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The Progression of Global Remote Learning and hence Educational Sustainability in Post COVID world

(An Empirical Evidence from India)

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Abstract

Purpose: COVID-19 has affected massively to the education and learning system in India. While it has generated many hurdles, it has also resulted in numerous possibilities. The education sector in India has improved significantly as a result of COVID-19. It has advanced, considering the many obstacles and opportunities it has posed. the objective of this research is to highlight the usefulness of remote learning in the pre and post covid era, its impact on transformative learning and interdisciplinary/ transdisciplinary education module and enlighten the educational need of students and teachers for remote learning and hence education sustainability.

Design/methodology/approach: This study is qualitative as well as empirical in nature. Primary as well as secondary data has been used for the analysis. Primary data is collected through a structured questionnaire.

Findings: Good thing that is observed through this survey that teachers and students from all over the country are very optimistic about this remote way of learning or digital shift in education, teacher and students both believe that the remote learning surge in India has brought a lot of privileges for them and explored their learning possibilities.

Research limitations/implications: Since Remote learning brought an educational transformation all over the world, this study is limited to India where there are only 460 respondents this study could be more exploratory and instead of it this research can be carried out in other countries too.

Implications: This study will be helpful for various education practiser, education ministries, and various policymakers, to have a birds-eye view of the inclination of teachers and students in India towards the new way of learning that is remote learning and to overcome the challenges arise due to it. This study can also farm a base for researchers to do further research.

Keywords: Digital Learning, Inclusive Education, UN Sustainable Development Goal 4, Post COVID Education Strategies, National Education Policy 2020.

Introduction

COVID-19 has affected massively to the education and learning system in India. While it has generated many hurdles, it has also resulted in numerous possibilities. The world is currently undergoing digital change by encouraging more and more digital initiatives in education. Multiple kinds of research on the provision of digital courses have been conducted around the world, especially in developed countries where more than 70 percent of learning is delivered via the internet. To deal with the ongoing COVID-19 issue, the Indian government and various educational practitioners have looked into the likelihood of Open and Distance Learning (ODL) by incorporating various digital tools. The education sector in India has improved significantly as a result of COVID-19. It has advanced, considering the many obstacles and opportunities it has posed. To contend with the present COVID-19 conditions, the Indian government and various education members have explored the prospect of e-learning by incorporating various digital technology.

Worldwide education representatives, addressed the increasing position of digital technology, in access the most disadvantaged children, as well as discussions how to model a realistic plan for them (UNESCO's Futures of Education Commissioners meeting on June 19, 2020) The world is committed to completing 17 goals known as the United Nations Sustainable Development Goals (UNSDGs), and one of those is Target 4, which puts a close focus on education. India, as a participant country, too has attempted to address education challenges with the primary concern, as evidenced by the government's feedback for introducing a New Education Policy in 2019. (Taso & Chakrabarty, 2020) Digital learning will assist in the accomplishment of the “Education for All” target as well as Sustainable Development Goal 4. (SDG 4). further use of this alternative form of learning should be made to resolve the "human resources shortage," avoid potential earnings reductions (due to a lack of education) and train a future-ready digital workforce to ride the Industry 4.0 surge. (Joshi, 2021)

The accessibility of study materials is reported to be one of the big factors for the learners to go for digital learning. According to the results, e-learning systems promote access to information, resulting in students having a constructive attitude toward it. This inference is based on the effectiveness, self-efficacy, ease of use, and student actions when it comes to e-learning. (Khan et al., 2021)

Literature Review:

Kiri and Arindam (2020)

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India, as a participant country of United Nations Sustainable Development Goals (UNSDGs), has attempted to address education challenges with the primary concern, as evidenced by the government's feedback for introducing a New Education Policy in 2019. The government is dedicated to ensuring universal education, which necessitates the development of an e-learning portal. Because it is hard to bring the enormous inhabitants under the purview of the traditional learning environment.

Radhika (2020)

Many children in developed countries, primarily middle school girls, would likely not back to school as a result of the COVID-19 pandemic. But COVID-19, on the other hand, is seen by many in the education sector as an Opportunity to reconstruct better—to re-imagine and re-design the education system for educational sustainability. Education is viewed as a social good. International relief organizations and charitable donors must collaborate with states to guarantee that all children get a quality education.

Ritimoni, Prasenjit and Kandarpa (2020)

MOOCs are the future of online digital learning in the twenty-first century, as several reports have demonstrated. it has not just made learning open to anybody, anytime, at anywhere around the globe but also brought people a different way to take advantage of the high-quality education programs offered by thousands of universities and colleges, and organizations around the globe Indeed, for supplying the long-term quality education.

Seema (2021)

Digital learning will assist in the accomplishment of the “Education for All” target as well as Sustainable Development Goal 4. (SDG 4). further use of this alternative form of learning should be made to resolve the "human resources shortage," avoid potential earnings reductions (due to a lack of education) and train a future-ready digital workforce to ride the Industry 4.0 surge. For a sustainable education system, concerted strategies for bridging ability gaps, developing alliances, and adhering to equity-oriented policies for maintaining learning outcomes, among many other factors, seem to be the way ahead.

Pravat (2020)

India does not seem properly equipped to create education accessibility in all areas of the country through online platforms. Students who aren't as lucky as their peers will struggle as a result of the new digital channel range. However, universities and the Indian government are working hard to find a solution to the issue. The focus here is to use emerging technologies to place thousands of potential

Indian students in a stronger place. Academic institutions must develop their expertise and information technology capabilities to be able to cope with COVID-19-like scenarios.

Mohammed, Vivek, and others (2020)

The benefits of e-learning, including the opportunity to study from any site, that is not feasible for traditional face-to-face education. Besides that, the research demonstrates the similar incident of being instructed as delivered via the physical teaching methods just like students deem e-learning as akin to conventional learning. students' desires for e-learning because it helps them to communicate with their professors, fellow students, and interact with their course materials while being relaxed and versatile in terms of room and time.

Amit, Muddu, and Preeti (2020)

Teachers face four forms of obstacles during online teaching and evaluation, according to the results. Lack of basic services, external distraction, and family disruption during teaching and performing tests were major problems recorded in home environment settings. Barriers to institutional help such as a shortage of funds for new hardware acquisitions and a lack of preparation.

Swati and others (2021)

To ensure uninterrupted instruction, remote learning (media-based and/or otherwise) should hit the last pupil. The curriculum should be redesigned, with an emphasis on review and core content. Rather than stressful structured instruction, e-learning in behavioral empowerment and daily life skills should be facilitated.

Sandeep and others (2021)

India is not properly prepared to use digital channels to carry education to all parts of the country. Universities and the Indian government are working together to find a solution for the country's education system. The first goal should be to use emerging technologies to help the millions of young students in India. The time of the educational institution is expected to assist their pupils. The educational institution’s hour is required to support their information and Knowledge Technology Sustainability dimensions to be prepared for confronting COVID-19 situations.

Objective:

- To highlight the usefulness of remote learning in the pre and post covid era and its impact in transformative learning and interdisciplinary/ transdisciplinary education module.

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- To analyses the perceived potential growth of remote learning in post covid world among teachers and students.
- To enlighten the educational need of students and teachers for remote learning and hence education sustainability.

Research methodology:

This study is qualitative as well as empirical in nature. Primary as well as secondary data has been used for the analysis. Primary data is collected through a structured questionnaire of sample size 500, from all over the country (India). In which we receive 460 acceptable responses, that includes 210 teachers and 350 students, who are actively using Remote learning platforms for their regular course during COVID -19 lockdown.

For the intent of verification and analysis of the data collected from the sample respondents, statistical analysis methods and technologies were used by the researcher. Cronbach's alpha methodology was considered in the study for determining the internal consistency between both the observed variables or reliability of the latent constructs that are used in the research.

SPSS (version 22) software was used to examine the perceived usefulness of remote learning, the perceived potential growth of remote learning in the post-COVID-19 world, and the perceived educational need for sustainability in education among teachers and students.

The questionnaire was personally transmitted via an online form — Google doc — for the primary data collection. Social media sites have proven to be an effective means of connecting with students and teachers at various universities. 560 correct responses count for statistical analysis. The data obtained is analyzed using SPSS tools.

Sample respondents:

Teachers	210
Students	350
Total	**560**

Table 1: Information about the sample

Analysis of teacher's response:

Reliability of the Latent Constructs

Testing the reliability is a crucial step since it verifies the internal consistency and examines the measurement scale's properties. Cronbach's alpha, a widely used measure of reliability in Likert scale

survey queries, was used in this analysis as a measure of reliability. Table 2 shows the Cronbach's alpha value for each of the constructs individually, which is prepared by SPSS output.

Latent constructs	**Cronbach's Alpha**	**No. of items**
Perceived Usefulness of Remote learning	.967	6
Perceived Potential growth of Remote learning in the post-COVID-19 world	.958	5
Perceived educational need for sustainability in education	.969	4

Table 2: Reliability of the constructs

Cronbach's alpha reliability values between 0.41 and 0.70 indicate moderate scale reliability, while values greater than 0.70 indicate strong internal consistency. Cronbach's alpha values of 0.70 to 0.90 are above the acceptable range. Cronbach's alpha value is a little over 0.90, as seen in Table 2, indicating strong internal consistency and enabling for further research.

The Perceived Usefulness of Remote learning

The study looks into the importance of remote learning for teachers in a variety of roles, including principal, primary school teacher, college faculty, university professors, and researchers. The questions in Table 3 are based on five-point Likert Scale statements ranging from "Strongly Disagree" to "Strongly Agree" and are used to assess the degree of perceived usefulness of remote learning.

The words "strongly agree" and "agree" are combined to form the positive answer "agree." In the case of "Strongly Disagree" and "Disagree," the same approach is used, and the two responses are combined to yield one answer from the survey respondents: "Disagree." "Neutral" has been kept in middle. Table 3 displays the results. The data in Table 3 was compiled using the SPSS frequency distribution Output table.

CODE	**VARIABLE**	**SD (1) %**	**D (2) %**	**TOTAL (1+2) %**	**N (3) %**	**A (4) %**	**SA (5) %**	**TOTAL (4+5) %**
PU1	Remote learning has provided time flexibility to learning.	0	18.1	18.1	9.5	48.6	23.8	72.4
PU2	Remote learning gives the opportunity people to study anywhere in the world	10.5	7.6	18.1	0	49	32.9	81.9

PU3	Digital technologies have strengthened transformative learning (instrumental learning and communicative learning)	0	18.1	18.1	9.5	58.1	14.3	72.4
PU4	Digitalization has overcome the challenges in the execution of interdisciplinary/ transdisciplinary / multidisciplinary education	0	10.5	10.5	17.1	63.8	8.6	72.4
PU5	There is the availability of such platforms where one can take and submit assignments remotely	10.5	7.6	18.1	0	30	41.9	71.9
PU6	There are so many digital platforms that facilitate an interactive virtual meeting between teacher and students	0	18.1	18.1	3.3	21.4	57.1	78.5

Table 3: The Perceived Usefulness of Remote learning of teachers

Table 3 shows that the highest response rate for PU2 is 81.9 %, indicating that teachers believe that the digital shift in education has facilitated people and made them free from geographical boundaries in terms of accessing quality education, while 18.1 percent of the sample disagrees. The argument PU6 has the second-highest positive answer rate at 78.5 %. Numerous digital platforms enable interactive virtual meetings between teachers and students, only 18.1 percent of teachers believe that there is not enough availability of such platforms that facilitate interactive virtual meetings. The next highest positive response rate is 72.4% for three statements PU1, PU3, And PU4 which means most of the teachers believes that digitalization has provided flexibility in education and they are assertive about digitalization and its impact on transformative learning and interdisciplinary & multidisciplinary education model and believe that digitalization has boosted it, whereas 18.1%, 18.1% and 10.5% of

the sample oppose these thoughts respectively. The next assertive response is 71.9% with regards to the statement PU5, which means approximately 1/4th of the sample of teachers impresses by the availability of digital platforms that facilitates them assigning and taking assignments from students. Whereas 18.1% of people don't find it helpful.

The Perceived Potential growth of Remote learning in the post-COVID-19 world:

CODE	VARIABLE	SD (1) %	D (2) %	TOTAL (1+2) %	N (3) %	A (4) %	SA (5) %	TOTAL (4+5) %
PP1	I believe remote learning will lead this world towards education sustainability	0	7.6	7.6	10.5	68.6	13.3	81.9
PP2	I believe remote learning will improve the gross enrolment the ratio in primary level education	7.6	10.5	18.1	10.5	56.2	15.2	71.4
PP3	I believe remote learning will improve the gross enrolment ratio in Secondary level education	10.5	7.6	18.1	10.5	62.9	8.6	71.5
PP4	I believe remote learning will improve the gross enrolment ratio in higher education	0	7.6	7.6	21	46.2	25.2	71.4
PP5	The new education policy 2020 has its measures to boost remote learning practices	0	18.1	18.1	1.1	48.9	31.9	80.8

Table 4: The Perceived Potential growth of Remote learning in the post-COVID-19 world of teachers

Table 4, states responses of five questions asked to know the Perceived Potential growth of Remote learning in the post-COVID-19 world among teachers, the highest response rate is 81.9 % and 80.8%

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for PP1 and PP5 respectively which means that most of the teachers believe that remote learning will lead this world towards educational sustainability and in Indian context they believe that the newly formed new education policy 2020 has taken measurable steps to promote remote learning in India. The next highest response rate is between 71.4-71.5 of PP2, PP3, and PP4, which shows that approximately 70% of the teachers are so optimistic about remote learning and believe that remote learning will improve gross enrolment ratio in primary, secondary as well as higher education, whereas around 18% of the sample firmly oppose PP2 and PP3, thus they don't consider remote learning as a tool to increase GER in primary and secondary education, while the date for higher education GER is little different as approximately 21% people don't find any correlation between these two.

Analysis of Students' response

A. The Perceived Usefulness of Remote learning:

CODE	VARIABLE	SD (1) %	D (2) %	TOTAL (1+2) %	N (3) %	A (4) %	SA (5) %	TOTAL (4+5) %
PU1	Remote learning has provided time flexibility to learning.	0	17.7	17.7	9.7	50	22.6	72.6
PU2	Remote learning gives the opportunity people to study anywhere in the world	10.9	6.9	17.8	0	48.9	32.4	81.3
PU3	Digital technologies have strengthened transformative learning (instrumental learning and communicative learning)	0	17.7	17.7	9.7	59.4	13.1	72.5
PU4	Digitalization has overcome the challenges in the execution of interdisciplinary/ transdisciplinary/ multidisciplinary education	0.3	10.6	10.9	15.1	68	6	74
PU5	There is the availability of such platforms where one can take and submit assignments remotely	8.9	6.9	15.8	2	42.3	40	82.3
PU6	There are so many digital platforms that facilitate an interactive	2.7	15	17.7	3.7	27.4	51.1	78.5

	virtual meeting between teacher and students							

Table 5: The Perceived Usefulness of Remote learning of students

The analysis of table 5 depicts the highest response rate that is 82.3% with regards to PU5 it reveals that students believe that there is the availability of such platforms where they can submit assignments remotely, on the other hand, 15.8% of the sample doesn't find this statement true. Second, the highest response rate is 81.3 for PU2 which means the majority of students find remote learning and digital technology use in facilitating flexibility in education and believe that it will eradicate geographical barriers in education, as it allows students to study anywhere in the world. The next highest response rate is 78% for PU6 which shows that more than ¾ of the sample believes that There are so many digital platforms that facilitate an interactive virtual meeting between teacher and students. whereas 17% of the sample denies this thought. Next, the highest response is 74% for PU4 which means that student respondents believe that Digitalization has overcome the challenges in the execution of interdisciplinary/ transdisciplinary/ multidisciplinary education, whereas 15.1% of the sample doesn't find any correlation between these two variables and 10.9% of the sample denies it. Next, the highest response is ~72.5% for PU1 and PU3 which shows that majority of students believe that Remote learning has provided time flexibility to learning and Digital technologies have strengthened transformative learning (instrumental learning and communicative learning) whereas approximately 17% of the students disagree with this thought.

B. The Perceived Potential growth of Remote learning in the post-COVID-19 world:

CODE	**VARIABLE**	**SD (1) %**	**D (2) %**	**TOTAL (1+2) %**	**N (3) %**	**A (4) %**	**SA (5) %**	**TOTAL (4+5) %**
Perceived Potential Growth of Remote learning in Post COVID-19 World								
PP1	I believe remote learning will lead this world towards education sustainability	0.3	6.6	6.9	10.9	67.1	15.1	82.2
PP2	I believe remote learning will improve the gross enrolment ratio in primary level education	4.6	13.1	17.7	10.3	60.3	11.7	72
PP3	I believe remote learning will improve the gross enrolment ratio in Secondary level education	10.9	6.9	17.8	10.3	64.9	7.1	72
PP4	I believe remote learning will improve the gross	2	4.9	6.9	18	49.3	25.2	74.5

	enrolment ratio in higher education							
PP5	The new education policy 2020 has its measures to boost remote learning practices	0.3	17.4	17.7	0.6	49.1	32.6	81.7

Table 6. Perceived Potential growth of Remote learning in the post-COVID-19 world of students

The highest response rate in table 6 is ~82% for PP1 and PP5 which means most of the students believe that remote learning will lead this world towards education sustainability, and the new education policy 2020 has considered the steps to boost remote learning in India. Next, the highest response rate is 74.5% for PP4 which means approximately 3/4th of the sample believes that remote learning or digital education will boost the gross enrollment ratio in higher education where 18% of the sample doesn't find any correlation between GER of higher education and remote learning. The next response rate is 72% for PP2 and PP3 which is close to the response rate for PP4, since all three statements are concerned with the increment of GER in primary secondary and higher education respectively, the combined response rate is ~72.6% which shows most of the students believe remote learning will improve GER in all three levels of education.

The Perceived educational need for sustainability in education

	Teachers				**students**			
	EN1: I believe data privacy is the main threat for this digital era	**EN2: I believe the government should make strict policies to protect data**	**EN3: I believe remote learning has created educational barriers for poor students**	**EN4: I believe the government should Equip unprivileged people with adequate digital resources**	**EN1: I believe data privacy is the main threat for this digital era**	**EN2: I believe the government should make strict policies to protect data**	**EN3: I believe remote learning has created educational barriers for poor students**	**EN4: I believe the government should Equip unprivileged people with adequate digital resources**
Mean	3.7333	3.8429	3.9381	4.1	3.7171	3.8286	3.9371	4.0914
N	210	210	210	210	350	350	350	350
Std. Deviation	1.0331	0.958	1.01707	0.87741	1.00856	0.93899	0.99658	0.86159

Skewness	-0.445	-0.405	-0.481	-0.197	-0.455	-0.425	-0.52	-0.177

Table 7: The comparison table of "The Perceived educational need for sustainability in education" of students and teachers.

Report

	EN Teachers	EN Students
Mean	3.9036	3.8936
N	210	350
Std. Deviation	.93057	.89965
Skewness	-.460	-.520

Table 8: Comparison table

The five-point Likert scale is considered an interval scale. The mean is very significant. From 1 to 1.8, it means strongly disagree. From 1.81 to 2.60, it means to disagree. From 2.61 to 3.40, it means neutral; from 3.41 to 4.20, it means agree; from 4.21 to 5, it means strongly agree.

Table: 8 is a comparison mean table of responses of teachers and students with the highest mean 4.1% for EP4 response of students followed by 4.09% by Teachers for the same which means both believe that believe the government should Equip unprivileged people with adequate digital resources. Since the mean calculated for all statements of teachers and students are approximately equal or date move in the same direction which shows negative skewness of .460 and .520 for teachers and students respectively.

For statements EN1, the mean for teachers and students are 3.73 and 3.82 respectively, which shows they believe that data privacy is the main threat for them in this digital era. For EN2 and EN3 too, data is negatively skewed with an average mean of 3.83 and 3.93 respectively, for teachers and students.

Results:

Descriptive Statistics					
Teacher's Response					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
A. The Perceived Usefulness of Remote learning	210	1.67	5.00	3.8603	1.00189

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B. The Perceived Potential growth of Remote learning in the post-COVID-19 world	210	1.80	4.80	3.7676	.90406
C. The Perceived educational need for sustainability in education	210	2.25	5.00	3.9036	.93057
Student's Response					
A. The Perceived Usefulness of Remote learning	350	1.50	10.83	3.8643	1.05050
B. **The Perceived Potential growth of Remote learning in the post-COVID-19 world**	350	1.80	5.00	3.7754	.88189
C. The Perceived educational need for sustainability in education	2.25	5.00	3.8936	3.8936	.89965

Table 9: Data summary

The usefulness of Remote Learning in Pre and Post COVID World: The mean of teacher's and student's response for this section is almost similar that is 3.86 which means that teacher and students both believe that the remote learning surge in India has brought a lot of privileges including time flexibility, no location constraints that directly or indirectly strengthen transformative learning in India including instrumental learning and communicative learning, instead of it digitalization and digital technologies have strengthened transformative learning program in India including instrumental learning and communicative learning and it has also eradicated the challenges in execution of interdisciplinary, transdisciplinary and multidisciplinary education module.

Potential Growth of Remote Learning in Post Covid World: The average mean for this section is 3.76, As students and teachers both believe that remote learning will increase gross enrolment ratio in all primary secondary and higher education level that will lead towards educational sustainability as such pandemic or crises can affect the learning system of students in India and here teachers and students believe that the new education policy has taken all considerable measures to promote remote learning system in India.

The Educational Need for Sustainability in Education: The average mean for this section is 3.89, as both students and teachers find the great threat to their data privacy and believe that government should make strict rules and regulation to protect data and reduce data hacking, instead of it they

believe that remote learning has created educational barriers for poor students and hence government should Equip unprivileged people with adequate digital resources.

Suggestions:

- During the pandemic, India should devise effective approaches to ensure that every child has continuous access to education. COVID-19 is a virus that infects people. For successful implementation, Indian initiatives must involve people from various backgrounds, such as remote areas, marginalized and minority population
- In today's world, getting access to resources and digital technology is a must. As a result, digital capabilities and technology must penetrate the most vulnerable and disadvantaged areas to enable students to complete their studies through pandemics. It is important to use public funding to bridge the technology gap to make sure that students can keep learning online.
- Many online education sites have several classes on the same topic with differing degrees of certification, curriculum, and evaluation requirements. As a result, in light of the exponential growth of online learning, Higher Education Institutions (HEIs) in India must build and provide quality assurance frameworks and quality benchmarks for online courses.
- The educational institution’s hour is required to support their information and Knowledge Technology Sustainability dimensions to be prepared for confronting COVID-19 situations. In such a pandemic scenario, the idea of "work from home" becomes much more important in minimizing COVID-19 transmission. India should formulate creative policies to ensure that all children have sustainable access to education across their lives.

Conclusion:

India is leading towards the adoption of digital technologies in the education sector, either its digital India mission or considerable measures for adoption of digital tools and techniques in new education policy 2020, the Indian government is trying to shift conventional mode to learning to blended and finally digital mode. One good thing that is observed through this survey that teachers and students from all over the country are very optimistic about this remote way of learning or digital shift in education, teacher and students both believe that the remote learning surge in India has brought a lot of privileges including time flexibility, no location constraints that directly or indirectly strengthen transformative learning in India including instrumental learning and communicative learning, instead of it digitalization and digital technologies have strengthened transformative learning programmed in India including instrumental learning and communicative learning and it has also eradicated the challenges in execution of interdisciplinary, transdisciplinary and multidisciplinary education module.

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As students and teachers both believe that remote learning will increase gross enrolment ratio in all primary secondary and higher education level that will lead towards educational sustainability as such pandemic or crises can affect the learning system of students in India and here teachers and students believe that the new education policy has taken all considerable measures to promote remote learning system in India.

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