

The Influence of Online Education on the Behavioral Patterns of University Students in India

R. Arun¹, Sundarapandiyan Natarajan², K. Sampath¹, Kiran Kumar Thoti³, R. Mahalakshmi⁴, K. Sivaperumal⁵

St. Joseph's College of Engineering, Chennai, India¹

Adithya Institute of Technology, Coimbatore, India²

St. Joseph's College of Engineering, Chennai, India¹

Department of Faculty of Entrepreneurship & Business, University, Malaysia³

Atlas Educational Institute, Corporate Office, Dubai, UAE⁴

SRM Institute of Science and Technology, Chennai 603203⁵

Corresponding author: R. Arun, Email: drarunr1123@gmail.com

E-learning is now a requirement in all educational institutions, including schools, colleges, and universities, because of the COVID-19 pandemic crisis. The use of online learning methods requires teachers and students to adapt to maintain business as usual despite several challenges. Additionally, it alters how students behave. Some of them struggle with anxiety and sadness. This essay investigates how behavior of students is affected by online learning. Teaching staff, including parents, recommend that the government sector take initiatives to assist students who have limited access to the internet and devices which are the primary requirements to be able to participate in online classes while also boosting student engagement in virtual learning, particularly during this crucial pandemic.

Keywords: Online learning, Covid-19, Course structure, Instructor feedback, Self-motivation, Learning style, Interaction.

1. Introduction

Education is essential for the development of people, organizations, and nations. It is a technology that facilitates the emergence of connections across settings all over the world. The primary determinant of a teacher's quality is the outcomes of the educational system. The ability to understand the lecture notes is therefore dependent upon an open educational system. It is necessary to evaluate students' efficacy because they are the tool's intended customers (in this case, education). The development of knowledge and skills depends on higher education of the greatest caliber. The cornerstones of an effective education are the visible delivery of the students' components and the visual course materials.

The visible delivery of the students' components and the visual course materials are the foundations of effective education. All emerging nations must make sure that their educational institutions are of the greatest caliber to adequately prepare students for a globally competitive environment. Educational institutions must place a strong emphasis on engaging students in research, creativity, and innovation in addition to teaching. Educational institutions must provide a stimulating learning environment and collaborate closely with businesses to deliver cutting-edge concepts to a society that is always evolving. Thus, online education has signaled a turning point in the majority of countries educational systems, particularly in India.

Online learning has been an idea since the 1960s, but it wasn't until the Internet and World Wide Web were invented that it took off. The study of internet technology, the cornerstone of this kind of learning, has increased, according to Adnan, M., & Anwar, K[1], who has been monitoring the evolution of online learning since the early 2000s. The coronavirus outbreak in 2019 increased public awareness of and interest in online learning. Online learning has a significant impact on the academic environment. Even with the COVID-19 outbreak, it has been essential to make sure that education and learning have continued.

Additionally, the switch from on-campus to online education was made quickly. Students had to adapt to a noticeably new style of education when all of the lesson plans were offered online because some academic institutions now decided to offer tuition via digital sites, but many did not. Given that these "virtual educational dictators" are only expected to be in place for a brief time, the primary sector must assess the results and success or failure of this change in delivery method. Emergency Online Teaching (EOT), which is provided in reaction to disasters like COVID-19, is different from a very well online learning experience. While some colleges chose to discontinue charging for classes, others opted to use a form of "online" instruction that was carefully marketed as remote teaching in an emergency. Students' adaptive responses to learning situations, both positive and negative, reveal their level of motivation to learn. Planning, task management, and perseverance are viewed as positive or adaptive behaviors as opposed to self-handicapping and other undesirable behaviors. Lastly, independent variables included in the study are course structure, instructor feedback, self-motivation, learning style, interaction, and instructor facilitation as potential determinants of online learning.

2. Literature Review

2.1 Online Learning, Course Structure, Instructor Feedback, Self-Motivation, Learning Style and Interaction (Independent Variables)

According to a significant number of authors, online learning is simply having access to educational opportunities while utilizing specific types of electronic devices Altuwairqi, K., Jarraya, S.K., Allinjawi, A. et al.[2]. Students have access to a wide range of online information resources, and the teacher also distributes the study materials digitally. Students can select from a wide range of disciplines in a virtual classroom based on their interests, in contrast to a traditional classroom. According to Conrad, online education is a developing kind of remote learning that increases access to educational possibilities for

students who are labelled as unusual and underprivileged. When the learner responds to a request for more information, the computer displays the proper content.

It looks at the many learning environments that universities have used, such as regular classrooms, online courses, broadcast classes, and most recently, internet-based distance education Richard, [3]The study focuses on why students select online learning as well as how well-liked and difficult certain courses are. The study found that students prefer online learning because it makes managing their other responsibilities easier and because they think they achieve better results there. However, creating a hybrid learning environment does suggest that integrating some aspects of online learning into conventional classes might have some educational advantages . Online learning might be ideal for a senior student body or commuter campuses, but it may not be acceptable for all students in rich learning contexts. Online learning is unable to be beneficial for younger students who live on campus because it is not their major source of instruction.

Thoti, K. K. [4]stated that the study's overarching goal is to learn more about the factors that influence young people's decision to become entrepreneurs. A growing number of young people are venturing out on their own as entrepreneurs in search of greater freedom, expression, and financial security. Young people's access to resources, cultural values, education, social and economic environment, and personal attributes are the factors that are highlighted in this literature review as contributing to their decisions to pursue entrepreneurship. This article discusses several challenges faced by young entrepreneurs, including a lack of expertise, inadequate financial resources, and regulatory hurdles. Undergraduates from Kelantan University participated in the study, which included ordinal and nominal scales in its question formulation. A correlation between the variables may be checked using the corrective analysis. For today's youth to succeed in the fast-paced, cutthroat corporate world, the research suggests implementing programmatic interventions.

Alzahrani, M [5] stated that it is discussed how native digitals vary from digital immigrants in that they are more closely associated with contemporary technology. The cognitive theory of multitasking encourages logical cognitive relationships based on multimedia material, and online learning is emphasized as a method of instruction that involves both online and offline applications. Changing the method of instruction and the way training is designed is necessary for online learning to be as successful as traditional learning. Some aspects of studying online may become standard as more students choose to take courses online Orakwue& Teng, [6]. In the article, the issue of student mental strain while employing multimedia in online training and e-learning is covered. Experts are looking for solutions to this issue as well as practical strategies for including new technologies in the classroom. The article also emphasizes how comfortable the younger generation is with online interaction and the benefits of e-learning systems.

As a result of new technologies becoming important instruments for achievement in a knowledge-based society, this illustrates how employment and education are changing. People want to use these technologies to increase their knowledge and skills, which will create a new method of learning Abdurraheem, [7]. Due to the increased usage of technology and the Internet, online learning in online settings has gained popularity. The context of online learning is personalized and individualized and includes independent coaching, online events, coaching, training, teamwork, evaluations, skill maps, creator tools, e-stores, and learning management systems. Although online learning is quicker and more obtainable, there are certain disadvantages, including a lack of social engagement and technological errors. There has been no conclusion reached although some researchers believe that e-learning is more successful than traditional learning. The adjustment and blending of the latest innovations into education must be guided by research if online learning is to be successful among students.

The global education system is progressively incorporating online learning and classes. Through the internet, everyone may now simply and conveniently access education. [8], it covers how the Internet

and global opportunities have increased the popularity of online learning, which uses technology to deliver education and training. It also demonstrates the value of technology and in-person instruction within a conventional structure of learning when learning online. Students and instructors will eventually decide if online learning is more beneficial than traditional learning on a broad scale. Academic institutions need to be upfront and forthright about the services they are providing the students. Tutors should be knowledgeable about the most recent software and online learning tools, and they should be eager to learn more. Everyone should keep in mind that it is something to learn and not be taken for granted Guitton, [9]. Students are evaluating their education more critically as a result of competitiveness. Students taking online classes want to be certain they are learning from the best professor's possible, many of whom they won't get to meet in person. Students in an online classroom must therefore heavily depend on other psychological factors since there are no physical or visual indicators present.

The mandatory usage of online learning during the COVID-19 epidemic is investigated by universities and other organizations worldwide. Faculty members obtained online training to enable them to advise students remotely over the Internet as traditional teaching methods become impractical Moawad, [10]. It also emphasizes how important it is to create a national plan for continuing education that allows for the maintenance of the educational system through online training. The pandemic presented a significant challenge for colleges and universities when attempting to switch every student and employee to digital networks on the same day, such as Whiteboard or Blackboard to Microsoft Teams and Google Meet, necessitating the rapid development of programs that facilitate online educational activities as well as rapid coaching for staff and students Chaka, [11]. Additionally, it highlights the advantages of online education over traditional schooling as well as how the COVID-19 pandemic has increased student commitment, involvement, and success in online courses. Online learning can be a great option for students looking to further their education if the right facilities and conditions are available. Although it may be challenging for professors to keep up with the quick changes in technology and effectively communicate with students online.

For academic administrators, staff, and students, the academic year 2020–2021 was one of the most difficult periods. The obstacles brought on by the raging epidemic cannot be ignored, notwithstanding high vaccination rates, some forms of in-person graduation, and the opportunity to resume some face-to-face instruction Dorn et al., [12]. While there are many advantages to taking classes on-campus, it cannot be overlooked how quickly colleges, universities, and other higher education institutions switched to online learning to keep up with demand during the COVID-19 crisis Singh et al., [13]. One of the most frequently mentioned advantages of online learning is flexibility. Other advantages include the ability to work at your own pace and time, an enjoyable learning environment, self-directed learning, cost efficiency, and the capacity to generate in-depth discussions. The academic community is working to give students more online learning options as COVID-19 instances rise.

It proves how important education is and exercise provided by online media during a pandemic. The majority of students can adjust to online learning well, but they also show an interest in combining online and offline learning. For students who prefer online learning over physical classroom instruction, the government also offers rules. Students are more engaged in activities at home as a result of social withdrawal, which has turned daily physical exercise into a routine Fajar, [14]. The study focuses on the simplicity of using networks like WhatsApp groups and Google Forms, as well as how online learning is becoming more and more popular owing to the COVID-19 epidemic. In physical education, where professors can make pupils move, the lecture-teacher approach is thought to be beneficial. However, there are also negatives to online learning, such as the increased workload and the need for a reliable internet connection. Despite these difficulties, studies have shown that learning online can be just as successful as traditional education, if not more so, and can also, over time, boost student productivity Chen et al., [15].

The study covers the effect of online education on academic performance. It demonstrates how online learning is gaining acceptance across the world and how people have favorable opinions on it. Universities and colleges view online learning as a useful tool because research has proven show students who take part perform greater than those that attend ordinary face-to-face classes Rahimi M, [16]. On its effect on academic performance, there are, however, unreliable results; some studies claim that there is no difference, while others report beneficial results. In contrast to its disadvantages, which include a lack of motivation and interaction skill development, online learning has the benefits of the versatility of access and simplicity of access to materials. Live responses with teachers and guidance from teachers in organizing students' studies are two advantages of face-to-face learning. To help or enhance learning, online learning involves the delivery of courses over the Internet as opposed to traditional educational environments. Removing teachers from their traditional gatekeeper roles and replacing them with facilitator roles, flexible, anywhere-anytime learning empowers individual learners.

Since "behavior is one of the dominant discourses underlying schooling," concerns about student behavior are rapidly becoming a shared issue Braun,. While most teachers put a lot of time and effort into keeping students from interfering with the learning environment, their tactics typically involve gaining control over them to get what they want Al-Adwan,. Because these are essential to developing educational settings wherein behaviors are more productive, it realizes the need of creating classroom environments that encourage academic engagement. In between being removed from school, there is also the option of permanent exclusion. To be balanced and reasonable or to help students make educated choices, teachers utilize step systems. Policies frequently advise teachers to concentrate on strategies, including step systems, to assist them achieve "effective classroom control" Maguire,.

Although more undergrads are taking online classes than ever before Valentino, [17], it's currently questionable whether this trend is driven by students' perceptions or actual experiences. Online courses may be challenging for students who lack the necessary self-regulation skills. Teaching students the abilities required for efficient online learning settings must be a part of academic institutions' long-term strategic objectives. Whether or not they have previously completed an online course, students generally view online instruction as deficient in engagement and connection with professors Solomon,. Online discussion classes may not be viewed as having the same value as conversations in-person by students, and this perception may be a result of misconceptions about online education. On the other hand, not all in-person classes have interactive components, and a lot of online classes use techniques to make an interactive learning environment.

This demonstrates how more and more online-based alternative certification programs exist for teacher training. To prepare special education teachers, they need to comprehend the efficiency of online learning. In higher education, new course styles have emerged as a result of the use of technology, including online instruction with discussion forums or email communication between students and professors Elfaki, [18]. Despite this, there are still few actual investigations analyzing online teaching methods, notably for special education educator preparation programs. Due to conversations with others in the group throughout the online discussion component, the study discovered that some students learned more knowledge than what was specified in the syllabus objectives. Students said they felt confident taking classes online and were interacting more online. The absence of communication between the teachers and other students throughout the virtual element of the session, however, bothered some students. Overall, students who took both online and traditional classes did not choose one type of learning over the other and were willing to take more online classes in the future Ruiz,.

Many students find lessons and homework challenging to understand, yet a large number of students choose online classes because of their flexibility and convenience. Students think it would be advantageous to offer more online courses. The question of whether online classes are less difficult as well as tough than physical classes is up for debate. It has been found that men and women perceive online courses differently in terms of their ease, but additional study is needed to determine why. In

general, universities need to focus on offering more flexible, technology-focused education and removing barriers to its efficient application Allen,. The study offers useful data for lecturers on how minority students in minority-serving communities may see online courses in comparison to in-person courses. According to one study, students who took the course online expressed much lower levels of satisfaction and preferred the conventional method. Virtual teaming with the capacity for self-learning are two examples of elements that can be uncommon but affect how effective each style of teaching is Chua,.

Lally, [19] it is discussed how undergraduate management courses were not given much attention in earlier studies comparing online and traditional courses. In addition, the study found that women perform equally well in online courses as men. Research indicates that the quality of online education is improving, even though administrators and employers still have unfavorable impressions of it. This is true even though some people still think that online education is problematic because of a lack of discipline . With an emphasis on undergraduate education, this article examines a study that analyses the results of students in online and traditional business courses. The study also discovered that women do as least as well as men in online courses, indicating that any prior disadvantage for women in online courses might have faded away. The study's findings deny the idea that the absence of discipline placed online students at a disadvantage and imply the fact that there might be alternatives in place for courses taken online that are advantageous to students.

The article describes how online learning technologies are employed in educational institutions to deliver undergraduate and graduate courses. While employing online learning alternatives has numerous advantages for schools, universities, and potential students, there are also several significant obstacles that must be overcome if this teaching strategy is to be successful. They conducted a study contrasting conventional face-to-face learning strategies with online learning methods while instructing two master's degree programs Zhang Z.,[20]. They found that independent and skilled learners, flexible learning resources, student control over learning pace, and evaluation designed to promote higher learner reflection are some factors that enhance student performance for online learners. To employ teaching practices that are effective for each type of learner, it is important to understand them.

The essay discusses how the global coronavirus outbreak has impacted education and compelled both teachers and students to become acclimated to online learning. The study focuses on how students perceive both regular classroom instruction and online education, as well as whether they would choose to return to it. The results highlight the advantages and disadvantages of each higher education option while also revealing new data on how education is changing. The study does recognize the value of in-person interactions and the fact that online learning cannot take the place of conventional education. The study concludes that there may be limitations to the full reintroduction of in-person instruction in the future and recommends that prospective alternatives for the educational process be viewed from the perspective of the student. Given that online learning has benefits and drawbacks, as demonstrated by the epidemic, it may be time to consider hybrid education as the way forward from the standpoint of a teacher. However, given people's hectic schedules, the benefits of online learning—such as its accessibility, practicality, and affordability—might become more important.

The article discusses how more and more higher education programs are incorporating distance learning and how many schools now offer whole degree programs online. There are advantages and disadvantages to online education, but many institutions are happy to switch from more traditional forms of education to this more contemporary one. However, teachers must also overcome challenges as they get acquainted to the newest technologies and instructional methods. It also included a list of numerous studies' findings on the effectiveness of online learning, who also found that older female students tended to gain from it despite there being no difference in their grades between online and on-campus sessions. When two-way interactive television was employed, Esmaili, examined its use and

found no appreciable differences in test results between on-campus and remote site students. In a similar vein, it asserted that online students outperformed their campus counterparts.

According to Ramdaniet al. this online learning tool can have a big positive impact on people's lives and offer a great deal of ease when used. The development of media for Android is expected to raise student literacy. Students can concentrate on content when they use learning resources. Animated music, video, text, and images are all included in learning materials so that users can interact with the features that are offered. The very high results of learning evaluation and excellent learning activities, which state that respondents with a percentage of 80% noted that interactive multimedia was exciting and fun, demonstrate the potential for interactive media to provide a positive response and increase student interest in learning.

As the globe continues to fight to contain the virus's deadly spread, schools and other learning environments were compelled to transition to totally online learning. Online learning is a term used to describe a learning environment where synchronous and asynchronous academic programme management and instructional delivery are done via the Internet and other technological means Usher & Barak, [21]Asynchronous online learning takes place without a set timetable and involves real-time interactions between the teacher and the students Singh & Thurman,. Synchronous online learning involves real-time interactions between the teacher and the students. Online learning has assumed the character of temporary remote instruction that responds to an emergency in the context of the COVID-19 pandemic.

Online or remote education indicates that learners need a delivery method because they are geographically separated from their teachers. Technology mediates interactions between students and teachers, and the layout of learning environments (the area where learning takes place, for example) can have a big impact on how well students learn Gonzalez et al., Effective online teaching comes from thorough instructional design and planning, which has been researched for decades Hodges et al. However, many students had to switch from in-person instruction to an online learning environment during the semester because of the COVID-19 pandemic. People's ability to process information is limited, and the use of many learning modalities may lead to cognitive overload, which could hinder one's capacity to adequately acquire new material.

To stop the virus from spreading, the majority of education sectors decided to conduct teaching and learning online. Many academic institutions who were previously reticent to abandon their traditional pedagogical approach were left with no choice but to entirely transition to online teaching and learning, according to Dhawan. Due to the pandemic, students were unable to attend class, thus the course was entirely delivered online. Students frequently do not interact physically with the outside world, which in some way affects their psychological state P, S., Prakash, [22]. Most governments encourage people who have mental health issues to seek assistance from professionals in their community or through government-sponsored programmes. As an illustration, Karim noted that the Indian Ministry of Women, Family, and Community Development established a hotline as a project to offer psychological support for people who are impacted by the stay-home order that was extended to stop the initial spread of the Covid-19 outbreak. Those experiencing emotional breakdowns because of the MCO can contact the "Talian Kasih" hotline to ask for help and emotional support.

The Movement Control Order (MCO) was implemented in India, as it was in many other nations, to flatten the curve of the Covid-19 distribution. All public and private universities in India will perform teaching and learning activities via online learning until the end of December 2020, according to a ministry announcement The academic fraternity handled MCO's issues with a lot of fortitude, agility, and initiative. In a span of two weeks, technology was used to create lessons, projects, group work, presentations, and assessments. There may be drawbacks such as a lack of human touch, such as sensing students' incomprehension via facial expressions, cracking small jokes to lighten mood, student engagement and interaction, which can be done more effectively in traditional face-to-face learning,

even though it is undeniable that online learning is deemed the best solution to ensure continuity in learning in the era of what has been coined the "new norm. M. Umamaheswari, [23] Students now face several difficulties, including the lack of social interaction and the difficulty to form the study groups they once benefited from.

The study compares online learning, or e-learning, with traditional learning, which includes face-to-face interactions between students and teachers. Due to the necessity for a physical location and the expense of the professors, traditional education can be pricey. R. Arun, [24] However, using wireless communication networks, online learning can be a more affordable option. The report examines the benefits and drawbacks of both approaches and provides statistical evidence to support its analysis. It also emphasizes the requirement for developing strategies to maintain learners' motivation in the absence of an instructor to assist in the learning process. The preference between the two is based on each person's interests and learning preferences. Younger students with no prior history may find it tough owing to the lack of teacher interaction, however, older students with past educational experience and motivation for themselves may favor online learning. Additionally, studies show that group learning is more effective than individual learning and that learning without application is more difficult.

Based on the article, more and more students are selecting online courses over traditional ones because they believe the latter to be restricted, unworkable, and rigid. Schools today provide efficient classroom instruction thanks to the development of technology. Institutions of higher learning have been compelled to reconsider how they distribute course material as a result. The accessibility of online learning for students with hectic schedules and the potential for global course delivery are just two of its many benefits. It still has some shortcomings, though, like a little sense of community. More students are choosing online learning to finish their degrees despite those disadvantages. Based on final marks that considered tests, assignments, participation in class, and research project grades, the study assessed how well students performed in the environmental science course Lorenzo-Alvarez et al., [25]. No obvious disparities across gender and class ranks were discovered between online and offline educational approaches, despite the method of learning.

3. Research Objectives

- a. To determine the behavior patterns of students in attending online learning
- b. To determine how online learning affects students' behavior.
- c. To determine the significant relationship between students', prefer online or traditional learning.

3.1 Research Problem Statement

Education standards around the world differ drastically from country to country and have changed a lot over time. In addition, we focused on higher education in India because COVID-19 has recently made a big difference in how students are taught. Parents and students alike are among the many members of the community that are concerned about the quality of online education in comparison to in-person instruction. Even though travel restrictions and institution closures are having an influence on traditional learning, students are beginning to use online learning as a substitute way to further their education. Students must complete their online courses in their home states by April 2020, according to Indian government regulations.

Following that, students face several difficulties or problems as a result of online learning in many ways. The first is how hard it is for students to adapt to new teaching techniques. Students have a difficult time adjusting when traditional classroom approaches are replaced by online ones. For students and instructors who have only ever experienced a university setting, however, this arrangement might not be comfortable. When students go from face-to-face training to online instruction, their learning is

significantly affected. Students have even additional challenge because of government regulations that require them to stay at home to participate in their online classes. Unfortunately, educators cannot expect that all their students will have an ideal study environment in their primary residence. 80% of students, it has been found, lack the necessary configurations to participate in their online classes. In a study, it was discovered that students who practice online learning at home commonly get distracted. Students who live in large households or those without access to the internet at home are two examples.

Most students take online education lightly, which reduces their desire to pay attentive attention throughout lectures. Most of them continue to attend their online classes as usual, but they are not paying as close attention. The student's disinterest in participating in online classes is the key reason for this. On the other hand, students struggle to complete their group projects. Students frequently include peers they have never met in person in groups for group work. Students choose the members of their groups at random from their classmates as a result. Students still struggle to conclude their meetings and turn in their projects on time, despite having access to internet discussion boards. They have a lot of "free riders" in their group, which causes this.

The efficiency of the assignments the students complete in groups will therefore be affected. Students' stress levels will only rise because of their academic workload and the negative attitudes of their group mates. Online group member selection by students has a few problems, one of which is this. Therefore, there are some challenges for online students.

4. Hypothesis Statement

Hypothesis 1: Effective use of online learning can boost students' academic achievement and enjoyment.

Hypothesis 2: A positive learning environment from online education resulted in improved student behavior.

Hypothesis 3: Online learning can help students' behavior by developing their soft skills when utilizing technology and the Internet.

Hypothesis 4: Due to the high levels of engagement throughout lessons, e-learning has an impact on students' behavior.

5. Research Method

An exhaustive search of scholarly databases such as Scopus will be performed, including recently published publications. Online learning, course structure, instructor feedback, self-motivation, learning style, interaction are all terms that will be used in the search strategy. According to the estimated count from the year 2019 to the year 2023 there are 97934 articles from Scopus, the initial search is projected to return many publications.

Predetermined inclusion and exclusion criteria will be used in the selection process for the retrieved articles. Studies published in English and peer-reviewed that examine the effects of online learning towards university students' behavior pattern may meet the inclusion criteria. Research that isn't specifically about the effects of online learning towards students University behavior pattern won't be considered.

Extraction of Data: Information such as authors, publication year, the study aims and methods, significant findings and implications will be culled from the chosen papers. For uniformity and precision, we will develop a standardized data extraction form. The quality and relevance of the articles chosen will be evaluated based on predetermined criteria such as the appropriateness of the research topic, the appropriateness of the technique, and the appropriateness of data analysis. This evaluation will assist in guaranteeing that only high-quality papers are included in the meta-analysis.

Data analysis: A thematic analysis strategy will be used to analyze the gathered data. This research aims to identify and integrate the findings and significant issues about the effects of online learning towards students University behavior pattern and its problem and limitations.

Findings will be integrated and reported in a way that answers the research questions. Key applications, benefits, constraints and suggestions for future research and development will all be covered in the review, as well as the overall effect of online learning towards students University behavior pattern. The findings will be presented in a clear and organized format.

6. Analysis

6.1 Defining an Appropriate Question

A clear explanation is required when defining questions for a systematic review. The question is better framed if it is asked repeatedly: "Is there a significant relationship between user friendliness in online learning?" When assessing systematic reviews, we should look to see if the commentary answers the explicitly stated issues and provides details on the intervention, target populations, and outcomes that are of interest to us. The review objective must flow naturally from the question and be plainly defined.

6.2 Searching the Literature

We will thoroughly search both published and unpublished literature for all pertinent publications and relevant investigations. Randomized comparative tests are typically employed in a systematic assessment of treatment and preventative interventions as they are the least biased. Accessing other electronic databases and non-English language sources must be part of searches.

6.3 Selecting the studies for inclusion in the review

The components of the question (kind of intervention, population, and result) are utilized to generate a set of inclusion criteria for studies in the review once a clear question for a systematic review has been developed. The studies found by the search technique are then evaluated considering these standards to see if they ought to be included in the review. It is crucial to employ a systematic and standardized method to the evaluation of research to prevent study selection that is skewed by preconceived notions. The selection of studies should ideally be done independently by two people.

6.4 Assessing and Reporting the Quality of Included Studies

The quality or validity of the studies that were included in the review are discussed once all potentially pertinent research have been found and evaluated for inclusion. This should be presented in an understandable manner so that we can assess the reliability of the research that contributed the review's data.

6.5 Combining the Results

The results from each of the included studies can then, if appropriate, be combined to create a summary assessment of the intervention's overall effect. This collection is sometimes qualitative (i.e., detailed summaries of the included research), but most often it is a quantitative analysis utilizing meta-analysis. Only comparable studies should be used for meta-analysis in terms of population, outcome, and intervention.

6.6 Placing the findings in context

The results from a meta-analysis of a minimally biased sample of research should be attempted to be contextualized in a systematic review. The discussion should cover topics including the caliber and heterogeneity (difference in the treatment effect between research) of the included studies, the likelihood of bias and chance, and the application of the findings.

7. Results Discussion

7.1 Visualization topic area using VOSviewer

Five clusters (red, blue, yellow, green, and purple) emerged during the VOSviewer analysis, illustrating the connections between various topics. Three distinct visualizations, including network visualization (Figure 1), overlay visualization (Figure 2), and density visualization (Figure 3), can be used by VOSviewer to display bibliometric mapping. Colored circles served as labels for the keywords. The circle's size has a positive correlation with the frequency of keywords in abstracts and titles. As a result, the size of letters and circles was based on how frequently they occurred. The letters and circles get bigger the more frequently a keyword appears.

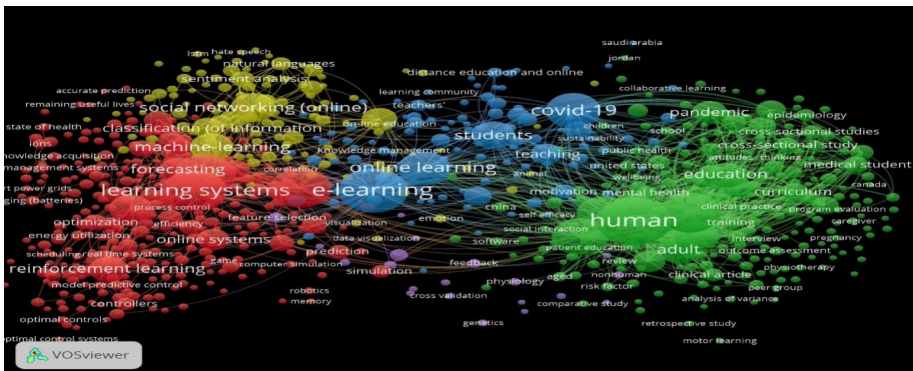


Figure 1: Visualization topic area using VOSviewer using network visualization.

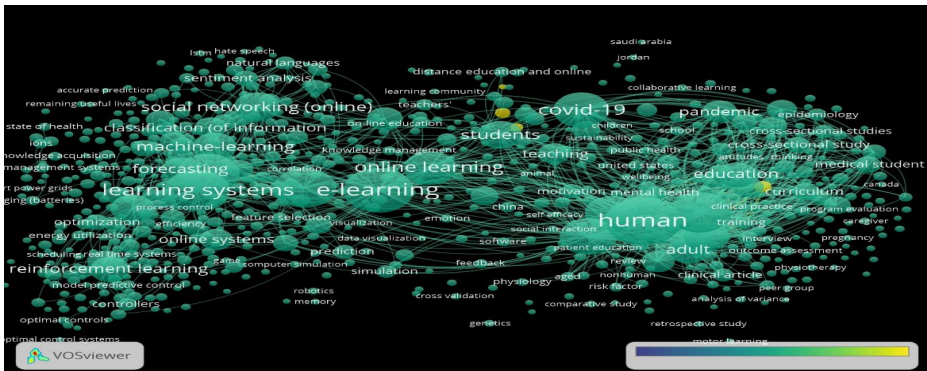


Figure 2: Visualization topic area using VOSviewer using overlay visualization.

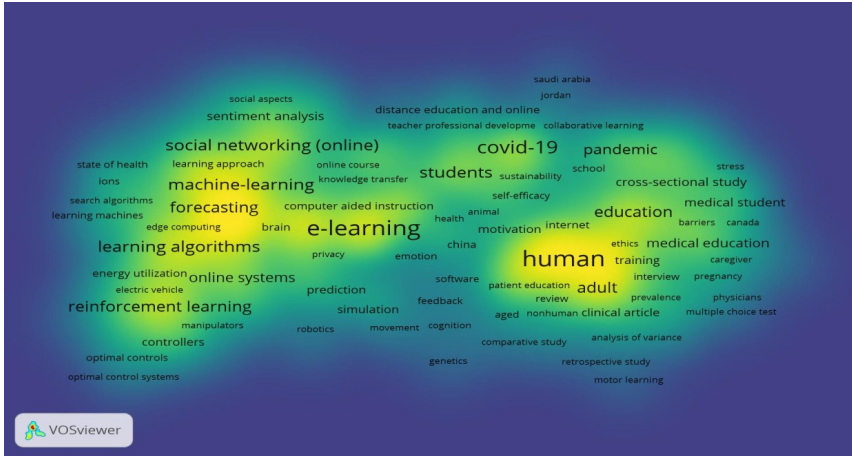


Figure 3: Visualization topic area using VOSviewer using density visualization.

Figure 1. shows clusters in each of the topic areas studied. The keywords online learning, students, and covid-19 are in the same cluster (blue area). This shows that there is a close relationship between them. Meanwhile, Figure 2, shows the trend from year to year related to this research. It is worth noting that this online learning at the end of 2023 and the number not increased rapidly in 2023. Meanwhile, Figure 3 shows the depth of research, replying that the more concentrated the colors that appear and the more research increases in number.

Figure 1 – 3, the keywords that often appeared were online learning, students, covid-19, day, and year. From these data, we can search the novelty online learning. For example, research related to the online learning process during the covid-19 outbreak is still little done by another research. To that end, research can contribute to tackling the Covid outbreak by conducting studies on the use of technology for learning.

The analysis to be carried out in the topic of the use of technology in learning can also be viewed from the number of studies being carried out by other researchers. From Figure 2, it appears that both learning, and technology show relatively small numbers compared to public health and laboratory.

8. Conclusion and Recommendations

The impact of online learning on Indian university students' behavior has been demonstrated by numerous studies. This is in keeping with Sujarwo et al.'s [26] assertion that students can readily adopt learning practices everywhere because they are not limited by time or space. For students with good internet connectivity, online education appears to be the most advantageous choice for teaching and learning during the Covid-19 pandemic. But there are drawbacks to online learning Aboagye et al., [27]. The insufficient networks and continual usage of mobile devices, for instance, make it difficult for students to access online learning. They miss out on the lessons as a result, which has an impact on their academic performance. It is recommended that the public sector take action to assist students who lack the devices and a bad internet connection that are necessary to enroll in online courses ArunR [28]. Due to their academic success, it will also lower the proportion of pupils with mental disabilities. In conclusion, this review study emphasizes the difficulties educators and students encounter when implementing online learning and getting quick behavior changes from students.

References

- [1] Adnan, M., & Anwar, K. (2020). Online Learning Amid the COVID-19 Pandemic: Students' Perspective. *Journal of Pedagogical Sociology and Psychology*, 2(1), 7.
- [2] Altuwairqi, K., Jarraya, S.K., Allinjawi, A. et al. Student behavior analysis to measure engagement levels in online learning environments. *SIViP* 15, 1387–1395 (2021).<https://doi.org/10.1007/s11760-021-01869-7>
- [3] A review of psychological impact on students online learning during COVID-19 in Malaysia. (2021, June 1). *SCIRP Open Access*. <https://www.scirp.org/journal/paperinformation.aspx?paperid=109894>
- [4] Thoti, K. K. (2023). Factors Impacts the Students to Choose Entrepreneurship as their Career of Choice in India. Published in *International Journal of Multidisciplinary Research and Analysis, An Open Access Journal*, 6(04).
- [5] Alzahrani, M. (2022). Traditional Learning Compared to Online Learning During the COVID-19 Pandemic: Lessons Learned from Faculty's Perspectives. *Sage Journals*. 12(2).<https://doi.org/10.1177/21582440221091720>
- [6] Apriyanto, R., & S, A. (2021). Effectiveness Of Online Learning and Physical Activities Study in Physical Education During Pandemic Covid 19. *Jurnal Ilmiah Pendidikan Jasmani*. 5(1), 64-70.<https://doi.org/10.33369/jk.v5i1.14264>
- [7] Elfaki, N. K., Abdulraheem, I., & Abdulrahim, R. (2019). Impact of E-Learning Vs Traditional Learning on Students' Performance and Attitude. *International Medical Journal*. 24(3), 225-233.
- [8] Arumugam, T., Arun, R., Natarajan, S., Thoti, K. K., Shanthi, P., & Kommuri, U. K. (2024). Unlocking the Power of Artificial Intelligence and Machine Learning in Transforming Marketing as We Know It. In S. Singh, S. Rajest, S. Hadoussa, A. Obaid, & R. Regin (Eds.), *Data-Driven Intelligent Business Sustainability* (pp. 60-74). IGI Global. <https://doi.org/10.4018/979-8-3693-0049-7.ch005>
- [9] Bapat, G. S., Chitnis, R. M., & Subbarao, P. S. (2022). The state of "Innovation" and "Entrepreneurship" in India-A Post Pandemic Bibliometric Analysis. *Journal of Positive School Psychology*, 6820-6826.
- [10] Gherhes, V., Stoian, C. E., & Farcasiu, M. A. (2021). E-Learning vs. Face-To-Face Learning: Analyzing Students' Preferences and Behaviors. *Sustainability*. 13(8), 4381.<https://doi.org/10.3390/su13084381>
- [11] Hanafy SM, Jumaa MI, Arafa MA. (2021). A Comparative Study of Online Learning in Response to the Coronavirus Disease 2019 Pandemic Versus Conventional Learning. *Saudi Med J*. 42(3), 324-331. <https://doi.org/10.15537/smj.2021.42.3.20200741>
- [12] Hollister, B., Nair, P., Hill-Lindsay, S., & Chukoskie, L. (May 2022). Engagement in Online Learning: Student Attitudes and Behavior During COVID-19. *Frontiers in Education*, 7.<https://doi.org/10.3389/educ.2022.851019>
- [13] Illie, V., & Frasinianu, E. S. (2019). Traditional Learning Versus E-Learning. *Social & Behavioral Sciences*.<https://doi.org/10.15405/epsbs.2019.08.03.146>
- [14] Illescas, M. K. A., Ong, A. K. S., & German, J. D. (2023). Online or Traditional Learning at the Near End of the Pandemic: Assessment of Students' Intentions to Pursue Online Learning in the Philippines. *Journal of Sustainability*. 15(8), 6611. <https://doi.org/10.3390/su15086611>
- [15] Jin, Y. Q., Lin, C. L., Zhao, Q., Yu, S. W., & Su, Y. S. (2021). A study on Traditional Teaching Method Transferring to E-Learning Under the Covid-19 Pandemic: From Chinese Students' Perspectives. *Frontiers in Psychology*. 12, Article 632787 <https://doi.org/10.3389/fpsyg.2021.632787>
- [16] Makarova, E. (2021). Effectiveness of Traditional and Online Learning: Comparative Analysis from the Student Perspective. *SHS Web of Conferences*.<https://doi.org/10.1051/shsconf/20219901019>
- [17] Nalini, G. K., Deepak, P., Neelamma, P., Sahana, G. N., & Jayashree, V. N. (2019). Effectiveness of digital learning versus traditional learning among undergraduate students. *National Journal of Physiology, Pharmacy, and Pharmacology*. 10(1).<https://doi.org/10.5455/njppp.2020.10.0828816102019>
- [18] Paul, J., & Jefferson, F. (2019). A Comparative Analysis of Student Performance in an Online vs. Face-to-Face Environmental Science Course. *Frontiers in Computer Science*. 1(7).<https://doi.org/10.3389/fcomp.2019.00007>
- [19] Rachmah, N. (2020). Effectiveness of Online vs Offline Classes for EFL Classroom: A Study Case in A Higher Education. *Journal of English Teaching Applied Linguistics and Literatures*. 3(1), 19.<https://doi.org/10.20527/jetall.v3i1.7703>
- [20] Salta, K., Paschalidou, K., Tsetseri, M. et al. (2022). Shift From a Traditional to a Distance Learning Environment during the COVID-19 Pandemic. *Sci & Educ* 31, 93–122.<https://doi.org/10.1007/s11191-021-00234-x>
- [21] Long, M., Tong, F., Wang, Z., Zhang, H., & Sutton-Jones, K. L. (2020). A Comparative Study of Problem-Based Learning and Traditional Approaches in College English Classrooms: Analyzing Pedagogical Behaviors Via Classroom Observation. *Behavioral Sciences*, 10(6), 105.<https://doi.org/10.3390/bs10060105>

- [22] Bapat, G., Ravikumar, C., & Shrivallabh, S. (2021). An exploratory study to identify the important factor of the university website for admissions during covid-19 crisis. *Journal of Engineering Education Transformations*, 35(1), 116-120.
- [23] R. Arun, M. Umamaheswari, A. Monica, K. Sivaperumal, Sundarapandiyan Natarajan and R. Mythily, "Effectiveness Performance of Bank Credit on the Event Management Firms in Tamilnadu State", In: Satyasai Jagannath Nanda and Rajendra Prasad Yadav (eds), *Data Science and Intelligent Computing Techniques*, SCRS, India, 2023, pp. 463-470. <https://doi.org/10.56155/978-81-955020-2-8-42>
- [24] The effects of Gamification in online learning environments: A systematic literature review. (2019, August 12). MDPI. <https://www.mdpi.com/2227-9709/6/3/32>
- [25] Arumugam, T., Arun, R., Anitha, R., Swerna, P. L., Aruna, R., & Kadiresan, V. (2024). Advancing and Methodizing Artificial Intelligence (AI) and Socially Responsible Efforts in Real Estate Marketing. In S. Singh, S. Rajest, S. Hadoussa, A. Obaid, & R. Regin (Eds.), *Data-Driven Intelligent Business Sustainability* (pp. 48-59). IGI Global. <https://doi.org/10.4018/979-8-3693-0049-7.ch004>
- [26] View of the effect of online tutoring applications on student learning outcomes during the COVID-19 pandemic. (n.d.). I T A L I E N I S C H. <https://www.italienisch.nl/index.php/VerlagSauerlander/article/view/100/99>
- [27] View of online learning readiness among University students in India amidst COVID-19. (n.d.). *Open Journal Systems*. <https://myjms.mohe.gov.my/index.php/AJUE/article/view/10294/4872>
- [28] Arun R, and Bhuvanewari R (2019). Buying behavior of mee²'s consumption relates to food safety from north and south part of the Coimbatore City. *International Journal of Recent Technology and Engineering*, 7, 429-433. <https://www.ijrte.org/wp-content/uploads/papers/v7i5s/ES2177017519.pdf>