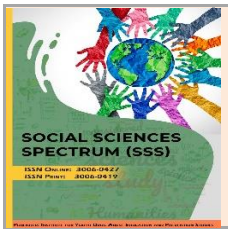

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Bridging the Digital Divide: Predictors of Positive Attitudes and Functional Use of AI Among University Students in Pakistan

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Abstract

Positive attitudes for generative artificial intelligence (AI) and functional use of AI are both essential for the youth of Pakistan, as they can improve student learning and skills for the job market. This study aimed to identify predictors of positive attitudes for AI and functional use of AI, and compare mean scores for attitudes, use, access, and literacy of AI with respect to student socio-demographic characteristics. A standardized survey was used to sample 171 students from universities of Pakistan. We found that positive attitudes for AI and greater use of AI are predicted by better availability and higher AI literacy, along with male gender, urban belonging, and higher wealth status. We conclude that the integration of AI-related content into Pakistan's education sector is crucial to enhance understanding and reduce skepticism, with a focus on improving AI literacy, accessibility, and engagement for rural students, females, and those from lower-income backgrounds. Collaborative efforts between academia, industry, and government, along with investments in infrastructure, teacher training, and continuous assessment, are essential to bridge the digital divide and prepare students for future job market demands.

Keywords: AI Attitudes, Digital Divide, Higher Education, Pakistan, Socio-Demographic Disparities.

Introduction

Generative Artificial Intelligence (AI) has the potential to benefit students in developing countries, and to support equal learning opportunities and academic achievement (Nedungadi et. al., 2024). Some of the significant gains for students from developing regions include accessing online resources, gaining from diverse pedagogical tools, benefiting from personalized instruction, and improving academic writing (Jacoby et. al., 2024; Costa et. al., 2024). However, positive attitudes of students towards AI is crucial in determining their use of AI technologies, securing gains in academic achievement, and their preparedness for succeeding in an AI-integrated workforce. Furthermore, positive attitudes toward AI have been linked to higher AI literacy and improved access to AI resources among students (Dobrovská et al., 2024). Certain demographic groups may have more positive attitudes toward AI, for example male students have been found to be more inclined as they show more interest in technological tools (Koohang et. al., 2024). Lack of positive attitudes and use of AI is of concern given that approximately 44% of workers are facing skill disruptions and job loss due to AI, confirming that there is critical need to develop positive attitudes and literacy skills for AI at universities (UNESCO, 2024).

Pakistani university campuses are a reflection of the pluralistic nation, with students from diverse socioeconomic, cultural, and linguistic differences coexisting together (Hermansen, 2019). The use of AI is slowly gaining momentum in higher education institutes of the country, with students using AI tools to complete their assignments, prepare for exams, and complete their theses (Samin & Azim, 2019). A recent local study revealed that positive attitudes toward AI among Pakistani university students is significantly associated with higher AI literacy and improved access to technology (Zahid et al., 2025). At the same time, challenges exist for students in using AI, such as less support for use of different AI tools, awareness of ethical use of AI, and equitable access to technology across diverse sociodemographic groups (Younas et al. 2024). Students from disadvantaged backgrounds in the country have reported that university administration does not support them with equitable learning opportunities and resources (Muzamil et al., 2024). Though some Pakistani university libraries have shown favorable awareness of AI adoption, student's functional use of AI is still low due to mistrust and low literacy about emerging AI tools (Asim et al., 2023).

University students from higher wealth background and urban areas tend to have greater access to technological literacy and academic resources which has consequences for sustaining and promoting inequality in the country (Waqas et al., 2024). Similarly, male university students in the country benefit from greater access to technology, with females being deprived due to conservative and patriarchal traditions, adding to concerns for worsening gender inequalities (Barra et al., 2024). Pakistan has a large rural population of over 61% (Raza, Wasim, & Sarwar, 2020), with many rural students enrolled at urban higher education institutes (Tayyaba, 2012). However, these students are known to suffer from disparities in access and literacy of digital resources, affecting their positive attitudes and use of AI (Iqbal, Tariq, and Ahmad, 2021). It is thus that we need to assess attitudes and use of AI and compare these across socio-demographic groups to support all Pakistani youth to remain competitive at a global scale (Kathala and Palakurthi, 2024), and contribute collectively to national growth (Mannuru et al., 2024).

Aim and significance of study

This study aims to sample university students from Pakistan in order to: 1. Identify descriptive statistics for four areas- a. positive attitudes for AI, b. functional use of AI, c. accessibility of AI, and d. AI literacy; 2. Compare mean scores for the four study areas (a. positive attitudes for AI, b.

functional use of AI, c. accessibility of AI, and d. AI literacy) with respect to socio-demographic characteristics of regional belonging, gender, and wealth; and R3. ascertain predictors of positive attitudes for AI and functional use of AI. This study holds significant relevance in the current educational landscape as it seeks to explore the multifaceted relationship between generative AI attitudes, use, access, and literacy in university students.

Sustainable Development Goal 4 highlights the important role of quality education in ensuring inclusive and equitable opportunities for all students, regardless of their backgrounds, which generative AI has the potential to contribute to (Unterhalter, 2019). This study will provide educators and policymakers with insights to tailor AI integration strategies that enhance student learning experiences, and also help to identify disparities and promote equitable access to AI resources. Studies such as this across different regions, especially developing ones like Pakistan, are crucial for designing inclusive policies that bridge the digital divide, support underrepresented groups, and prepare the youth for the transforming job market led by AI (Khan et al., 2023).

Methodology

Research design, sample, and ethics

This study has a cross-sectional quantitative design. The selection criterion was university students who: (i) had used generative AI for academic purposes, at least once, and (ii) had completed at least one year of university studies and could comment on AI literacy gained from higher education institutes. Informed consent was taken from all respondents and anonymity and confidentiality was guaranteed. The Institutional Review Board of the Forman Christian College University provided approval for this study.

Data collection and tool

Data was collected over two periods- June 2024 to August 2024, and January 2025 to February 2025, based on the availability of the students and semester exams. Google survey forms were used to collect data. Over twenty-five undergraduate WhatsApp classes were messaged, with each class having an average number of 35 students. In addition, several university Facebook accounts were messaged to invite student respondents. Despite this, the final sample included only 171 students. The low response was mainly due to: (i) data collection during summer or winter holidays, when students are less willing to participate in academic surveys; and (ii) student unwillingness to answer questions related to AI use, as it is still associated with cheating and misuse (Busch et al., 2024).

The survey included six socio-demographic questions (age, gender, major area, year of study, monthly household income, and regional belonging), and fifteen questions from the general attitudes towards Artificial Intelligence Scale, including only the items measuring positive attitudes (Schepman, & Rodway, 2020). In addition, five questions each were taken from internationally standardized surveys measuring functional use of AI, accessibility of AI (Bancoro, 2024), and AI literacy (Ng et al., 2022) (Appendix A).

Data analysis and reliability results

Data from Google survey forms were coded and transferred to SPSS 25.0 for analysis. At first, descriptive statistics were derived to present frequencies and percentages for attitudes, use, access and literacy of AI. Next, mean comparisons were obtained using independent sample T tests, to compare mean scores based on regional belonging, gender, and wealth background, after compounding the four study domains (a. positive attitudes for AI, b. functional use of AI, c. accessibility of AI, and d. AI literacy). Finally, multiple linear regression results were calculated,

first for the dependent variable of positive attitudes towards AI, and second for the dependent variable of functional use of AI. P values of less than 0.05 were considered significant. Reliability results for the four study domains show satisfactory Cronbach alpha results for all study domains (Table 1).

Table 1: *Reliability results of study domains*

	Itms	**α**
General Attitudes to AI	15	0.789
AI Functional Use	05	0.851
AI Availability	05	0.794
AI Literacy	05	0.908

Results

Descriptive statistics

Majority of the university student respondents lie between 23-25 years (50.3%) and are in their senior year of undergraduate studies (55.5%). The sample is split almost evenly between male (50.3%) and female (49.7%) students; however, majority are from the social sciences (71.9%). Nearly half have a family household income of PKR 300,000/ USD 1,071.58 or more. Though the university is located in an urban setting, there was good representation from rural areas (26.9%).

Table 2: *Descriptive statistics of demographic values (N=171)*

Variables	*f*	%
Age		
18-19	33	19.3%
20-22	52	30.4%
23-25	86	50.3%
Gender		
Female	85	49.7%
Male	86	50.3%
Major		
Social sciences	123	71.9%
Life sciences	17	09.9%
Humanities	07	04.1%
Computer science	24	14.0%
Year of study		
Sophomore	50	29.2%
Junior	26	15.2%
Senior	95	55.5%
Monthly household income		
PKR 50,000-99,000/ USD 178.60-353.62	36	21.1%
PKR 100,000-199,000/ USD 357.19-710.81	33	19.3%
PKR 200,000-299,000/ USD 714.38-1,068.00	32	18.7%
PKR 300,000 and above/ USD 1,071.58 and above	70	40.9%
Regional belonging		
Urban	125	73.1%
Rural	46	26.9%

Table 3 presents the descriptive results for items measuring positive attitudes towards AI in university students. There are four areas where majority students agree that: (i) there are beneficial applications of AI (83.0%); (ii) AI exciting (74.9%); (iii) they are interested in using AI in their daily life (59.1%); and (iv) they would use AI in their jobs (50.3%). However, there are nine areas where majority students disagree with benefits of AI or show mistrust with AI, such that: (i) they do not love everything about AI (86.5%); (ii) they would not entrust their life savings to an AI investment (84.8%); (iii) AI intelligence does not make them feel great about human ingenuity (77.8%); (iv) they do not feel that AI can perform better than humans (74.3%); (v) they do not feel that AI would be better than an employee (73.1%); (vi) for routine work they would not want to interact with AI (70.8%); (vii) they do not feel that AI can help people feel happier (69.6%); (viii) they do not feel that complex decisions are best left to AI (67.8%); and (ix) they do not feel that society will benefit from a future full of AI (56.7%).

Table 3: *Descriptive statistics for positive attitudes to AI (N=171)*

Variables	Disagree *f* (%)	Agree *f* (%)
There are many beneficial applications of AI	29 (17.0%)	142 (83.0%)
AI can have positive impacts on people's wellbeing	79 (46.2%)	92 (53.8%)
AI is exciting	43 (25.1%)	128 (74.9%)
AI can provide new economic opportunities for this country	70 (40.9%)	101 (59.1%)
AI system can perform better than humans	127 (74.3%)	44 (25.7%)
Much of the society will benefit from a future full of AI	97 (56.7%)	74 (43.3%)
I am interested in using AI system in my daily life	70 (40.9%)	101 (59.1%)
For routine work, I would rather interact with AI	121 (70.8%)	50 (29.2%)
AI intelligence makes me feel great about human ingenuity	133 (77.8%)	38 (22.2%)
An AI agent would be better than an employee	125 (73.1%)	46 (26.9%)
I would like to use AI in my own job	85 (49.7%)	86 (50.3%)
AI systems can help people feel happier	119 (69.6%)	52 (30.4%)
Some complex decisions are best left to AI system	116 (67.8%)	55 (32.2%)
I love everything about AI	148 (86.5%)	23 (13.5%)
I would entrust my life savings to an AI investment	145 (84.8%)	26 (15.2%)

Table 4 presents the descriptive results for AI functional use, accessibility, and literacy. Majority students that they rarely or only sometimes use AI for: (i) academic requirements (53.2%); (ii) supporting initial academic drafts (58.5%); (iii) improving inadequate or lacking output (60.2%); (iv) improving low grades (68.4%); and (v) finishing assignments quicker or more efficiently (55.0%). Majority students do not have issues with access to AI and confirm that it often or always accessible (59.1%), easy to access (64.9%), can be accessed anytime (66.7%), and that they are able to use it in on any advice- example smartphone, laptop, or desk PC (80.7%). However, majority report that they can rarely or only sometimes use AI tools for different types of academic requirements (52.0%).

More than 60% of students confirm that they have good or very good AI literacy in terms of knowing important concepts of AI (69.0%), knowing definitions of AI (64.3%), assessing limitations and opportunities of using AI (66.1%), weighing ethical considerations of AI (69.6%), and thinking of new uses for AI (69.6%).

Table 4:*Descriptive statistics for AI functional use, accessibility & academic performance*

Variables	Rarely/ Sometimes	Often/Always
Functional use of AI		
I use AI tools because it makes my academic requirements easier	91 (53.2%)	80 (46.8%)
I use AI tools to support initial drafts of my academic requirements	100 (58.5%)	71 (41.5%)
I use AI tools whenever I feel my output is lacking or inadequate	103 (60.2%)	68 (39.8%)
I use AI tools whenever I encounter low grades in prior assessments	117 (68.4%)	54 (31.6%)
I use AI tools to finish my requirements quicker and efficiently	94 (55.0%)	77 (45.0%)
Accessibility if AI		
I use AI tools because they are accessible	70 (40.9%)	101 (59.1%)
I can easily access and use AI tools without struggling	60 (35.1%)	111 (64.9%)
I can use AI tools anytime	57 (33.3%)	114 (66.7%)
I can use AI tools in any type of academic requirement	89 (52.0%)	82 (48.0%)
I can use AI tools in any type of device	33 (19.3%)	138 (80.7%)
AI Literacy	Very poor/ poor/ fair	Good/ Very good
I know the most important concepts of AI	53 (31.0%)	118 (69.0%)
I know definitions of AI	61 (35.7%)	110 (64.3%)
I can assess the limitations and opportunities of using AI	58 (33.9%)	113 (66.1%)
I can weigh the ethical considerations of AI	52 (30.4%)	119 (69.6%)
I can think of new uses for AI	57 (33.3%)	119 (69.6%)

Predictors for positive attitudes for AI and AI usage

Table 5 presents the multiple linear regression results for predictors of positive attitudes towards AI in university students. Nine factors explain 48.3% of the variance, with five showing statistical significance. These five independent variables which predict positive attitudes towards AI, include: (i) greater functional use of AI (t= 4.175, p=0.000); (ii) better availability of AI (t= 2.186, p=0.030); (iii) higher AI literacy (t= 2.397, p=0.018); (iv) male gender (t= 2.228, p=0.027); and (v) urban belonging (t= 1.723, p=0.047).

Table 5: *Multiple linear regression showing predictors for positive attitudes for generative AI*

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	25.766	3.228		7.982	.000	19.391	32.140
AI functional use	.459	.110	.361	4.175	**.000**	2.242	6.677
AI availability	.792	.362	.194	2.186	**.030**	1.507	4.076
AI literacy	1.217	.508	.223	2.397	**.018**	1.214	2.221
Age	.155	.097	.117	1.592	.113	-.037	.348
Gender	1.742	.782	.168	2.228	**.027**	1.286	4.198
Major	-.064	.349	-.013	-.185	.854	-.753	.624
Year of study	.040	.127	.028	.317	.751	-.210	.291
Monthly HH income	-.136	.313	-.031	-.436	.664	-.755	.482
Regional belonging	1.452	.843	.124	1.723	**.047**	.117	1.212

F= 5.446, p =0.000, df=9,161

R=0.483

Table 6 presents the multiple linear regression results for predictors of greater functional use of AI in university students. Nine factors explain 65.3% of the variance, with six showing statistical significance. These six independent variables which predict greater functional use of AI, include: (i) positive attitudes towards AI (t= 4.175, p=0.000); (ii) better availability of AI (t= 7.625, p=0.000); (iii) higher AI literacy (t= 2.287, p=0.023); (iv) male gender (t= 1.720, p=0.047); (v) senior year of study (t= 2.996, p=0.003); and (vi) urban belonging (t= 1.386, p=0.007).

Table 6: *Multiple linear regression showing predictors for functional use of AI*

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1 (Constant)	-3.244	2.582		-1.256	.211	-8.343	1.855
Positive attitudes for AI	.213	.051	.270	4.175	**.000**	2.112	7.313
AI availability	.564	.074	.502	7.625	**.000**	3.418	9.710
AI literacy	.792	.346	.184	2.287	**.023**	1.475	.108
Age	-.007	.067	-.007	-.105	.917	-.139	.125
Gender	.921	.535	.113	1.720	**.047**	-.136	1.977
Major	-.111	.237	-.029	-.469	.640	-.579	.357
Year of study	.729	.243	.228	2.996	**.003**	.248	3.210
Monthly HH income	.138	.213	.040	.650	.517	-.282	.559
Regional belonging	.223	.578	.024	1.386	**.007**	.919	2.365
F= 13.289, p =0.000, df=9,161							
R=0.653							

Mean comparisons for attitudes, use, availability, and literacy of AI

Table 7 presents mean comparisons for the four study domains by regional belonging (urban versus rural). Urban students show higher and significant mean scores for: (i) AI functional use (Urban Mean score= 16.53 versus Rural Mean score=15.78; p=0.040); (ii) AI availability (Urban Mean score= 19.36 versus Rural Mean score=18.67; p=0.008). However, results for positive attitudes to AI and AI literacy were not significant.

Table 7: *Mean comparisons for study domains by regional belonging (urban versus rural students)*

		N	Mean	SD	t	P value
Positive Attitudes to AI	Urban	125	33.26	5.271	1.462	0.136
	Rural	46	31.95	4.939		
AI Functional Use	Urban	125	**16.53**	4.387	1.068	**0.040**
	Rural	46	15.78	3.126		
AI Availability	Urban	125	**19.36**	3.703	1.106	**0.008**
	Rural	46	18.67	3.451		
AI Literacy	Urban	125	19.05	3.980	1.143	0.230
	Rural	46	18.89	3.796		

Table 8 presents mean comparisons for the four study domains by gender (male versus female). Male students show higher and significant mean scores for positive attitudes towards AI (Male Mean score= 33.40 versus Female Mean score=32.41; p=0.013); whereas, female students show higher and significant mean scores for AI literacy (Male Mean score= 18.56 versus Female Mean score=19.45; p=0.030).

Table 8: *Mean comparisons for study domains by gender (male versus female)*

		N	Mean	SD	t	P value
Positive Attitudes to AI	Male	86	**33.40**	4.481	1.253	**0.013**
	Female	85	32.41	5.827		
AI Functional Use	Male	86	15.68	3.959	-2.102	0.508
	Female	85	16.98	4.141		
AI Availability	Male	86	18.80	3.706	-1.373	0.845
	Female	85	19.56	3.553		
AI Literacy	Male	86	18.56	4.476	-1.488	**0.030**
	Female	85	**19.45**	3.231		

Table 9 presents mean comparisons for the four study domains by average monthly household income (USD 178.60-353.62 versus USD 1,071.58 and above). Students with greater average monthly household income of PKR 300,000 and above/ USD 1,071.58 and above show significantly higher mean scores for: (i) positive attitudes to AI (USD 178.60-353.62 Mean score= 32.52 versus USD 1,071.58 & above Mean score=34.85; p=0.025); (ii) AI Functional Use (USD 178.60-353.62 Mean score= 14.94 versus USD 1,071.58 & above Mean score=16.48; p=0.007); and (iii) AI Availability (USD 178.60-353.62 Mean score= 18.16 versus USD 1,071.58 & above Mean score=19.78; p=0.012).

Table 9: *Mean comparisons for study domains by average monthly household income (USD 178.60-353.62 versus USD 1,071.58 & above)*

		N	Mean	SD	t	P value
Positive Attitudes to AI	USD 178.60-353.62	36	32.52	6.389	-1.859	**0.025**
	USD 1,071.58 & above	70	**34.85**	4.321		
AI Functional Use	USD 178.60-353.62	36	14.94	5.344	-1.795	**0.007**
	USD 1,071.58 & above	70	**16.48**	3.454		
AI Availability	USD 178.60-353.62	36	18.16	4.771	-2.146	**0.012**
	USD 1,071.58 & above	70	**19.78**	2.972		
AI Literacy	USD 178.60-353.62	36	18.47	4.198	-.185	0.838
	USD 1,071.58 & above	70	18.62	4.093		

Discussion

We aimed in this study to understand factors that predict the positive attitudes and use of AI in university students and to make a comparison of differences based on socio-demographic backgrounds of students. Much of the student respondents represent a good balance of higher education enrollment, however, there was over representation from the social sciences. Given the selection criterion of our study, that students should have used AI, our findings may suggest that more social science students are turning to AI. This may be because students from the social sciences, compared to life science students, conduct research that heavily relies on analyzing human behavior, language, and social patterns, which AI tools like Natural Language Processing (NLP) and machine learning excel at (Miller, 2019).

Our findings suggest that while majority of students acknowledge the beneficial applications of AI and ere excited about its potential, majority students also mistrust AI and are skeptical about its role in society. This mistrust has been corroborated by other researchers who confirm that youth may undervalue AI due to bias and cultural anxieties, fear of data privacy being breached, and because AI tools are perceived as unethical and unreliable (Hutson & Plate, 2024). This may be why students from this study report limited functional use of AI for academic purposes, with some reporting rare or occasional use for tasks such as supporting initial academic drafts and improving low grades. This may also suggest that universities may not be providing support to students for ethical use of AI, which is discouraging them from use and gaining benefits of AI for student achievement (Alam, 2023).

However, our findings suggest that accessibility of AI is not a significant barrier for university students in Pakistan. Interestingly, over 60% of students rate their AI literacy positively, indicating a good understanding of AI concepts and definitions. This suggests that while students possess the necessary knowledge and access, other factors may be influencing their limited use of AI in academic settings. Other research suggests that students' may be less inclined to use AI tools when they are sensitive to rewards as they are more fearful of getting a poor grade due to use of AI, and that they believe that personal efforts will lead to higher quality academic output (Abbas, Jam, & Khan, 2024). Studies have also highlighted that humans are facing emotional worries about over-reliance and to encourage productive use of AI, they may need balanced implementation strategies related to AI (Frenkenberg & Hochman, 2025).

Regression analysis identified several predictors of positive attitudes toward AI, which include greater functional use of AI, better availability, higher AI literacy, male gender, and urban belonging. Predictors for greater functional use of AI included positive attitudes towards AI, better availability, higher AI literacy, male gender, senior year of study and urban belonging. Our findings align with existing literature, which suggests that familiarity and self-efficacy with AI tools contribute to more positive attitudes and greater use of AI (Asio & Gadia, 2024). We also investigated differences in positive attitudes, use, accessibility, and literacy for AI based on socio-demographic factors, which reinforced the results from the regression models. Overall, urban, male, and higher wealth background students show better attitudes, use, and access to AI. Other studies confirm that males use more AI and show less concern, whereas females are more negative and concerned about the adverse impact of AI on learning and assessment (Stöhr, Ou, & Malmström, 2024; Pellas, 2023).

Urban-rural disparities in student use of AI may be attributed to better infrastructure and exposure to technology in urban areas (Duanmu et al., 2025). Additionally, students with higher household incomes demonstrate more positive attitudes toward AI, greater functional use, and better availability. This aligns with studies suggesting that socio-economic status influences access to technology and positive attitudes to AI (Baca & Zhushi, 2024). These findings highlight the growing AI divide in Pakistan, where access and attitudes toward AI are shaped by gender, region, and wealth backgrounds. As AI becomes increasingly integrated into learning environments and the employment sector, this divide risks deepening professional disparities and limiting opportunities for disadvantaged groups. Addressing these inequities will require targeted policies that enhance AI literacy based on gender sensitive policies, and policies that target rural infrastructural access and impoverished or middle-class population groups.

Limitations and strengths

This study has some limitations, such as the small sample, which can limit the generalizability of findings. Additionally, the sample may not be representative of all university students in Pakistan, as it was confined to students who met specific eligibility criteria and was representative of students mainly from universities of Lahore and who were willing to respond. A survey by the government that is made mandatory for all universities to participate, may be reflective of all of Pakistan university students. However, some of the strengths of this study include the use of validated scales, and empirical evidence which provides valuable insights into the relationship between socio-demographic factors, and aspects of AI such as attitudes, use, access, and literacy. The findings of the study can be used by policy-makers to support AI integration and responsibly prepare students for better academic achievement and employment opportunities.

Conclusion

Based on the study findings it is recommended that the Pakistan education sector is in need of integrating AI-related content into curricula across disciplines to improve understanding and reduce skepticism. In addition, there is need to improve attitudes, literacy, and accessibility for AI, particularly for rural students, females, and those from lower wealth backgrounds. Developing specific programs that encourage female students to engage with AI is also needed to leverage their positive attitudes and competitiveness in the job market. It may be possible to leverage positive attitudes through a mentorship program by engaging students with favorable views of AI to support their peers. Furthermore, collaboration between academia, industry, and government institutions is essential to ensure AI education aligns with real-world applications and workforce demands. Establishing partnerships with technology companies can provide students with hands-on experience through internships, workshops, and training programs.

To bridge the digital divide, investment in infrastructure- such as expanding internet connectivity and providing affordable access to AI-related tools and resources should be prioritized, especially in rural and underserved areas. Additionally, teacher training programs should be implemented to equip educators with the necessary skills and knowledge to effectively teach AI concepts. Finally, continuous assessment and policy adjustments should be made to ensure AI education remains relevant and effective. Regular monitoring of AI integration efforts and student outcomes will help identify gaps and areas for improvement, ensuring that Pakistan's education sector remains responsive to technological advancements and prepares students for the future job market.

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