



Students' Perception of Online Learning: A Study Based on Secondary Data

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<https://doi.org/10.5281/zenodo.21201799>

Abstract

Online Learning can continue to directly affect students' engagement with educational material even after the pandemic. Online education became the primary method of imparting knowledge after the COVID-19 pandemic, displacing its role as an additional resource. This study addresses how students comprehend online learning by extensively examining and integrating secondary and standard data from industry survey reports and peer-reviewed journals (Frontiers in Education, ScienceDirect, Emerald Publishing, The International Journal of Interactive Mobile Technologies, and others). The research explores how student habits developed between 2022 and 2024, the digital divide between urban and rural regions, and the advantages (comfort, flexibility, emotional relief) and downsides (distraction, procrastination, connectivity issues) of online learning. The study also provides a conceptual framework that links precondition factors, student perceptions, and learning outcomes. The findings show that while students enjoy the adaptability and accessibility of online learning, concerns concerning concentration, socialising, and digital infrastructure continue to shape a prudent, more hybrid-focused perspective. The paper concludes with beneficial suggestions for lawmakers and educational organisations to improve the usefulness of online and hybrid learning approaches.

Keywords: *Digital Divide, E-learning, Hybrid Learning, Online Learning, Secondary Data Analysis, Student Perception.*

1. Introduction

Learning is experiencing a fundamental transformation in recent years, which has evolved from being entirely educational in the classroom to increasingly incorporating digital and online platforms. The COVID-19 pandemic obliged institutions and schools throughout the world to make the transition to online learning relatively soon. This immediate response, also referred to as e-learning, online learning, or hybrid learning in its hybrid form, has grown into a more planned and organised part of traditional education. (Dhawan, 2020) The term "online learning" refers to the transmission of textbooks and teaching without the need for in-person classroom attendance through digital platforms, learning management systems (LMS), video-conferencing



technologies, and recorded or live-streamed lectures. (Muthuprasad et al., 2021; Khan et al., 2021; Coman et al., 2020). Advances in internet connectivity, smart devices, and cloud-based educational technology have driven its adoption.

However, students' impressions of technology have a significant impact on the efficacy and popularity of online learning. Whether online learning is recognised as a true substitute for traditional classroom instruction or is simply acknowledged as a short-term, ineffective supplement depends on students' perspectives, which include satisfaction, engagement, motivation, and mindset. Therefore, it is essential to comprehend this perception in order to create educational systems that are well-equipped for the future. (Dhawan, 2020; Singh & Thurman, 2019)

In order to create a thorough and fact-based picture of the issue, this research conducts a secondary-data-based analysis of students' perceptions of online learning using empirical findings from several published studies carried out in India and abroad.

2. Conceptual Framework

Based on an extensive review of existing literature, this study proposes a conceptual framework that organises the determinants and consequences of students' perception of online learning into three broad categories: (a) Antecedent Factors, (b) Students' Perception (the central mediating construct), and (c) Outcome Variables. The framework also incorporates a feedback loop, recognising that learning outcomes and experiences continuously reshape future perception and institutional policy. (Coman et al., 2020; Khan et al., 2021; Singh & Thurman, 2019).

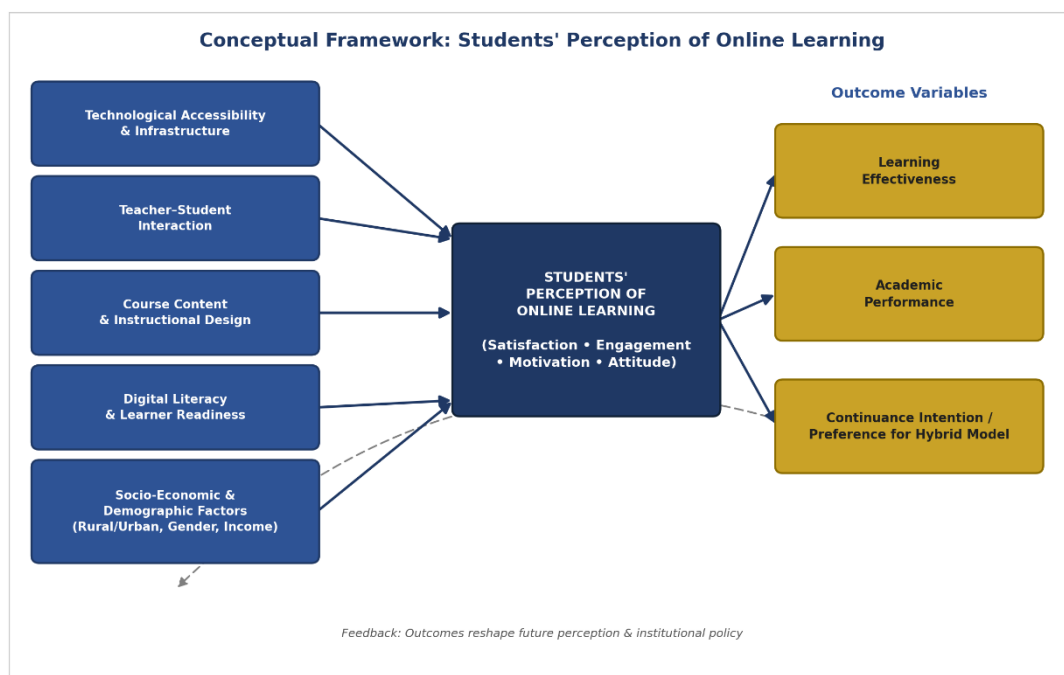


Figure 1: Conceptual Framework of Students' Perception of Online Learning



The antecedent elements include socioeconomic and demographic factors like household income, gender, and rural/urban location; course content and instructional design; student-teacher interaction; digital literacy and learner preparation; and technology infrastructure and accessibility. Together, these antecedents shape the major construct, students' perception, which consists of motivation, attitude, engagement, and satisfaction. (Khan et al., 2021; Muthuprasad et al., 2021; Venkatesh et al., 2024). Academic performance, learning efficacy, and retention intention, that is, students' tendency to persist with or prefer hybrid/online learning methods in the future- are all subject to such an approach.

3. Significance of the Study

- Helps educational institutions design more effective and student-centric online/hybrid learning models.
- Provides policymakers with evidence on the digital divide affecting rural and economically weaker student groups.
- Assists ed-tech companies in identifying gaps in platform design, content delivery, and engagement strategies.
- Contributes to the growing body of academic literature on post-pandemic educational transformation.
- Offers a consolidated, secondary-data-based reference point for future primary research on the subject.

4. Literature Review

1. (Muthuprasad et al., 2021) conducted a survey to learn more about Indian students' choices and views toward online learning during the COVID-19 pandemic. According to survey data compiled from typical college students, the researchers discovered that versatility, ease, and accessibility were the most significant advantages of traditional versus online education. However, bad internet connectivity, lack of motivation, and problems focusing had an adverse impact on the educational experiences of students. According to the survey's findings, nearly all students chose hybrid learning over fully online education.
2. (Sharma & Chandel, 2021) Frontiers in Education undertook a study that looked at how Indian students felt about online education throughout the pandemic. The study found that students appreciated better time management and the flexibility of learning at home. However, procrastination, distractions, and unequal access to digital infrastructure considerably decreased students' satisfaction. According to the survey, there is a clear digital divide in online learning between rural and urban areas.
3. (Ali et al., 2024) explored how Indian students felt about learning online in many subjects. Even though students had become more adaptable to online learning environments, the study, which was published in the International Journal of Interactive Mobile Technologies, found that limited access to digital devices and poor internet infrastructure remained major barriers, particularly for rural students. The researchers emphasised the importance of upgrading digital infrastructure in order to further enhance online learning outcomes.



4. (Comoretto et al., 2020) carried out a study that was published in the Asian Association of Open Universities Journal in order to comprehend how instructors and students view online learning environments. The study discovered that although participants acknowledged online learning as a useful substitute in emergency situations, they felt it could not completely replace traditional classroom instruction because in-person communication, classroom participation, and hands-on learning are still crucial elements of high-quality education.

5. (VDOCipher, 2024) examined data from a nationwide survey to identify patterns in the learning approaches that students favoured during the COVID-19 outbreak. According to the survey, between 2022 and 2024, students' interest in hybrid learning surged while their preference for entirely online education significantly decreased. According to the results, students now see online learning as an additional strategy rather than a whole substitute for traditional classroom instruction.

5. Objective of the Study

- To understand and analyse students' overall perception of online learning based on published secondary data.
- To identify the key advantages and disadvantages of online learning as perceived by students.
- To examine the digital divide between rural and urban students in accessing and perceiving online learning.
- To compare the trend in student preference for online learning between 2022 and 2024.
- To propose a conceptual framework explaining the antecedents and outcomes of student perception.
- To offer practical suggestions for improving the effectiveness of online and hybrid learning models.

6. Research Gap

While a considerable volume of research has examined students' perception of online learning during the acute phase of the COVID-19 pandemic (2020-2021), comparatively fewer studies have systematically tracked how this perception has evolved in the post-pandemic period (2022-2024), once online learning shifted from a compulsion to a choice.

Further, much of the existing literature treats advantages and disadvantages, rural-urban disparities, and temporal trends as isolated findings rather than integrating them into a unified conceptual framework. There is also limited secondary-data-based consolidation that brings together survey statistics from multiple independent studies to present a comprehensive, comparative picture. This paper attempts to address these gaps by synthesising multi-source secondary data into a single, structured, and conceptually grounded analysis.



7. Data Analysis and Findings

7.1 Perceived Advantages of Online Learning

Secondary data drawn from a large-scale Indian survey highlights the following as the most valued advantages of online learning among students:

Table 1: Perceived Advantages of Online Learning Among Students

Perceived Advantage	% of Respondents
Flexible timing (Flexitime)	81.0%
Comfort of learning from home	75.3%
Emotional respite / reduced stress	74.3%
Ability to spend time with family	67.8%

Source: Frontiers in Education, 'Perception of Online Learning Among Students from India Set Against the Pandemic' (2021).

Interpretation

Table 1 shows that flexible timing is the most highly valued advantage of online learning, with 81.0% of students identifying it as a key benefit. This is followed by the comfort of learning from home (75.3%) and emotional respite or reduced stress (74.3%), indicating that students appreciate the convenience and supportive learning environment offered by online education. Additionally, 67.8% of respondents reported that online learning enables them to spend more time with their families. Overall, the findings suggest that flexibility, convenience, and improved work–life balance are the major factors contributing to students' positive perception of online learning (Bast, 2021; Muthuprasad et al., 2021).

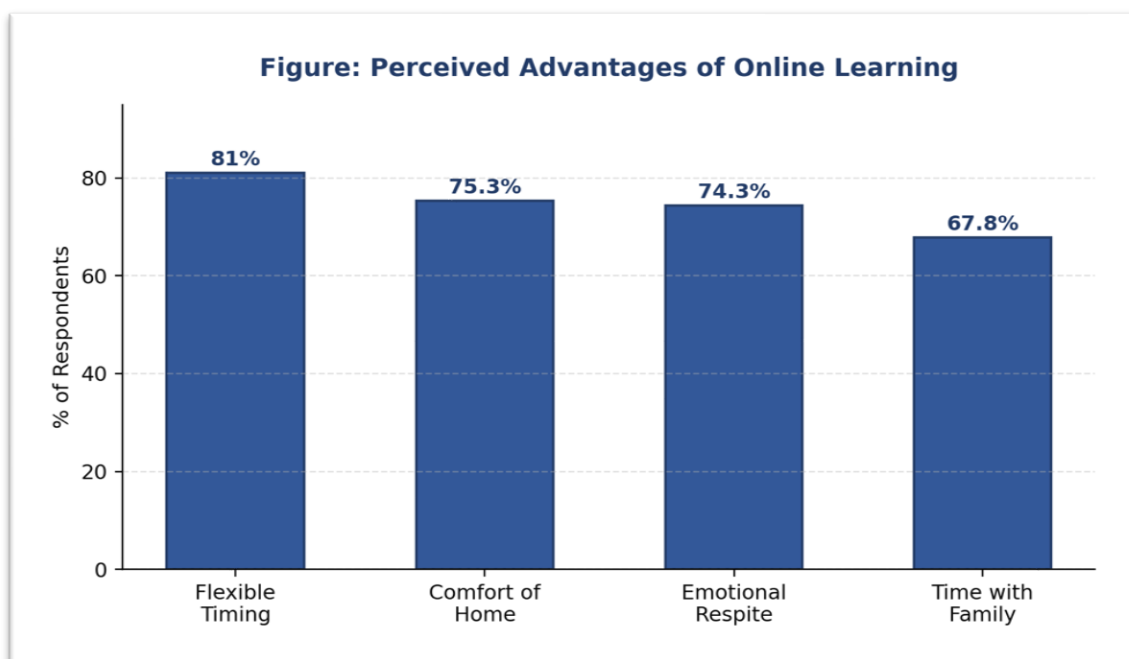


Figure 2: Perceived Advantages of Online Learning



7.2 Perceived Disadvantages / Challenges

Despite its advantages, students reported several recurring challenges associated with online learning:

Table 2: Perceived Disadvantages and Challenges of Online Learning

Perceived Disadvantage	% of Respondents
Distraction during class	66.8%
Tendency toward procrastination	54.5%
Internet connectivity issues	57.4%
Lack of technological equipment/devices	~15.0%

Source: Frontiers in Education (2021); cross-sectional study on student perception of e-learning (PMC).

Interpretation

Table 2 shows that distraction during online classes (66.8%) is the most significant challenge perceived by students, indicating that maintaining concentration in a virtual learning environment remains difficult. Internet connectivity issues (57.4%) and procrastination (54.5%) are also major barriers that negatively affect students' learning experience and academic performance. In addition, approximately 15.0% of respondents reported a lack of adequate technological equipment or digital devices, highlighting the persistence of the digital divide. Overall, the findings suggest that although online learning offers flexibility, technical, behavioural, and infrastructural challenges continue to influence students' perception of its effectiveness (Bast, 2021; Authors, 2024; Muthuprasad et al., 2021).

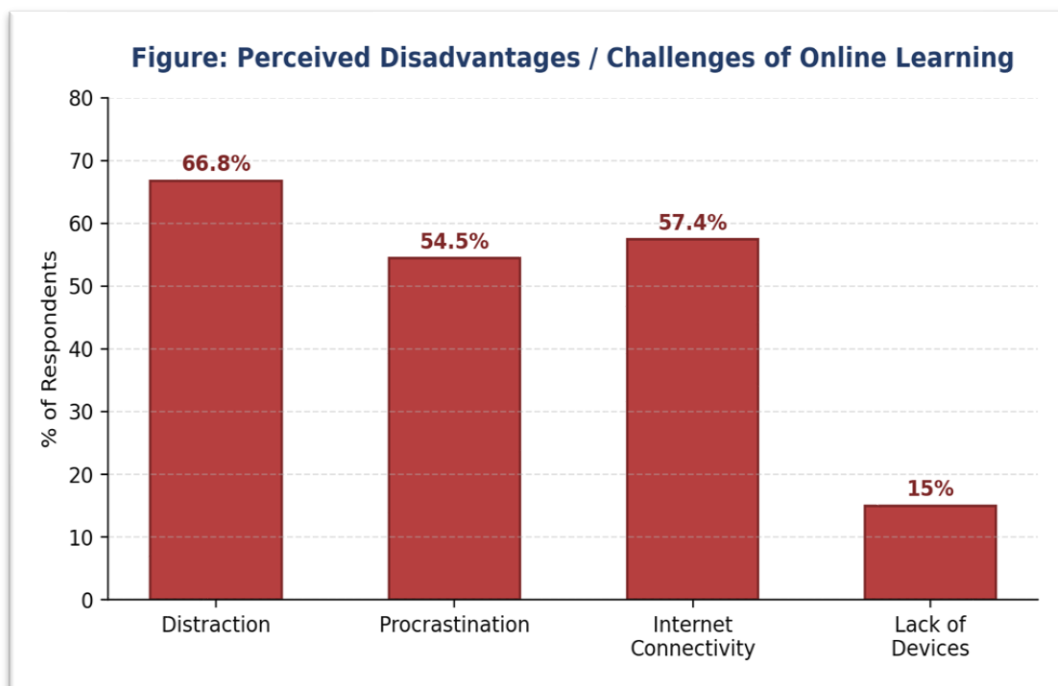


Figure 3: Perceived Disadvantages / Challenges of Online Learning



7.3 Rural–Urban Digital Divide

The data reveals a consistent and statistically significant gap between rural and urban students in both receptiveness to online learning and access to necessary devices:

Table 3: Rural–Urban Digital Divide in Online Learning

Parameter	Urban Students	Rural Students
Receptive to online learning	57.4%	49.7%
Lack access to smart devices	14.0%	19.0%

Source: Frontiers in Education (2021); International Journal of Interactive Mobile Technologies (2024).

Interpretation

Table 3 shows a clear disparity between rural and urban students in terms of online learning accessibility and perception. The findings indicate that 57.4% of urban students are receptive to online learning compared to 49.7% of rural students, suggesting that urban learners are more comfortable and willing to adopt digital education. Furthermore, 19.0% of rural students reported a lack of access to smart devices, compared with 14.0% of urban students, highlighting the digital divide in terms of technological resources. These findings demonstrate that inadequate digital infrastructure and limited access to technological devices remain significant barriers for rural students, affecting their perception and participation in online learning. Therefore, improving digital infrastructure and ensuring equitable access to technology are essential for promoting inclusive and effective online education (Bast, 2021; Venkatesh et al., 2024; Muthuprasad et al., 2021).

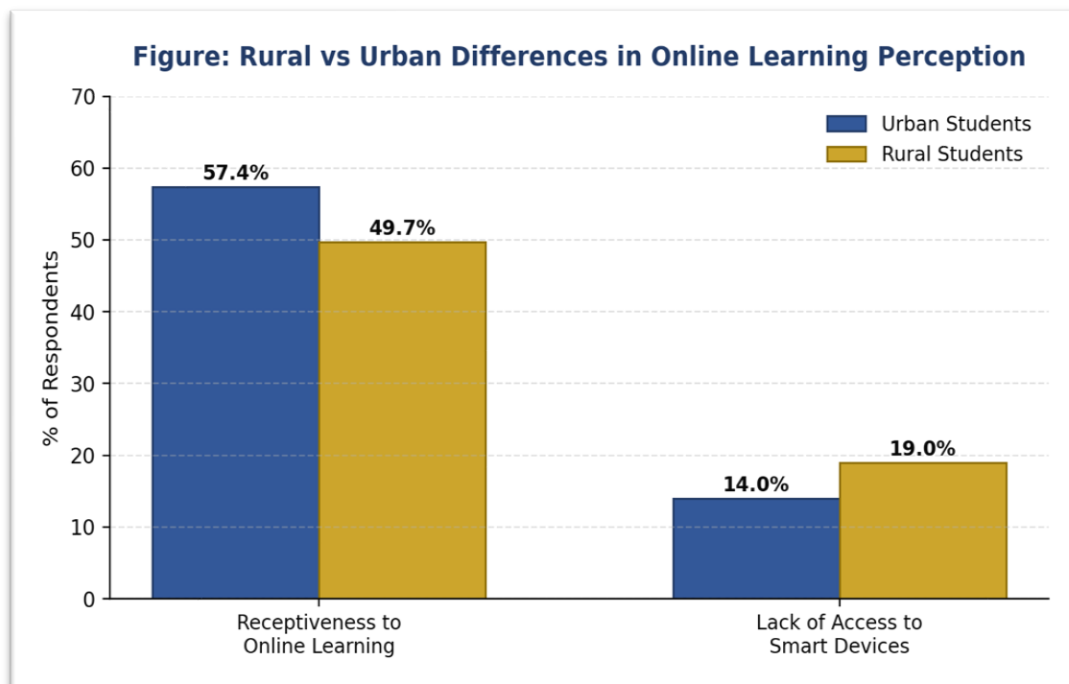


Figure 4: Rural vs Urban Differences in Online Learning Perception



7.4 Post-Pandemic Trend: 2022 vs 2024

A comparison of survey data across time shows a clear post-pandemic recalibration away from exclusively online preferences, with a rebound toward offline and blended formats:

Table 4: Post-Pandemic Trends in Students' Preference for Online Learning (2022–2024)

Indicator	2022	2024
Preference for online learning	~55.0%	36.4%
Participation in online group study	55.2%	29.5%

Source: VDOCipher, 'Online vs Offline Education Survey' , Learning Statistics (2024-25 update).

Interpretation

Table 4 shows a significant decline in students' preference for fully online learning in the post-pandemic period. The proportion of students preferring online learning decreased from approximately 55.0% in 2022 to 36.4% in 2024, indicating a growing inclination towards offline and hybrid modes of education. Similarly, participation in online group study declined substantially from 55.2% in 2022 to 29.5% in 2024, suggesting reduced reliance on online collaborative learning activities after the pandemic. These findings indicate that while online learning continues to be valued for its flexibility and convenience, students increasingly prefer face-to-face interaction and blended learning approaches for a more engaging and effective educational experience (VDOCipher, 2024; Muthuprasad et al., 2021; Bast, 2021).

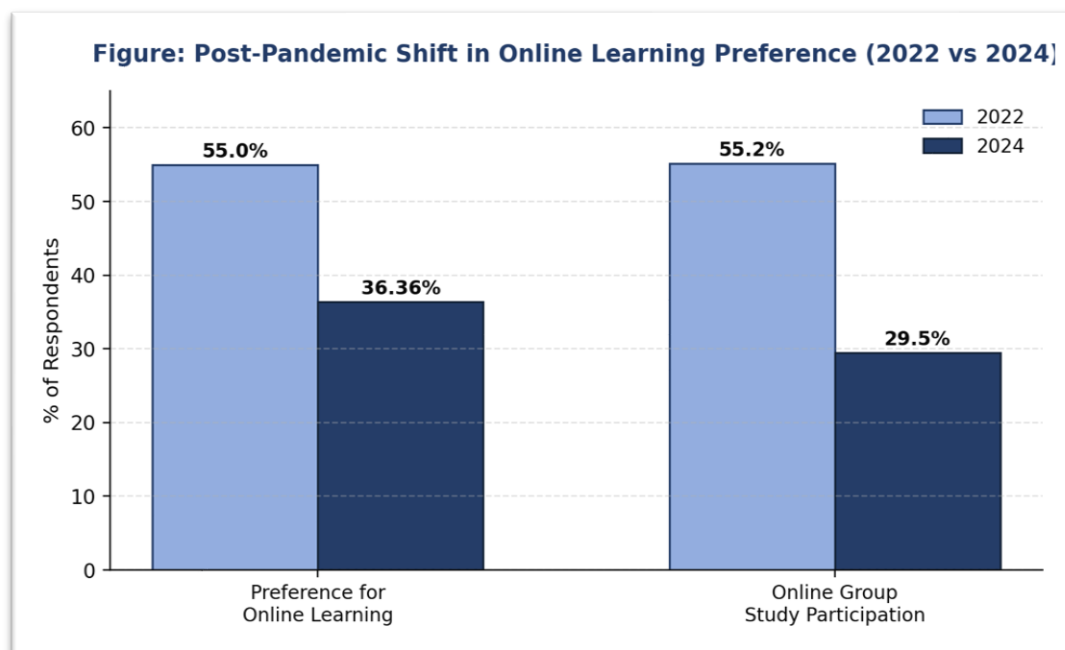


Figure 5: Post-Pandemic Shift in Online Learning Preference (2022 vs 2024)



8. Research Methodology

8.1 Source of Data

This study uses only secondary data. The data came from peer-reviewed academic journals (Frontiers in Education, ScienceDirect, Emerald Publishing, International Journal of Interactive Mobile Technologies, PMC/NCBI-indexed studies) and industry survey/analytics reports (VDOCipher Learning Statistics). There was no primary data collection (questionnaire or interview) done for this paper.

8.2 Research Design

The investigation used a descriptive-analysis-based research design. In an effort to recognise recurrent patterns, contrasts, and emerging patterns in students' impressions of online learning, it methodically assesses, gathers, and contrasts statistical data gathered from various secondary and standard sources.

8.3 Method of Analysis

Statistical charts and comparative tables are used to present secondary source data that has been arranged thematically (benefits, downsides, rural-urban divide, temporal trend). Based on the examined literature, an inductive conceptual framework has been established to explain the relationship between antecedent circumstances, student perception, and learning outcomes.

8.4 Scope of the Study

The vast majority of the data employed in this analysis is gathered from the Indian setting, and its focus is confined to students in schools and colleges and universities. Applicable overseas studies were added in scenarios where Indian data was not provided. The study is being carried out from the inception of the COVID-19 pandemic in 2020 until the most recent updated post-pandemic survey data become available in 2024–2025. Teacher perspective, institutional cost-benefit analysis, and technical evaluation of specific learning management systems are not covered, unless it is specifically related to student perspective.

9. Findings of the Study

- The two features of online learning that learners value the most include scheduling flexibility (81%) and home comfort (75.3%).
- The primary perceived negatives are internet connection concerns (57.4%) and distraction (66.8%).
- A substantial digital divide persists: urban learners are more flexible (57.4%) and more equipped than rural students (49.7% receptive; 19% lack devices).
- Student choices for complete online learning have dropped from nearly 55% in 2022 to 36.4% in 2024, showing a post-pandemic pattern back toward offline and hybrid preferences.
- Between 2022 and 2024, participation in online collaborative/group studies fell by more than half (from 55.2% to 29.5%).



- Students see online learning as a flexible and supplemental option rather than a complete replacement for traditional classroom instruction.
- While a contributing aspect, socioeconomic background is not as statistically noteworthy in determining perception as rural/urban location.

10. Suggestions

- To solve challenges with concentration and social involvement, educational organisations might implement a hybrid learning paradigm that combines the flexibility of online courses with irregular in-person communication.
- To address the perceived disparity separating rural and urban regions, governmental and commercial partners should give importance to establishing rural telecommunications infrastructure, such as inexpensive internet and sponsored smart devices.
- Course developers should use multimedia, activity-driven, and shorter-duration instructional modules to minimise distraction and procrastination.
- To replicate educational engagement, universities ought to establish procedures for peer-to-peer and instructor-student interaction in online platforms.
- It is crucial to establish regular feedback loops (for example, surveys and perception audits) to monitor changing student perception and modify online learning strategies as necessary.
- To increase comfort and efficiency with online platforms, teachers and students should receive digital literacy training.

11. Limitation of the Study

- The study relies exclusively on secondary data; no primary survey or interview was conducted to validate findings independently.
- Data have been sourced from studies with differing sample sizes, geographies, and time periods, which may limit direct statistical comparability.
- Some data points (e.g., 2022 online preference) are approximated from broader industry survey summaries rather than a single controlled study.
- Rapidly evolving technology (e.g., AI-based personalised learning) may render some findings less applicable in subsequent years.
- The study's Indian-context emphasis may limit generalisability to education systems in other countries with different infrastructure and cultural contexts.



12. Conclusion

This study employed a systematic review of secondary data to determine how students evaluated online learning. The findings paint a complicated picture: despite being commended for its flexibility, comfort, and emotional release, online learning nonetheless faces resistance due to distraction, poor technology, and a perceived lack of social interaction.

One ongoing structural barrier to equal access and perception is the digital divide between rural and urban areas. Importantly, after the pandemic, students' choice for fully online courses changed from 2022 to 2024, indicating that they are starting to see online learning as a component of a broader, mixed learning environment rather than as a substitute for traditional education. Therefore, educational institutions will benefit most from developing hybrid models that take advantage of both online and offline learning while proactively addressing the pedagogical and technical flaws identified in this study.

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Students' Perception of Online Learning: A Study Based on

Secondary Data

Published in Volume 04, Issue 07, June 2026.

EDITOR IN CHIEF