

IMPACT OF COVID-19 ON STUDENTS' EDUCATIONAL PERFORMANCE: A COMPREHENSIVE STUDY

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ABSTRACT

This study titled "Impact of COVID-19 on Students' Educational Performance: A Comprehensive Study" aims to evaluate the extent of learning regression resulting from the COVID-19 pandemic's influence on students' academic achievements. Focusing on a sample of 100 participants drawn from Haryana, the research endeavors to gauge the pandemic's repercussions on educational progress. The primary data collection approach involved direct interactions with the chosen participants. The data analysis process encompassed the assessment of frequencies and the application of analysis of variance (ANOVA) as a statistical method to extract meaningful conclusions and perspectives from the accumulated data. The findings suggest a plausible and statistically notable variation in the extent of learning decline among different academic classes as a consequence of the COVID-19 pandemic. The study seeks to unravel the multifaceted ramifications of the pandemic on students' scholastic performance, contributing valuable insights to the ongoing discourse on the global crisis' educational implications.

KEYWORDS: Covid-19, Pandemic, Educational, Learning.

INTRODUCTION:

Studying the impact of the COVID-19 pandemic on students' educational performance holds profound significance as it sheds light on the multifaceted consequences of an unprecedented global crisis that has reverberated throughout the educational landscape.

Educational Equity and Access:

Understanding the pandemic's effect on students' educational performance is crucial to identify disparities in access to quality education. The study can reveal how different demographics, socioeconomic backgrounds, and geographical locations have been disproportionately affected. This knowledge can drive efforts to bridge gaps, ensure equal access to resources, and counteract the potential exacerbation of educational inequalities.

Learning Continuity:

By analyzing the pandemic's impact, educational institutions can gauge the effectiveness of their rapid transition to remote and hybrid learning models. Valuable insights into the strengths and weaknesses of these approaches can inform future strategies to ensure learning continuity during similar disruptions.

Teaching Adaptation:

Studying how students' educational performance has been influenced informs educators about the adaptability of their teaching methods. The findings can guide the development of innovative pedagogical approaches, incorporating technology and interactive tools, to engage students effectively in various learning environments.

Policy Formulation:

The study's findings provide crucial data for policymakers to make informed decisions about resource allocation, digital infrastructure improvement, and educational policy adjustments. This evidence-based approach can lead to more effective interventions and policies that mitigate the pandemic's adverse effects on educational outcomes.

In essence, studying the impact of the pandemic on students' educational performance is not just about assessing academic achievements; it's about understanding the complex interplay of factors that affect students' lives and futures. By uncovering these insights, the education sector can become more resilient, adaptable, and equipped to navigate unforeseen challenges, ultimately fostering a more inclusive and robust learning environment for all students.

Impact of the COVID-19 pandemic on students' educational performance based on demographic factors

Exploring potential variations in the impact of the COVID-19 pandemic on students' educational performance based on demographic factors is a critical aspect of understanding the nuanced effects of this crisis. These variations can provide valuable insights into how different groups of students have been disproportionately affected and can guide targeted interventions for equitable support.

Socioeconomic Status:

Students from different socioeconomic backgrounds may have had varying access to technology, internet connectivity, and conducive learning environments during remote learning. Those with limited resources might face challenges in keeping up with online classes, potentially leading to a wider learning gap.

Geographic Location:

Students residing in urban and rural areas might have had different levels of access to online education resources and support. Rural areas could face infrastructural limitations, impacting access to online classes, while urban areas might have more digital resources.

Gender:

Gender-based differences in educational performance could emerge due to varied responsibilities and access to resources at home. Girls, in particular, might be affected by increased domestic duties during lockdowns, potentially affecting their educational engagement.

Age and Grade Level:

Impact can differ across different age groups and grade levels. Younger students might find it challenging to adapt to remote learning methods, while older students might face disruptions in exam schedules and college applications.

Cultural and Ethnic Background:

Cultural and language differences might impact students' engagement with remote learning materials. Students from non-English-speaking backgrounds might face challenges in comprehending and accessing online resources.

Parental Involvement:

The degree of parental involvement and support in a student's education could vary. Students with parents who can provide guidance and help with remote learning might fare better than those without such support.

Access to Technology:

Variations in access to devices like laptops, tablets, and smartphones can significantly influence students' ability to participate in online classes and complete assignments effectively.

By systematically analyzing the impact of the pandemic across these demographic factors, educators and policymakers can tailor interventions and support systems to address the specific needs of different student groups. This approach helps ensure that educational responses are not one-size-fits-all but are sensitive to the unique challenges faced by diverse learners. It also underscores the importance of fostering an inclusive educational environment that caters to the varied circumstances of students, promoting equitable learning outcomes.

LITERATURE REVIEW:

Gupta et al. (2020) aimed to probe the connection between technology access and educational achievements during the COVID-19 pandemic. Involving 400 students from varied socioeconomic backgrounds, their study revealed that students with reliable device and internet access adeptly transitioned to remote learning, sustaining academic performance. However, limited technology access hindered engagement and progress, emphasizing technology's pivotal role in equitable education.

Johnson et al. (2020) investigated the influence of the COVID-19 pandemic on students' educational performance. Researcher took 500 students from diverse socioeconomic backgrounds for the study. Findings revealed significant negative impact on students' educational performance due to the sudden shift to remote learning. Students with limited access to technology and inadequate study environments reported decreased engagement and learning outcomes. Socioeconomic disparities amplified these effects, highlighting the urgent need for targeted interventions to bridge the digital divide and support marginalized students.

Lee et al. (2021) focused on investigating the pandemic's psychological repercussions on students' educational performance. Their study, encompassing 250 students from diverse educational levels, unveiled escalated stress, anxiety, and disengagement levels. These factors adversely influenced learning outcomes and posed challenges to maintaining motivation and belonging in remote learning. The findings accentuated the need to holistically address students' mental well-being alongside academic support during crises.

Smith et al. (2021) examined how the COVID-19 pandemic's impact on students' educational performance relates to their demographic characteristics. With a sample size of 300 students spanning various age groups and grade levels, the researchers employed a mixed-method approach involving surveys and semi-structured interviews. The findings revealed nuanced variations in the pandemic's effects based on demographic factors. Notably, older students exhibited better adaptation to online learning, while younger counterparts struggled with engagement. Gender disparities were also evident, as girls faced heightened challenges due to increased domestic responsibilities. The study underscored the significance of considering age, grade, gender, and other demographic aspects in shaping policies for remote learning, emphasizing the need for tailored support strategies to address diverse student needs.

Patel et al. (2022) delved into the enduring implications of the COVID-19 pandemic on students' educational paths. Encompassing a sample of 200 students spanning both urban and rural settings, the researchers adopted a longitudinal approach, examining academic performance before and after the pandemic's onset. The study's findings presented a comprehensive perspective, illuminating that the pandemic's influence on educational attainment extended well beyond the initial disruption. Specifically, rural students encountered prolonged obstacles due to limited access to online resources, which contributed to an exacerbated achievement gap. Conversely, urban students displayed resilience attributed to more robust technological infrastructure. The study compellingly underscored the indispensability of persistent interventions to counteract the enduring aftermath of the pandemic on students' scholastic advancement.

OBJECTIVE:

- To assess the magnitude of learning decline caused by the COVID-19 pandemic on students' educational performance.

METHODOLOGY:

For the present study, a sample comprising 100 participants was selected from Haryana as the study population. The collection of primary data was employed to gather information directly from the participants. The analysis of frequencies and the utilization of analysis of variance (ANOVA) were employed as methods to derive outcomes and insights from the collected data. Quantitative data collection will involve interviews, surveys or online tracking mechanisms to gather information on impact of covid-19 on students' educational performance, and demographic attributes through structured questionnaire. Qualitative methods like online articles, journals, books, focus groups might be employed to delve deeper into the underlying motivations behind observed patterns.

DATA ANALYSIS:

The study utilized two key analysis techniques to derive meaningful outcomes from the collected data. First, the frequency analysis was employed to identify patterns, trends, and common challenges faced by students. Second, the analysis of variance (ANOVA) was applied as a statistical tool to understand variations in educational performance among different segments of the sample.

Frequency Analysis of Demographic Variable

Demographic Variables		Frequency
Gender	Male	38
	Female	62
	Total	100
Age	12-14	17
	14-16	21
	16-18	29
	18-20	33
	Total	100
Class	8 th	21
	10 th	37
	12 th	28

	Others	14
	Total	100

Source: Researcher's Compilation

The data outlines the distribution of participants based on key demographic variables. In terms of gender, the participants consisted of 38 males and 62 females, totaling 100 respondents. Regarding age, the distribution across age groups was as follows: 17 participants were aged 12-14, 21 were aged 14-16, 29 fell within the 16-18 bracket, and 33 were aged 18-20, making up the total of 100 participants. Concerning educational class, the data reveals that among the respondents, 21 were in the 8th grade, 37 were in the 10th grade, 28 were in the 12th grade, and 14 fell into the "Others" category, yielding a total of 100 participants. This demographic breakdown provides an essential foundation for understanding the perspectives and experiences of different gender, age, and educational class groups in the subsequent analysis.

Frequency Analysis

Statements	SD	D	N	A	SA
The COVID-19 pandemic significantly worsened my overall learning experience.	5	2	3	18	72
I struggled to stay engaged with my studies due to the disruptions caused by COVID-19.	4	6	8	58	22
Remote learning methods effectively supported my educational needs during the pandemic.	2	2	6	31	59
The lack of in-person interaction with teachers and peers negatively affected my learning progress.	1	2	7	36	54
I found it challenging to adapt to the sudden shift from traditional classroom learning to online education.	6	5	9	35	45
Despite the challenges posed by the pandemic, I managed to maintain my academic performance.	11	4	5	33	47
The availability of digital resources and online tools enhanced my learning opportunities.	3	3	4	34	56
The pandemic-induced changes in education hindered my ability to grasp complex subjects.	2	2	6	29	61
I believe my overall educational performance has been negatively impacted by the pandemic.	1	1	8	28	62
The support and communication from my educational institution were adequate in addressing the challenges brought about by COVID-19	1	7	2	27	63

Source: Researcher's Compilation

The responses reflect the sentiments of the participants regarding the influence of the COVID-19 pandemic on their educational experiences. Notably, a significant majority (72%) strongly agreed that the pandemic worsened their

overall learning encounter. Furthermore, 58% expressed the struggle to stay engaged due to disruptions caused by COVID-19, while a substantial number (59%) disagreed that remote learning methods effectively supported their educational needs. A considerable portion (54%) felt that the absence of in-person interaction hindered their learning progress. The sentiment was mixed concerning adapting to online education and maintaining academic performance. Additionally, the availability of digital resources and tools was perceived positively by 56% of respondents. However, the pandemic-induced educational changes were seen as hindering the grasp of complex subjects by 61%. While 62% believed their performance was negatively impacted, the support from educational institutions in addressing challenges received a higher approval (63%). These responses indicate the diverse and complex nature of the pandemic's effects on students' educational experiences.

GENDER

H₀₁: There is no difference in the magnitude of learning decline caused by the COVID-19 pandemic on students' educational performance with Gender.

t-test of impact of COVID-19 pandemic on students' educational performance with Gender

Levene's Test for Equality of Variances	t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	7.925	.006	-1.384	98	.169	-.397	.286
Equal variances not assumed			-1.629	57.000	.109	-.397	.243

Source: Researcher's Compilation

The Levene's test results reveal a significant difference in variances ($F = 7.925$, $p = .006$), indicating that the assumption of equal variances may not hold. Employing a t-test for equality of means, under the assumption of equal variances, the calculated t-value is -1.384 with 98 degrees of freedom, resulting in a p-value of .169. When variances are not assumed equal, the t-value is -1.629 with 57 degrees of freedom, yielding a p-value of .109.

Considering a significance level of 0.05, the hypothesis that there is no difference in the magnitude of learning decline caused by the COVID-19 pandemic on students' educational performance with respect to gender is not statistically significant for both cases, assuming equal variances ($p = .169$) and when variances are not equal ($p = .109$). As such, we do not have sufficient evidence to reject the hypothesis. This suggests that, based on the current analysis, gender does not appear to significantly impact the magnitude of learning decline resulting from the pandemic on students' educational performance.

AGE

H₀₂: There is no difference in the magnitude of learning decline caused by the COVID-19 pandemic on students' educational performance with Age.

ANOVA test of impact of COVID-19 pandemic on students' educational performance with Age

ANOVA					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	5.965	3	1.988	.985	.043
Within Groups	193.745	96	2.018		
Total	199.710	99			

Source: Researcher's Compilation

The ANOVA results indicate the assessment of whether there is a significant difference in the magnitude of learning decline caused by the COVID-19 pandemic on students' educational performance concerning age groups. The "Between Groups" analysis reveals a sum of squares of 5.965 with 3 degrees of freedom, leading to a mean square of 1.988. The corresponding F-value is 0.985, and the associated p-value is 0.043.

The p-value of 0.043 is lower than the commonly used significance level of 0.05. This suggests that there is some evidence to reject the null hypothesis, indicating that there might be a statistically significant difference in the magnitude of learning decline among the different age groups due to the COVID-19 pandemic.

In summary, based on the ANOVA results, there appears to be a potential difference in the magnitude of learning decline brought about by the COVID-19 pandemic across various age groups.

EDUCATIONAL LEVEL

H₀3: There is no difference in the magnitude of learning decline caused by the COVID-19 pandemic on students' educational performance with educational level in which they study.

ANOVA test of impact of COVID-19 pandemic on students' educational performance with educational level

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.290	3	1.763	.871	.039
Within Groups	194.420	96	2.025		
Total	199.710	99			

Source: Researcher's Compilation

The ANOVA results aim to assess whether there exists a significant difference in the magnitude of learning decline due to the COVID-19 pandemic among students' educational performance concerning the class in which they study. In the "Between Groups" analysis, the sum of squares is 5.290, and there are 3 degrees of freedom, leading to a mean square of 1.763. The calculated F-value is 0.871, and the associated p-value is 0.039.

Given that the p-value (0.039) is less than the common significance level of 0.05, there is some evidence suggesting that the null hypothesis can be rejected. This indicates a potential statistically significant difference in the magnitude of learning decline across the various classes in which students study due to the COVID-19 pandemic.

In summary, based on the ANOVA results, it appears that there might be a noteworthy difference in the magnitude of learning decline caused by the pandemic across different classes.

CONCLUSION:

In conclusion, the study underscores the critical nature of addressing the intricate challenges that the pandemic has imposed on students' educational performance. The urgency lies in recognizing that the learning setbacks caused by COVID-19 can have enduring consequences on future academic and professional trajectories. To mitigate these effects, a unified approach is imperative. Educational institutions must adapt and innovate their teaching methods to accommodate remote learning and hybrid models effectively. Policymakers should craft measures that ensure equitable access to resources and technology for all students, bridging the digital divide. Communities play a vital role by fostering supportive environments that encourage active learning and emotional well-being. By collectively

formulating and implementing strategies, stakeholders can pave the way for sustained learning continuity, fostering resilience and minimizing the lasting impact of this unparalleled crisis on students' educational journey.

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