A Study on Factors Contributing to Digital Dependency for EDU Learning: with Special Reference to Indian Students

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Abstract: *Education has changed significantly over time with the advent of e-learning, when instruction is delivered remotely and on digital platforms. Digital learning is the term used to describe web-based education that effectively imparts knowledge to students via the use of information technology. In actuality, this was only recently revealed, and people from all over the world have responded to it amazingly. A different name for it is the Smart Teaching Technique. No one in this era of technological advancement can tackle the upcoming challenges without the use of digital platforms.*

The major goal of this study is to look at how dependent students are on technology for their education and learning as well as to comprehend the significance and necessity of new teaching methods in order to help students overcome their challenges.

On the basis of primary data on 300 respondents, Factor analysis Secondary information has been collected for the study has been applied and percentage analysis has been done on demographic variables. Total 6 factor has been identified.

Keywords: Digital Learning, Digitalization, Education, E-Learning, Dependency, Students.

I. INTRODUCTION

Learning is a process of adaptation in which our nervous system modifies how it interprets environmental cues, changing how we behave and enabling us to function in our environment. In reaction to environmental stimuli, the process starts in our nervous system. Behaviour changes can be caused by the reinforcement, pruning, triggering, or rerouting of neural networks. Learning that is provided online, over the internet, is referred to by many other names, including distance education, computerised electronic learning, online learning, and internet learning.

According to this study, eLearning is the delivery of courses specifically over the Internet to a location other than the classroom where the instructor is present. It is not a course that is delivered by a videotape, DVD, or CD-ROM, or through a television network. You can interact with your professors, classmates, and teachers thanks to its interactive nature. You have two options for delivery: a recorded lecture or in-person delivery where you can "electronically" raise your hand and participate in real-time. You are constantly interacting with a teacher or professor who is also grading your participation, assignments, and assessments.

1.1 Digital Learning

It is accurate to refer to the twenty-first century as the "digital era." People's lives have significantly changed as a result of the internet, and everyone is now more dependent on technology to carry out even basic tasks. I'm sure most of you have heard about digital learning. Without question, e-education has given the teaching profession new life. Blackboards, chalk, even dusters are relics of a bygone era. They have been replaced alongside web-based education, which enhances the learning opportunities for students.

digital education Digital learning is the term used to describe web-based education that effectively imparts knowledge to students via the use of information technology. This has garnered an incredible response from people all across the

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world since it was just given a few years ago. It is also referred to as the Smart Teaching Technique, and as such, the majority of educational institutions and schools have eagerly adopted this approach, causing a significant change in the educational system. Large LCD monitors and projectors that go beyond conventional teaching techniques are used to educate the kids. It encourages learning anytime, wherever. The hassle of writing on the blackboard with white chalk and then erasing it is no longer necessary for the teacher-learning has a number of advantages, including time and money savings, enhanced retention, consistency, scalability, and, most significantly, customisation possibilities.

1.2 Types of Digital Learning

1. **Adaptive Learning:** Learning method called adaptive learning evaluates and analyses a learner's comprehension of a subject using the most recent AI advancements. The learner's feedback is used by the adaptive learning system to identify the learner's areas of strength and weakness and alter the way that content is delivered. Lessons are modified according on student retention and understanding rates using learning feedback.

2. **Badging and Gamification:** Gamification and edging are motivational techniques that award learners with digital badges. As a reward for successfully finishing a level of difficulty, badges are obtained. By encouraging students to "conquer" new learning information, badge collection turns the learning process into a gamified process.

3. **Blended Learning:** The best of both worlds is offered by blended learning, which mixes digital and traditional classroom instruction. Teachers and students connect with one another in real classrooms and online through interactive chat and virtual classrooms. Students can learn more quickly with blended learning while still enjoying a "group" environment in the classroom.

4. **Classroom Technologies:** Modernising classrooms is made possible by technologies like virtual reality, 3D printing, cloud computing, and social networking. We believe that as new technologies boost the abilities of both teachers and students, digital learning and conventional learning will converge. By utilising technology that help users get engaged in the classroom, teachers are noticing improved comprehension and retention. Kahoot and Centimetre are two examples of in-classroom technology.

5. **E-Textbooks:** E-textbooks are electronic versions of print textbooks. E-books are more economical, quicker to update, and cost-effective than traditional textbooks. We predict that the popularity of e-books will soon surpass that of conventional textbooks. The most effective usage of eBooks is when they are chosen to enable blended learning, which is supported by an LMS like the Deuteronomic Academy platform.

6. **Learning Analytics Data:** Mining is included into the learning process through learning analytics. The analytics process includes the collection, measurement, and analysis of data. In order to develop and execute new methods and structures based on predictive modelling and the learning feedback phase, learning analytics are most frequently employed in online digital learning services.

1.3 Need for Digital Dependency for Education

The use of digital technologies has already become necessary as a result of the globalisation of education. There were online systems available for administering the daily operations of academic institutions, conducting classes, exchanging resources, and performing assessments. However, these platforms were utilised proactively. The institutes were compelled to switch to an online teaching model by the COVID-19 Pandemic in order to maintain the educational system. Developed nations were prepared to handle this issue.

But developing nations made a lot of effort to fulfil this criterion. In this crucial period, digital technologies have emerged as education's rescuer. The need for international integration into the educational system is highlighted by the current global crisis. Digital technologies help students acquire skills like problem-solving, thinking critically, and process comprehension—all of which are necessary for professional performance. Additionally, they are getting ready for a more uncertain and dynamic future where technology will be indispensable. Students' learned traits and skills will be crucial to their success in the workplace. Digital learning tools and educational materials enhance the classroom environment and add interest to the teaching-learning process. Additionally, they provide every educational institution more freedom to customise its curriculum in accordance with the needs.

If technology is employed in the classroom, kids might become more interested in what they are studying. Electronic devices are increasingly widely used by children, so introducing them into the classroom would surely help to pique their interest and increase their level of engagement. Students benefit from an exciting learning experience when technology is used in the classroom, which helps them focus on the material longer. Students may find learning exciting and enjoyable because to the classroom's use of projectors, laptops, and other cutting-edge technology. By creating assignments in class that involve technology resources, oral presentations, and group interaction, student learning can become more dynamic and engaging. Participation is not limited to verbal exchanges.

Students can take a more active role and take control of the process while using computers and other technology alongside digital tools. In this approach, the teacher acts as a mentor and has the power to validate learning effectiveness. Learners can acquire the necessary data from the plethora of digital resources or contribute their own stuff. Wikis, podcasts, blogs, and other web 2.0 technologies help learners create content, collaborate with others, evaluate each other's work, and progress towards co-learning. Utilising classroom strategies like gamification or flipped classes that maximise learning is made simple by digital technologies. Learning landscapes have developed as a didactic tool that combines several methodologies and allows for the pre-sensing of unique itineraries to each student.

II. LITERATURE REVIEW

G. Jacqueline and M. G. presents a paradigm for contemporary learning theory that takes into account the Internet's global reach and the movement in social norms towards collaborative learning. It emphasises intellectual development rather than the traditional educational methodology. The proposed Online Collaborative Learning (OCL) model of learning encourages and supports students as they collaborate to gain knowledge. Instead of giving literature assertions, it is preferable to develop, investigate new ways to innovate, and, in doing so, attempt to understand. Students are encouraged to work together to complete this collaborative learning method as opposed to the approach that combines individual and closed decisions to achieve a goal.

A. M. Van Loon, A. Ros and R. Martens, according to research on digital problem-based learning (PBL), students who receive autonomy support feel more autonomous, and those who receive structural directives, clear expectations, guidance, and procedures feel more competent. The study in this area similarly comes to the conclusion that autonomy support and structure in an OCL both works to enhance intrinsic motivation. Students developed their intrinsic motivation even with just one of the aforementioned dimensions; as a result, they encourage one another. Evidence indicates a poor intrinsic emotional usage of ICTs if both, autonomy support and structure, are lacking. However, this study also demonstrated that while autonomy support does not result in improved learning outcomes, the structural OCL technique does. However, when both are coupled, autonomy support can stimulate greater outcomes.

Anne-Mette Nortvig, Anne Kristine Petersen and Soren Hattesen Balle (2018) Higher education is increasingly adopting e-learning, particularly blended learning, and there are many different methods to put this new approach to conventional teaching and learning into practise. In order to discover whether format produces the highest learning outcome, the most satisfied students, or the highest rate of course completion, numerous studies have been done to compare face-to-face instruction to online learning and/or blended learning. However, this research usually demonstrates that teaching and learning are influenced by factors other than just the instructional modality. This literature review will go deeper into some of the many significant features. With a specific emphasis on professional bachelor education, the review focuses on factors that affect learning experiences in e-learning, online learning, and blended learning.

Mr. Pratiksinh S. Vaghela (2016) The internet and information technology have dominated society in the twenty-first century. Nobody can imagine a world without the internet for even one day. The internet has integrated seamlessly into our daily lives. The largest effects of the internet on society's youth and children. It is crucial for a nation like India because, after China, it has the second-youngest population on the world. Our most precious resource is this group, but a large portion of them is occupied by digital entertainment, which reduces their employability. We call this "digital addiction." This article looks at internet usage and how widespread it is, both globally and in India, as well as how it affects generation D, which are the kids and teenagers who use digital technology.

Since the adoption of the remote learning strategy, the majority of academic courses have continued to incorporate collaborative components that were present before the epidemic. Synchronous communication (online chat, message

services, virtual classrooms, etc.), which allows all participants to actively participate in communicating from various locations, is one method that collaboration through distance learning can be trained. **(Duncan et al., 2012).**

The teacher can boost the learning process by encouraging learning through online quizzes, presentations, or other activities, and the diversity of choices like video conferencing and screen sharing can assist all group members to cooperate. This method of working is becoming more and more well-liked globally and is incredibly inexpensive to implement in a multinational setting. Asynchronous communication is another technique used in distant learning. It gives students more flexibility and can help them learn other soft skills like time management and workload management. Before the project is finally merged and completed, students learn to collaborate through the delegation of various jobs and learn to assume responsibility for individual sections of the project.**(Sangster et al., 2020).**

Interaction is encouraged by engagement theory in computer-based learning environments. Although this engagement is quantified, for example, by the number of key pushes or mouse clicks, it is believed to involve human interaction in the context of group activities rather than individual interaction with an educational programme. As a result, using computers and the internet for educational purposes is seen as a communication tool rather than just a means of information distribution. **(Kearsley &Schneiderman, 1998).**

(Kahu, 2013) With higher education rapidly integrating various digital technologies into their learning environments, it is essential to understand how students interact with these technologies in order to create flexible, highly adaptive learning environments that can accommodate a range of student learning preferences. Student engagement is a multifaceted and complex phenomenon to understand, but it is considered a critical factor in supporting student learning and development. Educators may provide students with a variety of digital literacy skills and knowledge to help their learning by having a better grasp of how students interact with digital devices.

The attitudes and opinions of educational stakeholders about the use of information and communication technology (ICT) as a digital learning resource for OCL have a substantial impact on their students' digital literacy. The teacher's level of trust in their digital competencies is related to the student's use of ICT. The effective use of ICT as a learning approach and "students' age" are significantly correlated, according to the evidence, as are teachers' "technological anxiety" and age. Nevertheless, in order to improve their ICT skills, educators may need ongoing professional development. Ineffective ICT learning environments can be improved by skilled teachers. Additionally, a poll revealed that 20 to 25 percent of European children are being taught by teachers who are proficient in using technology.

The ability to overcome challenges and accomplish learning objectives when facing obstacles and learning fears during the learning process is referred to as having learning willpower. It is more important for students to develop their willpower and resist temptation during the online learning process in order to achieve better learning results because teachers cannot immediately monitor students' learning situations or determine the level of their knowledge mastery. According to studies, persons with greater willpower can benefit more from online learning. **(Miller et al., 2012).**

According to an empirical study on the learning willpower of impaired students, the majority of them possess high levels of learning willpower, which encourages them to become more motivated and enthusiastic about studying and makes it easier for them to withstand various temptations during the learning process. By strengthening learning willpower, one can increase learning motivation. **(Morina et al., 2018).**

III. RESEARCH GAP

The aforementioned study has provided evidence of the necessity for and dependence on digital technology, but it has also highlighted certain difficulties and potential solutions.

3.1 Objective

The primary goal of this study is to discover the factors that influence students' reliance on digital technology for educational purposes during challenging times.

To understand the demographics of Indian Students in context of digital dependency for education learning.

3.2 Research Methodology
- **Universe**- The Indore Division has been chosen to collect data.
- **Sampling Technique**- The technique of convenience sampling has been employed to acquire data.

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- **Sampling Unit**- Data is gathered from school and college students in a variety of fields.
- **Sampling Size**-Student respondents were 300.
- **Tools for Data Collection**- Through the use of a self-designed questionnaire, data have been gathered.
- **Tools for Data Analysis**-Data analysis has employed factor analysis as a tool.
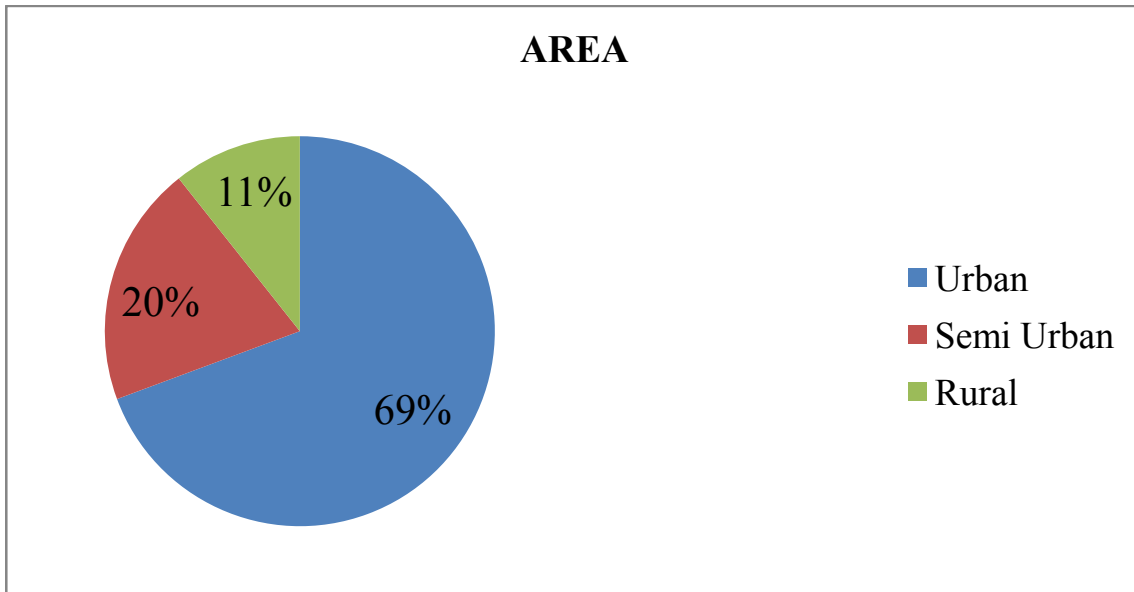
IV. RESULTS & INTERPRETATION

### BASED ON DEMOGRAPHIC VARIABLES
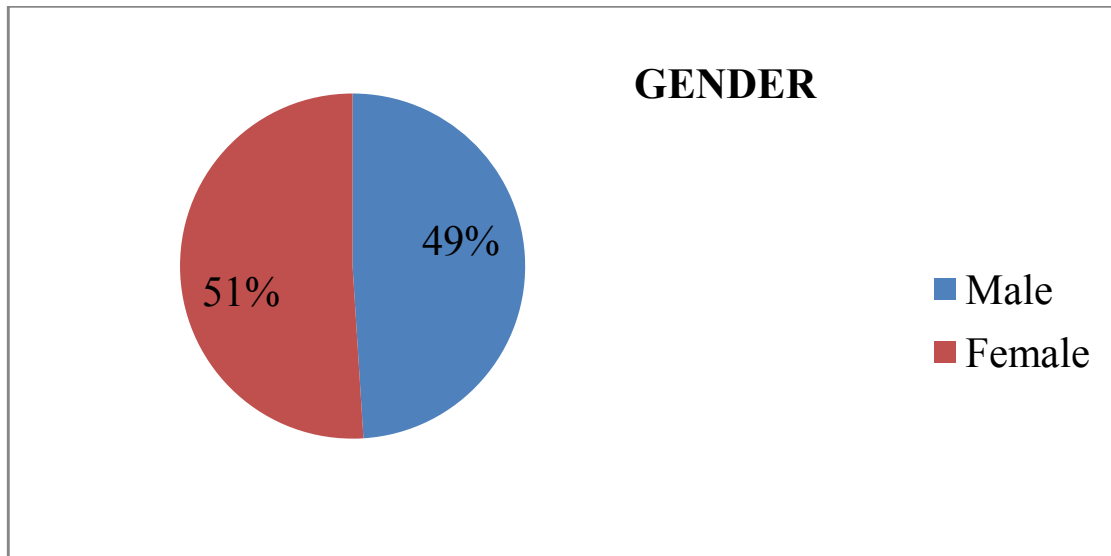
A questionnaire survey was undertaken, and responses were received from a total of 300 students, 49% of whom were men and 51% of whom were women.
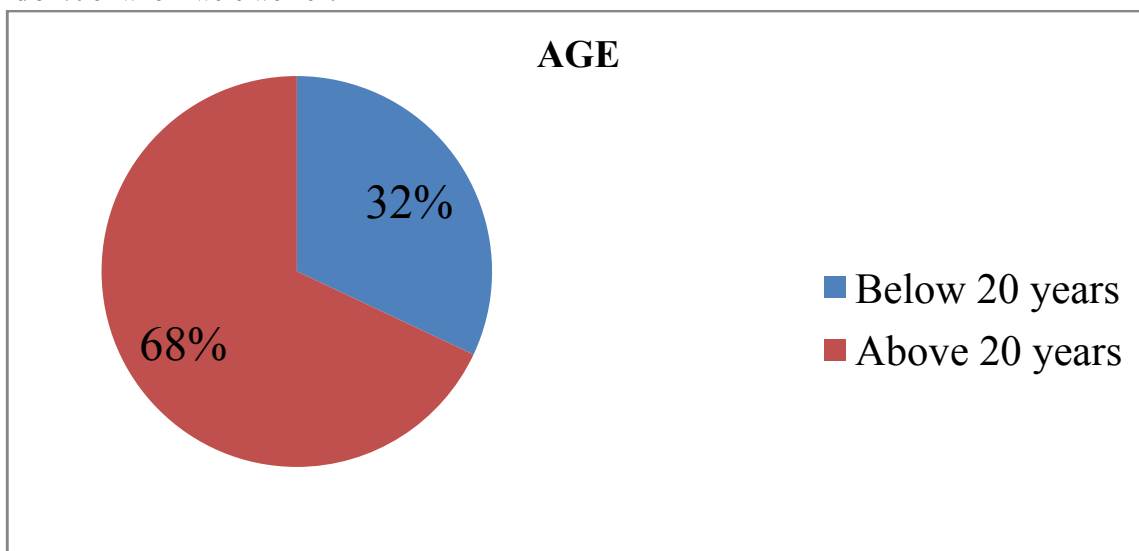

Of the 300 students, 32% were under 20 years old and heavily reliant on technology. The remaining 68% of responses came from students who were over 20 years old.

AREA

Sixty-nine percent of the total respondents (69%) are from metropolitan areas, twenty percent (20%) are from semi-urban areas, and the remaining eleven percent (11%) are from rural areas.

FREQUENCY OF USAGE
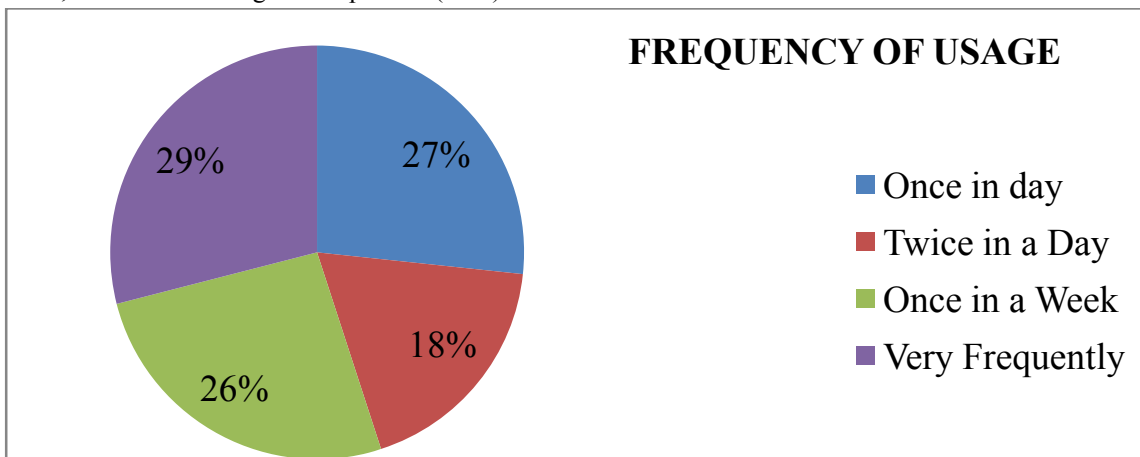
According to the results of the questionnaire survey, 27% of respondents use technology "once a day" on Edu-Learning, while 18% use it "twice a day," 26% use it "once a week," and the remaining 29% use it "very frequently."

Time Spend (per day)
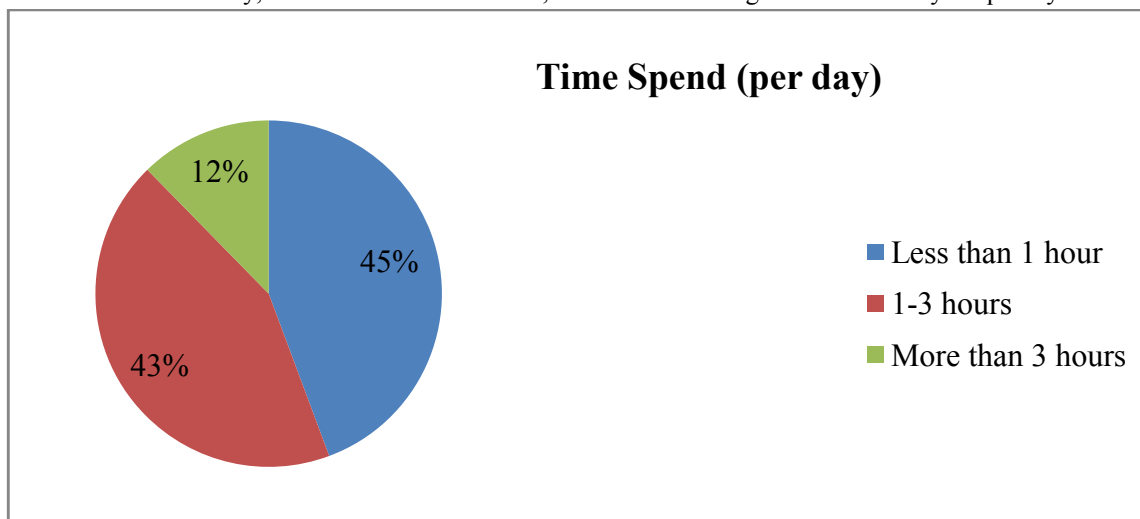
According to the questionnaire survey results depicted in the above figure, 43% of the 300 respondents are willing to spend '1-3 hours' per day on e-learning, while 45% of respondents are willing to spend 'less than 1 hour' per day. Only 12% of all respondents, however, said that they would be willing to dedicate "more than 3 hours" every day to e-learning.

FACTOR ANALYSIS: As a result of the factor analysis 43 items were finally classified into 8 factors namely:

Factor 1: Apparent Usefulness: The TAM defines apparent utility as the extent to which a person thinks that utilising a given technology would improve his or her ability to accomplish their jobs. In a similar vein, Mathwick et al. (2001) defined apparent usefulness as the degree to which a person believes a specific system will improve his or her performance at work.

Factors	Statements	Item Load	Factor Load
Apparent Usefulness	Helps me in Storing projects created digitally	0.683	**8.**574
	Accessibility Anywhere Anytime	0.641	
	Ease to share notes content	0.635	
	Collaborate shared learning projects	0.634	
	Provides ease of work	0.617	
	Ease in Creating Multimedia documents	0.6	
	Saves time	0.585	
	Helps in converting Files	0.579	
	Better Exchange of Knowledge	0.577	
	Creates more collaborative classroom environment	0.541	
	Helps in Collaboration with people outside the school	0.54	
	Helps in Preparing and Sharing group Projects	0.519	
	Infinite pool of learning Resources	0.503	
	Collecting and analyzing data	0.498	
	Practicing specific skills	0.422	

Factor 2: Digitization: Transforming information into a digital format is the process of digitization. As a result, a discrete group of points or samples are described by a string of integers that represent the object, image, sound, text, or signal.

Factors	Statements	Item Load	Factor Load
Digitization	Hard work has been Replaced by Smart work with Digitalization	0.67	3.519
	Revolutionary change in teaching pedagogy	0.631	
	Provide work from Manual to Automatic	0.626	
	Availability of Sufficient Resources tools and Software	0.621	
	Digitalization playing vital role in teachers up gradation	0.57	
	Virtual Digital world is more Comfortable	0.401	

Factor 3: Digital Media: Any form of media that has been encoded in a machine-readable format is considered digital. On digital electronics devices, digital media can be produced, watched, shared, altered, and archived.

Factors	Statements	Item Load	Factor Load
Digital Media	Digital Media is helpful in Quality learning	0.663	2.812
	Digital learning is effective for educating yourself	0.661	

Cost Effective	0.518	
It helps in learning and understanding in a better way	0.518	
Gives me broader perspective towards specific subject	0.452	

Factor 4: Productive: If you're productive, it indicates you put a lot of effort into something and generate a lot of it. The term "productive" can refer to anything that creates a lot of output, but it is also used to characterise a person's capacity to accomplish a lot of work. Instead, with e-learning, all the resources and tools are digital and pre-recorded, allowing for flexible training times.

Factors	Statements	Item Load	Factor Load
Productive& Creative	Persuade to be more Constructive	0.586	3.219
	Provides good technical support to deal with problems	0.577	
	Without digital media Learning is difficult	0.543	
	Encourages to do more creative work	0.526	
	Helps in Surveying	0.506	
	Increase the productivity of coursework	0.481	

Factor 5: Perceived Ease of Use: According to Davis (1989, p. 82), it describes "the extent to which a person believes that using a particular system would be free of effort." Given that effort is a limited resource, consumers are more likely to accept an application that they view as being simpler to use than another (Davis, 1989).

Factors	Statements	Item Load	Factor Load
Perceived Ease of Use	Helps in Research work	0.634	1.73
	In this crucial time of Social Distancing Digital Dependency	0.574	
	Ease of Searching and Sourcing	0.522	

Factor 6: Use of Technology hides Talent: Everyone has hidden abilities, and one of the most important things we can do to boost productivity is to find, develop, and utilize new skills and technologies. This will not only change how business is done, but will also make the most of employee potential.

Factors	Statements	Item Load	Factor Load
Use of Technology hides Talent	More likely to Distraction from other learning sources	0.743	1.84
	Sometimes results in Delaying in work	0.602	
	Suppress inner Talent and Creativity	0.495	

Factor 7: Sources of Information: Both analogue and digital methods, such as variouscombinations of telephone connections, telecourses, video conferencing, and computertransmissions, are used to supply information technology in distant education. Information technology is a reflection of this new environment in online learning programmes.

Factors	Statements	Item Load	Factor Load
Sources of Information	Unreliable sources can hinder the knowledge	0.611	1.659
	Digital technologies have the chances of plagiarism	0.59	
	Provides readily accessible information	0.458	

Factor 8: Techno-Savvy It indicates versed in or knowledgeable about technology or technological issues. Tech-savvy teachers contribute to the development of a pleasant learning environment where students are more engaged and like

their classes. The success of e-learning depends on teacher technology training, which makes it possible for the technological gap between students and teachers to diminish.

Factors	Statements	Item Load	Factor Load
Techno-Savvy	Helps in Enhance Communication with Experts	0.619	1.156
	Create documents or slide show presentations	0.537	

V. MAJOR FINDINGS AND CONCLUSION

According to the study, variables influencing students' use of digital resources for learning included their accessibility and convenience, competition from peers and norms of society, academic stress, and personal personality qualities. According to the report, while using digital tools for learning might be advantageous, educators must confront the dangers of digital dependency and encourage students to develop healthy digital habits. In controlling digital use for learning, the study also emphasises the significance of self-awareness and self-regulation.

Various factors have been identified such as apparent usefulness,Digitalisation, Digital media,Productive, Perceivedease, use of technology hides talent, source of information, techno savvy.

The study shows that students are less likely to spend more than three hours per day on e-learning platforms. whereas moderate response has been received from the people who responded are willing to spend '1-3 hours' on the Edu-Learning every day.

The study also shows that people are more likely to prefere-learning frequently. Whereas some of them even use this twice a day.

Research found out that e learning is found to be accessible source of learning to all the students overcoming geographical barrier.

e-learning have provided various opportunities to student to explore in field of learning by creating collaborative environment in the classroom.

The most evident transformation that has been changed promoting smart work rather than hard work. Digitalisation have made it easier for the students to get the resources available easily on the online e learning platforms and creating a more comfortable virtual digital world.

Quality learning is the goal. Students do have access to lectures so that they can refer it whenever required.

E learning is found to be more constructive and productive as it encourages to do more of the creative work by providing pools of opportunities.

Covid has led to the social distancing scenario in the world and e learning was the source bring the world back together and to continue sly learn something new and be productive.

E learning promotes Talent and skills acquisition rather than the traditional learning system that lacks in developing actual productive skills among the students.

Acquiring knowledge from the expert of the field is possible due to e learning as it provides an accessible platform for all irrespective of their geographical location.

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