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RESEARCH ARTICLE

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The Influence of Students' Perceptions of AI on their Learning Behaviour at Mirpur University of Science and Technology

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Abstract: Students' perceptions of Artificial Intelligence (AI) refer to their beliefs, attitudes, and understanding regarding the use of AI in education, whereas learning behaviour refers to students' engagement, motivation, and self-regulated learning strategies in their academic careers. This study aimed to identify students' perceptions of AI, examine their learning behaviour, and determine the relationship between students' perceptions of AI and learning behaviour at Mirpur University of Science and Technology. A quantitative research approach was employed using a self-designed questionnaire comprising 20 items divided into two sections: students' perceptions of AI and learning behaviour. Data from 30 students were collected to assess the questionnaire's reliability using Cronbach's alpha, which was found to be 0.72. The questionnaire's validity was checked by two education experts. Data were collected from students of the Faculty of Engineering and Technology, Faculty of Natural and Applied Sciences, Faculty of Social Sciences and Humanities, and MUST Business School. A sample of 377 students was selected through proportionate stratified sampling, of which 367 completed questionnaires were returned. Data were analyzed using descriptive statistics and correlation analysis through SPSS. The findings revealed that the relationship between students' perceptions of AI and learning behaviour was not statistically significant, although positive perceptions of AI were associated with improved academic engagement and learning behaviour. The study recommends that universities provide AI literacy and digital support services, including training and academic guidance, to help students succeed academically. Universities should also promote the ethical, responsible, and effective use of AI tools to support students' learning experiences and academic development.

Keywords: Students' Perceptions, Artificial Intelligence, Learning Behaviour

Introduction

Artificial intelligence is a defining technological transition of the twenty-first century (Holmes et al., 2022). In the past few decades, significant developments in AI have revolutionized major sectors of society such as healthcare, industry, communication, and especially higher education (Zawacki-Richter et al., 2019). The recent rise of Generative AI systems like Copilot, Gemini, and ChatGPT has brought unique possibilities for university-level education and learning (Kasneci et al., 2023). These large language models generate humanlike text, clarify complicated ideas, and help with academic writing, which has led colleges throughout the world to consider the best ways to include AI (Lim et al., 2023).

Optimism and alarm are expressed by educators, politicians, and academics about the increasing presence of AI in higher education (Crompton & Burke, 2023). Proponents suggest that artificial intelligence can improve educational outcomes by providing individualized training, quick feedback, wider access to

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information, and possibilities for autonomous learning (Chen et al., 2020). AI-powered technologies will allow students to seek academic support round the clock, get feedback on assignments and engage in interactive learning experiences.

Conversely, academics voice major worries about the excessive use of AI, including possible threats to critical thinking, creativity, and academic integrity (Zawacki-Richter et al., 2019; Kasneci et al., 2023). Discussions concerning data privacy, content ownership and authenticity of AI-assisted student work (Holmes et al., 2022; Crompton & Burke, 2023) also remain to be resolved. But the ultimate impact of AI on higher education won't be determined by the technology alone. It will depend on how students perceive and use these technologies.

Student perceptions are essential to the successful use of AI for learning. Positive attitudes motivate students to use AI as a helpful study aid, while negative attitudes may lead to avoidance or mistrust (Davis, 1989; Lim et al., 2023). Understanding these perspectives is crucial for assessing AI's impact on academic behaviour and learning outcomes (Chen et al., 2020).

Academic behaviour (self-regulation, time management, goal planning, persistence and help-seeking) is a primary indication of student involvement and student achievement. With artificial intelligence transforming how students gather knowledge and finish courses, whether student attitudes toward AI encourage effective or unproductive study practices is an important question to explore (Zawacki-Richter et al., 2019). The implementation of AI in Pakistan's higher education industry has gained momentum after the broad availability of Generative AI apps (Majeed et al., 2024). AI technologies are commonly used by many university students to write papers, search the literature, solve difficult problems and prepare for examinations (Alghazo et al., 2025). However, empirical research analyzing how Pakistani university students view AI and how those perceptions influence their academic behaviour is sparse, particularly inside public sector institutions where AI adoption is increasing rapidly (Shafqat & Amjad, 2024).

Mirpur University of Science and Technology (MUST) is a case in point, with its students increasingly using AI tools in their day-to-day academic activities. Even with this incorporation, there is a dearth of empirical data concerning MUST students' perceptions of AI and the subsequent impact on their learning behaviors. Filling this empirical gap is important to inform institutional policy, encourage ethical AI deployment, and optimize technology-enhanced learning environments (Ashraf et al., 2025).

Thus, this study examines the impact of students' impression of AI on their academic behaviour at Mirpur University of Science and Technology. This project ultimately intends to contribute to the wider body of literature on AI in higher education, as well as to offer practical implications for educators, policy-makers and students on the effective and responsible use of AI in academia.

Literature Review

Higher education is making growing use of artificial intelligence (AI) to improve teaching, learning, assessment, and access to educational resources. This technology can help students find information, make concepts clearer, come up with ideas, and get support when they study on their own. The growing use of generative AI has widened these opportunities even more, since tools like ChatGPT can produce written explanations and answer a user's questions interactively. Crompton and Burke (2023) carried out a systematic review of 138 studies published between 2016 and 2022 and found several ways AI is used in higher education, including assessment and evaluation, prediction, AI-assisted learning, intelligent tutoring, and managing student learning. Crompton and Burke (2023) also found that the field keeps changing and needs more research to examine what AI means for education. Although such applications suggest that using AI can enhance students' learning, its relevance to students' learning practices should also be considered through their perceptions and approaches to their academic work. Students' perceptions of AI may include their beliefs about the usefulness, ease of use, educational benefits, reliability, and ethical implications of using this technology. Davis (1989) developed the Technology Acceptance Model (TAM), which holds that perceived

usefulness and perceived ease of use are strong predictors of whether people accept a technology. Applied to AI in higher education, TAM offers a useful basis for understanding how students might form positive beliefs about what it can do if they find it easy to reach and helpful for academic matters. Even so, this acceptance should not be confused with effective learning or better study behaviours, because students may still worry about its accuracy, academic integrity, privacy, and the risk of relying on it too much. Empirical evidence shows how Students' perceptions of generative AI cover both helpful opportunities and possible concerns. Chan and Hu (2023) surveyed 399 undergraduate and postgraduate students from different disciplines in Hong Kong. Their findings suggested that Students' perceptions of generative AI were generally positive, regarding it as valuable for providing individualized learning support, writing and brainstorming assistance, and research support. However, they were also concerned about issues of accuracy, privacy, ethics, and potential implications for personal development. Their findings show that even when students recognise AI's usefulness, they may not accept every part of it without doubts. Although Chan and Hu (2023) contribute valuable evidence about student perceptions of AI, they do not directly establish whether their generally positive perceptions are related to students' overall learning behaviour in a Pakistani public university. Evidence from Pakistan also offers useful insights into what AI means for academic work. Ashraf et al. (2025) examined ChatGPT use, students' behavioural intentions, and academic performance in Pakistani higher education. Using a quantitative methodology and partial least squares structural equation modelling, Ashraf et al. (2025) reported beneficial associations involving ChatGPT use and academic performance, with behavioural intention playing an important role in ChatGPT use. Ashraf et al. (2025) research demonstrates its contributions to understanding AI adoption and its academic outcomes in Pakistan. Even so, academic performance and behavioural intention are not the same as learning behaviour, which covers students' study practices, such as setting goals, understanding and reviewing course materials, asking for help, and keeping at their academic tasks. So, proof of AI use or academic results cannot show whether students who see AI in a more positive light also display stronger learning behaviours.

Learning behaviour can be understood through the idea of self-regulated learning (SRL). Pintrich et al. (1991) described SRL as a process involving learners' motivation and their use of learning strategies, and Zimmerman (2002) explained further how learners can actively plan, monitor, and assess their learning. These views apply to study practices such as setting study goals, checking understanding, reviewing notes, seeking clarification, combining information from different sources, and changing study methods when difficulties arise. When learning is supported by AI, students may use AI to clarify concepts or explore information while still actively engaging with their course materials. On the other hand, depending on AI-provided answers without evaluating them may not involve the same level of independent monitoring and cognitive effort. These possibilities mean the link between perceptions of AI and learning behaviour should be examined rather than assumed.TAM and SRL offer complementary views for examining the relationship between Students' perceptions of Artificial Intelligence and their learning behaviour. TAM gives insight into how students evaluate AI, such as its perceived usefulness and ease of use (Davis, 1989), while SRL offers a theoretical basis for understanding their study practices (Pintrich et al., 1991; Zimmerman, 2002). These two views cover different areas of study, namely students' acceptance of AI and their learning behaviours, and the two should not be conflated. One student might see AI as beneficial yet keep using well-established study routines, while another might show effective learning practices even though they have concerns about AI. So, favourable perceptions of AI cannot necessarily be taken as a sign of learning behaviour, and its direction and extent should be examined empirically. Overall, the literature shows that AI has a growing presence in higher education, that students recognise its benefits and limitations, and that learning behaviour involves study practices. Research has examined how AI is used in higher education (Crompton & Burke, 2023), Students' perceptions of generative AI (Chan & Hu, 2023), and AI's use and its academic outcomes (Ashraf et al., 2025) in Pakistan. But these areas do not answer whether Students' perceptions of AI are related to their overall learning behaviour in the specific context of Mirpur University of Science and Technology. The present research will examine undergraduates' perceptions of AI and their learning behaviour and look into

the relationship between these two variables. It will not assume that students' positive perceptions of AI will lead to better learning behaviour but will test this association in a sample of MUST students.

Objectives, Research Questions and Hypothesis

The study was guided by the following specific objectives, questions and hypothesis:

1. To identify undergraduate students' perceptions of Artificial Intelligence (AI) at Mirpur University of Science and Technology.
2. To evaluate the learning behaviours of undergraduate students at Mirpur University of Science and Technology.
3. To examine the relationship between students' perceptions of Artificial Intelligence and their learning behaviours.

Three corresponding research questions followed, what are the key perceptions of Artificial Intelligence (AI) among undergraduate students at Mirpur University of Science and Technology? (RQ1), What is the level of learning behaviour among undergraduate students at Mirpur University of Science and Technology? (RQ2), Is there a statistically significant relationship between undergraduate students' perceptions of Artificial Intelligence and their learning behaviour? (RQ3). H0: There is no statistically significant relationship between undergraduate students' perceptions of Artificial Intelligence and their learning behaviour at Mirpur University of Science and Technology. Alternative Hypothesis (H_1): There is a statistically significant relationship between undergraduate students' perceptions of Artificial Intelligence and their learning behaviour at Mirpur University of Science and Technology.

Methodology

This study employed a quantitative, cross-sectional correlational research design to examine the relationship between undergraduate students' perceptions of Artificial Intelligence and their learning behaviour at Mirpur University of Science and Technology (MUST), Azad Jammu and Kashmir, Pakistan. A questionnaire-based survey was used to collect numerical data from students. The correlational approach was appropriate because the study aimed to determine the direction, strength, and statistical significance of the relationship between the two variables without manipulating them.

Participants and Settings

The population of the study comprised all undergraduate students enrolled across all degree programs at Mirpur University of Science and Technology (MUST), Azad Jammu and Kashmir, during the 2025–2026 academic session. The population was spread across four faculties: Social Sciences and Humanities, Engineering and Technology, MUST Business School, and Natural and Applied Sciences. Institutional data provided by the Directorate of Student Affairs confirmed a total undergraduate population of N = 6,613, distributed across four academic faculties. The setting of the study was Mirpur University of Science and Technology (MUST), AJ&K, and the participants were students from these four faculties. A proportional stratified random sampling procedure was used, and the final sample consisted of approximately 377 students, with 367 respondents actually participating in the study.

Sampling

To ensure representation from the university's four faculties, a stratified random sampling technique was used. The population was split into strata based on faculty, and within each stratum students were chosen by random sampling. The sample size was planned with reference to the sample-size guidelines of Krejcie and Morgan (1970). A total of 377 questionnaires were distributed, of which 367 were completed and retained for analysis. This yielded a response rate of 97.3%.

Procedure

Data were gathered through a structured, self-developed questionnaire that was prepared based on the study objectives and relevant literature on Artificial Intelligence in education and learning behaviour. Before the

main data collection, experts in the Education department reviewed the instrument, and it was pilot-tested with 30 students to assess its clarity and reliability. After the necessary permissions were obtained, questionnaires were given out to the selected undergraduate students. Completed questionnaires were checked and coded, and then all the data were analyzed using SPSS software.

Ethical Considerations

Permission in writing was requested from a range of different departments at MUST. Before the participants went on to complete the questionnaire, a cover letter was secured. By strictly following the established ethical rules, the researcher made sure that informed consent was given and that confidentiality was maintained.

Measure

Data were collected by using a self-developed questionnaire, which consisted of 20 items. The items were grouped into two sections, namely, the perception of artificial intelligence (AI) and learning behaviour. In the first section, the participants were asked to assess their perception of AI in terms of its usefulness, ease of application, educational value, ethical or academic-integrity concerns, and other attributes. The second section of the questionnaire comprised items developed based on the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1991) to measure participants' learning behaviour in terms of goal-setting, study habits, self-monitoring, persistence, help-seeking, and learning strategies. A five-point Likert scale was used for both sections. However, the two sections differed in response options; items in the first section used responses from Strongly Disagree (1) to Strongly Agree (5), whereas the items in the second section were scored from Never (1) to Always (5). Note that reverse-worded items were reverse-scored before calculating the relevant composite scores. The questionnaire was checked by people who work in the Department of Education at MUST. These people included Dr. Razia Rivi and Dr. Humaira Abbasi. The questionnaire was changed based on their ideas. Also, based on what the supervisor said. The questionnaire underwent pilot testing with 30 students; during the pilot testing, the Cronbach's alpha of the 20-item questionnaire was found to be .728, which was acceptable for the pilot study. All the questions used a scale that went from 1 to 5. The number 1 meant never. 5 Meant always.

Statistical Analysis Plan

Consistent with the hypotheses and design outlined above, the following analytic sequence was used to test.

- Data were checked to make sure everything was complete.
- Descriptive statistics were used to sum up the demographic info and how students answered the items. This included means, standard deviations, frequencies and percentages.
- Cronbach's alpha was used to check how consistent the 20-item scale was. The result was $\alpha = .728$, which shows the scale is good.
- Pearson correlation coefficient was used to look at how perception of AI and learning behaviour were related. The level of statistical significance was set at $p < .05$ (two-tailed).
- The null hypothesis was tested using r, p, and N values.
- Results were presented in tables and pie charts.

Results

The Results follow the order defined in the Statistical Analysis Plan (SAP). This section begins with the sample description, followed by the reliability of the outcome measure, then the descriptive analysis of students' perceptions of Artificial Intelligence and their learning behaviour, and finally the correlation analysis of the main study hypothesis.

Descriptive Statistics

The sample for the analysis included 367 university students from Mirpur University of Science and Technology (MUST) AJK, Pakistan. The students came from undergraduate levels. Gender: 151 students

(41.1%) were male, and 216 students (58.9%) were female. When it comes to the faculties, 25.61% were from Social Sciences and Humanities, 32.43% were from Engineering and Technology, 28.61% were from Applied Sciences, and 13.35% were from MUST Business School. Descriptive statistics are presented in the following table.

Table 1

Descriptive Statistics for Student Demographic Variables

Variable	M (SD) or n (%)
Gender: Male	151 (41.1%)
Gender: Female	216 (58.9%)
Faculty: Social Sciences and Humanities	94 (25.61%)
Faculty: Engineering and Technology	119 (32.43%)
Faculty: Natural and Applied Sciences	105 (28.61%)
Faculty: MUST Business School	49 (13.35%)

Reliability

The perception of AI and learning behaviour questionnaire showed good internal consistency (α = .728). This indicates that the items in the instrument consistently measured the intended constructs. The reliability findings are shown in Table 2.

Table 2

Internal Consistency of the Questionnaire

Scale	Items	Cronbach's α
Perceptions of AI and Learning Behaviour	20	.728

Descriptive Analysis

The descriptive statistics showed that students' perceptions of Artificial Intelligence had a mean score of 3.43 (SD = 0.49), while the mean score for learning behaviour was 3.32 (SD = 0.46). Based on the study's stated interpretation criteria, both scores fell within the moderate range. These findings indicate that students reported moderately positive perceptions of artificial intelligence and a moderate level of learning behaviour. Descriptive statistics for learning are presented in Table 3.

Table 3

Descriptive Statistics for Perception of AI and Learning Behaviour

Statement	N	M	SD
Perceptions of AI	367	3.43	.49
Learning Behaviour	367	3.32	.46

Descriptive Analysis of Perception of AI

The first aim was to determine how undergraduate students' perceptions of Artificial Intelligence at MUST are shaped. The descriptive results at the item level indicated that students rated the usefulness of AI for academic tasks fairly highly. The item "Using AI helps me to complete academic tasks more quickly" had an average score of 3.92 (SD = 1.15). In the same way, the item "Using AI improves my academic performance" averaged 3.91 (SD = 0.84), and ease of use averaged 3.88 (SD = 0.95). Students also responded positively to the item stating that AI helps them understand complex concepts better (M = 3.84, SD = 1.04). Their plan to keep using AI in their studies averaged 3.75 (SD = 0.98). Of the negatively worded items reported in the thesis, the concern that AI might weaken critical-thinking skills had the lowest average score (M = 2.41, SD = 1.06). Concerns about the ethical implications of AI averaged 2.74 (SD = 0.95), and the item stating that learning to operate AI takes substantial mental effort averaged 2.93 (SD = 1.14). These item-level results suggest that respondents generally acknowledged the academic usefulness of AI, even though

some concerns about its use remained. The overall perception-of-AI score was 3.43 (SD = 0.49), which points to a moderate level of perception under the study's interpretation criteria. Descriptive statistics for Perception of AI are presented in Table 4.

Table 4

Descriptive Analysis for Perception of AI (N=367)

Statement	M	SD
Using AI helps me to complete academic tasks more quickly.	3.92	1.15
Using AI improves my academic performance.	3.91	0.84
I find AI tools easy to use.	3.88	0.95
Learning to operate AI requires a lot of mental effort._	2.93	1.14
AI helps me understand complex concepts better.	3.84	1.04
I intend to continue using AI in my studies.	3.75	0.98
Using AI for assignments feels like cheating._	3.18	1.21
I have concerns about the ethical implications of using AI._	2.74	.95
AI use might reduce my critical thinking skills._	2.41	1.06
I would recommend AI tools to other students.	3.69	1.06

Note: _ = Reverse-coded.

Descriptive Analysis of Learning Behaviour

The second objective was to investigate the learning behaviour of the undergraduate students at MUST. The highest reported item mean was for asking oneself questions to test understanding of studied material (M = 3.76, SD = 1.03); this was followed by combining information from various sources, including lectures, readings and discussions (M = 3.71, SD = 1.05). Students reported a mean score of 3.50 (SD = 1.11) for altering study methods when not doing well in a course and 3.49 (SD = 1.11) for setting goals prior to starting to study. The statement regarding returning to material that was not understood had a mean score of 3.48 (SD = 1.16). The lowest item means were recorded for the negatively worded statements regarding difficulty maintaining a study schedule (M = 2.67, SD = 1.09) and quitting planned study due to laziness or boredom (M = 2.69, SD = 1.10). These values should be interpreted in light of the wording and reverse-scoring of the relevant items. The overall learning behaviour score was 3.32 (SD = 0.46), which is a moderate level of reported learning behaviour. Overall, item-level results suggest that self-monitoring and integration of information from various sources were relatively prominent learning practices among the respondents. Descriptive statistics for learning behaviour are presented in Table 5.

Table 5

Descriptive Statistics for Learning Behaviour

Statement	M	SD
I set goals for myself before I begin to study.	3.49	1.11
I find it hard to stick to a study schedule. _	2.67	1.09
I ask myself questions to make sure I understand the material I have been studying.	3.76	1.03
When I don't understand the material, I go back and try to figure it out.	3.48	1.16
I change my study methods when I'm not doing well in the course.	3.50	1.11
I review my class notes regularly to improve my understanding.	3.28	1.12
I combine information from different sources (Lectures, readings, discussions).	3.71	1.05
I often feel so lazy or bored when I study that I quit before I finish what I planned._	2.69	1.10
I ask my instructor to explain concepts I don't understand.	3.34	1.14
I keep studying even when the material is boring.	3.32	1.17

Note: _= Reverse coded.

Correlation Analysis

Pearson's product-moment correlation coefficient was used to investigate the relationship between students' perceptions of Artificial Intelligence and their learning behaviour. There were 367 valid cases in the analysis. The results revealed that there was a very weak positive correlation between the two variables, r = .07, two-tailed p = .155. Correlations are presented in Table 6.

Table 6

Correlation Between Perception of AI and Learning Behaviour

Variable	N	Pearson Correlation	Sig. (2-tailed)
Perception of AI	367	1	—
Learning behaviour	367	.074	.155

Note. The correlation between perception of AI and learning behaviour was not statistically significant (p = .155).

Hypothesis Testing

The third objective was to establish whether there was a statistically significant relationship between students' perceptions of Artificial Intelligence and their learning behaviour. The hypotheses were:

H_0: There is no statistically significant relationship between students' perceptions of Artificial Intelligence and their learning behaviour.

H_1: There is a statistically significant relationship between students' perceptions of Artificial Intelligence and their learning behaviour. The Pearson correlation analysis resulted in a coefficient r = .07 and a two-tailed significance value of p = .155. Because the significance value exceeded .05, the null hypothesis was not rejected.

The results therefore failed to provide sufficient statistical evidence of a significant relationship between students' perceptions of Artificial Intelligence and their learning behaviour amongst undergraduate students at MUST. While the observed correlation was positive, it was very small in magnitude and not statistically significant. This result should be taken as reflecting a lack of statistically significant evidence in the current sample, rather than as evidence that a relationship cannot exist in other populations or circumstances.

Discussions

The results of this study revealed that students' perceptions of Artificial Intelligence were positively, albeit very weakly and statistically non-significantly (r = .07, p = .155), related to their learning behaviour. Hence, the null hypothesis was not rejected. Students held a relatively favorable perception of AI's potential to facilitate academic tasks, improve academic performance, and comprehend complex concepts. The overall mean of perceptions of AI was 3.43 in comparison to the mean of 3.32 for the learning behaviour. These results suggest that while students identified various academic benefits of AI, positive perceptions did not necessarily translate into enhanced reported learning behaviour. In a way, this finding is related to the Technology Acceptance Model that identifies perceived usefulness and ease of use as two key predictors of technology acceptance (Davis, 1989) as well as to self-regulated learning theory that highlights students' role in managing and monitoring their learning (Pintrich et al., 1991; Zimmerman, 2002). The results should be further considered in the context of the ethical implications of AI that were of concern to the students, and its potential impact on their critical thinking. At the same time, the nature of this correlational study does not allow for identifying the reasons behind the weak relationship or other potential contributors to students' learning behaviour. The results should be regarded as pertaining specifically to the undergraduate students at MUST, and should not be extrapolated to suggest that there is no way perceptions of AI could be related to learning behaviour in other contexts.

Limitations and Future Directions

This study has several limitations. First, the study was conducted only in one university, MUST. The results might have different implications for students in other higher learning institutions. Second, the study adopted a cross-sectional correlational design. This design cannot help identify causation or directionality; thus, the study cannot establish how students' perception of Artificial Intelligence influences their learning behaviour. Finally, the study used self-reported questionnaires to gather information. The information might not be accurate because students do not always give honest responses. The researchers can consider adopting multiple studies in different universities using a mixed-method study design. This approach will help address the limitations in the study.

Conclusion

This study aimed to investigate the association between students' perceived artificial intelligence (AI) and learning behaviour of undergraduate students at Mirpur University of Science and Technology. Participants had a positive perception about AI, but their perception and learning behaviour showed a very weak and statistically non-significant correlation ($r = .07$, $p = .155$), so the null hypothesis was not rejected. In other words, results revealed that students' positive perceptions of AI were not related to their learning behaviour. This study emphasized the need to encourage the responsible use of AI and effective learning. Further studies are needed to explore the link between AI and learning behavior in different settings.

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