E-Learning: A New Form Of Elixir In The New Normal

Upasana Saxena¹, Dr. Vijay Kumar², Sanchita Mehrotra³ & Rabindra Kumar⁴

¹ Assistant Professor, Amity School of Communication, Amity University, Lucknow.
² Assistant Professor, School of Commerce and Management, Maharishi University of Information Technology, Lucknow.
³ Research Scholar, Amity School of Communication, Amity University, Lucknow.
⁴ Research Scholar, Faculty of Commerce, P. K. University, Madhya Pradesh.

Abstract

Purpose:
The novel Corona Virus has shuddered the whole world. The jeopardy of the situation has created a social dilemma and disarrangement worldwide. Many countries all over the globe including India have suffered from this pandemic. The entire country suffered from the shutdown after the announcement of lockdown on 22nd March 2020. Offices, factories, schools and colleges stopped working at official premises in physical mode and resumed their work as a work from home concept. Due to this pandemic crisis the most affected demography were the students and children as their lives have taken a halt from doing different activities like playing, education or in other words it can be said that their social life has been affected. In this pandemic, the E-Learning applications such as Vedantu, Byjus, and Unacademy, etc. have played vital role in providing education through effective online teaching platforms for students adding an advantage of keeping children in a secured environment from their home and assimilating peer learning environment.

Design/Methodology/Approach:
The research work is done with primary data collection from around 150 respondents who are active users of E-learning applications and are learning through MOOCs platform by the government MHRD initiatives or have subscribed private online E-Learning applications or
have access to both platforms. To understand different research perspectives factor analysis was applied to the data collected as a test for analysing the data.

**Result and Findings:**
The study focuses on different E-Learning applications emphasizing on three different research perspectives as: (1) To understand the major catalyst (to provide the strength and support for the learners) (2) Conciliator (problem-solving, anxiety, and barriers to education) during the COVID-19 pandemic and (3) Examining the role of E-learning applications.

**Practical Implications:**
Online learning platforms using Artificial Intelligence (Augmented Reality) for teaching students with the use of such innovative technologies will help in increasing the knowledge of students. Pandemic has taught a great lesson to the education system of developing nation like India where it has always been dependent on the traditional methods of teaching and with effective E-learning applications available online made the whole experience of teaching and learning at ease. With the prolonged use of E-learning applications its feasibility and its role in strengthening knowledge for future generation can be effectively studied by education experts and policy makers.

**Keywords:** E-Learning, Covid-19, Education, Peer Learning, Augmented Reality

**GEL Classification:** I21, I23, O3

1. **Introduction:**
India was affected by novel Corona Virus at the start of the year 2020, with the first case detected on January 30, 2020 in Kerela, which was later declared a Public Health Emergency of International Concern (PHEIC) by WHO (World Health Organization). On the 22nd of March, India announced a fourteen-hour 'Janta Curfew,' followed by a complete lockdown on the 25th of March, 2020. The entire country was put on lockdown from the 24th of March to the 31st of May 2020, and then the government declared the unlock phase from June 1 to October 31, 2020. The country's complete lockdown to partially unlocking nature impacted many industries, and students attending school, colleges, universities, and for higher education were also affected by the pandemic crisis. This pandemic crisis has taught us a lot. E-learning programmes have brought about innovation in the education sector. E-learning has been embraced by various schools and higher learning educational institutions in India to prevent students from falling behind in their academics. To deliver regular lessons to students, several teaching learning technologies such as Zoom, Google Meet, and Microsoft Teams were developed. Self-learning educational portals and learning applications such as Byjus, Vedantu, and Unacademy also helped students, indicating that education in any circumstances is never wasted using E-Learning Applications.

Students at all levels of education have embraced the online learning platform, including primary, secondary, and higher education. In both elementary and secondary schools, using a digital platform to deliver education has become the new standard. The availability of E-
learning through various applications and portals has allowed schools, colleges, and universities to not only provide convenient education but also to prepare students for competitive exams such as JEE, NET, and various banking examinations, in addition to providing regular education based on the class syllabus.

**Impact of COVID-19 on the education system:**
Covid-19 has had a negative impact on education, allowing the national government to take proper action by shutting down educational institutions in order to prevent the spread of Novel Coronavirus infection from Indian schools to universities. According to the report by UNESCO, it has shown unfavorable results of 290 million college students from around 22 countries across the globe, whereas in India the number of students gets affected by the pandemic is 320 million.

Because of the higher adaptability of the online education system, this epidemic has launched a new wave of education away from the chalk and board school system, and has become the new normal. In this age of the new normal, various courses have been made available for free on MOOC (Massive Open Online Courses). The digital learning platform has given traditional methods of education new wings, and E-learning has made the teaching-learning system more acceptable. With the ease of connectivity provided by the internet or E-learning, students can learn from anywhere without the constraints of a classroom or the problems of travelling to the institution; however, the lack of class demonstrations, peer interactions, and personal encounters with lecturers are the students' main drawbacks. Prior to the COVID-19 scenario in India, online education was seen as a resource for the wealthy and those who lived in metropolitan regions with good internet access, as well as those who couldn't physically travel to their educational institutions. E-learning, on the other hand, is a technique of delivering education from a remote location, ensuring that pandemics do not deprive students of their right to education and information. Apart from the government's initiative to provide E-learning through various courses such as NPTEL and SWAYAM, a number of private E-learning programmes also offer content and infrastructure ranging from class I to class XII standards. These E-Learning programmes train students for a variety of competitive examinations in addition to traditional classes, and this epidemic has ushered in a rush of new competitors into the market to provide hassle-free education. Several of these E-learning apps, as well as their impact on e-learners, will be researched further in the future.

**The objective of the Study:**
- To study the impact of E-learning applications.
- To analyze which E-learning application is most liked by the students.
- To analyze which E-Learning application is more marketed among the youth.

E-learning is a type of education that uses ICT (Information Communication Technology) to provide students with on-demand and flexible learning without having to leave their homes. These applications feature embedded course materials for students to learn from, and with the advancement of technology, many applications are now offering live interactive lessons, where students may study in the style of classroom instruction and clear their doubts while on the go.

Below are some examples of government and private-sector E-learning applications:
2. MOOC platforms:
Covid-19 has brought many challenges in the education sector and universities and institutions have come up with different strategies to cope up with the pandemic crisis and provided education to the students without any difficulty. MHRD and UGC (University Grants Commission) have taken efforts to bring the online platform with online depositories, several E-books, and other educational material for the unveaded teaching pedagogy. In the period of lockdown, students are using social media tools such as Zoom, Google Meet, Telegram, YouTube live, etc., MHRD (e-Broucher- https://mhrd.gov.in/ictinitiatives) has come up with the ICT initiative to provide the distinctive platform as a digital learning solution under one umbrella (Pravat, 2020a). Some of the digital platforms which are the initiative of UGC and MHRD for ICT learning initiative are mentioned as under:

- **E-Gyan Kosh** (http://egyankosh.ac.in): This is one of the portal of which rights and copyrights are reserved under Indira Gandhi National Open University (IGNOU) and the share the content as the National Digital Repository for sharing the educational and learning resources which are designed by the distant and open learning institutes of India and been reactivated under the center of education of India.

- **Swayam** (http://www.swayam.gov.in): Swayam is one of the MOOCs (Massive Open Online Courses) and initiative of MHRD, consist of all the courses of discipline related to UG and PG (Under Graduates and Post Graduates) and have the feature of credit transfer from around 140 universities. Swayam was designed for delivering the three fundamental principles, that are:
  - Access
  - Equality
  - Quality.

The courses taught in the Swayam portal starts from class IX to post-graduation and the course can be opted by the students into four different parameters:

- Video Lectures
- Easily Downloadable printed material for self-study
- Self-assessment Tests
- Discussion forum for the clarification of doubts and issues

For ensuring the valuable delivery of the course content, the pedagogy has been divided among the nine National coordinators that are named as under.

1. **AICTE** (All India Council for Technical Education) for self-paced and international courses
2. **NPTEL** (National Programme on Technology Enhanced Learning) for Engineering
3. **UGC** (University Grants Commission) for non-technical post-graduation education
4. **CEC** (Consortium for Educational Communication) for under-graduate education
5. **NCERT** (National Council of Educational Research and Training) for school education
6. **NIOS** (National Institute of Open Schooling) for school education
7. **IGNOU** (Indira Gandhi National Open University) for out-of-school students
8. **IIMB** (Indian Institute of Management, Bangalore) for management studies
9. **NITTTR** (National Institute of Technical Teachers Training and Research) for Teacher Training program

**Swayam Prabha** ([http://swayamprabha.gov.in](http://swayamprabha.gov.in)): One of the educational programs through the use of high-quality video transmission through 34 DTH channels on a 24X7 basis. The telecast of this educational drive will be on an everyday basis and the new content will be telecasted for around four hours and will be repeated five times a day, for the convenience of the students for choosing their desired time. The education contents will be delivered through NPTEL, IITs, UGC, CEC, IGNOU, NCERT, and NIOS and the web portal is maintained by INFLIBNET.

**E-PG Pathshala** ([https://epgp.inflibnet.ac.in/](https://epgp.inflibnet.ac.in/)): It is another ICT initiative of MHRD under the mission of the National Mission on Education through ICT (NME-ICT) and executed by UGC by their 70 different subjects E-Content from the different social-sciences, arts, fine arts, and humanities and mathematics. Under e-PG Pathshala different portals that are executed are as under:

- **E-Adhayan (e-books)**: e-Adhyayan is a platform to provide 700+ e-Books for Post-Graduate Courses.
- **UGC MOOCs (online courses)**: UGC-MOOCs is one of the verticals to produce a course on Post Graduate subjects in SWAYAM (Online Courses, An MHRD initiatives).
- **E-Pathya (offline Access)**: e-Pathya is one of the verticals of e-PG Pathshala which is a software-driven course/content package that facilitates students pursuing higher education (PG level) in distance learning as well as a campus learning mode.

**National Digital Library of India (NDLI)** ([https://ndl.iitkgp.ac.in/](https://ndl.iitkgp.ac.in/)): An Initiative of Indian Institute of Technology (IIT Kharagpur) to prepare a repository for the content in their electronic format and can be assessed by everyone related to academics and also designed in a manner that can be used for the competitive examinations and can be accessed even through mobile phones.

**e-Yantra** ([https://www.e-yantra.org/](https://www.e-yantra.org/)): It helps in providing the experience to the students from over 2300 colleges to access 380 more labs in an encapsulated way.

**FOSSEE** ([https://fossee.in/](https://fossee.in/)): The full form of which is Free/Libre, open-source software for education, which uses the FLOSS tools for academic and research purposes.
Shodhganga (https://shodhganga.inflibnet.ac.in/): It is one of the platforms which allows the Ph.D. Scholars to submit their thesis and can be made available to all the research community. It is one of the repositories to store and preserve the thesis of scholars in an electronic format.

E-Shodh Sindhu (https://ess.inflibnet.ac.in/): It is an initiative of the Ministry of Education being executed by INFLIBNET center, it is a troupe of e-journals and e-books for the long-term. It has 10,000+ e-journals, 31,35,000+ e-books.

VIDWAN (https://vidwan.inflibnet.ac.in/): It is one of the National Researcher Network and Experts Database. Being one the premier database which consists of profiles of a different scientist, Faculty, and researcher from the leading organizations and academic institutions and the work done by these laurates in their fields.

Virtual Labs (http://www.vlab.co.in/): As the name suggests, it a web-based curriculum lab and the experimental from the remote location of the student's home. The database consists of around 100 labs which are virtually available with 700+ web-enabled experiments. The labs provide remote access to the different fields of science and engineering. These virtual labs are accessed through students of graduate, undergraduate, and postgraduate level and also for the research scholars.

3. The E-Learning Plethora of digital K-12 Providers in India:
In India, the E-Learning industry has emerged as a boon for students as well as a challenge to traditional methods of learning through coaching institutes, establishing a new trend in the educational industry. According to a survey conducted by Data labs for Inc42 analysis, there are approximately 4450 educational e-learning start-ups in the private sector, notably BYJU’s, Toppr, Vedantu, and Unacademy being the most popular e-learning private applications. There are some well-known global e-learning providers among these, including LinkedIn, Udemy, and Coursera.

BYJU’s is one of the most well-known and widely used private e-learning applications, after the government application introduced by IGNOU in 2006. The BYJU programme was first launched in 2011 for K-12 students and students studying in grades 4 to 12, and later the flagship service was launched in August 2015. BYJUS chose online learning content for a number of reasons, including use of all stimuli and senses, which allows students to acquire the knowledge more quickly, as well as content that is based on proficiency and competency, allowing students to engage and learn appropriately.

Competitive exams are one of the key structures laid in the educational career advancement of Indian students in the evolving tech-savvy educational sector. In India, new start-ups have been launched to provide online education to students or aspirants preparing for competitive examinations in order to advance their careers. Unacademy, which began as a YouTube channel in 2010 and then evolved into an e-learning platform in 2015, has enabled students in preparation for competitive examinations from remote areas. Unacademy's YouTube channel has a community of over 3 million subscribers and 250 million views. Unacademy has been
able to explore the Indonesian and Brazilian education markets with the funds raised in the last two rounds, after pioneering the Indian education industry.

The future is virtual learning and teaching, but it has not yet arrived in India. We must prepare ourselves for what is to come, but we must do so in a way that does not jeopardise our current survival. The success of Unacademy and BYJU’S test-taking and test-preparation platforms does not imply that they are replacing teachers, but rather that they are supplementing them. Platforms like Coursera, Udemy and LinkedIn Learnings are setting the standard on skill development and professional training. Learning is no longer constrained by geography, classes, or training institutes.

Vedantu is another live online tutoring service that supports and collaborates with the state and national governments of India to improve the well-being of society by reaching out to distant learning centers. Vedantu initially offered online education to students, instructors, and schools in the New Delhi, Bengaluru, Kerela, and Hyderabad regions. According to the CEO and co-founder of Vedantu, Vamsi Krishna, on March 13, 2020 “ At Vedantu, we believe online learning is a safe option in these risky and uncertain times. The students can study from the safety of their homes and avoid travel to public places. We are closely monitoring the impact of COVID-19 and are here to assist students and schools with all their learning needs”

3.1 New Trends in E-learning:
Covid-19 has not only shown the world a new pandemic that has changed the world in every manner, but it has also shown the hardships of many people in various ways, with the most affected being students who have been restricted within four walls with no option to attend educational institutions. The Covid-19 crisis has opened a new era of E-learning, with innovative online learning programmes that have made learning more convenient and accessible from anywhere. This indicates a significant impale in the paradigm shift from traditional to e-learning implementation. However, with the changing phase of the learning styles, there are different trends which are mentioned as under:

❖ Flexible learning- Flexible learning or flexible teaching is the method which is evolved with the use of computer algorithm. Flexible learning's key benefit is that it aids in the development of interactive pedagogy for interactive learning and teaching, as well as interactive teaching with individually tailored resources. It also gives students with learning resources tailored to their own needs and abilities. Students can learn with adequate focus, confidence, and knowledge using AI-enabled (Artificial Intelligence) technology and VR (Virtual Reality).

❖ Micro-Learning- Micro-Learning is a notion derived from the term micro, which refers to small learning courses. It may also be referred to as short-term learning courses offered to students in order to create an environment conducive to learning. Some examples of micro-learning are short videos, quizzes using infographics etc. The advantage of the micro-learning method is that it is not constrained by traditional classrooms and can be used with laptops or desktop computers that can be easily accessed by learners via mobile phones. Another benefit of micro-learning is that it
provides a unique learning experience by providing learners with a small amount of knowledge and critical objectives. This also assists students by providing them with relevant information and a unique format in a limited capacity. It allows for repeated learning while having fun, and it cuts down on the customary long hour of lectures.

❖ Assisting with Technology Driven Artificial Intelligence - Artificial Intelligence (AI) is a technology that uses virtual reality and augmented reality to educate students in a more compatible way by creating a learning environment with the effective use of Natural Language Processors (NLP), the best example of which is the use of Alexa, Google Assistant, which allows users to communicate in human language and responds in the same way. Another type of artificial intelligence is the Chatbot, which is an online help desk or virtual online assistant that allows students to sort their questions through online chat. Robotics technology helps learners plan and study more quickly with the use of artificial intelligence, and robots can easily guide people with the use of NLP technology.

❖ Gamification Technology - In order for students to be conscious learners, the use of games and a gaming environment aids in the retention of lectures. The goal of developing a gaming environment for students is to allow them to learn without feeling rushed, to enjoy their study time, and to stay inspired to continue their studies. This approach of incorporating a game environment into an online mode of learning will result in greater student retention during the gamification phase.

❖ Use of Virtual Reality and Augmented Reality - When a learner is given a virtual or augmented reality experience while at a remote location, the organisation is using virtual or augmented reality. This technology can be seen in a variety of applications for instructing students of various abilities. Virtual and augmented reality are used to study the eye retina and learn other science-related theories, allowing the learner to grasp the material completely. It's similar to integrating the actual world into the computer by using several senses such as audio-video, somatosensory and olfactory, or in a simpler phrase, employing 3-dimensional films and images for more user interactive learning.

❖ Video-Based Learning - Learning with videos is one of the oldest approaches since it makes use of almost every sense of the human body, including hearing, seeing, and occasionally touching Video-based learning may be observed on YouTube in the current era of technology, and it aids in conveying information to users in the most efficient way possible. Face-to-face interaction is the only thing that video-based learning lacks, but it does allow for mass training and the learner's ability to stop and play the video as needed for their understanding.

❖ Mass learning - Mass learning is defined as individual learning through mass meetings using various platforms, regardless of the learner's age. Examples of platforms include conferences, forums, seminars, and sessions, as well as learner's circles. This type of learning is based on the social learning theory, in which learning is defined as the
process of learning from the social behaviour of people in large groups and by observing the level of learning of others. Building a culture of institutional learning or mass learning based on the characteristics of the individuals in the company.

There are certain advantages and disadvantages to online teaching over traditional learning for every E-Learning platform. Some of the advantages and disadvantages of online teaching are mentioned below.

3.2 Advantages of E-Learning:

- **No Barrier to education**: With E-learning applications, the barrier to education has been removed. Learners can access education from anywhere via internet platforms such as laptops, cell phones, tablets, and other mobile devices. It has provided study flexibility for people of all ages, as professionals can learn by pursuing courses of their choice rather than going to a classroom.

- **Cost-Effective**: The cost of education from online learning is more cost-effective with E-Learning. MOOC platform is the most suited E-learning system for upscaling their talents and securing their jobs for learners who are working and want to upgrade their knowledge in order to seek better career prospects. This has benefitted professionals by allowing them to upgrade their knowledge and abilities at a reasonable rate, as well as students by assisting them with their studies and lowering the cost of coaching institutions.

- **Learn by your own**: Every learner learns and grasps E-Learning technology in their own unique way. This is the advantage that students have over traditional learning methods. Students can learn their lessons numerous times by watching an online lecture, and they can understand the topic until it is no longer comprehensible to them, which is not achievable with a module-based pedagogy. Students will be able to clear up their doubts through live chats and other live interaction techniques.

3.3 Disadvantages of E-learning:

**Distraction from the learning**: It is very easy for students to lose interest in online teaching pedagogy by constantly being on laptops, tablets, or smartphones, and even for teachers in teaching, because there is no face-to-face interaction with the students, it is possible that students are not paying attention to the lectures taught by the teachers.

4. **Few Applications for the lab-based studies**: Students or learners who need to undertake practicals and require lab-based instruction find it difficult to obtain virtual labs, unless they use the MHRD initiative’s MOOC platform, which provides the virtual lab capability.

**Methodology**:
The research work is done with primary data collection from around 150 respondents who are active users of E-learning applications and are learning through MOOCs platform by the
government MHRD initiatives or have subscribed private online E-Learning applications or have access to both platforms. The respondents selected as study samples were the students, professionals, or research scholars who have experienced using any of these online E-Learning applications. Convenient sampling technique was applied to this study as the duration of this data collection was done during the lockdown period between May to June 2021 and it was difficult to approach all the respondents face to face. Therefore, the data was collected using structured questionnaire created through google form and was emailed or sent through whatsapp mode to the selected respondents.

5. **Data Analysis and Interpretation:**

For the data analysis principle component analysis method was used, so that data can be extracted. The below table shows the relationship of one variable with that of another. From the table, it can be analyzed that nearly all the variables are positively correlated with each other except for some variables; where variables are negatively correlated.
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<td>E-learning has a positive impact on student retention power or grasping power</td>
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<td>With the use of Artificial Intelligence and VR and AR technologies, Learners are more interested in E-Learning</td>
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<td>A learners could also face the issue with the face to face interaction with the teacher for solving their query</td>
<td>30.56</td>
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<td>In the future E-learning, applications will be looked up over the traditional coaching centers</td>
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<td>E-learning provides flexibility to the learners from their remote locations</td>
<td>32.54</td>
<td>8.722</td>
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<td>The course material embedded for the students are more fruitful</td>
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<td>8.874</td>
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## Correlation Matrix

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<th>V8</th>
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<th>V10</th>
<th>V11</th>
<th>V17</th>
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<td>.331</td>
<td>.156</td>
<td>.075</td>
<td>.157</td>
<td>.310</td>
<td>.068</td>
<td>.296</td>
<td>.209</td>
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</tbody>
</table>
Bartlett's test of sphericity and Kaiser-Meyer Olkin (KMO) is used for the measurement of the adequacy of the samples and also to analyze whether the factor analysis conducted has its appropriateness. The chi-Square test shows 82.502 with 45 degrees of freedom. The KMO statistic is found to be 0.429 which is less than the significant value of 0.5.

<table>
<thead>
<tr>
<th>V9</th>
<th>.031</th>
<th>.005</th>
<th>.046</th>
<th>.075</th>
<th>.112</th>
<th>.008</th>
<th>.452</th>
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<td>.265</td>
<td>.022</td>
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<td>.157</td>
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<td>.449</td>
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<tr>
<td>V11</td>
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<td>V22</td>
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<td>.105</td>
<td>.215</td>
<td>.223</td>
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</tr>
</tbody>
</table>

a. Determinant = .632

After the KMO and Bartlett's Test, the result derived is the high communalities value after the extraction of the data. In the study, the variables are < 0.4, which suggests that the variables are fruitful for further research.
E-Learning enables the learners to learn without the boundaries of places  |  Initial: 1.000 | Extraction: .437
---|---|---
Higher education learners prefer MOOC platforms  |  Initial: 1.000 | Extraction: .547
Private E-learning applications are more profound among K-12 Students  |  Initial: 1.000 | Extraction: .498
E-learning has made learning more easy and adaptable among the students  |  Initial: 1.000 | Extraction: .377
E-learning has a positive impact on student retention power or grasping power  |  Initial: 1.000 | Extraction: .538
With the use of Artificial Intelligence and VR and AR technologies, Learners are more interested in E-Learning  |  Initial: 1.000 | Extraction: .629
A learners could also face the issue with the face to face interaction with the teacher for solving their query  |  Initial: 1.000 | Extraction: .502
In the future E-learning, applications will be looked up over the traditional coaching centers  |  Initial: 1.000 | Extraction: .631
E-learning provides flexibility to the learners from their remote locations  |  Initial: 1.000 | Extraction: .526
The course material embedded for the students are more fruitful  |  Initial: 1.000 | Extraction: .629

**Extraction Method: Principal Component Analysis.**
By retaining the variables from the Eigen Value which is greater than one, it can be inferred that 15.0006% of the variance is explained by factor V2; 13.878% of variance which can be examined through the factor V3; 12.314 and by factor V5  and 10.337% of the variance is examined by factor V8. Altogether all the factor equals 56.138% of the variance.

6. Result and Conclusion:
Learners have benefited from e-learning because of the content's flexibility and accessibility, as well as the ability to choose the best time for them. Students' computers, smartphones, and tablets, as well as an active internet connection, are all that is required for them to learn regardless of their geographical location, as E-learning allows them to learn from anywhere. According to Klein and Ware (2003) that with the remote environment and availability of the study material the learner can take advantage of any place whether the students or the organizational employees.

E-learning has some disadvantages as well which is the lack of social interplay among the people and social interactivity. For distant learning or online learning, the students need a more focussed approach and proper time management for the performance in the online environment.
In the traditional form of classes and coachings or brick and mortar, the system enables the students for face-to-face interaction among the learner and the teacher and this also enables the exchange of thoughts and ideas among each other (Haserbrook, et al 2003).

According to Bourner and Flower (1997), that there should be some type of interactivity among the learner and the teacher for creating more human touch in the online environment. Whereas Daniels (1996) that the online organization needs to move the interest of the students towards the online system from the campus studies and should focus on developing the sense of belonging among the teachers, staff, and students.

There are some of the data which shows the use of online applications among the students:

- The growth of online applications will increase to 1.96 billion in 2021, which shows a compound growth rate of 52%
- The number of learners who got enrolled for the various online applications are estimated to be 1.6 million in 2016 and will grow to 9.6 million in 2021
- The impact of lockdown and Covid-19 on education is that there is an increase of 175% increase with classroom teaching, and it is found that online learning is more cost-effective.
- The Indian market for online education has targeted the audience from the age of 8-40, which is nearly around 58% of the Indian population.

With the increase in online learning applications, the Indian market is on the rise, especially in the aftermath of the pandemic. Apart from government programmes for online education with their various online education websites, the most prominent of these is SWAYAM. Private companies are also entering the competition, and numerous EdTech companies, such as Byjus, Unacademy, Vedantu, Upgrad, and others have become well-known among students and professionals. With the introduction of virtual reality and augmented reality, these market players have brought technical changes to the online education sector.

This has benefitted both students and professors in terms of online engagement and doubt-solving sessions. The Internet of Things (IoT) has removed the obstacles to face-to-face contacts while simultaneously providing study materials to the real-time education system. In addition, the government programme has introduced virtual lab technology, allowing students to use the lab facilities and continue their study.

7. **References:**


15. https://www.education.gov.in/hi/ict-initiatives