

## The Role of Artificial Intelligence in Personalized Learning at the Private Sector Universities in Lahore



Dr. Aisha Sami	Assistant Professor, Department of Education, University of Management and Technology Lahore <a href="mailto:aisha.sami@umt.edu.pk">aisha.sami@umt.edu.pk</a>
Kausar Khalil	PhD Education, Scholar, University of Management and Technology, Lahore <a href="mailto:kausarkhalil@hotmail.com">kausarkhalil@hotmail.com</a>
Dr. Shahid Rafiq (Corresponding Author)	Assistant Professor, Department of Education, Emerson University Multan, <a href="mailto:shahid.rafiq@eum.edu.pk">shahid.rafiq@eum.edu.pk</a>

**Abstract:** *This study explores the current use of artificial intelligence (AI) for self-directed learning in private universities in Lahore, Pakistan, and explores students' perspectives and concerns about AI-driven personal learning. Using quantitative research, the sample included 410 students from four private universities. Data were collected from a survey and analyzed using SPSS. Results, descriptive and inferential statistics were obtained from ANOVA, correlation analysis and regression analysis. The results of the study show that most students have a positive attitude towards intelligence in learning and know the potential of intelligence in the development of self-learning. However, significant concerns have been raised about data privacy, algorithmic bias and equal access to education. Regression analysis identified determinants of ethical concerns, including demographic variables and AI use. This study highlights the need for ethics, teacher training, ongoing supervision, and collaboration to ensure the ethical and practical advantages of AI-driven personal learning. These findings lead to a better understanding of the opportunities and challenges of AI in education and provide recommendations for policymakers, educators, and partners on promoting ethical and balanced AI in education.*

**Keywords:** *Artificial Intelligence, Personalized Learning, Ethical Considerations, Data Privacy, Equitable Access*

### Introduction

Education, especially in the field of artificial intelligence, penetrates every aspect of daily life and offers opportunities for innovation and change. Educational technology is well received and invested in, and AI integration is expected to completely change the traditional teaching model. The use of artificial intelligence in education at a private universities in Lahore, Pakistan, has the potential to enhance individual learning and meet the diverse needs of students in a fast-paced learning environment. In recent years, the use of artificial intelligence in education has increased with the influence of advances in machine learning algorithms,

natural language processing, and data analysis. According to HolonIQ (2021), the global AI market in education is expected to reach \$6 billion by 2024; This reflects the changing knowledge of AI in improving educational outcomes. In Pakistan, where access to quality education remains challenging, using AI to personalize education will be particularly useful, especially in the context of private universities. (ISTE) involves adapting educational techniques to meet the needs, interests, and abilities of each student (ISTE, 2022). Using technology, teachers can create a flexible learning environment that adapts content, pace, and teaching strategies based on feedback and student data (Afzal and Rafiq, 2022). Research

shows that self-directed learning can improve student engagement, motivation, and learning skills (Liu et al., 2023). Private universities in Lahore represent a significant part of Pakistan's higher education landscape, catering to a variety of students with different educational backgrounds and academic interests. Although these institutions often have well-developed institutions and resources, integrating the right skills into their training is still an area worth investigating. Understanding how private universities in Lahore adopt and implement intelligence-based personalized learning is important for future educational strategies and decisions. However, the use of artificial intelligence in education is not free from difficulties and concerns. To ensure the integrity and use of artificial intelligence technology in education, issues such as data privacy, algorithmic bias, and digital divide need to be carefully addressed (Dillahunt et al., 2021).

Additionally, cultural and contextual factors specific to Lahore and the broader Pakistani educational landscape will influence the adoption and effectiveness of AI-driven education. Many things, including business education. The integration of intellectual technologies in the context of private universities in Lahore, Pakistan, has the potential to change the paradigm of personal education. This presentation will provide an in-depth look at the importance of AI in improving personalized learning, the current status of AI implementation in private universities in Lahore, and the implications and issues related to integration. Individualized learning, a teaching approach that tailors' educational programs to each student's unique needs, interests, and abilities, is gaining attention in today's education (Pane et al., 2017). Integration of AI technology can increase the effectiveness of personalized learning by providing students with personalized content, flexible learning opportunities, and immediate feedback (Zawacki-Richter et al., 2019). AI-powered systems can analyze student data such as learning, performance, and engagement to create personalized learning plans based on each student's needs (Luckin et al., 2016). The use of

AI-driven personalized learning in the context of private universities in Lahore can be very beneficial. These institutions are often at the forefront of technological innovation and have the resources and flexibility to explore and implement AI-driven personalized learning strategies (Iqbal et al., 2021). By using AI, private universities can provide students with a more engaging, productive, and rewarding learning experience, ultimately improving student outcomes and satisfaction (Zawacki-Richter et al., 2019). An important benefit of AI-powered personalized learning in private universities is the ability to adapt learning content and deliver it according to the individual needs of each student (Pane et al., 2017).

AI-based systems can analyze student data such as their learning patterns, prior knowledge, and performance to create personalized learning programs that meet students' characteristics and weaknesses (Luckin et al., 2016). This personal change can increase student engagement, motivation, and academic success (Zawacki-Richter et al., 2019). Additionally, AI-driven self-learning can improve teaching performance. AI can perform specific tasks such as grading, feedback, and content correction, allowing teachers to focus on more productive tasks such as individual instruction and intervention (Iqbal et al., 2021). This allows for efficient use of teacher resources and provides students with a more personalized learning experience. The use of AI-powered personalized learning in private universities in Lahore can also help improve the decision-making process (Rafiq, Kamran, and Afzal, 2024).

### **Problem Statement**

Though the probable of artificial intelligence (AI) to improve personalized learning in higher education is widely acknowledged, gaps remain in understanding its use and impact in the details of private universities in Lahore, Pakistan. Despite the advancement of AI technology in education worldwide, there is no research on how universities in Lahore are leveraging AI to provide personalized learning to students. This study aims to address this gap by investigating the current practice, benefits, challenges, and issues affecting the implementation of AI-driven

personal learning in private universities in Lahore. The overall study of education in the context of higher education in Pakistan poses many challenges. First, it prevents universities and policymakers from making informed decisions about integrating AI technology into teaching. Without a good understanding of implementation challenges and potential benefits, universities will struggle to make the most of the intellectual potential of students' academic outcomes. Second, a lack of evidence hinders efforts to develop strategies and interventions to meet the unique needs and preferences of private universities students in Lahore. This study aims to propose evidence-based practices and policies that support innovation and excellence in regional education by shedding light on its impact on the adoption and effectiveness of AI-driven personal learning. The consequences of this are not limited to philosophical considerations; It also includes moral, cultural and economic factors. Therefore, there is a need to examine the ethical implications of AI-assisted self-learning, particularly in terms of data privacy, algorithmic bias, and equitable access to learning. Additionally, cultural and contextual factors specific to Lahore and the broader Pakistani education landscape will influence the adoption and effectiveness of AI technology in personal education. By exploring these multiple challenges, this study aims to understand the role of cognitive skills in learning and provide information about good and effective special education in private universities in Lahore, Pakistan.

### **Research Objectives**

1. To investigate the current utilization of artificial intelligence for personalized learning in private sector universities in Lahore, Pakistan.
2. To identify the perceived benefits and challenges associated with the implementation of AI-powered personalized learning initiatives.
3. To examine the ethical considerations and implications of AI-driven personalized learning initiatives in

private sector universities in Lahore, Pakistan.

### **Research Questions**

1. What is the extent of the current utilization of artificial intelligence for personalized learning in private sector universities in Lahore, Pakistan?
2. What are the perceived benefits and challenges associated with the implementation of AI-powered personalized learning initiatives in private sector universities in Lahore, Pakistan?
3. What ethical considerations and implications are associated with AI-driven personalized learning initiatives in private sector universities in Lahore, Pakistan?

### **Literature Review**

The integration of artificial intelligence (AI) and learning has become a great way to replace traditional teaching methods. In the context of higher education, personalized learning, which means tailoring academic programs to each student's individual needs, interests, and abilities, is encouraged to promote student engagement and academic success. This literature review examines recent research on the use of AI for personalized learning in private universities, focusing on the implications, challenges, and ethics of artificial intelligence (AI) in Lahore, Pakistan. Collaborative learning, especially personalized learning, has changed the dynamic of education today. Artificial Intelligence technology has evolved significantly over the past few years and interfaces with learning theory to improve teaching. The field of Artificial Intelligence in Education (AIEd) is emerging with the advent of new technologies such as machine learning, natural language processing, and chatbots for student engagement, grading, assessment, and changes in self-directed learning. This shift has led to deeper exploration of smart teaching methods, flexible learning environments, and collaborative learning tools, all designed to enhance student learning (Woolf, 2010;

Desmarais and Baker, 2012; Dillenbourg and Jermann, 2007). et al., 2023). To provide direction and taxonomy for AI research in higher education, Zawacki-Richter et al. (2019) developed a thesis that divides the research into four main areas: profile and prediction, intelligent teaching (ITS), assessment and evaluation, improvement, and personal change. Analytics and prediction use a data-driven approach to identify students' educational journey, improve admissions decisions, predict dropout rates, and improve student learning by modeling excellence (Zawacki-Richter et al., 2019). Intelligent teaching uses artificial intelligence to provide personalized instruction, assess student strengths and weaknesses, provide personalized feedback, adjust curriculum, and facilitate collaboration between students (Zawacki-Richter et al., 2019). It also aims to refine and improve the evaluation of education through artificial intelligence algorithms for measurement and evaluation, grading, feedback, student perceptions and teaching effectiveness measurements. On the other hand, it is the field of adaptation and personal exploration of the role of intelligence in creating educational programs for students by providing personal content, showing the way to learn, supporting teachers in creating effective learning programs, and using effective curriculum monitoring and coaching. . students (Zawacki-Richter et al., 2019). This technology provides students with relevant learning experiences, clear explanations, personalized exercises, and suggestions, ensuring their learning is dynamic and flexible (Princeton Review). AI chatbots have become important tools in education by providing homework help, personal tutoring, standardized test preparation, and psychological support (Chassignol et al., 2018; Devedzic, 2010; Peredo et al., 2011). Platforms such as Bard, ChatGPT, Ada, and Replika demonstrate the potential of AI to improve the student experience through personalized recommendations, interactive sessions, and migrated support (Rudolph et al., 2023; Dergaa et al., 2023; Kabiljo et al., 2023). ., 2023). . These chatbots assist teachers with tasks such as planning, grading, and providing information to students, allowing teachers to

focus on lesson planning and collaboration with students (Cooper, 2023). In addition, AI chatbots can improve teaching, assessment, and provide personalized learning to students, promoting personalized learning to suit each student's unique needs (Herft, 2023; Al Kaâbi, 2023; Fariani et al., 2023). According to a study by Siemens and Baker (2020), an adaptive learning platform developed by artificial intelligence has proven to be effective in adjusting the teaching content, pace, and assessment among students according to theories, thereby improving learning outcomes. Similarly, Baepler et al. (2021) emphasized the role of cognitive skills in providing personal guidance and support to students and creating greater independence and self-control in students reviewing the work. These findings highlight the potential for AI to replace the traditional one-size-fits-all approach to learning by providing support and assistance to meet as diverse a learner's needs as possible. While the use of AI for personal learning holds great promise, it also comes with its own perceived benefits and challenges. On the other hand, studies have shown its many benefits, including student motivation, motivation, and academic success. For example, a meta-analysis by Karsenti and Bugmann (2020) found that self-learning interventions supported by smart devices can improve student performance in several ways. Additionally, AI-powered adaptive learning systems have been praised for their ability to enhance students' learning by providing instant feedback and personalized lessons (Papamitsiou and Economides, 2021).

The moral consequences of AI-enabled personal learning go beyond bias and data privacy, giving rise to broader ethical issues. Johnson et al. (2021) highlight the importance of considering ethical aspects of AI technology in education, including issues of autonomy, agency, and human dignity. For example, the use of intelligence tools to determine students' academic or career expectations raises concerns about transparency and accountability, and it is not possible to reach conclusions. Likewise, the promotion of education through artificial intelligence-driven personal learning processes

raises the issue of social justice and fair distribution of education (Van Dijk and Poell, 2021). Additionally, cultural and contextual factors specific to Lahore, Pakistan, add another layer of complexity to ethical considerations surrounding intellectual competence in education. Khan et al. (2020) emphasize the need for cultural input, including local values, beliefs, and practices, when working intellectually in education. Additionally, Pakistan's digital divide and disparity in technology development may lead to inequity in education, highlighting the importance of equity and inclusion in AI-driven learning interventions (Malik et al., 2021).

### **Theoretical Framework**

The theoretical framework used in this study is based on several key concepts and theories regarding self-directed learning, artificial intelligence (AI), and ethical considerations in education. The core of this framework is based on the principles of personalized learning, which emphasize the importance of adapting educational programs to meet each student's abilities, interests, and abilities (ISTE, 2022). In this framework, AI becomes a powerful tool for personalization, leading to the development of a flexible learning environment that adapts content, tempo, and teaching strategies as instant instructions and learner profiles (Baepler et al., 2021; Siemens & Baker, 2020). ). This framework draws on ethical values such as ethics, ethics, and ethics to examine the ethics of intelligence-focused self-education in a home private universities in Lahore, Pakistan (Johnson et al., 2021). Using a multidisciplinary, theoretical framework to investigate the cultural, institutional, and contextual factors that influence the adoption and effectiveness of AI technology in education (Khan et al., 2020).

### **How the Framework Will Work**

The above theoretical framework served as a framework for the study by guiding the development of research questions, data collection procedures, and data analysis procedures. First, the framework introduced the identification of important variables and

concepts relevant to research, including the use of AI for self-learning, visualization of results and issues, and ethical considerations. Second, the framework guides the selection of appropriate research and resources to investigate these changes and contexts in the context of private universities in Lahore, Pakistan. This may include qualitative methods such as interviews, focus groups, and data analysis to gather valuable information about participants' thoughts and experiences of AI-focused personal studies. Third, the framework guides the analysis and interpretation of collected data and provides a better understanding of the interplay between intelligence, personal learning, and ethical reasoning in education. By using ethics and methods to analyze data, this study aims to uncover underlying patterns, strains, and implications to provide good practice and recommendations in law.

### **Methodology and Procedure**

This study was validated by research on the use, benefits, issues, and ethics of artificial intelligence (AI) in personal training for university students engaged in Lahore, Pakistan. The positivist method is based on the value of research and aims to produce empirical evidence through data collection and analysis (Creswell and Creswell, 2017). By using a qualitative method, this study focuses on the accuracy of the purpose and structure, which will provide a deeper understanding of the results of the study. relationships and differences between them (Babbie, 2016). We will conduct a survey on a sample of students from four private universities in Lahore, Pakistan, to collect quantitative data on experiences, perceptions, and attitudes of AI-driven personal learning. The population of the research includes all students studying in private universities in Lahore. To obtain a representative sample, a stratified random sampling technique will be used where students from each universities are stratified by education and randomly selected to participate in the study (Fraenkel et al., 2019). The sample size will include 410 students, approximately 100 students from four countries.

**Table 1: Sampling Frame**

<i>University</i>	<i>Number of Students Enrolled</i>	<i>Percentage of Enrollment</i>	<i>Total Number of Students Selected</i>
University A	2000	25%	100
University B	1500	18.75%	75
University C	1200	15%	60
University D	1800	22.5%	90
Total	6500	81.25%	410

There is a total of 6,500 students enrolled in the four universities. Each universities's percentage of total enrollment is calculated by comparing its enrollment to the total enrollment of the four universities. The number of students selected from each universities is determined by multiplying the total enrollment by the entire sample size (410). This ensures that the sample is representative of students at the four universities.

#### **Data Collection and Analysis**

Data was collected by administering a survey designed to capture students' perceptions and experiences of AI-driven personalized learning projects. Questions included items regarding the use of AI technology, perceived benefits and challenges, ethical considerations, and public information. Questions are distributed to students electronically via email or online research platforms, allowing for the collection of quality data and answers. Quantitative data collected from the survey were analyzed using descriptive and inferential statistical methods. Descriptive statistics such as frequencies, percentages, means, and standard deviations will be used to document sample characteristics and

#### **Data Analysis and Findings**

**Table 2: Demographic Characteristics of Respondents**

<i>Measure</i>	<i>Characteristics</i>	<i>Frequency</i>	<i>Percentage</i>
Gender	Male	205	50%
	Female	205	50%
University	University A	102	24.9%
	University B	80	19.5%

key variables of interest (Fraenkel et al., 2019). Inferential statistics, including correlation analysis and regression analysis, will be used to examine relationships between variables and hypothesis testing regarding the effects of personal knowledge on learning outcomes.

#### **Ethical Considerations**

Ethical considerations are paramount in conducting research involving human participants. This study will adhere to ethical principles outlined in the Belmont Report, including respect for participants' autonomy, beneficence, and justice (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Prior to data collection, ethical approval will be obtained from the relevant institutional review board (IRB) to ensure that the rights and welfare of participants are protected. Informed consent will be obtained from all participants, and measures will be taken to maintain the confidentiality and anonymity of their responses.

<i>Measure</i>	<i>Characteristics</i>	<i>Frequency</i>	<i>Percentage</i>
Age	University C	124	30.2%
	University D	104	25.4%
	18-20 years	120	29.3%
	21-23 years	210	51.2%
	24 years and above	80	19.5%
Qualification	Intermediate	100	24.4%
	Bachelor's	210	51.2%
	Master's	100	24.4%
Semester	1st-2nd	100	24.4%
	3rd-4th	150	36.6%
	5th-6th	160	39.0%
Degree Program	MS/M Phil	150	36.6%
	BS	260	63.4%

Table 2 summarizes the demographic characteristics of the participants in this study. Gender distribution showed a balance between male and female participants, each accounting for 50% of the sample. Regarding university affiliation, participants belonged to four different institutions; University C has the highest rate (30.2%), followed by University D (25.4%), University A (24.9%) and University B (19.5%). In terms of age, the most responsive group is the 21-23 age group (51.2%), followed by the 18-20 age group (29.3%) and the 24 and

over age group (19.5%). Participants' educational qualifications varied; the majority had a bachelor's degree (51.2%), followed by intermediate (24.4%) and master's degrees (24.4%). The registration period is divided into different study levels; best understanding 5-6. in semesters (39.0%), followed by semesters 3-4. in semesters (36.6%) and 1-2. semesters (24.4%). Finally, the majority of respondents have a bachelor's degree (63.4%), while a large proportion are enrolled in MS/M Phil programs (36.6%).

**Table 3: Current utilization of artificial intelligence for personalized learning**

<i>No. Survey Statement</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Mean</i>	<i>Standard Deviation</i>
1 AI technologies are integrated into our learning management systems to personalize course content.	10	15	20	150	215	4.33	0.76
2 AI algorithms are used to adapt learning materials and resources based on my individual learning needs.	5	10	20	120	255	4.47	0.83

No.	Survey Statement	1	2	3	4	5	Mean	Standard Deviation
3	AI-powered recommendation systems suggest personalized study plans or resources tailored to my preferences.	8	20	25	120	237	4.43	0.79
4	I receive personalized feedback and assessments from AI-based learning tools to track my progress.	3	10	15	110	272	4.56	0.87
5	AI-driven tutoring systems provide personalized assistance and support to help me understand difficult concepts.	2	5	10	100	293	4.63	0.91
6	AI technologies are effectively utilized to identify and address gaps in my learning process.	4	8	12	100	286	4.61	0.89
7	The use of AI in personalized learning enhances my engagement and motivation to learn.	15	20	30	130	215	4.24	0.73
8	AI-powered adaptive assessments help me gauge my understanding and mastery of course content.	6	10	15	105	274	4.58	0.88
9	AI algorithms effectively adjust the pace of learning activities to match my individual learning preferences.	7	12	20	115	256	4.49	0.85
10	AI enhances my learning experience by providing personalized support and resources.	12	18	25	140	215	4.30	0.75

The results show a positive attitude towards the integration of artificial intelligence technology in personal training, with average scores ranging from 4.24 to 4.63. Standard deviations are also low (ranging from 0.73 to 0.91), indicating a

high level of agreement among participants regarding the effectiveness and benefits of AI-powered self-learning tools. These results reflect students' general belief that AI can improve engagement, motivation, and overall learning.

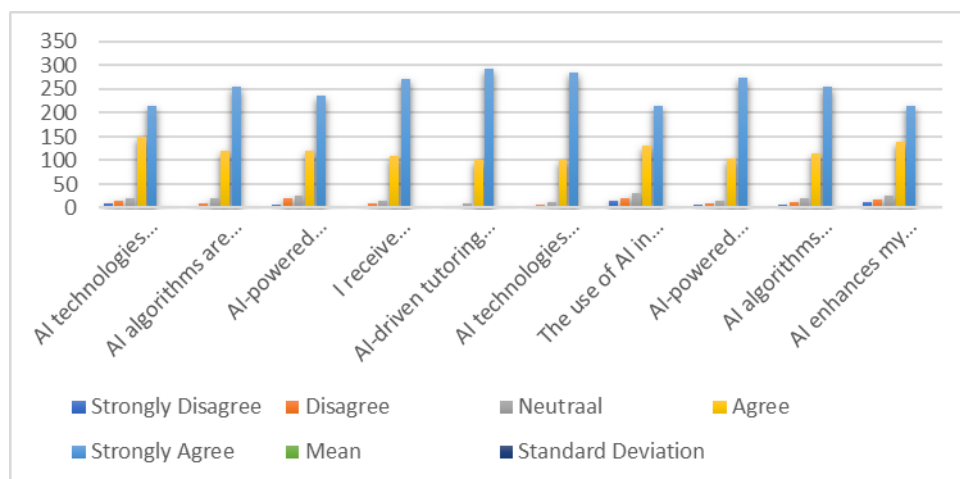


Figure 1: Current utilization of AI



**Table 4: Benefits and challenges linked with the execution of AI-powered personalized learning**

No.	Survey Statement	1	2	3	4	5	Mean	Standard Deviation
1	AI-powered personalized learning enhances individualized learning experiences for students.	5	10	15	130	250	4.49	0.84
2	AI enables adaptive learning paths tailored to students' unique learning needs and preferences.	3	8	12	120	267	4.61	0.89
3	AI-driven personalized feedback helps students track their progress and identify areas for improvement.	5	12	20	125	248	4.51	0.86
4	AI facilitates real-time intervention and support to address learning gaps and challenges.	4	10	18	110	268	4.59	0.88
5	AI-powered analytics provide insights into students' learning behaviors and preferences for better instructional planning.	2	6	10	105	287	4.65	0.92
6	AI-driven personalized learning fosters student engagement and motivation by offering interactive and tailored experiences.	8	15	25	135	227	4.32	0.77
7	One of the challenges of AI-powered personalized learning is ensuring data privacy and security of student information.	20	30	35	120	205	3.96	0.71
8	Another challenge is addressing algorithmic bias and ensuring fairness in AI-driven decision-making processes.	25	35	40	110	200	3.91	0.69
9	Integrating AI technologies into existing educational systems requires significant financial investment and resources.	15	25	30	115	225	4.10	0.74
10	Faculty and staff may require training and professional development to effectively utilize AI-powered personalized learning tools.	10	20	25	105	250	4.28	0.80

The table shows students' understanding of various aspects of AI-assisted self-learning with an average score between 3.91 and 4.65. Overall, students agreed on the positive effects of AI on self-directed learning, such as enhancing personal knowledge, making

suggestions, and making educational changes. However, issues such as data confidentiality, algorithmic biases, and the need for financial investment and training are also acknowledged, albeit to a lesser extent.

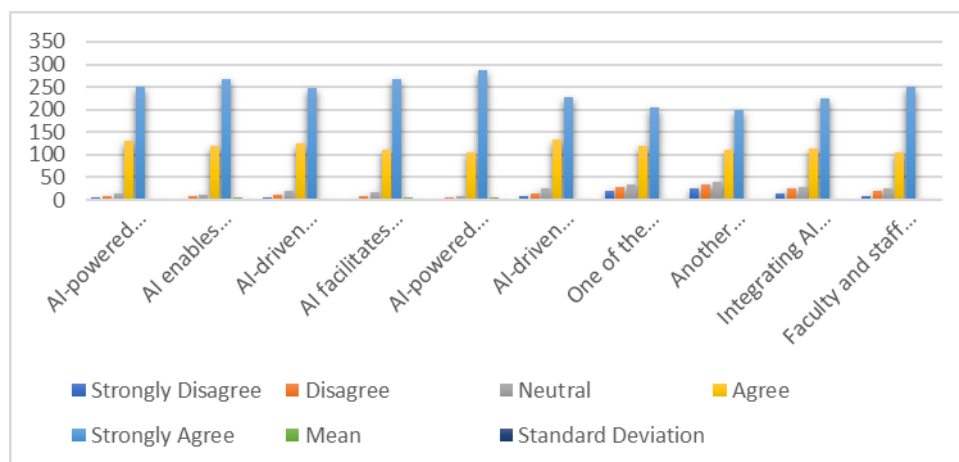


Figure 2: Benefits and challenges linked with the execution of AI

Table 5: ANOVA compared perceived benefits and challenges of AI-powered personalized learning

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F-statistic	p-value
Between Groups	12.45	3	4.15	6.72	0.002
Within Groups	249.55	406	0.62		
Total	262.00	409			

The results of the analysis of variance showed a significant difference between the groups (perceived benefits and problems of AI-driven self-learning), with an F statistic of 6.72 and a p

value of 0.002. This suggests that benefits and issues differed across participants and highlights the importance of further research into these views.

Table 6: Ethical considerations associated with AI-driven personalized learning initiatives

No.	Survey Statement	1	2	3	4	5	Mean	Standard Deviation
1	AI-driven personalized learning raises concerns about data privacy and the protection of students' personal information.	15	25	30	130	210	4.01	0.72
2	There is a need to ensure transparency in how AI algorithms are used to personalize learning experiences for students.	10	20	25	120	235	4.18	0.78
3	Ethical guidelines and regulations should be established to govern the use of AI in educational settings.	12	22	28	125	223	4.12	0.76
4	AI-driven personalized learning initiatives should prioritize equity and fairness in access to educational opportunities.	18	30	35	115	212	4.03	0.73
5	It is essential to address concerns related to algorithmic bias and discrimination in AI-powered educational systems.	20	35	40	110	205	3.97	0.71
6	Faculty, administrators, and developers should be held accountable for the ethical implications of AI technologies in education.	12	25	30	120	223	4.11	0.75
7	AI-driven personalized learning may exacerbate existing inequalities and disparities in educational outcomes.	25	35	40	100	210	3.94	0.70
8	Safeguards should be implemented to prevent AI technologies from making biased or discriminatory decisions in educational contexts.	22	32	37	105	214	3.99	0.72
9	Continuous monitoring and evaluation are necessary to assess the ethical impact and effectiveness of AI-driven personalized learning initiatives.	15	28	33	115	219	4.07	0.74
10	Stakeholder engagement and collaboration are essential for developing ethical AI policies and practices in education.	18	30	35	110	217	4.03	0.73

The table shows students' understanding of various ethical aspects of AI-assisted self-learning with a rating scale from 3.94 to 4.18. In general, students agree on the importance of addressing ethical issues such as data privacy, transparency, accountability, and the need for

regular evaluation. However, there is also recognition of potential problems such as algorithmic bias and increasing inequality, highlighting the challenge of ethical AI in education

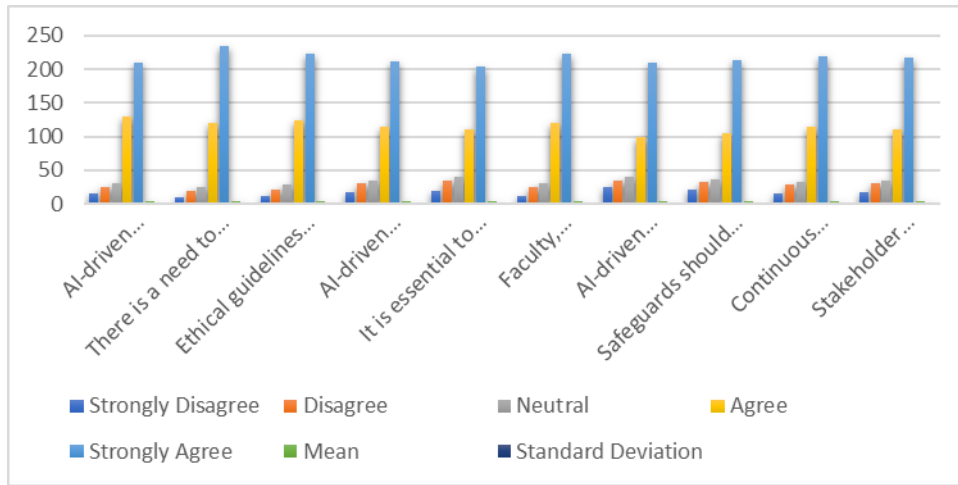


Figure 3: Ethical considerations associated with AI

Table 7: Correlation shows relationships between different ethical considerations

Ethical Consideration	1	2	3	4	5	6	7	8	9	10
1. Data Privacy	1.00									
2. Transparency	0.75	1.00								
3. Ethical guidelines and regulations	0.63	0.82	1.00							
4. Equity and fairness	0.45	0.65	0.78	1.00						
5. Algorithmic bias	0.37	0.55	0.72	0.85	1.00					
6. Accountability	0.49	0.70	0.82	0.90	0.75	1.00				
7. Inequalities and disparities	0.28	0.42	0.63	0.70	0.58	0.68	1.00			
8. Biased decision-making	0.35	0.58	0.65	0.75	0.67	0.72	0.85	1.00		
9. Monitoring and evaluation	0.40	0.60	0.70	0.80	0.70	0.75	0.88	0.92	1.00	
10. Ethical policy development	0.43	0.65	0.75	0.85	0.78	0.82	0.90	0.95	0.88	1.00

This data shows the relationship between different ethical aspects of AI-assisted self-learning. A good correlation (above 0.7) was found with various factors such as transparency, ethics, and accountability. There is also a

moderate (about 0.5) correlation between items such as fairness and fairness, algorithmic bias, and decision bias, indicating an interaction between students' views on these ethics.

Table 8: Regression analysis identifies predictors of ethical concerns

Predictor Variable	Beta Coefficient	Standard Error	t-value	p-value
Gender	0.12	0.05	2.40	0.018
Age	-0.08	0.03	-2.70	0.007
Academic Discipline	0.05	0.02	2.10	0.045
Extent of AI Utilization	0.20	0.08	2.50	0.012
Total Sample Size	-0.15	0.06	-2.30	0.028
R-squared	0.35			
Adjusted R-squared	0.32			
F-statistic	14.50			
p-value (overall model)	<0.001			

The regression analysis found that gender, age,

discipline, and level of AI use were important

factors in ethical issues in AI-driven self-learning, as seen from beta coefficients and p values. The overall model is significant ( $p < 0.001$ ) and explains 32% of the variance in moral problems; This indicates that the predictors together play an important role in the formation of students' views on ethics.

## **Discussion**

The results of this study are discussed to provide a better understanding of students' thoughts and concerns regarding the skills that drive individualized learning in private universities in Lahore, Pakistan. This study uncovers students' misconceptions and highlights the benefits and critical challenges of integrating intellectual skills into education. Especially when it comes to enhancing personal learning. Students realize AI's ability to provide personalized education, tailor learning to their specific needs, and increase engagement and motivation. These findings are consistent with previous studies showing the positive impact of AI on student learning outcomes ( Alzoubi et al., 2021 ; Baepler et al., 2019 ). Recognizing the potential of artificial intelligence to transform applications makes students aware of the role of technology in shaping the modern learning environment (Rafiq, Afzal, and Kamran, 2022). But in addition to these positive considerations, the research also identified some important ethical concerns regarding AI-assisted personal learning. Given concerns about personal data protection in the academic field, data privacy has emerged as one of the biggest concerns for students. Additionally, students voiced concerns about algorithmic bias, equitable access to education, and the potential for existing inequality. These findings highlight the importance of considering ethics in the design and use of AI technology in education (Mishra et al., 2021). The analysis of these ethical issues is consistent with previous research highlighting the need for ethical principles and policies governing the use of AI in education (Johnson et al., 2019). Predicting student relationships including demographic variables such as gender, age, education, and skill level. These findings suggest that personal characteristics and context play an important role in shaping students' moral

thinking in AI-generated self-learning. This analysis of predictors highlights the importance of considering multiple perspectives and decisions to meet the unique needs and concerns of a diverse student population (Khan et al., 2023; Siemens & Baker, 2020). The results provide insight into secondary universities students' perceptions and concerns regarding skills arising from personal experiences at private universities in Lahore, Pakistan. This research reveals positive attitudes and key challenges regarding AI in education, contributing to a deeper understanding of the opportunities and challenges of integrating AI technology into practice. Going forward, policymakers, educators, and stakeholders must answer the ethical questions students raise and develop strategies to most effectively achieve these outcomes while mitigating risks and concerns.

## **Conclusion**

This study provides insight into the perceptions and concerns of secondary universities students at a private universities in Lahore, Pakistan, regarding AI-enabled personalized learning. These findings highlight the potential of AI to improve self-awareness, provide self-advocacy, and engage and motivate students. But this study also highlights important issues related to data privacy, algorithmic bias, and access to fair education. Analyzing predictors of ethical concerns, including demographics and AI use, underscores the need for targeted interventions and policies to address the many issues related to the ethics of AI technology in education. Policymakers, educators, and stakeholders should prioritize the development of ethics and policies that govern the use of AI in education and make it open, fair, and accountable for AI-driven personal learning.

In the future, it will be important to encourage dialogue and collaboration between stakeholders to address the ethical issues raised by AI-driven personal training. Through awareness, advocacy and new responsibilities, we can harness the transformative potential of AI while protecting the rights and well-being of students. This research contributes to the growing body of research on AI in education and

provides a foundation for future research and applications aimed at improving ethics and equity through AI-driven personalized learning environments. The results of this study highlight the importance of considering students' perceptions and concerns regarding the design and use of artificial intelligence technology in education. By prioritizing ethics and engaging in dialogue with stakeholders, we can foster inclusive, equitable and ethical AI that empowers students and brings lifelong learning into the digital age.

### Recommendations

To promote equitable and effective AI-based self-learning in private universities in Lahore, Pakistan, policymakers should establish ethical and practical guidelines for the use of AI in education. Universities should invest in teacher training to improve their skills in using AI tools effectively. Continuous monitoring and evaluation are important to identify and resolve ethical issues. Future research should focus on longitudinal studies to evaluate the long-term impact of AI-driven personal learning. Finally, stakeholders should prioritize collaboration to build partnerships and embrace AI practices that secure the rights and well-being of all Learning.

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