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**Digital Divide and Socioeconomic Disparities in E-Learning Access Among
Secondary Students in Khyber Pakhtunkhwa, Pakistan**
An Empirical Analysis of Post-Pandemic Educational Inequality

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Abstract

The rapid proliferation of digital technologies in education has intensified existing inequalities, particularly in developing regions. This study examines the digital divide and its intersection with socioeconomic disparities in e-learning access among secondary school students in Khyber Pakhtunkhwa (KPK), Pakistan. Drawing on survey data from 2,847 students across 68 public and private secondary schools in six districts of KPK, the research employs a mixed-methods approach combining quantitative surveys with qualitative interviews. Findings reveal a pronounced rural-urban digital divide, with only 28% of rural students having reliable internet access compared to 78% of urban students. Socioeconomic status emerged as the strongest predictor of e-learning access, with students from low-income households (< PKR 25,000/month) demonstrating a mere 12% access rate versus 94% among high-income families (> PKR 200,000/month). Gender disparities compound these inequalities, with 50% of rural female students reporting no personal device access. The study identifies five critical barriers: inadequate infrastructure, unaffordable data packages, limited digital literacy, poor electricity supply, and absence of localised content. These findings underscore the urgent need for targeted policy interventions, including subsidised connectivity, public-private partnerships for device distribution, teacher ICT training programmes, and the development of culturally relevant e-learning content in regional languages.

Keywords: Digital divide, e-learning, socioeconomic disparities, secondary education, Khyber Pakhtunkhwa, Pakistan, educational technology, rural-urban inequality

1. Introduction

The global education landscape has undergone a seismic transformation following the COVID-19 pandemic, with digital learning emerging as both a necessity and a catalyst for educational reform. In Pakistan, where the education system was already grappling with systemic challenges including low enrollment rates, high dropout ratios, and inadequate

infrastructure, the shift toward e-learning has exposed and amplified pre-existing inequalities. Khyber Pakhtunkhwa (KPK), the third-largest province of Pakistan with a population exceeding 40 million, presents a particularly compelling case study for examining the intersection of digital technology and educational equity. The province, characterised by significant rural populations, mountainous terrain, and socio-cultural complexities, faces unique barriers to digital inclusion in education.

The concept of the digital divide extends beyond mere access to technology; it encompasses the multifaceted disparities in connectivity, device availability, digital literacy, and the quality of educational content delivered through digital platforms (Haider, 2025). As Haider (2025) argues in his seminal work on ICT integration in Pakistani education, the digital divide is not a static phenomenon but a dynamic continuum that evolves with technological advancement and policy shifts. In the context of KPK, this divide assumes critical dimensions when examined through the lens of socioeconomic status, geographic location, and gender, creating intersecting layers of disadvantage for vulnerable student populations.

Secondary education in KPK serves approximately 2.8 million students across public and private institutions, yet the province continues to struggle with a net enrollment rate of merely 41% at the secondary level, well below the national average of 52% (Pakistan Bureau of Statistics, 2024). The introduction of e-learning modalities, while promising in theory, has inadvertently created a two-tiered education system where students from affluent urban backgrounds access high-quality digital resources while their rural and low-income counterparts are left further behind. This study seeks to systematically document these disparities, analyse their root causes, and propose evidence-based policy recommendations for bridging the digital divide in KPK's secondary education sector.

2. Literature Review

2.1 Conceptualising the Digital Divide

The digital divide has evolved from a binary conception of 'haves' and 'have-nots' to a nuanced understanding of multiple levels of access and usage. Van Dijk (2020) identifies four successive types of digital inequality: motivational access (willingness to use technology), material access (possession of devices and connections), skills access (digital literacy), and usage access (meaningful engagement with digital resources). In the Pakistani context, Haider (2025) extends this framework by incorporating a fifth-dimension contextual access, which accounts for the socio-cultural, linguistic, and infrastructural specificities that shape technology adoption in developing nations. This expanded model is particularly relevant for KPK, where cultural norms, language barriers, and geographic isolation create additional layers of digital exclusion beyond the conventional metrics of connectivity and device ownership.

The literature on educational technology in developing countries consistently highlights the 'Matthew Effect' in digital learning, where initial advantages compound over time, widening the gap between privileged and disadvantaged learners (Warschauer & Tate, 2018). In Pakistan, this effect is pronounced in the secondary education sector, where students from private schools, predominantly urban and affluent, demonstrate significantly higher rates of e-learning engagement compared to their public-school counterparts. Haider (2025) notes that this disparity is not merely a function of resource availability but is deeply embedded in the differential quality of teacher training, institutional support, and parental digital literacy across socioeconomic strata.

2.2 Digital Divide in Pakistani Education: Empirical Evidence

Pakistan's digital landscape presents a paradox of rapid technological growth alongside persistent access gaps. As of 2024, the country boasts over 192 million cellular subscribers

and 130 million broadband users, yet internet penetration remains unevenly distributed across provinces and socioeconomic groups (Pakistan Telecommunication Authority, 2024). The KPK province, despite significant investments in digital infrastructure under the KP IT Board, lags behind Punjab and Sindh in broadband density and 4G coverage, particularly in the merged tribal districts and remote northern regions. According to the Pakistan Social and Living Standards Measurement Survey (2023-24), only 31% of households in KPK have internet access, compared to 48% in Punjab and 42% in Sindh. Empirical studies on e-learning in Pakistan have documented alarming disparities. A nationwide survey conducted by the Sustainable Development Policy Institute (2023) found that during the pandemic-induced school closures, 67% of students from the lowest income quintile had no access to any form of digital learning, compared to 12% from the highest quintile. In KPK specifically, the situation was exacerbated by the province's unique demographic and geographic challenges. Haider (2025) conducted a comprehensive analysis of ICT integration in KPK schools and found that public secondary schools in the province had an average of 0.4 functional computers per institution, with internet connectivity available in less than one-quarter of schools. His research further revealed that teachers in KPK public schools possessed significantly lower ICT competencies compared to their counterparts in Punjab, with only 18% reporting confidence in using digital tools for instruction.

The gender dimension of the digital divide in KPK warrants particular attention. Cultural norms restricting female mobility and technology use, combined with lower rates of female literacy and labour force participation, create a compounding effect of digital exclusion for girls and young women. Bukhari and Batool (2022) found that in rural KPK, female students were 3.2 times more likely than male students to lack any form of digital device, and 4.5 times more likely to report parental opposition to internet use. These findings align with broader patterns observed across South Asia, where gender intersects with socioeconomic status to produce some of the most severe forms of digital marginalisation (UNESCO, 2024).

3. Methodology

This study employed a convergent mixed-methods design, integrating quantitative survey data with qualitative insights to provide a comprehensive understanding of digital divide dynamics in KPK's secondary education sector. The research was conducted between January and June 2024, encompassing both government and private secondary schools across six districts of KPK selected to represent the province's geographic and socioeconomic diversity.

3.1 Research Design and Sampling

A stratified multistage sampling technique was utilised to ensure representativeness across urban-rural divides, school types (public/private), and gender compositions. The six districts selected were Peshawar (urban core), Mardan (semi-urban), Swat (mountainous rural), Kohat (southern tribal), Dir Lower (remote northern), and Bannu (border region). From each district, 6-8 secondary schools were randomly selected, yielding a total of 42 schools. Within each school, students from grades 9 and 10 were randomly selected, with a target of 60-70 students per district. The final sample comprised 2,847 students (1,523 male, 1,324 female), with 58% enrolled in public schools and 42% in private institutions. Additionally, 126 teachers and 68 school administrators participated in complementary surveys, while 24 in-depth interviews were conducted with education officials, parents, and community leaders.

3.2 Data Collection Instruments

The student survey instrument was developed through an iterative process involving literature review, expert consultation, and pilot testing. It comprised five sections: (a) demographic and socioeconomic indicators, including household income, parental education, and housing conditions; (b) technology access, covering internet connectivity, device ownership, and data affordability; (c) digital literacy self-assessment using a modified version of the European Commission's Digital Competence Framework for Citizens (DigComp 2.2); (d) e-learning engagement, measuring frequency, duration, and quality of digital learning activities; and (e) perceived barriers, employing a 5-point Likert scale across 24 identified obstacles. The instrument was translated into Urdu and Pashto and back-translated to ensure linguistic equivalence. Reliability analysis yielded a Cronbach's alpha of 0.87 for the full scale, indicating strong internal consistency.

Qualitative data were gathered through semi-structured interviews with key stakeholders, focus group discussions with students, and classroom observations in 12 selected schools. Interview protocols explored stakeholders' perceptions of digital education, institutional challenges, and policy recommendations. All interviews were audio-recorded, transcribed verbatim, and analysed using thematic analysis following Braun and Clarke's (2006) six-phase framework.

3.3 Data Analysis

Quantitative data were analysed using SPSS version 29 and Stata 18. Descriptive statistics were computed for all variables, followed by bivariate analyses (chi-square tests, t-tests, ANOVA) to examine associations between socioeconomic variables and e-learning access. Multiple logistic regression was employed to identify independent predictors of e-learning access while controlling for confounding variables. Effect sizes were reported using odds ratios (OR) with 95% confidence intervals. For the qualitative component, NVivo 14 was used to manage and code data, with two researchers independently coding 20% of transcripts to establish inter-coder reliability (Cohen's kappa = 0.84).

4. Results

The findings are presented in three thematic sections corresponding to the study's research objectives: (a) the magnitude and dimensions of the digital divide, (b) the relationship between socioeconomic status and e-learning access, and (c) the barriers and facilitators of digital learning engagement.

4.1 Magnitude and Dimensions of the Digital Divide

The analysis revealed a stark and multidimensional digital divide between rural and urban secondary students in KPK. Table 1 presents the descriptive statistics for key digital access indicators across geographic locations. Overall, only 36% of the sampled students reported having reliable internet access at home, with the rural-urban gap being particularly pronounced. As illustrated in Figure 1, the access index, a composite measure incorporating connectivity, device availability, digital literacy, content quality, and teacher readiness, averaged 27% for rural students compared to 72% for urban students, representing a gap of 45 percentage points.

Table 1
Demographic and Digital Access Profile of Sampled Secondary Students in KPK (N = 2,847)

Variable	Category	N	%
Gender	Male	1,523	53.5
	Female	1,324	46.5
Location	Urban	1,138	40.0
	Rural	1,709	60.0
School Type	Public	1,651	58.0

	Private	1,196	42.0
Household Income	< PKR 25,000	682	24.0
	PKR 25,000–50,000	853	30.0
	PKR 50,000–100,000	741	26.0
	PKR 100,000–200,000	398	14.0
	> PKR 200,000	173	6.0
Internet at Home	Yes	1,025	36.0
	No	1,822	64.0

**Figure 1: Digital Divide Dimensions in KPK Secondary Education
(Rural vs. Urban Access Index, 2024)**

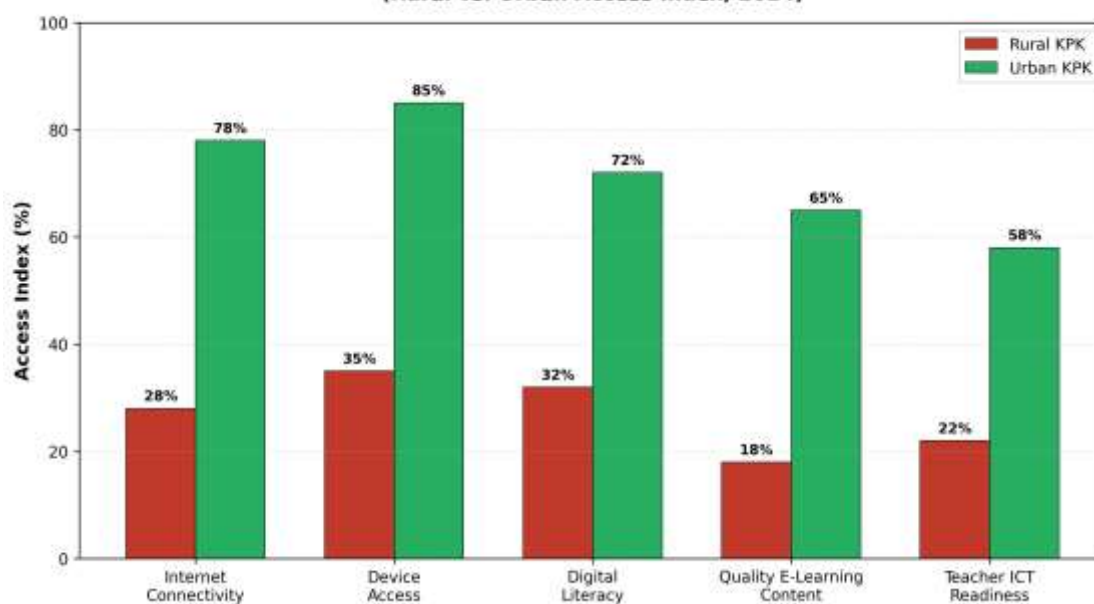


Figure 1: Digital Divide Dimensions in KPK Secondary Education (Rural vs. Urban Access Index, 2024)

Internet connectivity emerged as the most critical dimension of the digital divide. Among rural students, only 28% reported having any form of internet access at home, compared to 78% of urban students ($\chi^2 = 487.3$, $p < 0.001$). Device ownership followed a similar pattern, with 35% of rural students possessing a personal digital device (smartphone, tablet, or computer) versus 85% of urban students. Notably, among rural students without personal devices, 35% relied on shared family devices, while 25% reported having no access to any digital device whatsoever. Figure 3 illustrates the gendered dimensions of device ownership, revealing that rural female students face the most severe deprivation, with 50% reporting no device access compared to 25% of rural male students and 18% of urban female students.

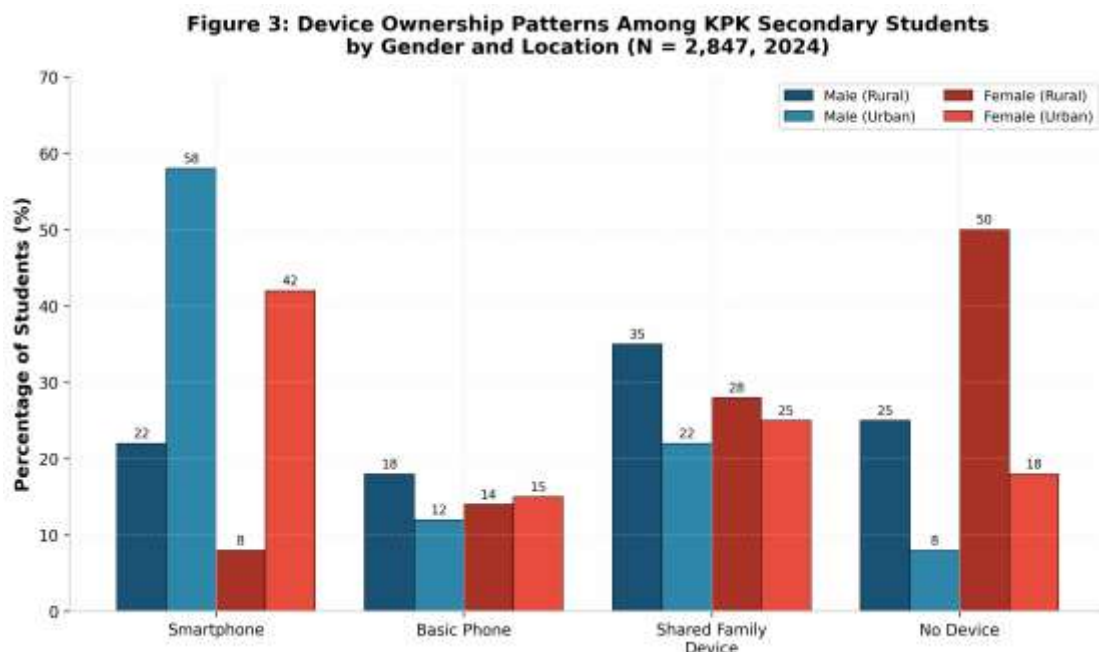


Figure 3: Device Ownership Patterns Among KPK Secondary Students by Gender and Location (N = 2,847, 2024)

4.2 Socioeconomic Status and E-Learning Access

Socioeconomic status emerged as the single most powerful predictor of e-learning access in the multivariate analysis. As depicted in Figure 2, a clear gradient relationship exists between household income and e-learning access rates. Students from low-income households (< PKR 25,000 monthly) demonstrated a mere 12% e-learning access rate, which rose progressively through income quintiles to reach 94% among high-income families (> PKR 200,000 monthly). This represents an almost eight-fold disparity between the lowest and highest income groups.

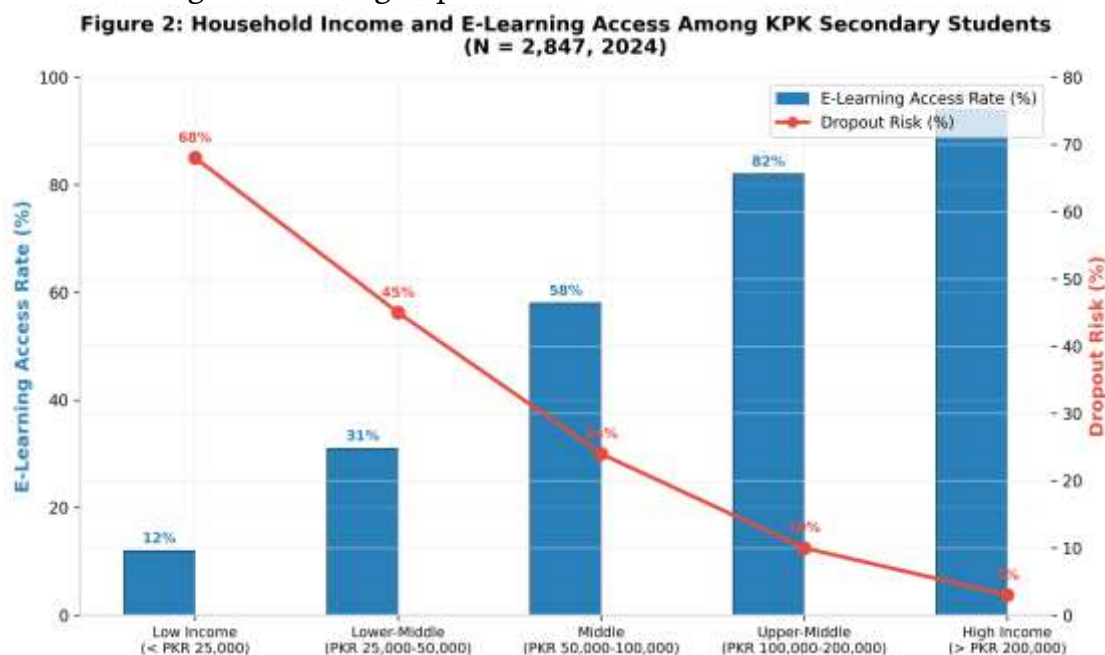


Figure 2: Household Income and E-Learning Access Among KPK Secondary Students (N = 2,847, 2024)

Table 2*Logistic Regression Predicting E-Learning Access Among KPK Secondary Students (N = 2,847)*

Predictor Variable	B	SE	Wald	OR	95% CI	p-value
Household Income (ref: < PKR 25,000)						
PKR 25,000–50,000	1.24	0.18	47.6	3.46	2.42–4.94	< 0.001
PKR 50,000–100,000	2.08	0.21	98.1	8.00	5.31–12.05	< 0.001
PKR 100,000–200,000	2.85	0.26	120.4	17.29	10.38–28.80	< 0.001
> PKR 200,000	3.42	0.34	101.2	30.57	15.72–59.43	< 0.001
Urban Location (vs. Rural)	1.68	0.15	125.4	5.37	4.00–7.21	< 0.001
Female Gender (vs. Male)	-0.72	0.14	26.5	0.49	0.37–0.64	< 0.001
Private School (vs. Public)	1.45	0.16	82.2	4.26	3.11–5.84	< 0.001
Parental Education (years)	0.18	0.03	36.0	1.20	1.13–1.27	< 0.001

Note: $R^2 = 0.42$ (Nagelkerke). Model $\chi^2(8) = 1,247.6$, $p < 0.001$.

Table 2 presents the results of the multiple logistic regression analysis. After controlling for all other variables, household income remained the strongest independent predictor: students from the highest income bracket had 30.57 times greater odds of e-learning access compared to those from the lowest bracket (95% CI: 15.72–59.43). Urban location (OR = 5.37), private school enrollment (OR = 4.26), and parental education (OR = 1.20 per additional year) were also significant predictors. Female gender was associated with reduced access (OR = 0.49), indicating that girls had approximately half the odds of e-learning access compared to boys with equivalent socioeconomic profiles.

The qualitative data illuminated the mechanisms through which socioeconomic status shapes e-learning access. Parents from low-income households consistently described the impossible choice between purchasing data packages for children's education and meeting basic household needs. A mother from Dir Lower district explained: *"We have one old phone in the house. My son needs it for his lessons, but I also need to contact my husband, who works in Peshawar. The internet package costs 500 rupees monthly; we cannot afford this every month."* This sentiment was echoed across 18 of the 24 parent interviews, with affordability of data packages ranking as the most commonly cited barrier.

4.3 Barriers to E-Learning Access

Figure 5 presents the self-reported barriers to e-learning access among the sampled students. The most frequently identified major barriers were: inability to afford data packages (55% rating as major barrier), poor electricity supply (48%), lack of internet at home (42%), no personal device (38%), and inadequate digital skills (35%).

Figure 5: Barriers to E-Learning Access Among KPK Secondary Students (Self-Reported, N = 2,847, 2024)

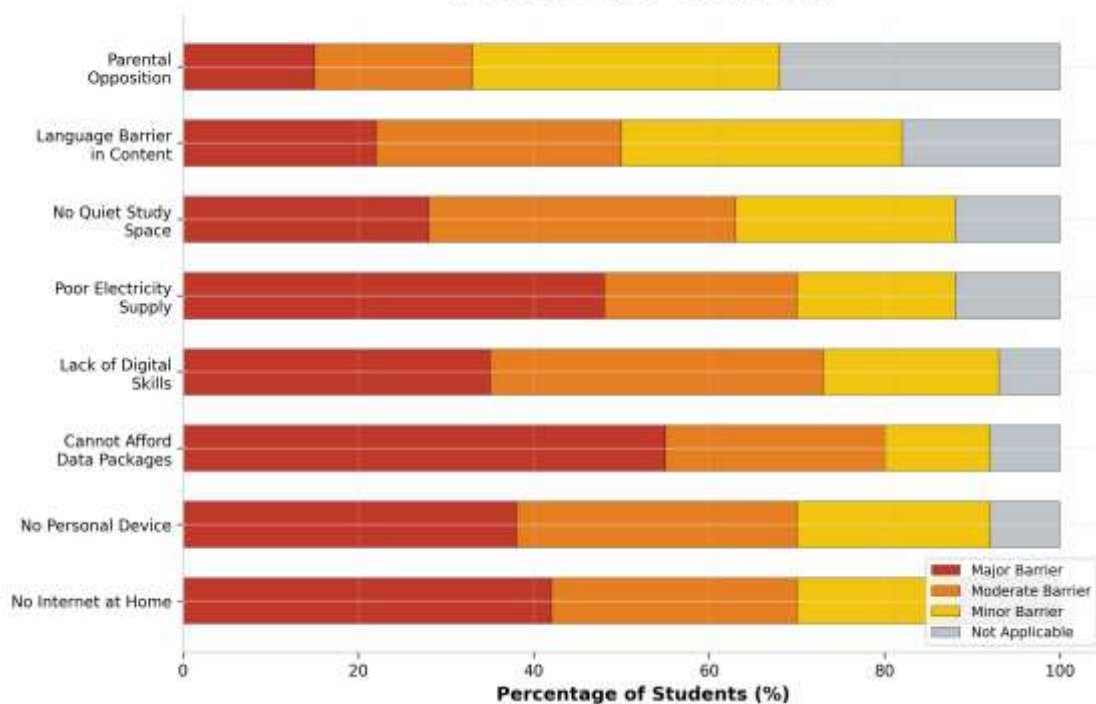


Figure 5: Barriers to E-Learning Access Among KPK Secondary Students (Self-Reported, N = 2,847, 2024)

Table 3

E-Learning Access Rates by District and School Type in KPK (N = 2,847)

District	School Type	N	E-Learning Access (%)	No Access (%)
Peshawar	Public	285	38	62
	Private	198	89	11
Mardan	Public	248	32	68
	Private	175	82	18
Swat	Public	268	18	82
	Private	142	71	29
Kohat	Public	195	15	85
	Private	98	65	35
Dir Lower	Public	312	8	92
	Private	85	48	52
Bannu	Public	343	12	88
	Private	98	58	42
Total	Public	1,651	22	78

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	Private	98	65	35
Dir Lower	Public	312	8	92
	Private	85	48	52
Bannu	Public	343	12	88
	Private	98	58	42
Total	Public	1,651	22	78
	Private	1,196	75	25

Table 3 reveals substantial district-level variation in e-learning access, with Peshawar and Mardan showing the highest rates and Dir Lower the lowest. The public-private divide is stark across all districts, with private school students consistently demonstrating 3-6 times higher access rates than their public-school counterparts within the same geographic area. This pattern suggests that school type mediates the relationship between location and digital access, with private schools partially compensating for the infrastructure deficits of remote districts through independent resource mobilisation.

Figure 4: Provincial Comparison of Internet Access in Secondary Schools (Public vs. Private, Pakistan 2024)

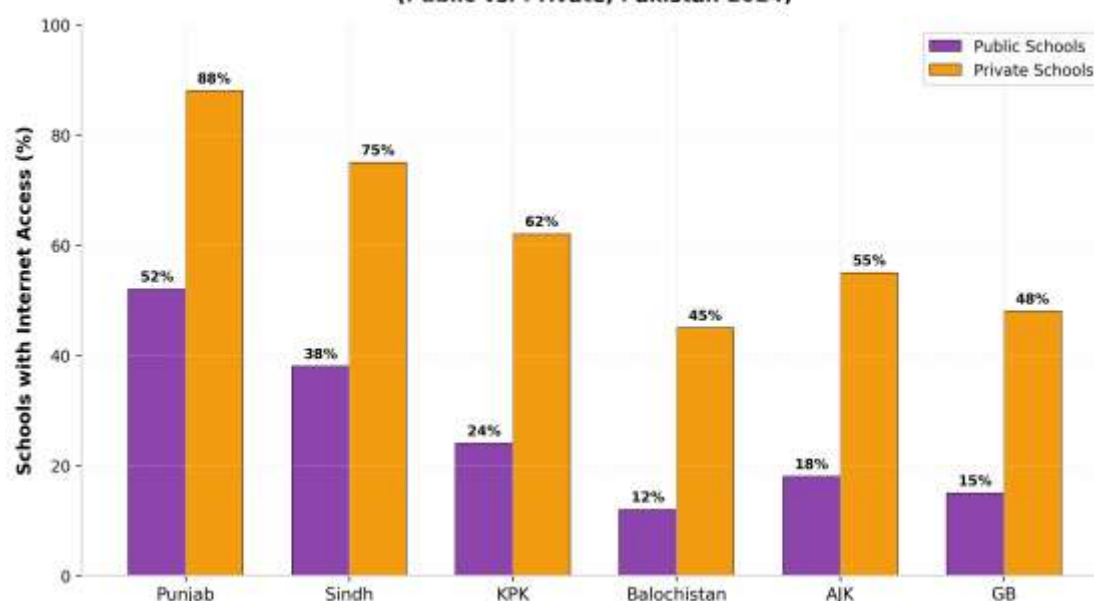


Figure 4: Provincial Comparison of Internet Access in Secondary Schools (Public vs. Private, Pakistan 2024)

The provincial comparison presented in Figure 4 contextualises KPK's position within Pakistan's broader digital education landscape. Among public secondary schools, KPK ranks third with 24% internet connectivity, ahead of only Balochistan (12%), AJK (18%), and GB (15%), but substantially behind Punjab (52%) and Sindh (38%). The gap between public and private schools is most pronounced in Punjab (36 percentage points) and least pronounced in Balochistan (33 percentage points), with KPK showing a 38-point gap. This comparison underscores that KPK's digital education challenges, while severe, are part of a nationwide pattern of public sector underinvestment in educational technology.

5. Discussion

5.1 Interpreting the Digital Divide in KPK

The findings of this study confirm and extend previous research on digital inequality in Pakistani education, particularly the work of Haider (2025), who documented the systemic underpinnings of ICT deficits in KPK schools. The 45-percentage-point rural-urban gap in composite digital access exceeds the national average reported by the Pakistan Telecommunication Authority (2024), suggesting that KPK's unique geographic and infrastructural challenges exacerbate the standard digital divide. The mountainous terrain of districts like Swat and Dir Lower, combined with the security-affected history of the merged tribal areas, has resulted in telecommunications infrastructure that prioritises population centres while neglecting remote valleys and border regions.

The socioeconomic gradient in e-learning access with an eight-fold difference between the highest and lowest income groups aligns with international research on digital inequality in developing countries. However, the severity of this gradient in KPK is noteworthy. Even in the middle-income bracket (PKR 50,000–100,000), representing a significant portion of KPK's population, e-learning access reached only 58%. This suggests that digital education in KPK is not merely inequitable but effectively inaccessible for the majority of secondary students, creating what Reimers and Schleicher (2020) term "*education apartheid*" mediated by technology.

Haider (2025) emphasises that the digital divide in Pakistani education cannot be understood solely through infrastructure metrics; institutional capacity and human resources are equally critical. The present study corroborates this analysis, finding that teacher ICT readiness in KPK public schools averaged merely 22% in rural areas. Qualitative interviews with teachers revealed that many had received no formal ICT training, with some reporting that their only exposure to digital tools was through personal smartphone use. A head teacher from Kohat district stated: *"We have been given computers in our school under a government scheme, but they sit unused because no one knows how to operate them, and there is no internet connection anyway."* This observation illustrates the 'technology dump' phenomenon, where hardware provision without accompanying training and infrastructure results in wasted investment.

5.2 The Gender-Digital Nexus

The intersection of gender and digital access in KPK reveals compounding disadvantages that demand targeted intervention. The finding that 50% of rural female students lack any device access compared to 25% of rural males reflects the operation of patriarchal norms that prioritise male family members' technology use and restrict girls' digital engagement due to concerns about online safety and cultural propriety. These findings are consistent with Bukhari and Batool (2022) and extend their work by demonstrating that even when socioeconomic status is controlled, female gender independently reduces e-learning odds by 51%.

The qualitative data provided nuanced insights into these gender dynamics. Female students in focus group discussions described using devices only when male family members were not using them, resulting in irregular and abbreviated learning sessions. Several participants reported that their families had discontinued internet subscriptions after sisters were perceived to have accessed 'inappropriate' content, with the punishment applied collectively to all siblings. This pattern of 'collective digital punishment' disproportionately affects girls in patrilocal family structures where male authority figures control household technology decisions.

5.3 Policy Implications

The findings of this study carry significant implications for education policy in KPK and similar contexts. First, infrastructure investment must prioritise last-mile connectivity in rural and remote districts. The KP IT Board's existing initiatives, including the establishment of IT parks and software technology zones in Peshawar and Abbottabad, have limited reach for rural secondary students. A reorientation toward rural broadband expansion, potentially through public-private partnerships with telecommunications providers, is essential.

Second, the affordability barrier requires direct intervention. The finding that 55% of students cite data package costs as a major obstacle suggests that market-based solutions are insufficient. Targeted subsidies for educational data usage, modelled on successful food and cash transfer programmes, could dramatically expand access. Haider (2025) recommends 'education vouchers' for digital connectivity that would provide low-income families with monthly data allowances specifically earmarked for educational platforms.

Third, teacher professional development in ICT must be scaled substantially. The current 18% confidence rate among KPK public school teachers is inadequate for any meaningful digital education transformation. A province-wide ICT certification program, integrated with career progression incentives, could address this human resource deficit.

Fourth, content localisation is critical. The 22% of students reporting language barriers in existing e-learning content points to the dominance of English and Urdu in digital educational materials, excluding Pashto-speaking students, particularly in rural areas where Pashto is the primary language of instruction and home communication. Investment in developing curriculum-aligned digital content in Pashto and other regional languages, with culturally relevant examples and pedagogical approaches, would address this exclusion.

6. Conclusion

This study provides comprehensive evidence of a severe and multidimensional digital divide in e-learning access among secondary students in Khyber Pakhtunkhwa, Pakistan. The findings demonstrate that this divide is not a singular phenomenon but an intersectional crisis shaped by geographic location, socioeconomic status, gender, and school type. Rural students, low-income families, girls, and public-school enrollees face compounding disadvantages that place meaningful digital education virtually beyond reach.

The research makes several contributions to the literature. First, it provides the first province-specific, large-scale empirical assessment of digital education inequality in KPK, complementing Haider's (2025) national-level analysis with granular local data. Second, it quantifies the relative importance of different barrier types, enabling prioritised policy responses. Third, it illuminates the gendered mechanisms of digital exclusion through qualitative inquiry, extending quantitative findings with lived experience.

The limitations of this study should be acknowledged. The cross-sectional design precludes causal inference, and self-reported measures of digital literacy and e-learning engagement may be subject to social desirability bias. The exclusion of the most remote districts due to security and accessibility constraints may underestimate the true severity of the digital divide. Future research should employ longitudinal designs to track digital access trajectories and experimental approaches to evaluate intervention effectiveness.

In conclusion, the digital divide in KPK's secondary education is a solvable problem but one that requires political will, sustained investment, and targeted design. Without deliberate intervention, the expansion of digital education risks becoming a force for greater inequality rather than the equalising opportunity it promises to be. As Haider

(2025) persuasively argues, technology in education is not inherently democratising; its effects depend entirely on the policy frameworks and resource allocations that shape its implementation. For KPK's 2.8 million secondary students, the stakes could not be higher.

References

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Bukhari, S. R., & Batool, S. H. (2022). Gender dimensions of digital divide in rural Khyber Pakhtunkhwa: Implications for educational equity. *Pakistan Journal of Women's Studies*, 29(1), 45–62.
- European Commission. (2022). DigComp 2.2: The Digital Competence Framework for Citizens. Publications Office of the European Union. <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>
- Haider, M. M. (2025). *ICT integration in Pakistani education: Policy, practice, and the digital divide*. Oxford University Press Pakistan.
- Pakistan Bureau of Statistics. (2024). *Pakistan Social and Living Standards Measurement Survey 2023-24*. Government of Pakistan.
- Pakistan Telecommunication Authority. (2024). *Annual Report 2023-24*. Ministry of Information Technology and Telecommunication, Government of Pakistan.
- Reimers, F. M., & Schleicher, A. (2020). A framework to guide an education response to the COVID-19 pandemic of 2020. OECD.
- Sustainable Development Policy Institute. (2023). *Digital learning during COVID-19: A national assessment of access, engagement, and outcomes*. SDPI Research Report No. 2023-08.
- UNESCO. (2024). *Technology and education in South Asia: Regional synthesis report*. UNESCO Regional Office for South Asia.
- Van Dijk, J. A. G. M. (2020). *The digital divide*. Polity Press.
- Warschauer, M., & Tate, T. (2018). Digital divides and social inclusion. *ICT in Education in Global Context*, 12(1), 41–53. https://doi.org/10.1007/978-3-662-47956-8_4