

PERCEPTION OF STUDENTS ABOUT ONLINE TEACHING AT HIGHER EDUCATION LEVEL: A STUDY OF KORAPUT DISTRICT, ODISHA

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Abstract: This study examines how undergraduate students at the higher education level in Koraput district, Odisha, perceive online teaching, a mode of instruction that gained prominence during and after the COVID-19 pandemic. Adopting a descriptive cross-sectional survey design, sixty students from Bhairaba Degree Mahavidyalaya, Borigumma, and Vikram Deb University, Jeypore, were selected through purposive sampling on the basis of their prior experience with online classes. A structured questionnaire covering demographic details, perception statements, and challenge-related items was administered, and the resulting data were analysed using descriptive and inferential statistics in SPSS. The results show that although students valued the flexibility that online classes offered, unstable internet connectivity, limited access to digital devices, and weak teacher-student interaction remained persistent concerns. Overall satisfaction was moderate, with a majority of respondents still favouring classroom teaching over the online mode, though a sizeable minority expressed openness to a blended format. Academic stream showed a statistically significant association with perceived effectiveness, whereas gender differences were not significant. The findings point to the continuing digital divide in semi-rural and tribal-dominated districts and underline the need for stronger infrastructural support and digital-literacy training if online education is to become a genuine complement to classroom teaching in such regions.

Keywords: online teaching; student perception; higher education; digital divide; tribal district; Koraput; blended learning

I. INTRODUCTION

The last two decades have redrawn the map of higher education. Learning management systems, video-conferencing tools and mobile applications have moved from being optional add-ons to becoming, for many students, the primary channel through which coursework is first encountered. This shift was already under way before 2020, but the COVID-19 pandemic turned a gradual transition into an abrupt one. When colleges and universities across India closed their gates in March 2020, online teaching stopped being an experiment and became, almost overnight, the only available mode of instruction (Dhawan, 2020). Institutions with well-developed digital infrastructure adapted with relative ease; those without it did not have that option, and the gap between the two experiences has since become one of the more closely watched questions in Indian higher-education research (Mishra, Gupta, & Shree, 2020).

The Government of India and several state governments responded to this disruption by scaling up platforms such as DIKSHA, SWAYAM and e-Pathshala. In practice, however, their reach was uneven. Colleges and universities leaned heavily on Google Meet, Zoom, Microsoft Teams and, most often of all, WhatsApp, since it required the least bandwidth and the least technical familiarity. Teachers received only basic orientation in digital tools, and students were expected to adjust just as quickly. Even where participation looked satisfactory on paper, questions remained about how much of it translated into genuine understanding, and whether the shift widened rather than narrowed existing inequalities in access to quality education (Aithal & Aithal, 2021; Bisht, Joshi, & Bisht, 2021; Chauhan, 2021).

Koraput district, located in the tribal belt of southern Odisha, illustrates these tensions with unusual clarity. The terrain is hilly, the settlements are scattered, and a large share of the population belongs to Scheduled Tribes; the

district's literacy rate stood at around 49 percent as per the 2011 Census. Government efforts over the years, including residential schools, scholarships and midday-meal support, had been slowly narrowing the educational gap between Koraput and the rest of Odisha. The pandemic interrupted that progress. Colleges and the region's central university introduced online classes as an emergency measure, but many students could not attend regularly. Some borrowed a relative's or a friend's smartphone; others walked or travelled to nearby towns in search of a usable network signal. Limited digital literacy compounded these obstacles and shaped how students eventually came to view the entire experience of learning online (Nayak, S., 2021; Mishra, L., 2022).

Perception, in the psychological sense, is how a person interprets and responds to what happens around them. In an educational setting, students' perception of a teaching method has a direct bearing on their motivation, their engagement, and ultimately their academic performance. Where students see online teaching as burdensome or ineffective, disengagement tends to follow, and existing inequalities widen further. Where they adapt to it comfortably, it becomes possible to imagine digital tools as a lasting complement to classroom instruction rather than a temporary substitute for it. Understanding how students in a region like Koraput actually perceive this mode of teaching is, therefore, not a peripheral question but a central one for anyone thinking about the future of digital education in India's tribal and semi-rural belts.

Much of the existing research on online education in India draws on data from metropolitan and semi-urban institutions, where digital infrastructure is comparatively strong. Districts such as Koraput rarely find a place in this literature, even though the difficulties their students face are qualitatively different from those reported in better-connected regions. The present study was undertaken to address this gap. It examines how undergraduate students at two institutions in Koraput, Bhairaba Degree Mahavidyalaya, Borigumma, and Vikram Deb University, Jeypore, perceive online teaching, what challenges they associate with it, and whether this perception differs by gender or academic stream. In doing so, it seeks to add a regionally grounded voice to a debate that is too often conducted at a distance from the students it concerns, and to speak to the wider policy goal, echoed in Sustainable Development Goal 4, of inclusive and equitable quality education for all.

II. REVIEW OF LITERATURE

The literature on online education in India can be read along several overlapping lines: the general shift to digital instruction during the pandemic, the persistent rural-urban divide in access and perception, the specific situation of tribal students, the role that gender and household circumstances play in shaping participation, and the readiness of teachers and institutions to deliver quality instruction online. Each of these threads has some bearing on how the findings of the present study should be read.

At the national level, online learning was widely described as a necessary response to an unprecedented crisis, one that kept education running when physical classrooms were not an option (Dhawan, 2020). Mishra, Gupta and Shree examined the lockdown-period shift to online teaching-learning in Indian higher education and found that while institutions adapted quickly in administrative terms, the quality of the learning experience varied enormously depending on students' access to devices and stable connectivity (Mishra, Gupta, & Shree, 2020). Aithal and Aithal, studying student perception and satisfaction with online education more broadly, reported a mixed picture in which flexibility was appreciated but concerns about interaction and assessment persisted (Aithal & Aithal, 2021). Similar ambivalence was noted by Bisht, Joshi and Bisht in their study of undergraduate perception during the pandemic (Bisht, Joshi, & Bisht, 2021), and by Chauhan, who found that satisfaction levels depended heavily on how comfortable students already were with digital tools before the crisis began (Chauhan, 2021).

A second and closely related strand of research concerns the gap between rural and urban experiences of online education. Agarwal situated this gap within the broader discourse on the digital divide in India, arguing that unequal access to connectivity and devices was likely to widen educational inequality rather than reduce it (Agarwal, 2021). Pandey documented specific disparities in rural online learning, including patchy connectivity and a lack of dedicated study space at home (Pandey, 2022). Sharma described the everyday reality of virtual classrooms in rural India as considerably less seamless than policy documents suggested (Sharma, D., 2021), while Sharma and Choudhary, comparing rural and urban students directly, found that rural respondents consistently reported lower satisfaction and greater difficulty following live sessions (Sharma & Choudhary, 2022). Sharma and Dubey extended this comparison to identify specific gaps in e-learning provision in rural higher education institutions, including the near-total absence of institutional learning management systems (Sharma & Dubey, 2022). Debnath's analysis of India's educationally

backward districts reached a similar conclusion: that digital learning initiatives, however well-intentioned, could not compensate for missing basic infrastructure (Debnath, 2021). Tripathy's empirical overview of rural college students and Tiwari's account of post-pandemic e-learning experiences both reinforced the picture of a rural student body that adapted out of necessity rather than genuine preference (Tripathy, 2021; Tiwari, 2023).

Odisha's tribal districts, including Koraput, have received more focused attention in recent years. Nayak's analytical study of digital education in Koraput specifically identified poor network coverage and a shortage of smartphones as the two most frequently cited obstacles (Nayak, S., 2021). Mishra's evaluative study of tribal students in Koraput reported that while students recognised the convenience of online classes, they also felt that something was lost in terms of peer interaction and hands-on clarification of doubts (Mishra, L., 2022). Das examined how the digital divide plays out among tribal students across Odisha and concluded that bridging it would require investment well beyond the classroom, extending to household electricity supply and affordable data (Das, 2022). Mallick and Mishra's case study of tribal Odisha echoed this, noting that even motivated students were often defeated by circumstances outside their control (Mallick & Mishra, 2022). Studies focused on the KBK region (Koraput, Bolangir and Kalahandi), by Nanda and Pani and separately by Swain, found broadly similar patterns of intermittent participation, low device ownership, and heavy reliance on WhatsApp for course material (Nanda & Pani, 2022; Swain, 2022). Subudhi's work on tribal student engagement in Odisha, Panigrahi's district-level analysis of barriers, and Mohanty's review of the pandemic's effect on higher education in Odisha's tribal districts each arrived at the same broad conclusion: that online teaching in these areas functioned as a stopgap rather than a genuinely equivalent alternative to classroom instruction (Subudhi, 2023; Panigrahi, 2023; Mohanty, 2023). Nayak and Pattnaik's survey of student perspectives across Odisha and Barman and Kundu's comparable study from tribal Jharkhand suggest that these findings are not unique to Koraput but reflect a wider pattern across India's tribal belt (Nayak, R., & Pattnaik, 2021; Barman & Kundu, 2022). Meena's work on Rajasthan's tribal regions and Choudhury and Verma's review of digital-education policy for tribal students point to the same conclusion from different parts of the country, while Borah and Sarma's study of digital literacy among tribal students in Assam found that even where devices were technically available, the skills needed to use them productively were often missing (Meena, 2023; Choudhury & Verma, 2023; Borah & Sarma, 2021).

Gender and household circumstances form another recurring theme. Singh and Kaur, studying student attitudes in Himachal Pradesh, found that domestic responsibilities disproportionately affected how consistently female students could attend live sessions (Singh & Kaur, 2021). Suman and Devi, examining barriers to online education in Bihar's rural colleges, reported a similar pattern, with shared family devices often prioritised for male members of the household (Suman & Devi, 2021). Two large-scale data sources reinforce these localised findings at a national level: the National Statistical Office's survey on household social consumption in education documented substantial rural-urban gaps in internet access and device ownership (National Statistical Office, 2023), and UNICEF's assessment of learning loss and digital inequality in rural India warned that these gaps, if left unaddressed, would have consequences reaching well beyond the pandemic period itself (UNICEF, 2021).

Finally, several studies have looked at the institutional and teacher-related side of the transition. Mishra and Behera explored student satisfaction in virtual learning environments and found that perceived teacher preparedness was one of the strongest predictors of a positive experience (Mishra & Behera, 2021). Mukherjee and Sen, writing on student engagement from a rural perspective, made a related point: engagement depended less on the platform used than on whether teachers actively adapted their delivery to the constraints their students were working under (Mukherjee & Sen, 2021). Patel and Sharma's case study of digital readiness in rural Chhattisgarh colleges, and Varma's account of student digital adaptability in the same state, both found that institutions with even modest prior investment in digital infrastructure coped noticeably better than those without it (Patel & Sharma, 2022; Varma, 2022). Srivastava and Jha's broader review of digital equity in Indian education, along with Chatterjee and Pal's and Bhattacharya and Sinha's studies of equity and accessibility in rural colleges, converge on the argument that meaningful digital inclusion requires sustained investment rather than one-time distribution of devices (Srivastava & Jha, 2022; Chatterjee & Pal, 2023; Bhattacharya & Sinha, 2023). Case studies from West Bengal by Banerjee and Dey and by Mandal documented comparable struggles at the institutional level, particularly around maintaining consistent teacher-student contact (Banerjee & Dey, 2020; Mandal, 2021). Verma and Ali's assessment of online learning effectiveness in tribal colleges and Singh's review of digital-education adoption in underdeveloped regions both note that policy ambition has generally outpaced ground-level implementation (Verma & Ali, 2023; Singh, A., 2023). This is consistent with the picture presented in the University Grants Commission's own annual report on higher education (UGC, 2023) and with

UNESCO's Global Education Monitoring Report for India, which identifies the rural-urban and tribal-non-tribal digital divide as one of the more persistent obstacles to achieving equitable quality education in the country (UNESCO, 2022).

Taken together, this body of work suggests three things that are directly relevant to the present study. First, students in tribal and rural districts consistently report a narrower and less reliable set of tools for online learning than their urban counterparts. Second, gender and household context shape how consistently students, particularly female students, can participate even when a device is technically available at home. Third, teacher preparedness and institutional support matter as much as connectivity itself in determining whether students come away from the experience with a favourable or unfavourable perception. The present study builds on this literature by examining these questions directly among undergraduate students in Koraput, a district that earlier studies have flagged as facing acute versions of each of these difficulties.

III. RATIONALE AND STATEMENT OF THE PROBLEM

Most of the empirical work reviewed above, and much of the wider literature on online education in India, draws its evidence from metropolitan or semi-urban institutions with comparatively strong digital infrastructure. Such settings cannot be assumed to represent the experience of students in a tribal-dominated, hilly district like Koraput, where connectivity is patchy, digital literacy is still developing, and many students are the first in their families to engage with any form of computer-mediated learning. A region-specific, experience-driven study is therefore necessary to understand what online teaching actually looked like from the vantage point of these students, rather than relying on assumptions carried over from better-resourced contexts.

This gap matters beyond the immediate concerns of the pandemic period. The National Education Policy 2020 envisages digital and blended learning as a lasting feature of Indian higher education, not a temporary emergency measure. If policy continues to be shaped mainly by evidence from urban and semi-urban settings, there is a real risk that national strategies will reproduce the very inequalities they are meant to resolve. Disaggregated, district-level evidence of the kind this study provides can help close that gap, and can offer colleges, universities, and local administrators in Koraput a concrete basis for planning rather than a set of borrowed assumptions.

The problem this study addresses can therefore be stated as follows: the abrupt shift to online teaching in Indian higher education, triggered by the COVID-19 pandemic, affected students in remote and tribal districts such as Koraput in ways that remain poorly documented. Whether online teaching succeeded in meeting these students' academic needs depends on how they themselves perceived it, on the specific barriers they encountered, and on whether this perception varied systematically across gender or academic stream. The present study was designed to examine precisely these questions.

Research Questions

- What is the perception of higher education students in Koraput district toward online teaching?
- What are the major challenges faced by students in accessing and participating in online classes?
- How do students evaluate the effectiveness of online teaching compared with traditional classroom methods?
- Are there significant differences in perception based on gender or academic stream?

IV. OBJECTIVES OF THE STUDY

- To assess the overall perception of students in Koraput district toward online teaching at the higher education level.
- To identify the challenges faced by students in accessing and participating in online learning.
- To evaluate the effectiveness of online teaching compared with traditional classroom teaching, as perceived by students.
- To examine whether perception differs significantly by gender and by academic stream.

For the purposes of this study, perception refers to students' attitudes, opinions and satisfaction regarding the use of online methods in their academic programme. Online teaching refers to instruction delivered through digital platforms

such as Google Meet, Zoom or WhatsApp without physical classroom contact. Higher education refers to undergraduate programmes offered by colleges and universities located within Koraput district.

V. METHODOLOGY

Research Design

The study followed a descriptive cross-sectional survey design, chosen because it allows data on perceptions, experiences and challenges to be collected from a defined group of respondents at a single point in time. This design suited the exploratory nature of the research questions, which sought a comprehensive snapshot of student opinion rather than a study of change over time.

Study Area and Participants

Data were collected from two institutions in Koraput district, Odisha: Bhairaba Degree Mahavidyalaya, Borigumma, and Vikram Deb University, Jeypore. Both institutions draw their student body mainly from tribal and rural communities and offer undergraduate programmes across the Arts, Science and Commerce streams. A purposive sample of sixty undergraduate students, spanning the first, second and third years of study, was selected on the single criterion that each had direct experience of attending online classes during or after the COVID-19 pandemic. Purposive sampling was considered appropriate precisely because the research questions required respondents who could speak from first-hand experience of online learning; a random sample drawn without this criterion risked including students with little or no such experience to report on.

Variables

The independent variables recorded were gender, academic stream, year of study, type of internet access, and the device typically used for online classes. The dependent variables were students' perception of online teaching, as measured through Likert-scale statements; their reported satisfaction and the specific challenges they associated with online learning; and their perceived effectiveness of online teaching relative to classroom instruction.

Tool and Procedure

A structured questionnaire, developed for this study and reviewed by a panel of academic experts for clarity and content validity, served as the primary data-collection instrument. The questionnaire was organised into five sections: demographic information, access and experience with online learning, perception statements rated on a five-point scale from Strongly Agree to Strongly Disagree, challenges faced (recorded as multiple-response items), and open-ended suggestions for improvement. Data were collected in person, with prior approval from the college administration. Every participant was briefed on the purpose of the study before completing the form, and participation was entirely voluntary. Anonymity and confidentiality were maintained throughout data collection, storage and analysis, and no identifying information was retained beyond what was needed to track completion of the questionnaire.

Data Analysis

Completed questionnaires were coded and analysed in SPSS. Descriptive statistics, namely frequencies, percentages, means and standard deviations, were used to summarise the demographic profile and the overall pattern of responses. An independent-samples t-test was used to examine whether perception scores differed by gender, and a chi-square test of association was used to examine whether perceived effectiveness of online teaching differed by academic stream. A significance threshold of $p < 0.05$ was applied throughout.

VI. RESULTS AND DISCUSSION

A. Demographic Profile of Respondents

The final sample comprised 60 undergraduate students. Table 1 summarises the demographic composition of the sample by gender, academic stream and year of study.

Table 1: Demographic Profile of Respondents (N = 60)

Category	Group	Number of Students	Percentage (%)
Gender	Male	34	56.7
	Female	26	43.3
Academic stream	Arts	28	46.6
	Science	18	30.0
	Commerce	14	23.4
Year of study	1st year	21	35.0
	2nd year	19	31.7
	3rd year	20	33.3

Male students formed a slight majority of the sample (56.7 percent), which is broadly consistent with enrolment patterns commonly reported for degree colleges in this part of Odisha. The Arts stream accounted for the largest share of respondents (46.6 percent), reflecting the wider popularity of Arts programmes in semi-rural institutions where they tend to be more accessible and affordable than professional or science-based courses. The near-even spread across the three years of study means the sample captures perceptions from students at different stages of their undergraduate journey, rather than being weighted toward any single cohort.

B. Access to Devices and the Internet

Table 2 presents the type of internet access students relied on for attending online classes, and Table 3, read together with Figure 1, shows the devices they most commonly used.

Table 2: Type of Internet Access Used for Online Learning

Type of Internet Access	Number of Students	Percentage (%)
Mobile data	40	66.7
Wi-Fi	12	20.0
No regular access	8	13.3
Total	60	100.0

Table 3: Devices Used for Online Classes

Device Used	Number of Students	Percentage (%)
Smartphone	46	76.7
Laptop	8	13.3
Tablet	6	10.0
Total	60	100.0

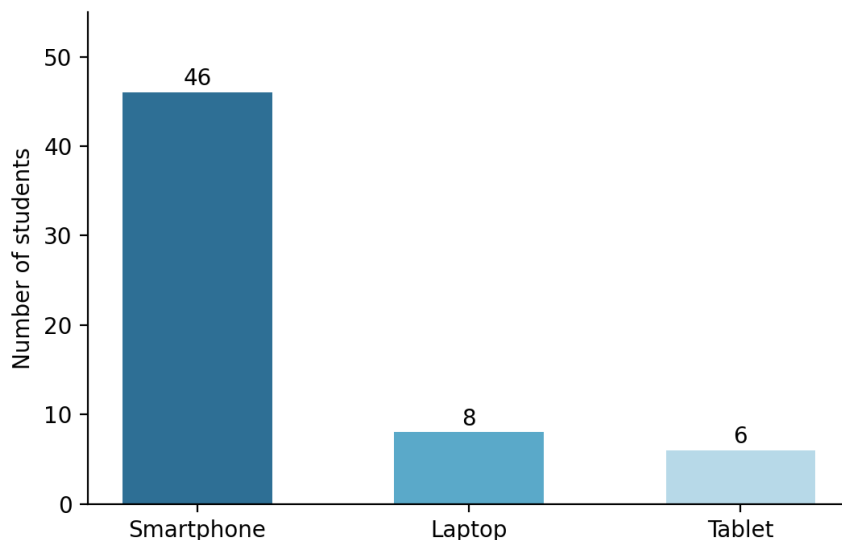


Figure 1: Devices Used by Students for Online Classes

Two-thirds of the respondents (66.7 percent) depended on mobile data rather than a fixed Wi-Fi connection, and 13.3 percent reported that they had no regular internet access at all during the period they were attending online classes. This pattern is consistent with what Nayak and, separately, Mishra reported for Koraput specifically (Nayak, S., 2021; Mishra, L., 2022), and it mirrors the broader rural-urban gap documented at the national level by the National Statistical Office (National Statistical Office, 2023). The dominance of the smartphone as the device of choice (76.7 percent, against 13.3 percent for laptops and 10 percent for tablets) points to a mobile-first mode of learning that is convenient in one sense, since a phone is cheaper and more portable than a laptop, but limiting in another, since it constrains what students can realistically do during a live session, from viewing shared documents clearly to typing out longer responses.

C. Satisfaction with Online Teaching

Table 4 and Figure 2 present students' self-reported satisfaction with the online teaching they received.

Table 4: Satisfaction with Online Teaching

Satisfaction Level	Number of Students	Percentage (%)
Highly satisfied	6	10.0
Satisfied	20	33.3
Neutral	13	21.7
Dissatisfied	15	25.0
Highly dissatisfied	6	10.0
Total	60	100.0

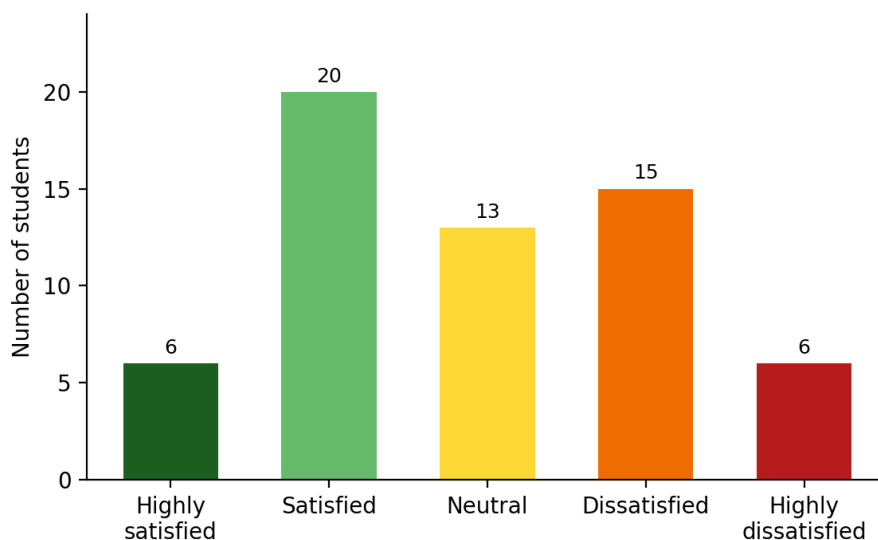


Figure 2: Satisfaction Levels Reported by Students

Combining the two positive categories, 43.3 percent of students reported being satisfied or highly satisfied with their online teaching experience, while 35 percent reported some degree of dissatisfaction and the remainder were neutral. The mean satisfaction score on the corresponding five-point Likert item was 2.9, with a standard deviation of 0.81 (Table 5), indicating a moderate but not strongly positive average level of satisfaction, along with a fair spread of opinion across the sample. This roughly even split between satisfied and dissatisfied respondents is consistent with what Aithal and Aithal (Aithal & Aithal, 2021) and Bisht, Joshi and Bisht (Bisht, Joshi, & Bisht, 2021) describe as a generally mixed national picture, and it sits at the more cautious end of what Mishra and Behera found in their study of satisfaction in virtual learning environments, where teacher preparedness was shown to be a key differentiator (Mishra & Behera, 2021).

Table 5: Satisfaction with Online Teaching (Five-Point Likert Scale)

Measure	Online Teaching
Mean	2.90
Standard deviation	0.81

D. Perceived Effectiveness Relative to Classroom Teaching

Table 6 shows how students compared the effectiveness of online teaching with that of traditional classroom instruction.

Table 6: Comparison of Online and Classroom Teaching Effectiveness

Perception	Number of Students	Percentage (%)
Online teaching more effective	6	10.0
Both equally effective	14	23.3
Classroom teaching more effective	40	66.7
Total	60	100.0

Two-thirds of the sample (66.7 percent) considered classroom teaching more effective than online teaching, a view most plausibly linked to the richer scope for interaction and immediate clarification that a physical classroom allows. This finding closely matches what Sharma and Choudhary reported when comparing rural and urban students directly (Sharma & Choudhary, 2022), and it echoes the concerns about weakened teacher-student interaction that Mishra documented among tribal students in Koraput itself (Mishra, L., 2022).

E. Major Challenges Faced During Online Learning

Students were asked to identify the difficulties they associated with online learning, with multiple responses permitted. Table 7 and Figure 3 summarise the results.

Table 7: Major Challenges Faced During Online Learning (Multiple Response)

Challenge	Number of Responses	Percentage of Respondents (%)
Poor internet connectivity	39	65.0
Lack of interaction with teachers	34	56.7
Distractions at home	30	50.0
Financial burden of data recharge	24	40.0
Inadequate or shared devices	13	21.7

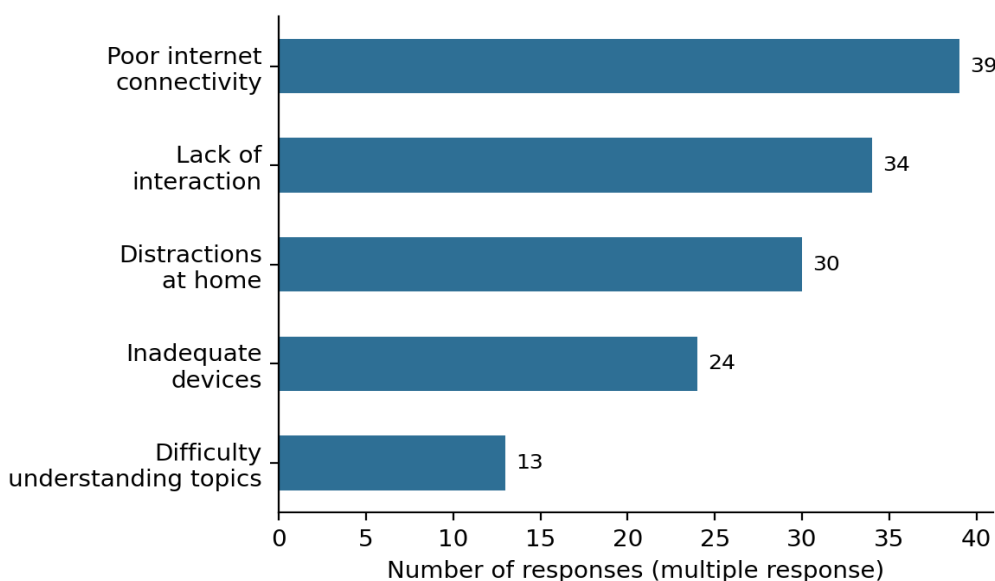


Figure 3: Major Challenges Reported by Students (Multiple Response)

Poor internet connectivity was, by a clear margin, the most frequently cited obstacle, mentioned by 65 percent of respondents, followed by weakened interaction with teachers (56.7 percent) and distractions at home (50 percent). The financial burden of regularly recharging mobile data was flagged by 40 percent of students, and just over a fifth pointed to a shortage of, or the need to share, a suitable device. This ranking of difficulties is very close to what Sharma (Sharma, D., 2021) and Debnath (Debnath, 2021) describe for rural India in general and to what Barman and Kundu (Barman & Kundu, 2022) and Meena (Meena, 2023) report specifically for tribal students elsewhere in the country, suggesting that Koraput's students are not facing a unique set of problems so much as a locally intensified version of a nationwide pattern.

F. Preferred Mode of Future Teaching

Table 8 and Figure 4 show students' stated preference for the mode of teaching they would like to see once normal classroom activity is fully restored.

Table 8: Preferred Mode of Future Teaching

Preferred Mode	Number of Students	Percentage (%)
Offline (classroom)	43	71.6
Online	5	8.4
Blended (both)	12	20.0
Total	60	100.0

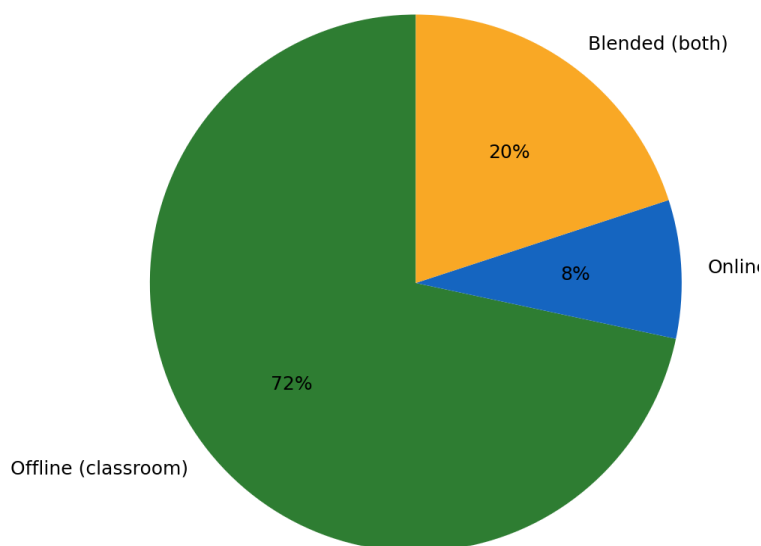


Figure 4: Students' Preferred Mode of Future Teaching

A large majority of students (71.6 percent) preferred a return to purely offline, classroom-based teaching, while only 8.4 percent would choose to continue entirely online. Notably, one in five students (20 percent) expressed a preference for a blended model that combines the two. This is a meaningful minority: it suggests that, despite the difficulties documented above, a section of the student body sees genuine value in retaining some digital component in their education, a possibility also raised by Chatterjee and Pal (Chatterjee & Pal, 2023) and by Srivastava and Jha (Srivastava & Jha, 2022) in their broader discussions of digital equity.

G. Overall Perception Toward Online Teaching

Responses to the perception items were combined into a composite score for each student, ranging from 1 to 5, and grouped into three bands. Table 9 presents the distribution.

Table 9: Students' Overall Perception toward Online Teaching

Perception Score Range	Category	Frequency	Percentage (%)
1.0 – 2.0	Negative	15	25.0
2.1 – 3.0	Neutral	24	40.0
3.1 – 5.0	Positive	21	35.0
Total		60	100.0

Overall perception was mixed rather than uniformly negative: 40 percent of students scored in the neutral range, 35 percent scored positively, and a quarter scored negatively. Read alongside the satisfaction and effectiveness findings above, this suggests that most students in Koraput do not reject online teaching outright; rather, their view of it is qualified by the specific, addressable obstacles of connectivity, device access and interaction quality documented in Table 7.

H. Differences by Gender and Academic Stream

An independent-samples t-test was conducted to examine whether mean perception scores differed by gender. Table 10 reports the result.

Table 10: Independent-Samples T-Test – Gender and Perception Score

Gender	N	Mean Perception Score	Std. Deviation	T-Value	P-Value
Male	34	3.05	0.62	1.84	0.070
Female	26	2.83	0.67		

Male students recorded a marginally higher mean perception score than female students (3.05 against 2.83), but the difference was not statistically significant at the 0.05 level ($t = 1.84$, $p = 0.070$). While the gap did not reach conventional significance, its direction is consistent with what Singh and Kaur (Singh & Kaur, 2021) and Suman and Devi (Suman & Devi, 2021) describe elsewhere in India, where domestic responsibilities and device-sharing arrangements tend to disadvantage female students slightly, even if the effect in a sample of this size does not cross the threshold of statistical significance.

A chi-square test of association was then used to examine whether perceived effectiveness of online teaching differed across academic streams. Table 11 presents the cross-tabulation.

Table 11: Chi-Square Test – Academic Stream and Perceived Effectiveness of Online Teaching

Stream	Effective	Not Effective	Total
Arts	12	16	28
Science	12	6	18
Commerce	10	4	14
Total	34	26	60

The association between academic stream and perceived effectiveness was statistically significant ($\chi^2 = 9.15$, $p = 0.010$). Science and Commerce students were more likely than Arts students to rate online teaching as effective, a pattern plausibly linked to differences in how each stream's content lends itself to remote delivery: numerical and procedural material in Science and Commerce may transfer more readily to recorded lectures and shared problem sets than the discussion-based, text-heavy material typical of many Arts subjects, which depends more on live interaction to work well.

I. Summary of Findings

- Sixty-seven percent of students relied on mobile data for online classes, 20 percent used Wi-Fi, and 13.3 percent had no regular internet access.
- The smartphone was the dominant device for online learning (76.7 percent), consistent with a mobile-first mode of study in a low-resource setting.
- Only 43.3 percent of students reported being satisfied or highly satisfied with online teaching, while 35 percent reported dissatisfaction; the mean satisfaction score was 2.9 out of 5.
- A majority (66.7 percent) rated classroom teaching as more effective than online teaching, largely on account of stronger interaction and fewer technical barriers.
- Poor internet connectivity (65 percent), lack of interaction with teachers (56.7 percent) and distractions at home (50 percent) were the most frequently reported challenges.
- Most students (71.6 percent) preferred a return to offline classroom teaching, though 20 percent expressed openness to a blended model.

- Overall perception was mixed: 40 percent neutral, 35 percent positive and 25 percent negative.
- Gender differences in perception were not statistically significant ($p = 0.070$), while differences across academic stream were significant ($\chi^2 = 9.15$, $p = 0.010$), with Science and Commerce students viewing online teaching more favourably than Arts students.

VII. EDUCATIONAL IMPLICATIONS AND RECOMMENDATIONS

The findings of this study carry practical implications for colleges, universities and local administrators working in Koraput and comparable tribal districts. Rather than treating online teaching as a wholesale replacement for classroom instruction, institutions in such settings appear better served by a blended approach that keeps face-to-face contact at its core while using digital tools selectively, for revision material, recorded lectures that can be viewed offline, and low-bandwidth communication such as voice notes where live video is impractical.

- Flexible scheduling: allowing recorded sessions and asynchronous access so that students without reliable connectivity are not permanently excluded from a given class.
- Investment in access: working with local administration and telecom providers to improve network coverage and, where feasible, to support subsidised device or data schemes for students from low-income households.
- Digital literacy training: short, practical orientation sessions for both students and faculty on using learning platforms effectively, going beyond WhatsApp-based content delivery.
- Stronger interaction mechanisms: structured doubt-clearing sessions, smaller discussion groups and regular feedback on assignments to address the interaction gap that students in this study repeatedly flagged.
- Stream-sensitive design: given the significant difference in perceived effectiveness across streams, Arts departments in particular may need to rethink how discussion-heavy content is delivered online, rather than applying a uniform approach across all subjects.

VIII. LIMITATIONS OF THE STUDY

This study is not without limitations. The sample was drawn purposively from two institutions in a single district and is modest in size ($n = 60$), which limits how far the findings can be generalised to other tribal or rural districts, even within Odisha. The cross-sectional design captures perception at one point in time and cannot speak to how these views may have shifted as students gained more experience with online platforms. Data were also self-reported, which carries the usual possibility of recall or social-desirability bias. Finally, the study did not include the perspectives of teachers or institutional administrators, whose accounts might complicate or qualify the picture drawn here from the student side alone.

IX. CONCLUSION

This study set out to examine how undergraduate students in Koraput district perceive online teaching, and the picture that emerges is neither wholly negative nor straightforwardly positive. Students value the flexibility that online classes offer and are not opposed to digital learning in principle, as the meaningful minority open to a blended model makes clear. At the same time, unreliable internet access, the cost of data, a shortage of adequate devices and a persistent sense of reduced interaction with teachers have kept overall satisfaction moderate and have led most students to prefer a return to classroom teaching once given the choice. The significant difference in perceived effectiveness across academic streams, with Science and Commerce students responding more favourably than their Arts counterparts, suggests that the nature of the subject matter itself shapes how well online delivery works, and that a single, one-size-fits-all digital strategy is unlikely to serve every discipline equally well.

These findings reinforce a point that is easy to state and harder to act on: technology alone cannot close an educational gap that is rooted in unequal infrastructure. For a district like Koraput, the future of online teaching probably lies not in replacing classroom instruction but in supplementing it carefully, backed by real investment in connectivity, devices and digital literacy, and shaped by ongoing attention to what students themselves say is and is not working. Listening to that feedback, this study suggests, is not a peripheral courtesy but a precondition for making digital education in tribal and rural India genuinely inclusive rather than inclusive only on paper.

REFERENCES

- Agarwal, P. (2021). Digital divide and education in India: Challenges and opportunities. *Journal of Education and Practice*, 12(6), 45–52.
- Aithal, P. S., & Aithal, S. (2021). Online education in India: A study on students' perception and satisfaction. *International Journal of Applied and Advanced Scientific Research*, 6(1), 14–26.
- Banerjee, S., & Dey, N. (2020). Challenges in online education during COVID-19: A case study from rural West Bengal. *Indian Journal of Education and Information Management*, 9(4), 33–39.
- Barman, P., & Kundu, M. (2022). Understanding digital education and access in tribal areas: A study from Jharkhand. *International Journal of Tribal Studies*, 5(2), 21–30.
- Bhattacharya, S., & Sinha, R. (2023). Online teaching in India: An assessment of equity and accessibility among college students. *Indian Journal of Educational Research*, 8(1), 17–29.
- Bisht, R. K., Joshi, G., & Bisht, R. (2021). Perception of students towards online learning in higher education during COVID-19 pandemic in India. *International Journal of Educational Research and Technology*, 12(2), 9–14.
- Borah, M., & Sarma, B. (2021). Digital literacy and access to online education among tribal students in Assam. *Journal of Social Sciences and Humanities*, 10(3), 43–51.
- Chatterjee, A., & Pal, S. (2023). Equity in online learning: Insights from rural colleges in India. *Asian Journal of Distance Education*, 18(1), 58–72.
- Chauhan, R. (2021). Perception of undergraduate students toward online learning during COVID-19. *Journal of Educational Technology and Society*, 24(2), 105–112.
- Choudhury, S., & Verma, A. (2023). Exploring digital education policies for tribal education in India. *Educational Policy Review*, 6(2), 90–101.
- Das, P. (2022). Bridging the digital divide: Tribal students and online education in Odisha. *Odisha Journal of Education and Development*, 13(1), 22–37.
- Debnath, R. (2021). Access to digital learning in India's backward districts: A critical analysis. *Social Change Review*, 19(3), 45–60.
- Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5–22.
- Mallick, R., & Mishra, S. (2022). A case study of online education in tribal Odisha. *Journal of Indian Distance Learning*, 6(3), 49–61.
- Mandal, S. (2021). Perception of rural students about online classes: A study from Bankura, West Bengal. *Rural Education Quarterly*, 7(1), 38–47.
- Meena, P. (2023). Educational inequality in digital India: Lessons from Rajasthan's tribal regions. *Indian Journal of Educational Studies*, 5(2), 75–88.
- Mishra, L. (2022). Online teaching and tribal students: An evaluative study in Koraput. *Odisha Journal of Research in Education*, 9(1), 15–28.
- Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, 1, 100012.
- Mishra, S., & Behera, B. (2021). Exploring students' satisfaction in virtual learning environments. *Open Learning Journal*, 16(2), 93–106.
- Mohanty, R. (2023). COVID-19 and higher education: Insights from Odisha's tribal districts. *Indian Journal of Sociology of Education*, 12(2), 59–71.
- Mukherjee, R., & Sen, A. (2021). Student engagement in online learning: A rural perspective. *Educational Innovation Quarterly*, 10(4), 80–94.
- Nanda, S., & Pani, A. (2022). Online education during pandemic: A study in KBK districts of Odisha. *Journal of Rural Development Studies*, 6(2), 29–41.
- National Statistical Office. (2023). Household social consumption: Education in India. Ministry of Statistics and Programme Implementation, Government of India.
- Nayak, R., & Pattnaik, S. (2021). Students' perspective on online learning during the COVID-19 pandemic in Odisha. *Journal of Educational Research and Development*, 13(2), 64–72.
- Nayak, S. (2021). Issues of digital education in Koraput: An analytical study. *Odisha Educational Research Bulletin*, 8(3), 22–33.
- Pandey, A. (2022). Online learning disparities in rural India. *Journal of Educational Technology Systems*, 51(1), 1–16.

- Panigrahi, B. (2023). Barriers to digital education in Odisha: A district-level analysis. *Eastern India Education Review*, 7(1), 55–68.
- Patel, R., & Sharma, P. (2022). Digital readiness of rural colleges: A case study in Chhattisgarh. *Indian Journal of Open Education*, 11(1), 18–27.
- Sharma, D. (2021). Virtual classrooms and rural India: A reality check. *Journal of Educational Innovation and Research*, 7(3), 83–96.
- Sharma, K., & Choudhary, P. (2022). Digital divide in online education among rural and urban students in India: A comparative study. *Indian Journal of Educational Studies*, 40(1), 88–97.
- Sharma, N., & Dubey, V. (2022). E-learning gaps in rural higher education. *India Education Monitor*, 15(1), 40–52.
- Singh, A. (2023). Adoption of digital education in underdeveloped regions. *Educational Trends and Policy Analysis*, 10(2), 63–79.
- Singh, R., & Kaur, M. (2021). Students' attitudes toward online learning in Himachal Pradesh. *Hill Education Journal*, 6(2), 21–35.
- Srivastava, A., & Jha, P. (2022). Online education and digital equity in India. *Journal of Educational Planning and Administration*, 9(2), 19–34.
- Subudhi, R. (2023). Online learning engagement among tribal students: A study in Odisha. *Educational Researcher and Analyst*, 6(3), 50–66.
- Suman, R., & Devi, M. (2021). Barriers in online education in Bihar's rural colleges. *Journal of Rural Pedagogy*, 8(1), 44–56.
- Swain, M. (2022). Digital learning in KBK districts of Odisha. *Odisha Journal of Social Sciences*, 13(2), 30–46.
- Tiwari, S. (2023). Rural student experiences in post-pandemic e-learning. *International Review of Education*, 69(1), 55–72.
- Tripathy, A. (2021). Rural college students and digital education in India: An empirical overview. *Journal of Digital Education*, 3(3), 38–49.
- UGC. (2023). Annual report on higher education in India. University Grants Commission.
- UNESCO. (2022). Global education monitoring report: India chapter. UNESCO Publishing.
- UNICEF. (2021). Learning loss and digital inequality in rural India. UNICEF India Country Office.
- Varma, R. (2022). Students' digital adaptability in remote areas: Case studies from Chhattisgarh. *Education for Development*, 9(4), 67–82.
- Verma, S., & Ali, T. (2023). Online learning effectiveness in Indian tribal colleges. *Global Journal of Education and Learning*, 11(2), 22–37.

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