

# Utilization of Artificial Intelligence in Higher Education: Insights from Teachers and Students on Inclusivity

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## Abstract

Artificial Intelligence (AI) is increasingly shaping the way higher education operates, from instructional design to assessment and student support. This study investigates how teachers and students in Pakistani universities perceive the use of AI in higher education, with a particular focus on inclusivity. Using a quantitative survey design, data were gathered from teachers and students across three institutions: Ghazi University DGK, Education University DGK, and the Institute of Southern Punjab Multan. Perceptions were measured using a validated questionnaire (Cronbachs alpha = 0.96-0.98) in six major areas: AI effectiveness, Chat GPT use, student competence, teacher competence, skill development and inclusivity with AI. The results showed that the two groups recognized the relevance of AI in personalizing learning, enhancing productivity and supporting different learners. However, the issues of cost, biased accessibility, academic integrity, and AI illiteracy still persist. There were also some differences in demographics, as the views of teachers varied based on their experience, qualification and designation, and those of students varied based on their gender, locality, and academic stage. The study conclusively states positive results that AI can be a useful inclusivity tool when it is meaningful, trained, properly accessed, with clear ethical guidelines.

**Keywords:** Artificial Intelligence, Insights, Higher Education, Inclusivity

## 1. Introduction

Artificial Intelligence (AI) is no longer a far-off idea - it is already changing higher education in the world. Adaptive learning, automated assessment, student analytics, and virtual tutoring are some of the ways AI is being applied in universities. The technologies will also help the institutions in customizing the process in which the teaching will be performed to reduce the administrative overhead in addition to giving the students the option of choosing in the learning opportunities.

Higher education is plagued by the same problems in such nations as Pakistan: scarcity of resources, thousands of students, and a great diversity of their backgrounds and abilities. AI offers potential solutions, particularly for inclusive education ensuring that all students, regardless of gender, location, or ability, have access to meaningful learning opportunities.

Globally, AI is recognized for its capacity to adapt learning experiences to individual needs, yet its integration in developing countries is still in early stages (Popenici& Kerr, 2017). In Pakistan, the pandemic accelerated interest in educational technology, but adoption remains uneven. Against this backdrop, important questions arise:

- How do teachers and students view AI in higher education?
- Does AI help create inclusive learning environments?
- Do there any differences between teachers' perspective regarding usage of artificial intelligence in higher education on the base of demographics i.e. gender, experience and university?
- Are there differences in students' perspectives on the use of artificial intelligence in higher education based on demographics such as gender, age, university, semester, and department?

This study addresses these questions by exploring the perspectives of teachers and students from selected Pakistani universities, focusing on how AI can contribute to inclusivity in higher education.

## **2. Literature Review**

### **2.1 AI in Higher Education**

AI applications in higher education range from adaptive learning systems and automated grading to research assistance and academic writing support (Chassignol et al., 2018; Chiu et al., 2023). AI's strength lies in its ability to process large volumes of data and deliver personalized feedback, enabling more targeted teaching strategies. In developing contexts, AI can bridge resource gaps — but only if institutions address barriers such as infrastructure, technical skills, and financial constraints (Ferguson et al., 2015).

### **2.2 AI and Inclusivity**

Inclusivity in education ensures that all learners, including those with disabilities or from disadvantaged backgrounds, can access and benefit from educational opportunities. AI tools can assist through real-time translation, speech-to-text applications, adaptive assessments, and personalized learning pathways (UNDP, 2015). But without a carefully considered design, AI can drive even greater inequalities and may prove especially harmful when there is unequal access to technology (Toyama, 2015). They are moral categories: FATE (Fairness, Accountability, Transparency, Ethics): they must exist in the air of the responsible implementation (Garcia et al., 2020).

## **2.3 Chat GPT in Education**

Chat GPT is an AI tool launched by Open AI in 2022, but it has become one of the most popular AI tools in the academic community in a short period of time. It is able to generate explanations, summaries, elucidate the process of writing, and answer challenging questions (Gilson et al., 2022). Even students find it fast and flexible and anticipate in the lesson planning and content writing by the teacher. But the most commonly reported concerns are accuracy, the risk of plagiarism, and excessive reliance (Su et al., 2022; Mollick&Mollick, 2023).

## **2.4 Ethical and Cultural Considerations**

There is also the risk to information, Intellectual Property, algorithm bias and cultural adoption in relation to the application of AI to education (Dignum, 2017). These problems are further complicated in Pakistan by institutional readiness disparities between rural and urban locations and disparities in technological exposure. Concerns that AI may supplant human judgment or undermine academic integrity are the most common factors that contribute to resistance (Chomsky et al., 2023), which explain the rationale of AI literacy programs at teacher and student levels (Tan and Subramonyam, 2023).

## **2.5 Research Gap**

Although the potential of AI in enhancing inclusiveness is emphasized in the international literature, empirical research in Pakistan, with regard to teacher and student attitudes, is scarce. This study addresses this gap by providing evidence from multiple universities and examining demographic differences in perceptions.

## **3. Methodology**

### **3.1 Research Design**

A quantitative survey approach was used to gather perceptions from teachers and students regarding AI use in higher education. The design enabled systematic comparison of attitudes across demographic groups.

### **3.2 Population and Sample**

The study involved teachers and students from:

- Ghazi University, DGK
- Education University, DGK
- Institute of Southern Punjab, Multan

A simple random sampling method was applied to select participants representing different genders, localities, academic levels, qualifications, and professional experience.

### 3.3 Instrument

A structured questionnaire measured perceptions across five dimensions:

1. Effectiveness of AI technologies
2. Effectiveness of Chat GPT
3. Students' competence in AI use
4. Teachers' competence in AI use
5. Enhanced student skills through AI

The 30-item tool used a four-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree). Reliability testing produced Cronbach's alpha values between 0.86 and 0.89.

### 3.4 Data Collection and Analysis

Data were collected in person and online after obtaining institutional permissions. Descriptive statistics summarized responses, while t-tests and one-way ANOVA examined differences across demographic variables, with significance set at  $p < 0.05$ .

## 4. Results

### Demographic Information Regarding Teachers

*Table 1: Demographic-Based Frequency Distribution*

Variables		Responses	
		<i>f</i>	%
Gender	Male	24	75
	Female	8	25
Experience	05-10 years	15	46.8
	11-15 Years	12	37.5
	16-20 Years	5	15.6
University	University of Education	9	28.1
	Ghazi University	17	53.1
	ISP Multan	6	18.7

Table 1 shows descriptive statistics used to analyze sample participants demographic information.

1. Table 1 states that (75%) teachers were males and (25%) were females.
2. Table 1 displays that (46.8%) teachers were at experience of 05-10 year, (37.5%) were at of 11-15 year, (15.6%) were at of 16-20 year
3. Table 1 states that (28.1%) teachers are from University of Education, and (53.1%) are from Ghazi University, and (18.7%) from institute of southern Punjab Multan.

*Table 2: Factor wise Mean & Sig. level of Teachers Perspective regarding Artificial Intelligence (AI) in higher education*

<b>Statements</b>	<b>Mean</b>	<b>Sig.</b>
Proficiency in A.I	4.03	0.00
AI usage	3.12	0.01
Chat GPT	3.39	0.00
Content Delivery	3.40	0.03
Evaluation	3.36	0.02
Inclusivity	3.26	0.03
<b>Overall mean</b>	<b>3.42</b>	<b>0.01</b>

Table 2 elaborates that teachers have significant and positive perspective regarding AI proficiency (M=4.03, Sig.= .00), AI usage (M=3.12, Sig.= .01), Chat GPT (M=3.39, Sig.= .00), Content Delivery (M=3.40, Sig.= .03), Evaluation (M=3.36, Sig.= .02) and inclusivity (M=3.40, Sig.= .03). AI in higher education is still in its early stages, with space for growth in terms of adoption and efficacy. To fully leverage AI's impact in education, institutions may need to provide more training and resources.

*Table 3: Gender-Based Differences in Teachers' Perspectives on the Use of Artificial Intelligence (AI) in Higher Education*

<b>Variables</b>	<b>Category</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>df</b>	<b>t</b>	<b>Sig.</b>
Gender	Male	20	3.4632	.80099	27	.040	.602
	Female	9	3.4510	.66470			

Table 3 presents a sample size (N) of 20 males and 9 females. The average score for males is 3.4632, whereas the average score for females is 3.4510. The standard deviation (SD) for males is 0.80099, suggesting greater variability in their responses relative to females, whose SD is 0.66470. The significance level (Sig.) is 0.602, exceeding the conventional threshold of 0.05. The disparity between the mean scores of males and females is not statistically significant.

*Table 4: Variations in Teachers' Perspectives on the Utilization of Artificial Intelligence (AI) in Higher Education Based on experience*

	Sum of Squares	df	Mean Square	f	Sig.
Between Groups	1.960	1	1.960		
Within Groups	13.766	27	.510	3.84	.003
Total	15.726	28			

Table 4 illustrates the disparity among participants based on their experience about the "utilization of Artificial Intelligence (AI) in higher education: Perspectives of Teachers and Students." The significance value (0.003) is less than (0.005), indicating a statistically significant difference based on experience.

*Table 5: Disparity in Teachers' Perspectives on the Utilization of Artificial Intelligence (AI) in Higher Education According to universities*

	Sum of Squares	df	Mean Square	f	Sig.
Between Groups	1.735	2	.868		
Within Groups	13.991	26	.538	1.612	.219
Total	15.726	28			

Table 5 illustrates the disparity among participants from various universities about the "utilization of Artificial Intelligence (AI) in higher education: Perspectives of Teachers and Students." The significance value (0.219) exceeds (.005), indicating that there is no statistically significant difference among the universities.

Table 6: Frequency Distribution of Sample of Students on the Basis of Demographics

Demographic Variables		Participants Response	
		Frequency	%age
Gender	Male	260	44.4
	Female	325	55.5
Age	20-30 years	160	27.3
	31-40 Years	340	58.1
	41-50 Years	85	14.5
University	University of Education	125	21.3
	Ghazi University	360	61.5
	ISP Multan	100	17
Department	Education	327	55.8
	Physics	147	25.1
	Math	31	.05
	History & Political Science	80	13.6

Table 6 presents the descriptive statistics employed to examine the demographic information of the sample participants.

1. Table 6 states that (44.4%) students were males and (55.5%) were females.
2. Table 6 displays that (27.3%) students were at age of 20-30 year, (58.1%) were at age of 31-40 year, (14.5%) were at age of 41-50 year
3. Table 6 states that (21.3%) students are from University of Education, and (61.5%) are from Ghazi University, and (17%) from institute of southern Punjab Multan.
4. Table 6 also elaborates that (55.8%) from education department, (25.1%) from physics department, (.05 %) form math department and 13.6% from history and political department.

Table 7: Factor wise Mean of Students' Perspective regarding usage of Artificial Intelligence (AI) in higher education

Statements	Mean	Sig. Lvl
Effectiveness	4.12	0.00
Proficiency	3.79	0.00
Learning	3.87	0.02
Skill Development	3.95	0.01
Inclusivity	3.57	0.03
<b>Overall mean</b>	<b>3.86</b>	<b>0.01</b>

Table 7 elaborates that, students have significant and positive perspective regarding AI effectiveness (M=4.03, Sig. = .00), Proficiency (M=3.79, Sig.= .00), Learning (M=3.87, Sig.= .02), skill development (M=3.95, Sig.= .01) and inclusivity (M=3.95, Sig.= .01). Overall mean (3.86) and Significance (0.01>0.05) shows significant utilization of artificial intelligence in higher education positively.

*Table 8 : Difference on usage of Artificial Intelligence (AI) in higher education Based on Gender*

<b>Variables</b>	<b>Category</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>df</b>	<b>t</b>	<b>Sig.</b>
Gender	Male	105	3.9846	.49408	231	.514	.229
	Female	128	3.9524	.46187			

Table 8 demonstrates that the p-value (0.229) above 0.05, indicating that the disparity between male and female mean scores is not statistically significant. This indicates that gender does not significantly influence the measured variable, and any observed score differences are likely attributable to chance rather than a genuine effect.

*Table 9: Difference on Utilization of Artificial Intelligence (AI) in higher education Based on Age*

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>f</b>	<b>Sig.</b>
Between Groups	4.185	2	4.056	275	.003
Within Groups	48.35	230	.205		
Total	52.5	232			

Table 9 illustrates the age-related differences among participants on their perceptions of the utilization of Artificial Intelligence (AI) in higher education. The significance value (0.003) is less than (0.005), indicating a statistically significant difference between age groups.

*Table 10: Variations in the Application of Artificial Intelligence (AI) in Higher Education Based on Universities*

	Sum of Squares	Df	Mean Square	f	Sig.
Between Groups	3.159	2	1.580		
Within Groups	49.382	230	.215	7.357	.001
Total	52.541	232			

Table 10 illustrates the variance among participants from different universities regarding the perception of the usage of Artificial Intelligence (AI) in higher education. The significance value (0.001) is smaller than (0.005), indicating a statistically significant difference between colleges.

*Table 11: Difference on usage of Artificial Intelligence (AI) in higher education Based on semester*

	Sum of Squares	df	Mean Square	f	Sig.
Between Groups	.111	1	.111		
Within Groups	52.430	231	.227	491	.484
Total	52.541	232			

Table 11 illustrates the disparity among participants from various universities about the utilization of artificial intelligence (AI) in higher education. The significance value (0.484) exceeds (.005), indicating that there is no statistically significant difference across semesters.

*Table 12: Disparities in the application of Artificial Intelligence (AI) within higher education according to departments*

	Sum of Squares	df	Mean Square	f	Sig.
Between Groups	.467	3	.156		
Within Groups	52.074	229	.227	684	.563
Total	52.541	232			

Table 12 illustrates the disparity among participants from various universities about the utilization of Artificial Intelligence (AI) in higher education. The significance value (0.563) exceeds (.005), indicating that there is no statistically significant difference between departments.

#### **4.1 General Trends**

AI use was reported at moderate to high levels. Private institutions showed slightly more integration than public ones, with applications including adaptive learning platforms, automated grading, and research support.

#### **4.2 Teachers' Perspectives**

Teachers valued AI for reducing workload and offering real-time analytics but expressed caution about over-automation. Those with higher qualifications showed greater confidence in AI integration, while more experienced faculty tended to be cautious, highlighting potential impacts on pedagogical quality.

#### **4.3 Students' Perspectives**

Students were finding AI to be a useful educational tool, especially in writing, translation, and research. The inclusivity benefits of AI were rated higher by female students than by male students, and frequent use was more common among urban students than among rural students.

#### **4.4 Chat GPT Usage**

Chat GPT was perceived as useful by both groups to create content and explain complicated issues. But issues of accuracy, plagiarism and over-dependence were widespread.

## 4.5 Inclusivity Outcomes

The AI was linked to the support in training students with disabilities, identifying instructions, and language barrier. A barrier to the full realization of these benefits was identified to be access inequality and the high cost of software.

## 5. Discussion

The favorable attitudes towards AI in the current paper are also echoed in the global data on perceiving AI as an instrument to support learning and inclusivity (Chiu et al., 2023; UNDP, 2015). One of the dangers of widening the digital divide, however, is disparities in access, rural vs urban learners (Toyama, 2015). Teachers' cautious optimism aligns with previous research emphasizing the need for professional readiness and ongoing training (Tan & Subramonyam, 2023). Students' enthusiasm reflects the perceived academic benefits of AI but also underscores the importance of embedding AI use within pedagogical strategies that encourage critical thinking and originality (Su et al., 2022).

Chat GPT's mixed reception illustrates the dual nature of generative AI: highly useful but requiring oversight to avoid misinformation and ethical breaches (Dignum, 2017). For inclusivity goals to be met, institutions must pair technology adoption with deliberate equity and policy measures.

## 6. Conclusion and Recommendations

### 6.1 Conclusion

The perspective of teachers and students of universities was positive regarding the use of AI in higher education. AI has significant potential to enhance inclusivity in Pakistani higher education by offering personalized learning, reducing barriers for students with disabilities, and streamlining teaching processes. Yet, challenges such as unequal access, limited AI literacy, and ethical concerns must be addressed to ensure equitable benefits.

### 6.2 Recommendations

1. **AI Literacy Training** for both teachers and students, covering ethical and critical use.
2. **Equitable Access** through infrastructure investment and subsidized tools for under-resourced areas.
3. **Institutional Guidelines** on AI ethics, academic integrity, and privacy.
4. **Assistive AI Applications** to support diverse learning needs.
5. **Ongoing Evaluation** of AI's educational and inclusivity impact.

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