted that there are a few issues associated

with MOOCS. These are lack of accreditation, low retention rate and language barrier. It has been found that the retention rate on online learning portals such as Coursera and edX is low. Language barrier may be an issue for that. In India, there are still a large number of people who struggle with English. This can be a reason for the low retention rate on global online learning platforms. Furthermore, accreditation is a challenge for these online learning platforms. There are many organisations or institutions which are yet to recognise the certificate offered by such online platforms.

**Theme 5: Lack of student engagement is a limitation of e-learning**

In this chosen article, it has been shown that lack of student engagement is a limitation of e-learning. Interpretive structural modelling has been used as a method in this research. It has been discovered that there are a couple of barriers to e-learning in India. These include a lack of necessary skills, a lack of student engagement, limited access to technology and quality issues (Panackal *et al.* 2022). Among these, a lack of student engagement is one of the key issues that may make e-learning ineffective for learners. In a traditional classroom, it is easier for instructors to measure the engagement level of the learners by assessing their attention rate, body language and expressions.

**Figure 12: E-learning portals with issues faced by Indians in online learning**



Source: Rathore, 2023

Teachers or instructors can interact with the learners as a way to engage them in the class. This is difficult to do when the classroom is shifted to online mode. In this mode, there may be many students studying at a time as it is possible to scale online education. Therefore, this may be challenging for instructors to keep an eye on every learner to check whether they are fully engaged or not. Learners in online learning mode may also lose their engagement because their needs are not identified and fulfilled by instructors. In the classroom, a diverse range of students participate with different levels of Intelligence and competencies. It is the responsibility of the instructors to meet the diverse needs of the students. The same can also be challenging to execute in the online mode of learning.

### **Discussion**

The growth of e-learning platforms in India is helping students, teachers, and professionals improve their skills. Many educational institutions in these countries offer online learning on various subjects and skill development programs (Joshi and Dewangan, 2021). Nonetheless, it has been discovered that e-learning platforms must be highly interactive to improve learners' satisfaction levels. In the literature review part, it has been highlighted that loss of attention and motivation are key issues for learners in e-learning methods (Abdur Rehman, 2021). In this regard, the findings have indicated that e-learning platforms can address such issues by becoming highly interactive. Still, there is a lack of personal bonding between teachers and students in e-learning. This is a key limitation of it.

The findings in this research have further pointed out a few issues in e-learning methods. It has been depicted that e-learning can be an issue for learners living in rural areas. In such areas, there is a lack of penetration of high-speed internet services (Jamil and Muschert, 2023). Also, people living in rural regions are less likely to have the technical skills and expertise to be able to operate digital devices necessary for e-learning. Students may feel isolated as they study through e-learning. As a result of these, learners from rural areas may find it difficult to access e-learning sites.

The results have also indicated that massive open online courses or MOOCs are also increasing in India as people are opting to use online learning platforms such as Coursera and edX to improve their skills and knowledge. The cost-effective business model of these online learning platforms is attracting learners from all across India. People can learn a variety of skills such as coding, language training and even cooking in India using online learning platforms (Pant *et al.* 2021). There are also various local learning platforms helping individuals to acquire new skills. However, it needs to be highlighted that the retention rate on these online learning platforms is low. In addition to this, accreditation is an issue for the mentioned online learning portals. Many institutions are yet to recognise these certifications offered by such

online learning platforms to their users. Yet, the use of online learning platforms in India is growing following its benefits such as flexibility and cost-effectiveness.

### **Conclusion**

This research has been initiated with the focus of investigating the impact of e-learning on enhancing the competencies of learners. A secondary qualitative method was used to execute this research. The findings have revealed that e-learning is effective in improving learners' competencies in developing countries such as India. In this country, various e-learning platforms, such as Coursera and Khan Academy, have emerged to help improve the skills and knowledge of students, teachers, and professionals. It has also been found that e-learning platforms should be interactive to avoid issues such as loss of attention from learners. However, there are a few challenges associated with e-learning in developing countries. These challenges are the lack of internet access in rural areas and the lack of expertise of people from rural areas to operate digital devices to take part in e-learning.

It is crucial in the present digital era to actively get engaged with the different digital platforms to enhance awareness and also to carry out everyday activities. A pandemic situation faced by the whole world has made online platforms more prominent in conducting and parting education of every sort. In the present study, it has been noticed that all forms of training and learning activities can be conveniently performed with the help of digital platforms. It is notably significant that the absence of physical barriers for the learners in such platforms has made these platforms even more convenient. Moreover, learners with limitations of physical mobility can also access learning programs with the help of these digital platforms. Another notable conclusion of the study states the timing of the sessions conducted online for various types of skill development to aid vocational purposes.

Individuals who were previously deprived of learning a new skill or vocational competency due to time restraints can now get help from e-learning platforms. The working-age population in developing countries such as Pakistan and India are being suitably addressed by the e-learning platforms. These platforms provide opportunities to learn at the convenience of the learner and no strict schedule needs to be maintained for learning. The programs in these e-learning platforms are developed with the focus on helping learners who are mostly unable to seek regular classes for skill development and training. In developing countries, most of the working-class populations are found to make use of these platforms while continuing with their respective job roles. This factor has considerably increased the opportunity for accessing skill development programs while continuing to earn their livelihood.

Learners with specific health conditions are also able to develop their learning abilities with the



help of these platforms which do not include physical movement for undertaking learning programs. Thus, employment opportunities and growth have been increased to a great extent for the interested learner in developing countries. However, the lack of infrastructural advancement in developing countries has made accessibility to the Internet limited in certain geographical areas. This factor has restricted the growth of e-learning platforms in the developing countries.

Problem-solving and critical thinking of the learners are significantly addressed with the help of e-learning platforms. The course modules use advanced technologies such as Artificial Intelligence(AI) to develop 3D models which help in explaining concrete theories and facts with ease. The first objective of the study has been met in the discussion and findings chapter.

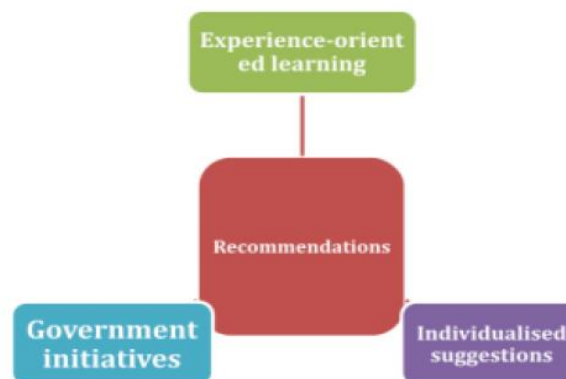
The lack of accessibility to smart devices and limited internet facilities plagues specific locations of developing countries in enhancing the e-learning process. Learners belonging to the low-income groups in these countries fail to initiate e-learning programs. Thus, the second objective has also been addressed in the findings and discussion chapter.

The advancement of e-learning platforms has made the wider population of developing countries suitably use technology for purposes other than entertainment. However, the challenges identified need to be mitigated with the help of specific modifications while considering the geographical locations. Therefore, the third objective has been analysed in the findings and discussion section.

### **Recommendations**

The recommendations to enhance the learning experience of e-learners in the developing countries are as follows:

**Figure 13: Recommendations**



Source: Self-developed

### **Opportunities to learn which is experience-oriented**

Experience-based learning can be suitable for addressing the specific challenges faced by individual learners within a given e-learning program. In the learning process which includes hands-on experience to include the applicability in real-world problems, needs an enhancement. The abilities gained from experiential learning can be used effectively by the learners to minimise their challenges in the real world (Asad *et al.* 2021). Therefore, the inclusion of this experience-oriented learning can substantially reduce the challenges faced by the learners while taking lessons through digital mode. On the other hand, it is important to note that the skills which are learned as a part of these programs also can be assessed beyond the digital classroom. The implementation of these skills in solving real-life issues can boost the confidence of the learners to a great extent.

### **Individualised suggestions**

The e-learning platforms can provide educational lessons to learners from different age groups. It is also vital to note that the characteristics of the learners are very important in a digital classroom which provides an opportunity to interact with the instructor (Engeness, 2021). Characteristics of learners do not remain the same across age groups. The resultant impact of the interactions of the learners can provide a favourable condition for learning to take place. It is recommended that learners who fail to interact effectively with the instructors be evaluated by the use of innovative techniques. These include gamification to address the problem areas of the learner while making sure that the learning outcome remains desirable.

### **Government initiatives**

The necessary infrastructural development to make the intranet accessible to the remote locations of developing countries needs to be preceded by government policies. It should be made clear that public policies of the government need to be modified in favour of boosting digital infrastructure.

Internet access and connectivity are the basis for the enhancement and adoption of e-learning programs in developing countries (Madni *et al.* 2022). The effectiveness of these developments will help remote learners to undertake e-learning programs whenever necessary.

The findings of the study will help the different e-learning platforms to undertake effective strategies for boosting e-learning in the context of developing countries. In addition, the identified challenges will serve as guidelines for addressing the problem areas in the enhancement of e-learning platforms in developing countries. The study has been conducted with the help of secondary qualitative data collected from reliable sources. The use of numeric data

might have yielded more specific results with statistical parameters in the present study.

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