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A Regional Sweep of the Effects of Covid-19 on Students in Gujranwala: The Adverse Effects of Online Education System

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ORIGINAL ARTICLE

ABSTRACT

Background: COVID-19 pandemic disrupted traditional education worldwide, necessitating a sudden transition to online learning. In Pakistan, particularly in Gujranwala, this shift posed challenges due to limited digital infrastructure, lack of training, and reduced student motivation.

Objectives: To evaluate the impact of online education system during the COVID-19 pandemic on the academic performance, adaptability, and satisfaction levels of students in Gujranwala.

Methods: A quantitative descriptive design was employed. A stratified random sample of 102 students from intermediate to postgraduate levels, who had experienced both traditional and online education between 2020 and 2021, was surveyed using a 16-item structured Google Forms questionnaire. Secondary data were obtained from BISE Gujranwala to compare academic performance before and after the pandemic. Data analysis was conducted using SPSS version 30.

Results: Findings revealed mixed reactions to online education. While 33.3% found it moderately feasible, only 23.5% expressed satisfaction. A majority (55.9%) found it easy to resume pre-pandemic learning, indicating resilience. However, academic data showed a drop in pass percentages post-pandemic: HSSC-1 results declined from 45.79% (2018) to 38.48% (2022), and HSSC-2 from 58.25% (2019) to 56.11% (2023), indicating diminished academic outcomes.

Conclusion: Online education during the COVID-19 pandemic adversely affected student performance and satisfaction in Gujranwala. However, it also underscored the potential of hybrid models, prompting the need for blended learning strategies, improved digital infrastructure, and teacher training for future resilience.

Introduction

Throughout human history, the world has witnessed several deadly pandemics that have left lasting impacts on societies, economies, and individuals. From the devastation of the Black Plague in the 14th century to the widespread suffering during the Spanish Flu in the early 20th century, these health crises have consistently challenged humanity's resilience. COVID-19 was no different. Emerging in the city of Wuhan, China, in late 2019, the virus quickly spread across the globe and became one of the deadliest pandemics in recent memory, claiming between 7.1 and 36.5 million lives worldwide by 2025 [1]. The COVID-19,

commonly known as the coronavirus, is an airborne viral disease that primarily attacked the lower respiratory tract, often resulting in pneumonia. It spread rapidly through air droplets and contaminated surfaces, making it highly contagious. In a matter of months, the virus forced the world to a standstill. Countries imposed lockdowns, borders closed, economies shrank, and hospitals overflowed. One of the most significant disruptions was felt in the education sector, where traditional classroom learning had to be immediately replaced with online teaching methods [2]. While online education seemed like a necessary and logical solution, its sudden implementation came with a host of challenges. Most teachers were unfamiliar with virtual teaching tools and lacked the training to manage digital classrooms effectively. On the other side, students struggled with technical issues such as poor internet connections, lack of devices, and the distractions that came from studying in the comfort of their homes. As a result, many students began to disengage from their studies, leading to a noticeable decline in academic performance [3]. In many cases, students preferred entertainment and leisure over attending online lectures, especially when there was little to no accountability or direct supervision.

In Pakistan, the first confirmed case of COVID-19 was reported on February 26, 2020 [4]. The government responded by imposing strict lockdown measures and closing educational institutions by March 15, 2020 [5], in line with WHO guidelines [1]. With no other option available, the Ministry of Education advised schools and colleges to switch to online learning platforms like Zoom and Google Classroom. Initiatives such as the SABAQ broadcasting system were introduced to reach underprivileged students and help bridge the educational gap [2][6]. However, the transition was far from smooth. Teachers struggled to adapt to new technologies, and students—especially those from less privileged backgrounds—found it difficult to keep up due to limited resources.

Studies have shown that many young students, particularly teenagers and young adults, tend to lack discipline and motivation when left unsupervised [7]. This characteristic, combined with the freedom and comfort of home-based learning, meant that many students did not take their studies seriously during the pandemic. Consequently, the quality of education suffered significantly, and students were often unable to grasp and retain concepts as effectively as they would have in traditional classrooms. Focusing on Gujranwala, the fifth-largest city in Pakistan, this issue becomes even more important. According to the 2023 census, Gujranwala has a population of 6,356,552, and over 58% of them approximately 3.7 million

individuals—are under the age of 20 [8]. With such a large portion of the population being students or school-aged youth, it becomes crucial to explore how this demographic was affected by the shift to online education during the pandemic.

This study aimed to evaluate the impact of online education system during the COVID-19 pandemic on the academic performance, adaptability, and satisfaction levels of students in Gujranwala. It explores their views on the online education system, their levels of satisfaction, and the overall impact on their learning outcomes. By understanding how students were affected, this research hopes to highlight the lessons learned and provide insights for better preparedness in the future, should such a crisis arise again.

Methods

This study employed a quantitative research approach with a descriptive design to assess the effects of online education during the COVID-19 pandemic on students in Gujranwala, Pakistan. The setting for the study was Gujranwala, the fifth largest city in Pakistan, with an estimated population of 6.3 million according to the 2023 census, of which approximately 50–60% are under the age of 20. The target population included students from Grades 9 to 12 who had experienced both traditional and online education systems between 2020 and 2021. The sample size consisted of 102 students, and the sampling technique used was stratified random sampling, categorizing participants into two main groups: those who studied before the pandemic under traditional settings, and those who were taught online during the lockdown period. The study excluded students whose results could not be compared fairly due to academic policy changes, such as those promoted without exams in 2020 or those examined only in elective subjects in 2021. Students included in the study were from the intermediate, bachelor's, and master's levels, having firsthand experience with the sudden transition to online learning.

The primary instrument used for data collection was a structured questionnaire created via Google Forms. This form consisted of 16 close-ended questions designed to gather insights on key variables such as feasibility, adaptability, satisfaction, and the students' overall perception of online education. The questionnaire was distributed through online platforms such as WhatsApp to maximize reach and ensure participant convenience. In addition to survey data, the study incorporated secondary data collected from BISE Gujranwala, the official examination board for matriculation and intermediate levels, to facilitate a comparative analysis between student performances before and after the shift to online education.

Data entry and analysis were carried out using SPSS software version 30. The responses were coded and analyzed for frequencies, trends, and visual charts to interpret the extent and nature of the impact of online learning. The comparative academic performance data obtained from BISE Gujranwala added depth and credibility to the findings by offering a region-wide academic perspective, allowing the researchers to evaluate the effectiveness and shortcomings of the online education system during the pandemic in a statistically supported manner.

Results

Promising findings indicate that while students faced challenges, there were positive aspects to online education. Regarding feasibility, 33.3% of respondents rated online learning as moderately feasible, suggesting that a notable portion found it partially workable despite the abrupt transition (Figure 1a; Table 1).

While overall satisfaction was mixed, a portion of respondents (23.5%) expressed some level of contentment with the online education system, suggesting that digital learning had some acceptance among students (Figure 1b; Table 1).

In terms of adaptability, 42.2% of students reported finding the return to physical classes easy, showing a successful reintegration for a significant segment (Table 2). Furthermore, 55.9% of students stated that it was easy to resume their pre-pandemic learning methods, indicating strong academic resilience. When evaluating the ability to retain concepts, 27.5% of students believed online learning helped them do so, reflecting its potential for concept reinforcement in certain learning environments (Table 2).

In terms of preference, 26.5% of respondents favored online education, and 62.7% appreciated a combination of both traditional and online methods, hinting at a growing recognition of hybrid learning models as a viable alternative (Table 3).

Table 1: Responses of feasibility questions (n = 102)

Sr. No.	Question	Category									
		1		**2**		**3**		**4**		**5**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	How feasible was online learning?	12	11.8	25	24.5	34	33.3	14	13.7	17	16.7
2	How satisfied were you with E-learning system?	21	20.6	24	23.5	33	32.4	15	14.7	9	8.8
3	What would be your reaction if online system to be implemented?	39	38.2	19	18.6	13	12.7	12	11.8	19	18.6
4	How was it to cope your attention span towards book by the end of COVID-19?	21	20.6	20	19.6	33	32.4	14	13.7	14	13.7
5	If online education were to be re-established, what would you feel?	30	29.4	20	19.6	25	24.5	11	10.8	16	15.7

Table 2: Responses of adoptability questions (n = 102)

Sr. No.	Question	Category					
		May be		**No**		**Yes**	
		n	**%**	**n**	**%**	**n**	**%**
1	Were you able to retain majority of your concepts by E-learning?	31	30.4	43	42.2	28	27.5
2	Did the E-learning system manage to overcome the traditional learning?	18	17.6	57	55.9	27	26.5
3	Was it easy for you to return on physical interactive learning?	32	31.4	27	26.5	43	42.2
4	Was it easy for you to return on old way of learning?	-	-	45	44.1	57	55.9
5	Would you want online education to be re-established?	24	23.5	57	55.9	21	20.6

Table 3: Responses of satisfaction questions (n = 102)

Sr. No.	Question	Category					
		Physical		**Online**		**Both**	
		n	**%**	**n**	**%**	**n**	**%**
1	What mode of education do you prefer more?	75	73.5	27	26.5	-	-
2	What is your major preference?	25	24.5	13	12.7	64	62.7

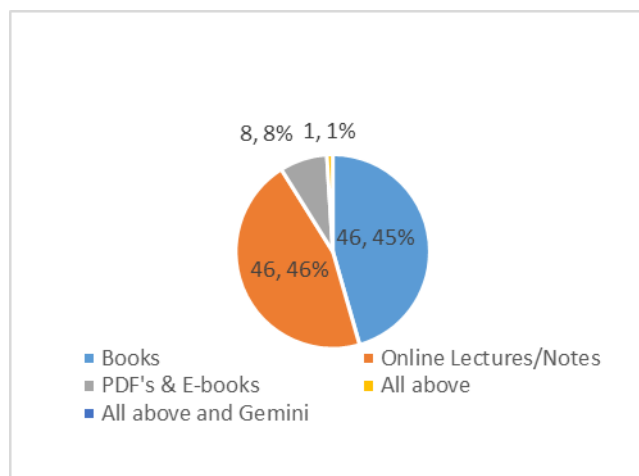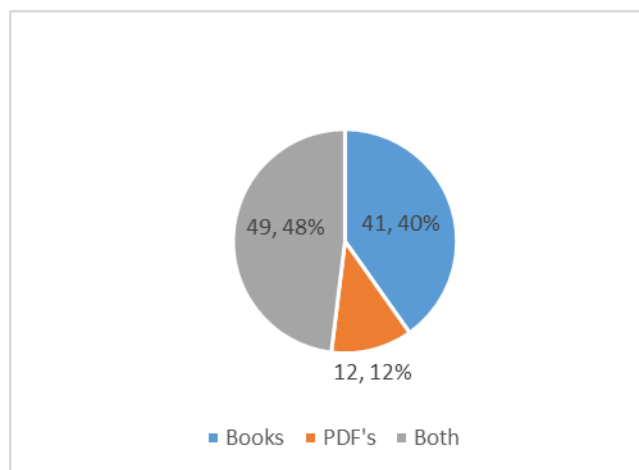**Figure 1(a): What mode of learning did you use the most?**

Figure 1(b): Currently what source of reading material do you use the most?

Discussion

To understand the academic impact of online education introduced during the COVID-19 pandemic, a comparative analysis was conducted using factual data from BISE Gujranwala [~~10~~ 9]. This analysis focused on two student cohorts: one that completed their education prior to the pandemic and one that studied during and after the shift to online learning. Specifically, the performance of the 2016 batch (pre-COVID-19) and the 2020 batch (post-COVID-19) was evaluated based on their results in Grade 11 (HSSC-1) and Grade 12 (HSSC-2) board examinations [10] [11].

The selection of these batches allows for a fair and relevant comparison, as students in Grade 9 and 10 during 2020 were either promoted or assessed through limited subject examinations, making results from those years unsuitable for reliable analysis. Therefore, the comparison focuses exclusively on intermediate-level data, which offers a clearer indication of the effects of prolonged online education [11].

In HSSC-1, the 2016 batch achieved a pass percentage of 45.79% in 2018. In contrast, the 2020 batch, after being educated primarily through online platforms, recorded a significantly lower pass percentage of 38.48% in 2022. This marks a decline of 7.31 percentage points, suggesting that a considerable number of students were unable to meet academic standards after being subjected to remote learning. While this percentage gap may appear modest, it translates to thousands of additional failures and indicates a substantial drop in academic performance [12].

In HSSC-2, the trend persisted, albeit with a smaller margin. The 2016 batch recorded a pass rate of 58.25% in their final year (2019), whereas the 2020 batch achieved 56.11% in 2023. This 2.14% drop, although less severe than in HSSC-1, still reinforces the pattern of academic decline post-online education. The consistency of lower pass percentages in both years of intermediate education supports the argument that online education did not facilitate academic retention or performance effectively [13].

These statistical outcomes correlate with the perceptions gathered from the student survey conducted in this study. A considerable portion of respondents reported that online education was not helpful in retaining academic concepts and expressed dissatisfaction with the system overall. This alignment between subjective feedback and objective board results strengthens the claim that the online education model, as implemented during the pandemic, had a detrimental effect on student learning outcomes [14].

It is also worth noting that students reported facing difficulty when transitioning back to traditional education after the pandemic. Despite a clear preference for physical classrooms, many struggled to adapt to the structure and pace of in-person learning, likely due to the long-term disruption in study habits and diminished attention spans cultivated during online sessions. This transition difficulty further validates the long-lasting educational impact of the pandemic-era learning environment [15].

Despite these shortcomings, students did acknowledge certain strengths of the online education model. Many recognized the ease of access to learning resources, tools, and digital content as beneficial. Importantly, a significant number of students expressed interest in a hybrid education system; one that combines the structure of traditional classrooms with the flexibility and resourcefulness of digital tools [16].

To respond to these insights, the following recommendations are proposed:

- Leverage online resources to supplement classroom teaching through e-books, educational platforms, and academic tools.
- Develop institutional digital platforms (e.g., apps or portals) for content sharing, assignment management, and peer interaction under faculty supervision.
- Train teachers in digital classroom management, including how to effectively deliver online lessons, maintain discipline, and engage students.
- Establish support systems for students transitioning back to traditional learning, ensuring they rebuild effective study habits and classroom focus.
- Promote blended learning models that harness the strengths of both systems, preparing education frameworks for future disruptions.

In conclusion, while the COVID-19 pandemic posed a significant challenge to the education system, it also highlighted opportunities for innovation. A restructured and integrated approach to learning could transform these lessons into lasting educational reforms, ensuring resilience and adaptability for the future [17].

Conclusion

From both the board examination results and student survey responses, it is evident that the shift to online education during the COVID-19 pandemic negatively influenced academic performance among students in Gujranwala. The decline in pass percentages in both HSSC-1 and HSSC-2 after online learning implementation points toward diminished concept retention, lower engagement, and potential gaps in instructional quality. Moreover, the persistent struggle among students to adjust back to conventional learning styles indicates that the effects of online education were not only immediate but enduring.

Authors' contributions

ICMJE criteria	Details	Author(s)
1. Substantial contributions	Conception, OR	1,3,10
	Design of the work, OR	2,4,8,9
	Data acquisition, analysis, or interpretation	5,6,7
2. Drafting or reviewing	Draft the work, OR	1,2,3,10
	Review critically for important intellectual content	4,5,6,7,8,9
3. Final approval	Approve the version to be published	All
4. Accountable	Agree to be accountable for all aspects of the work	All

Declarations

Ethics approval and consent to participate
The Ethics Review Committee of M. Islam Medical & Dental College, Gujranwala approved the study. Informed consent was taken from all volunteer participants.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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