

Impact of E-Learning Among Students Pursuing Higher Education Due to COVID-19: An Exploratory Study

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The systematic process of all academic, educational and research institutes have collapsed by the advent of the COVID-19 pandemic in recent years. The traditional practices of teaching learning process have been challenged and it has become a necessity for all educators to equip themselves to suitable viable technologies. Therefore, it is significant that every educator takes necessary actions to impart education in the suitable ways to meet our students' needs and requirements. The current work aims to detail the various causes and its impact of COVID-19 among the students pursuing their higher education. The focus is to plan and create a digital educational module by receiving feedbacks from the focus group using a structured questionnaire. The outcomes will be compiled as graphs and discussions, arriving at a model which would suit the needs and requirements of the higher education students. Viable and possible solutions to make teaching-learning process in a digital way would be addressed in spite of any pandemic situation.

Keywords: e-learning, higher education, contemporary issues, COVID-19

INTRODUCTION

In today's world, e-learning plays a vital role in major higher education institutions and is used worldwide. The intensification of this e-learning technology has added feathers to the concept of globalization. All the academic standards and interpretations are integrated as a single entity across the globe. The geographical and societal limitations are unchained in all the educational institutions that are offering education in distance mode, online mode, etc. The availability of the internet is one of the main reasons through which all the resources can be shared for the teaching-learning process for all purpose. Our Indian Government and the University Grants Commission (UGC) has initiated integrating Information and Communication Technology (ICT) in higher education to upgrade the current under- graduate education system and bind the gap among the rural and urban education system. At present, many types of virtual education through e-learning is uplifted by the government in most of the educational bodies, thereby, the demand for flexible learning systems is fulfilled in both local and international backgrounds. This demands for an effective and well-designed e-learning teaching-learning process.

The e-learning process can be used in multiple ways to enhance the learning procedures. It also can be used in virtual classrooms called as blended learning. Hence by integrating the available technology with the emerging technologies, e-learning may obtain maximum benefits at minimal costs. During the COVID-

19 pandemic, the e-learning platform was at its peak, and even the primary education system implemented this process too. Though its need is essential and undeniable, many challenges and issues are faced while adopting the process. Hence, identifying the various problems becomes important before making huge investments. Thus, any similar pandemic situation has become a reason for our study of the benefits and challenges of incorporating the e-learning process in our day-to-day activities in higher education institutions. At this juncture due to dynamic change in the society structure, it has revealed the requirement of a new paradigm for education across the world. Thus, to facilitate a very smooth exchange of information effectively, various suggestions are recommended to enable students of different ages to learn in a campus-based or a distance education mode-based learning.

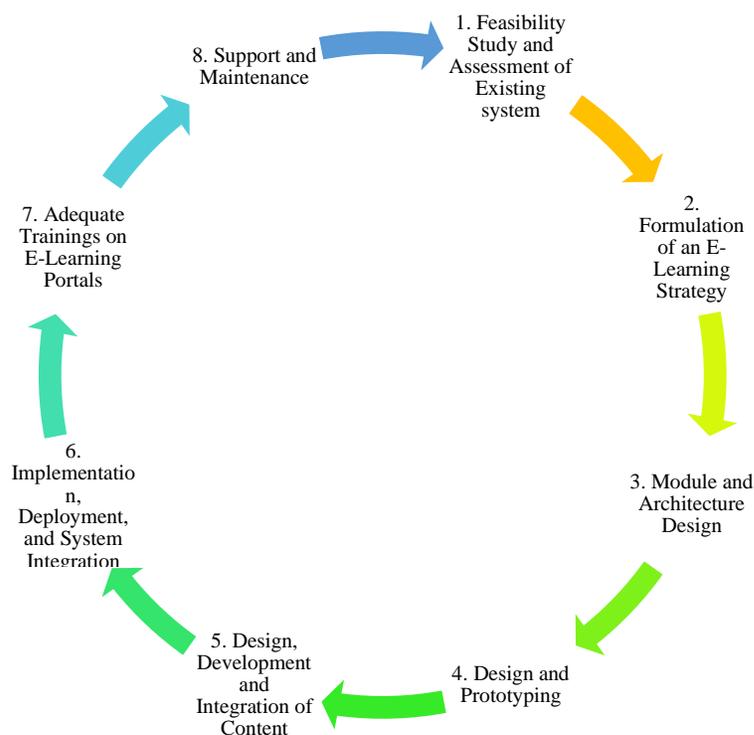
E-LEARNING

Any structured learning process using one or more electronic devices is termed as e-learning. Some of the major components involved in this learning process, both inside and outside a classroom, is the use of computers with good internet connectivity. The role of digital media plays a vital role in delivering remote learning experiences. Such exposure aims to simulate a real-world classroom teaching anywhere and anytime for easy access to knowledge.

Eight Step Process

The eight-step process given in Fig 1. narrates the various activities to be done to develop any e-learning process. This eight-step model leads to a successful and operative e-learning architecture, which is as follows:

FIGURE 1
DEVELOPMENT ACTIVITIES OF E-LEARNING PROCESS



Step 1: Feasibility Study and Assessment of Existing System

This phase consists of activities such as analyzing existing system, essential need for training, business domain analysis, identifying various gaps, bridging the systems, and gathering different learning patterns.

Step 2: Formulation of an E-Learning Strategy

An effective strategy has to be formulated to determine the needs to access wide range of technologies, its resources and contents, outputs and delivery, issues with e-governance and setting the specific learning objectives for the learners. Designing the strategy within the budget and time becomes crucial.

Step 3: Module and Architecture Design

Modules and architecture designs must incorporate functional requirements such as teaching aids, assessment procedures, etc., and non-functional requirements such as performance, availability, usability, scalability and reliability.

Step 4: Design and Prototyping

From many feasible solutions, an optimal one is selected and to be modelled as per the needs. Proper illustrations to be made by blending the creative, technical and innovative concepts.

Step 5: Design, Development and Integration of Content

Appropriate design is to be developed and validated before the actual implementation begins. Analyzing the existing requirements, adding, deleting and updating the features are carried out. Contents of various modes to be integrated and produced as a repository.

Step 6: Implementation, Deployment, and System Integration

In this execution step, programming, testing, integrations and installations are performed. All the essential components to be developed and integrated as one enabling the ease access of resources.

Step 7: Adequate Training on E-Learning Portals

Initial investments on hands-on-training must be followed so that both the students and teachers obtain sufficient practice to access the online platform.

Step 8: Support and Maintenance

After the deployment of the learning platform, continuous support and maintenance has to be provided. Any learner feels comfortable when there exists customer support 24/7 for any queries. Thus, enhances the learning process.

REVIEW OF LITERATURE

A detailed study on various issues and problems in implementing the e-learning ideology into the higher education sector is carried out. This work includes the hierarchy and deliverables, consequences faced by students and teachers, and the major impacts it has on society. An advanced study is made to find the specific characteristics of e-learning processes carried out by the university students and their way of study, leading to a better understanding of the characteristics themselves and whether these specific characteristics are achieved. Many suggestions are derived from the results for improving the particular characteristics based on the experiences gained by the students through e-learning which is used further to enhance the campus-based experience.

In addition, every state government must enthusiastically ensure the availability of good and reliable network to promote technology-enabled learning guide for students across the nation. An empirical work presents that every teacher must be trained and encouraged to support in creating the e-learning contents. Teachers have to make a lot of effort in designing and producing multimedia embossed content to prepare quality study material. Students must feel more interested and comfortable in taking the self-assessment to

fulfil the examination concepts. Many interactive online activities are to be planned and scheduled to bring more collaboration among the teachers and students during the online sessions. A first-hand study inspects the effectiveness in teaching through e-learning in tertiary organizations. Handling the issues in mobilizing the latest information and communication technologies across higher education institutions becomes very important. The present research on e-learning binds together all the pedagogical, technical and organizational uncertainties within a range of socio-cultural aspects. Many research groups are more focused on understanding the various problems and challenges in adopting e-learning, resulting in the development of future practices.

The implementation of e-learning concepts in public universities become quite challenging in Yemen. Such difficulties and challenges in establishing e-learning as a role model in the teaching-learning process are discussed. The Philippines' Open University who are currently practicing the Distance Education (DE) has now devised the term Open and Distance

E-Learning (ODEL). The existing DE transforms into ODeL by featuring an open learning philosophy, distance education trainings and e-learning skills. The work identifies numerous issues and challenges about to be faced by the Philippines' Open University from the leading ODeL practitioners. A hands-on study effort to explore the different proportions of student engagement with Technology-Enhanced Learning (TEL) resources as part of anatomy curriculum in a medical program by using exploratory factor analysis.

Students adapted a specialized tool to review the course content and to self-evaluate their preparation towards the upcoming examinations. This method works well instead of increasing their interest on the usage of online virtual resources. A collaborative study considering the traditional blackboard system, an e-learning system, and the students who avail it in Saudi Arabia. The demonstrated work attempts to find and fill the gap through complete investigations on the importance of the design criteria developed for e-learning systems. Such systems are intended for usability evaluations in Saudi territory education from students' perspective. The problem of introducing Resource Based Learning (RBL) in higher education organizations involving the optimal use of the triad "student-teacher-librarian" is explored. All the activities of the students in mastering their skills are obtainable through the RBL, which acts as a holistic dynamic process in organizing and activating their activities.

Often, we find many queries posed by current generation of idealistic students. The healthcare pedagogy has changed drastically over the periods, resulting in many demands and challenges faced by the younger generation of students. In a positive learning experience, intrinsic motivation acts as a catalyst. This intrinsic motivation can be defined as a stimulating behaviour that emerges from within an individual and later based on further interest it develops. Though the higher education students were aware of many e-learning resources, still there exists some confusion in choosing and accessing them. SecondLook™, a popular histology self-review tool was offered to students in different interfaces to record the active participation of students.

After all the investigations and studies, the results are very clear that today's students are very keen to use high-tech learning resources but lagging behind without knowing the right tools and resources to follow. Instead, they are often stuck up with familiar tools and interfaces.

SIGNIFICANCE AND AIDS OF E-LEARNING

Importance of E-Learning

The quality of learning experience is improved with the help of e-learning resources and content. It provides a wide range of tools and technologies to empower students and teachers. They can customize the platform according to their needs to become more innovative and creative. It creates many online communities who can share their experiences about various digital learning platforms available. Anyone from any part of this world can have easy access to the huge repositories of information and thereby empower themselves. Thus, the society can be developed further.

Benefits of E-learning

With the demanding needs, e-learning fulfills many dreams. Availability of resources anytime makes the student confident about gathering the information. A wide range of topics allows the students to explore a lot in their area. It also gives the students the flexibility in learning their desired topic. Based on the industrial need, one can browse and self-learn. Many slow learners can repeat the content again and again to understand more.

Barriers of E-learning

In spite of many advantages, there are some barriers observed. The primary one is the lack of experience in self-learning. This is a very common one observed among the students. The next barrier is the resistance to change. Migrating to a new platform become difficult for most of the beginners. Lack of attractive and high-quality content disappoints the users, leaving them idle.

CONTEMPORARY ISSUES IN E-LEARNING

Problems Identified

- The students find it difficult to concentrate for more than 30 Mins on an average for a video lecture and expect short breaks in-between.
- They find it rather sluggish or monotonous to sit idle in front of a computer or laptop for long hours without any activity.
- Students prefer Teacher assisted E-learning contents than pre-recorded video lectures.
- Technological glitches such as power failure and internet connectivity issues are the biggest concern among the students.
- The normalization of hardware or gadget varies from each student and this also varies the performance of each student.

Probable Solutions

- Faculties should avoid reading directly from ppt's and make the lecture interesting and appealing to students.
- To break the monotony, faculty may encourage students to answer a question related to the topic and make the session interactive and engaging.
- The faculty should make the student feel that they are always there to explain and clarify their doubts if required.
- With usage of PLD (Personal Learning Devices), students can stay connected to their classes for more than 6 Hrs.
- Students should be dealt with empathy during these kinds of scenarios and faculties can give suitable additional guidance for their successful course completion.
- A regulatory body should be setup by the UGC (University Grants Commission) for Schools and Higher Educational Institutions to create a framework for Digital Education.

In general, many advent actions will reflect good improvements in E-learning which are more effective in higher educational institutions. Such actions are as follows: (1) Hardware availability (2) Network Connection with good bandwidth (3) Latest Software Version (4) Necessary guidelines supporting e-learning (5) Instant Technical Support (6) Low price connectivity (7) Good Quality E-Content (8) Value of E-learning (9) Adequate training at all levels. The traditional classroom teaching learning process is no longer enough, and a hybrid learning system is needed. Blended learning, or hybrid learning, can overcome the lack of interaction in online learning. The usage of various devices and gadgets along with the blended learning can be better solution to develop an ultra-model framework.

RESULTS AND DISCUSSION

**FIGURE 2
USE OF E-LEARNING PLATFORMS**

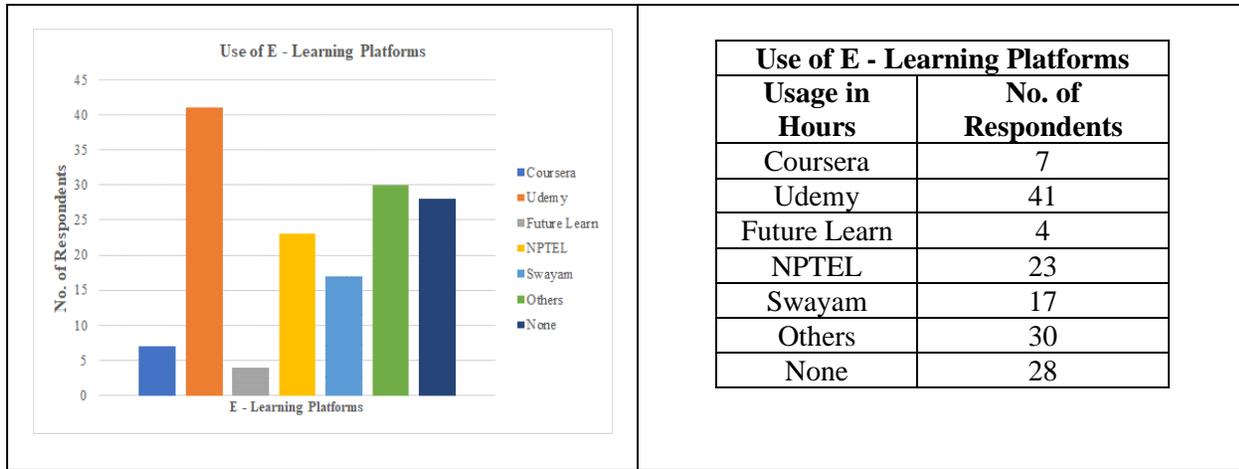
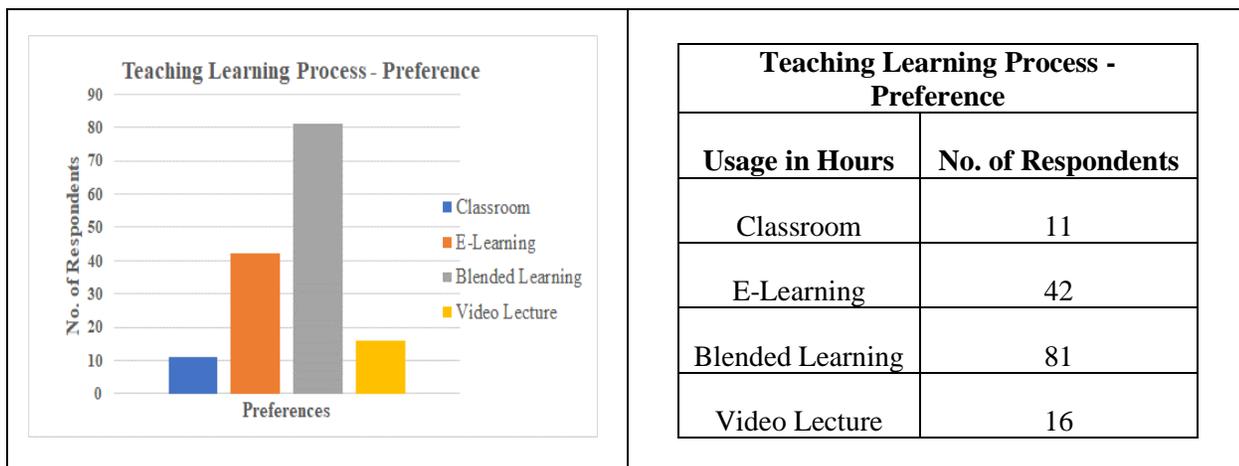


Fig 2. Clearly, most students used free educational E-Learning portals such as Udemy and Coursera. Students were unfamiliar with dedicated government services for E-Learning, such as NPTEL and Swayam. There were also a good number of students who were also not exposed to this kind of online learning platforms and technologies. The transition from the current education system to a newer version would be smoother, only when the students and faculty have prior experience with certain e-learning applications. To make use of the right methodology, flexible learning procedures are to be followed. Hands-on pieces of training on the new delivery procedures and assessment methodologies will help the academicians and students.

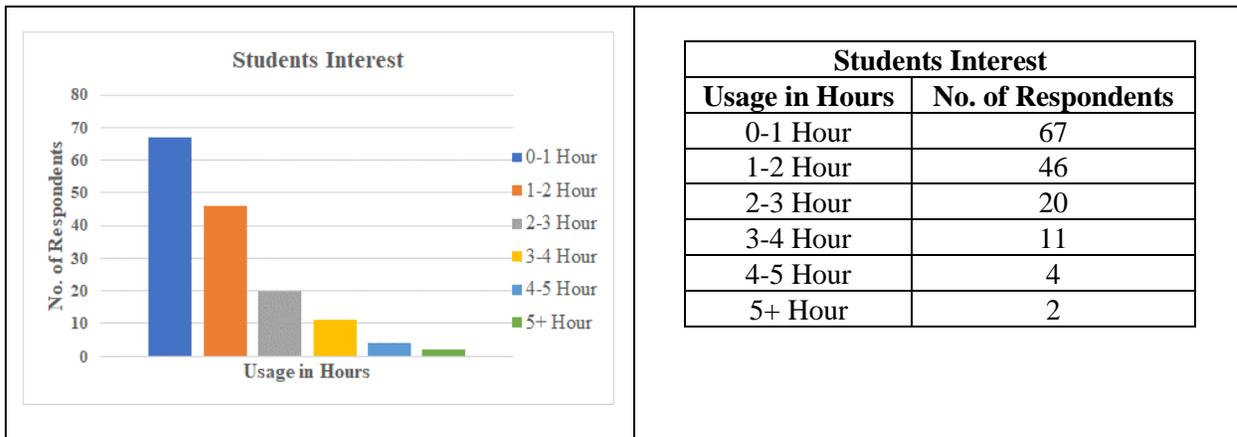
**FIGURE 3
TEACHING LEARNING PROCESS - PREFERENCES**



During the pandemic, when the students were forced to use digital platforms, they underwent a significantly higher level of stress. The sudden change in the academic environment made them feel stressed. It is advised to improve the stability of the students before any adverse changes in the study pattern. The policymakers must keep this in mind while preparing the e-learning framework. The majority of the

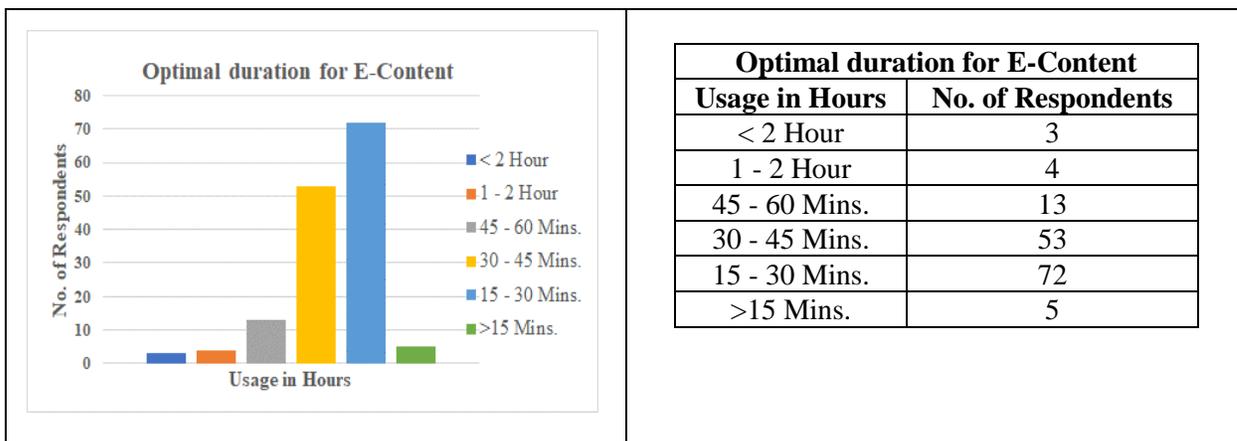
students preferred Blended learning more than self-paced E-Learning, Video lecture, or traditional classroom-based learning, according to Fig 3. The e-learning process requires adequate IT infrastructure. Most of the educational institutions in India do not have such environments. Thus, the entire concept of e-learning becomes a failure. The participation of students, teaching, and non-teaching members of the institutes in the online trainings and workshops must be encouraged. Many training sessions are to be conducted with sufficient devices to apply the concept of e-learning. The entire institute must be modernized to accommodate advanced devices and suitable classrooms.

FIGURE 4
STUDENTS INTEREST



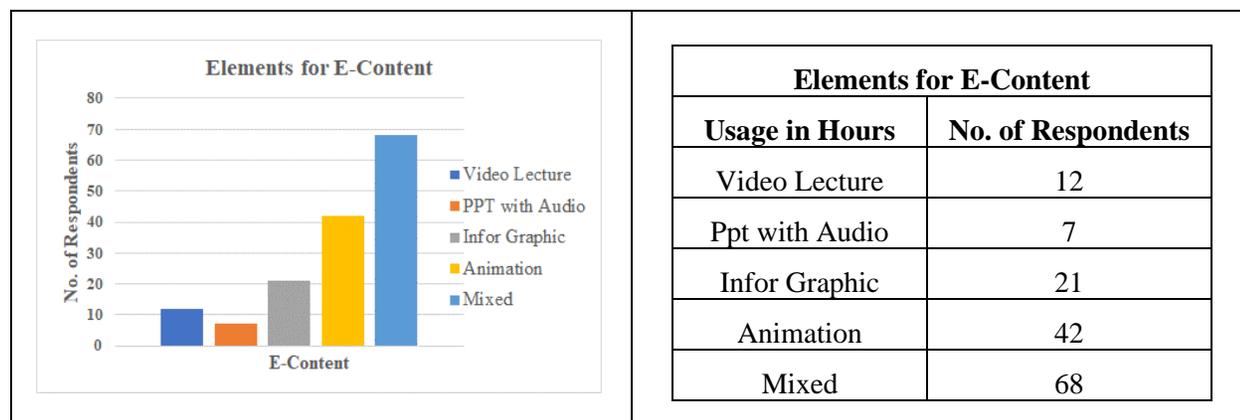
Students tend to get bored if the course content is for more than 1 to 2 Hours maximum as in Fig 4. They also wished to have small breaks in between the course time given by the faculty concerned for blended learning. To develop any framework, it's essential to focus on the language to be used. In a country like India, where numerous languages are spoken, it's important to stick to one common language. Such language has to be empowered among the students as a first step. According to a study conducted on two measures such as the readiness for change scale and the interest in learning scale, the integrative e-learning method have proved effective. While the e-learning approach has shown a significant lack of interest, the integrated one has brought tremendous difference.

FIGURE 5
OPTIMAL DURATION FOR E-CONTENT



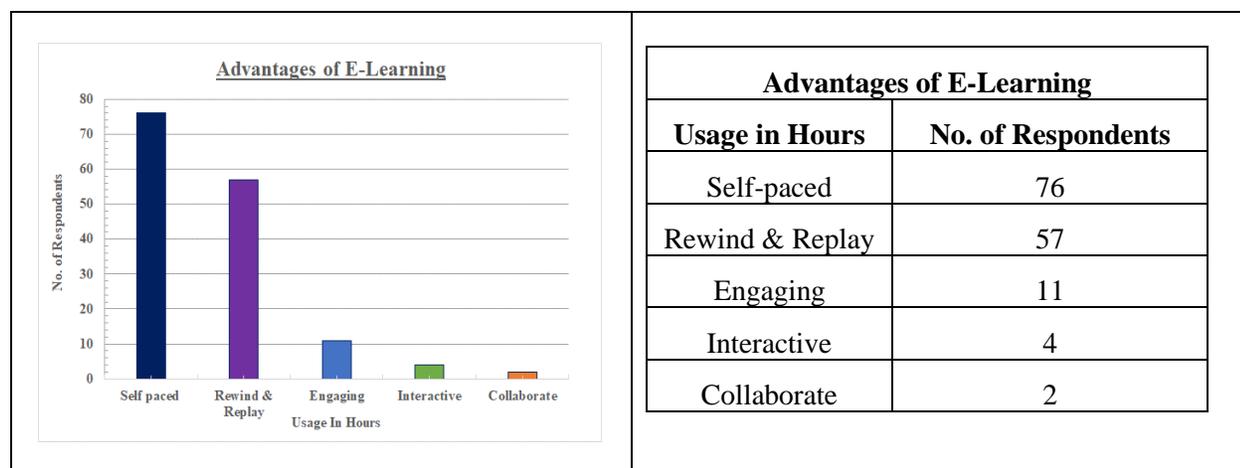
An optimal duration of the E-Content can be around 30 to 45 Mins. as per the student’s suggestion. Anything less than 15 minutes and more than an hour is not encouraging for the students, as depicted in Fig 5. It is very clear and understood from the surveys taken a better e-learning framework can be developed considering all the pros and cons that were faced during the pandemic. The limitations and shortcomings may be rectified and fulfilled in future educational models. Distance and blended learning may be integrated for a better change.

**FIGURE 6
ELEMENTS FOR E-CONTENT**



Students prefer a blended faculty moderated virtual learning environment where the faculty joins the meeting with the students and explains the topic with suitable videos, animation and related course documents as in Fig 6. According to a study conducted on two measures such as the readiness for change scale and the interest in learning scale, the integrative e-learning methods have proved effective. While the e-learning approach has shown significant lack of interest, the integrated one has brought tremendous difference.

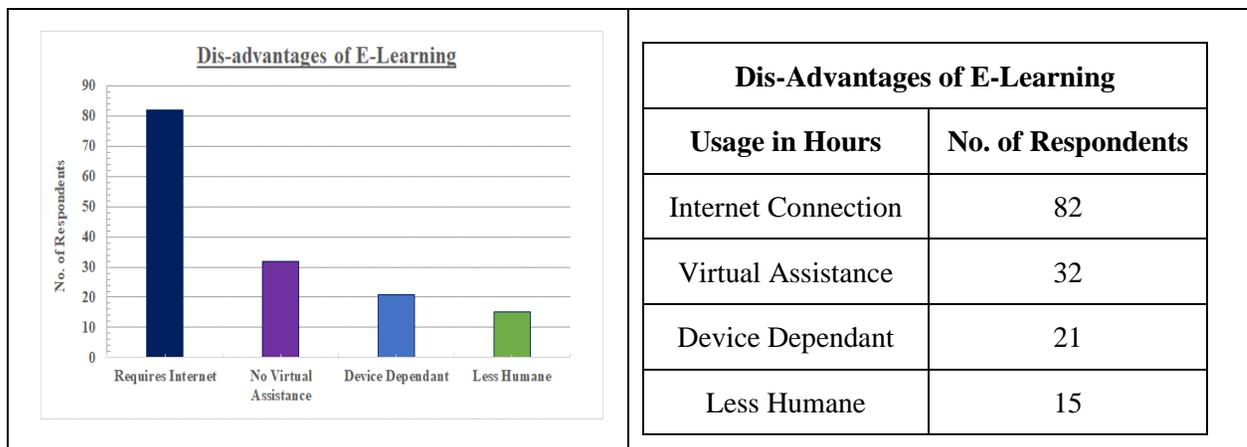
**FIGURE 7
ADVANTAGES OF E-LEARNING**



As in Fig 7 Students believe that the E-Learning content helps them to study the course at their own pace giving them the freedom to go back and forth as required. They also feel the current E-learning content

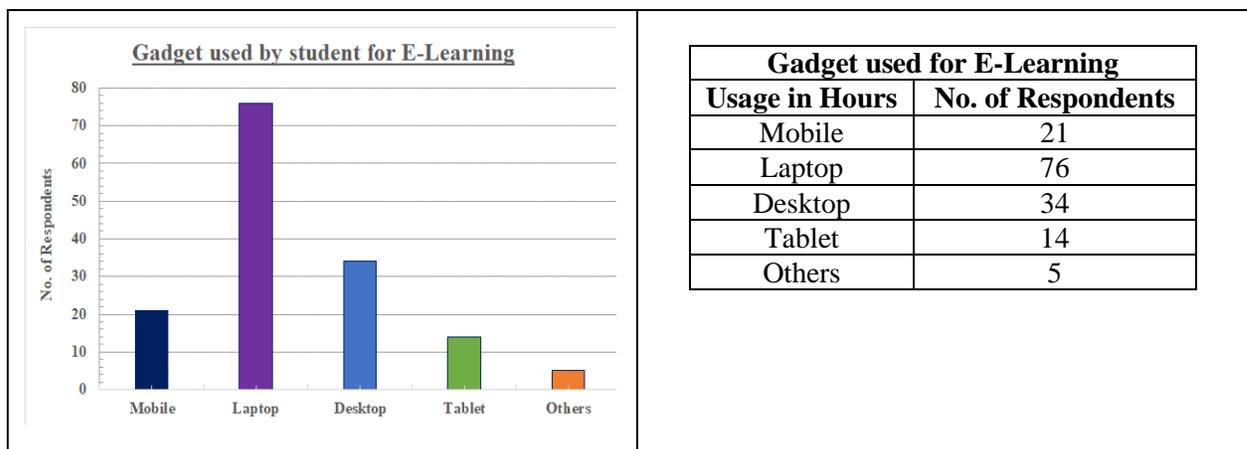
is not engaging and interactive and encourages collaborative learning among students. The necessity of more pieces of training in digital technologies and various gadgets are provoked by the COVID-19 outbreak. The education sectors have to integrate the use of e-learning and virtual environments with the current education system. A few limitations, such as accessibility and affordability, are to be addressed while planning for the future educational framework.

**FIGURE 8
DISADVANTAGES OF E-LEARNING**



The majority of the students feel that the E-Learning environment cannot work unless they have a gadget with internet connectivity, as in Fig 8. The Blackboard teaching is alone becoming insufficient, creating a demand for using digital platforms in the education system. A need for educator during the course of their learning is expected and a tutor to correct their mistakes if they go wrong in understanding a concept is still not incorporated. An attempt to study the perceptions of e-learning among the students has revealed that most of the students are comfortable in a way where e-learning can be adopted in traditional classroom teachings. Thus, the requirement leads to a blended model in education. Several researches are ongoing to ensure this blending of two different teachings. The study results in the recommendations of combining traditional classroom teachings with e-learning concepts to create an educational scheme that could be suitable in any pandemic situation.

**FIGURE 9
GADGETS USED BY STUDENTS FOR E-LEARNING**



According to Fig 9, most students prefer using their laptops to pursue their E-learning content followed by desktop, tablets and finally mobiles. Students cannot pursue E-Learning content through their mobile due to more content overload and smaller screen sizes. The majority of the students recommend E-Learning to supplement their teaching-learning process. They also believe that E-Learning will gradually replace classroom-based learning. The 2019 lockdowns have changed the minds of the students, parents and teachers from all perspectives. The situation has thrown the limelight over digital communications, IT infrastructures, and many emerging technologies worldwide. The challenges, drawbacks, and upcoming opportunities were focused on many studies, resulting in the strong recommendations of a complete framework that suits in varied situations.

CONCLUSION

The advent of COVID-19 has affected the whole world both psychologically and economically. We must stand up to any similar situations and try to find suitable ways to normalise our lifestyle, thereby mitigating the pandemic. In this regard, the teaching-learning process for schools, higher education and research organizations need a suitable framework to help us carry forward our academic requirements through any pandemic period. The academic bar regarding the curriculum and syllabi for all schools and higher education can be reduced to lessen the mental pressure among the students. As India is still in its growing phase regarding network connectivity, reaching all nooks and corners of the country would still pose a challenge. Students should be dealt with empathy during these situations, where they might need more mental and moral support due to the problems of any emergent situations. We must give additional support to the needy students and encourage them to complete the minimal requirements and basically make them understand the concepts better. Digitalization should be considered as only a mode of information dissemination tool and not as a replacement for the physical presence of a faculty. An online tool cannot replace a faculty's experience or problem-solving ability. Hence, the faculty must consider this medium to be an alternative tool for knowledge sharing rather than a replacement for them. It is necessary for the educators to be connected to the students, educate them, enlighten them, and come up with solutions that would address the society's problems to fight against COVID-19 and any such emergencies in the future. Rather than considering every individual entity separately, having an integrated framework that suits the need is always better. While the blackboard teaching methods are to be compared, most students are comfortable because of the lack of resources required for e-learning around them. Beginning from their home facilities, network facilities, financial support, and knowledge about digital tools, most of the students prefer blackboard teachings. This situation is as same for the faculty members. A high priority must be set to enhance the required facilities to adopt the successful e-learning process. Only a well-developed and excellent educational model can bring a better solution where all the amenities are part of the education system.

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