

Exploring the Role of AI Tools in Shaping Learning Experiences in the Metaverse: A Student-Centric Analysis

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Abstract: The paper investigates the complex relationship between students' engagement with artificial intelligence (AI) tools and their readiness for future educational environments, particularly the Metaverse. The study employs a descriptive and exploratory quantitative design, collecting data through a questionnaire from a sample of 200 college students across various disciplines in the Delhi/NCR region of India. The primary objectives were to analyze AI tool usage patterns, assess the level of student trust in these technologies, examine the perceived impact of AI on academic grades, and determine if current AI adoption behaviors reflect a preparedness for more immersive, Metaverse-style education.

The findings challenge several common assumptions about technology adoption in education. A key result is the absence of a statistically significant correlation between the frequency of daily AI tool usage and the degree of trust students place in the technology. The correlation coefficient was found to be a negligible 0.050, indicating that mere exposure or increased usage does not automatically foster greater trust. Even more significant is the finding that a student's trust in AI tools does not serve as a meaningful predictor of their academic grades. A linear regression analysis confirmed that the model was not statistically significant (p -value = 0.3225), with trust in AI explaining less than 1% of the variability in grades. This suggests that other factors, such as individual study habits or instructional quality, play a far more substantial role in academic outcomes.

The study also provides valuable descriptive data on current student behavior. It found that students, on average, use AI tools for approximately 2.47 hours per day. However, a high standard deviation indicates a wide spectrum of engagement, from minimal to heavy usage, suggesting that AI has not been uniformly integrated into student life. Among the AI tools mentioned, Gemini was identified as the most preferred, while ChatGPT was the least preferred.

Perhaps the most critical conclusion for the future of educational technology is that students' readiness for immersive learning environments like the Metaverse is not driven by a simple increase in exposure or trust. Instead, their willingness to adopt new technologies is largely dependent on the perceived usefulness of the tools. These findings carry significant implications

for educators and policy-makers, suggesting that the successful implementation of the Metaverse in education will require a strategic focus on demonstrating clear, practical benefits for learning. The study advocates for a phased, non-uniform implementation approach that addresses diverse student needs and emphasizes the crucial role of educator training and robust technological infrastructure.

Keywords: AI tools, Metaverse, Educational technology, Student trust, Academic performance

1. Introduction

The concept of immersive learning that has grown from science literature to a tangible technological frontier is set to transfigure modern education by generating immersive, interactive, and decentralized education environments (Lin et al., 2022). Defined as a persistent, shared, and decentralized three-dimensional virtual space where users interact through avatars, the Metaverse allows for daily activities, including learning, to occur within a digitized realm where virtual and physical realities coexist (Chen et al., 2023; Kaddoura & Al Hussein, 2023; Tlili et al., 2022). This transformative potential has been enhanced by global shifts, such as the COVID-19 pandemic, which normalized online interactions and highlighted the limitations of traditional educational models in engaging digital-native students (Kaddoura & Al Hussein, 2023; Flores-Castañeda et al., 2024).

The latest technologies like AR, VR, XR, AI, IoT, and many more are the backbone of the Metaverse. (Lin et al., 2022; Flores-Castañeda et al., 2024). These technologies break the conventional methods of learning and develop new methods where engagement, entertainment, and learning go hand in hand. The application of the metaverse highly depends on the concept of decentralization, where educators, management, and ultimate beneficiaries work together in a collaborative environment. (Lin et al., 2022).

The metaverse depends upon human-computer interaction, which allows a high level of engagement with the support of different technologies. It helps the learner to learn complex problems easily through the process of visualization and simulation. (Lin et al., 2022; Kaddoura & Al Hussein, 2023). The retention capacity of students will be enhanced. They are able to collaborate with each other without residing in the same location. They can explore the concept of the outer world very easily by the techniques like visualizing the historical monuments of different countries. (Chen et al., 2023; Kaddoura & Al Hussein, 2023). Metaverse will certainly increase the participation level and motivation of students by creating an environment of collaboration, cooperation, and gamification. (Tlili et al., 2022; Flores-Castañeda et al., 2024).

The metaverse concept is totally economical and commercial, which gives an employment opportunity to various stakeholders where they can create, market, and trade the various solutions of metaverse modules. The reach of this commercialization will go globally. (Lin et al., 2022). Furthermore, it will certainly increase the skill sets of the prime beneficiary stakeholder, that is students. (Flores-Castañeda et al., 2024). Generation Z is already being exposed to the latest technologies; hence it will be easier for them to create and use the multiple applications of metaverse tools. (Tlili et al., 2022; Flores-Castañeda et al., 2024).

In spite of numerous advantages, we have certain challenges too in the application of the metaverse. The list starts with the requirement of the best information infrastructure, data privacy and security, training to educators and students, and lastly setting up the right balance between real and virtual identities. (Chen et al., 2023; Kaddoura & Al Hussein, 2023; Flores-Castañeda et al., 2024). Psychological impacts of using technology for a longer time plus ethical implications, will also be added in the list of challenges. (Kaddoura & Al Hussein, 2023). If we particularly talk about higher education, there is still a gap in the skill set of students that needs to be addressed beforehand with the creation of immersive metaverse environments. (Tlili et al., 2022; Flores-Castañeda et al., 2024).

As we have already mentioned that the base of Metaverse depends upon the latest technologies, hence it is very important to explore the usage/ pattern of applications of AI tools among Gen Z in current scenario.

Many of the sectors are applying the concepts and models of artificial intelligence in performing routine and complex tasks. It became one of the revolutions of 21st century. These robust models make the work easier and speedier. The introductory ideas for AI were laid in 1955 by John McCarthy, who proposed machines proficient of expanding human intelligence (Benhamou & Janin, 2018). This paper examines the usage and pattern of various AI tools and test the relationships of AI tools with grade performances of the students.

AI refers to computer systems intended to complete tasks typically needing human acumen. Researchers describe AI as enabling machines to operate at a near-human intelligence level (Benhamou & Janin, 2018). Verma (2018) further defines it as computers' ability to comprehend, decide, problem-solve, and create. It characterizes AI as the study of intelligent machines that can reason, learn, and interact with the world. While AI's roots were established in 1950s and is growing with latest developments and advancements.

The educational sector is undergoing a significant transformation due to AI. AI-powered adaptive learning systems can personalize instruction, potentially narrowing achievement gaps and improving outcomes. Key benefits include tailored learning, personalized feedback, research support, and automated administrative tasks (Koohang et al., 2024). AI not only supports individualized education but also prepares students for a technology-driven future (Koohang et al., 2024). Studies show increasing AI adoption among students; approximately 43% of U.S. college students use AI tools, with 22% for assignments (Koohang et al., 2024). AI can improve student performance by 30% and reduce anxiety by 20%, even predicting final grades with 80% accuracy (Koohang et al., 2024). AI tools assist students with research, text analysis, programming, exam preparation, and concept clarification (von Garrel & Mayer, 2023). The interactivity and personalization offered by AI in education are particularly appealing (Koohang et al., 2024).

Embracing AI today is crucial for future readiness in immersive digital worlds like the Metaverse. As AI tools and metaverse technologies increasingly merge, they create more engaging and personalized learning experiences, directly preparing individuals for advanced digital environments. This incorporation not only boosts involvement and knowledge holding but also fosters the necessary digital competencies. Therefore, widespread AI adoption, coupled with

continuous training in its applications, is key to navigating and thriving in the evolving landscape of interactive, digital futures.

The current study aims to understand key things about how AI is used in learning. We want to see how students use AI tools and how much they trust them. Also, we'll explore how students feel AI tools affect their academic work. Finally, by looking at how people are using AI now, we want to see if it's getting them ready for new, immersive ways of learning, like in the Metaverse.

2. Literature Review

Table 1: Summary Table

Theme	Key Findings
Comprehensive Analysis of Educational Metaverse Implementation	This systematic literature review reveals that metaverse signifies a transformative combination of virtual and physical realities that could revolutionize educational delivery through immersive environments. The study identifies two educational paradigms: Personal Teaching Environments (PTE) where educators share knowledge through digital platforms, and Personal Learning Environments (PLE) where learners construct personalized experiences. Educational metaverse requires integration of AI, blockchain, IoT, digital twins, and extended reality technologies. Number of top companies like Robolox are investing millions in developing metaverse models certainly by looking about the different advantages of the reform like enhanced visualization, reduce geographical constraints , high technology usages like block chain and highly personalized learning but the coin always has two sides with number of advantages there are certain challenges in form of cyber security, governance ethical practices and lastly the right implementation of high level technologies like AR and VR. The metaverse will certainly change the face of higher education and transform it as web 3.0 education. (Lin et al., 2022), (Mumtaz et al., 2025).
Systematic Analysis of Metaverse Educational Research Evolution	This paper adopts a technique of PRISMA for conducting a SLR. It includes 22 papers and concludes that the software platforms like second life are creating the number of platforms that support metaverse applications. These applications are widely used among different countries like Japan, South Korea, and USA from year 2011 to 2022. Second Life emerged as the most utilized platform (n=7), though recent studies increasingly employ mixed reality technologies like Microsoft HoloLens. Educational benefits identified include enhanced participant motivation, improved attendance rates, support for collaborative and flipped classroom pedagogies, development of communication skills, and creation of sustainable learning environments. However, significant challenges persist including

	bandwidth limitations, server capacity issues, platform restrictions, delayed real-time interaction responses, high development costs, and the need for specialized technical expertise. The review reveals two distinct technological contexts: traditional 3D software-based metaverses focusing on avatar-mediated virtual worlds, and emerging digital reality-based metaverses integrating immersive VR/AR experiences. Future research directions emphasize the need for experimental studies examining learning effectiveness, scalable platform development, and integration with artificial intelligence and blockchain technologies for enhanced educational outcomes (Saritaş & Topraklıkoğlu, 2022).
Smart Learning Environments (2022)	As the Metaverse continues to develop—particularly targeting Generation Z and leveraging artificial intelligence—there remains a notable lack of exploration into learning models such as mobile, hybrid, and micro-learning. The study underscores the benefits of broadening educational access to previously unreachable settings, but also points out ongoing challenges, such as privacy and security risks, as well as the risk of deepening the digital divide (Tlili et al., 2022).
A systematic review of literature to identify and explain the benefits of using metaverse applications in education.	The study reviewed 60 articles and found that the metaverse serves as a central theme uniting various emerging technologies, including artificial intelligence, augmented reality, virtual reality, and blockchain. The study highlighted number of benefits of metaverse in form of boosting student's morale for learning. In metaverse the learning is collaborative which increases the engagement level of students. From the year 2022 number of studies focused on application of metaverse and there is a huge scope for research to explore on implementation of metaverse by different educational institutions. (Flores-Castañeda et al., 2024).
An investigation into the awareness and perception of university students regarding the use of AI in their academic studies.	This study focused on the relationship between awareness of AI tools and positive perception regarding the AI tools. the study concludes that there is a positive relationship between the awareness of AI tools and its perception regarding it. Most of the students found the use of AI tools in positive manner which will increase their knowledge base. Younas et al. (2024).
A comprehensive review proposing a framework and implementation strategies to address the disparity in AI literacy	The paper focuses on the challenges which developing nations are facing in implementation of metaverse in respective domains. lack of sufficient knowledge, poor infrastructure facilities are prime challenges among them. The study recommends strategies for implementation, including supportive government policies, collaboration between public and private sectors, and wider use of

between developed and developing nations.	online educational platforms. Emphasizing effectiveness, the research stresses the importance of culturally sensitive and context-specific methods to help close the worldwide gap in AI literacy (Kathala & Palakurthi, 2024).
Issues in Information Systems	The research found significant differences in students' perceptions of AI benefits based on their AI usage, gender, and major. Students who use AI more frequently have a higher perception of its benefits and opportunities. Male students and those majoring in computer science/IT reported a expressively higher perception of AI benefits associated to female students and business majors, respectively. There were no substantial differences in perceptions based on age (Koohang et al., 2024).
Education and Information Technologies.	The research found that performance expectancy was the robust predictor of behavioral intention for both undergraduate and postgraduate students. However, factors such as social influence, effort expectancy, and enjoyment (hedonic motivation) showed notable differences between bachelor's and master's level learners. According to the study's models, 65.3% of the variation in undergraduates' behavioral intention and 73.5% of the change in postgraduates' behavioral intention were explained. The models also accounted for 49.3% of the variation in actual use behavior for undergraduates and 59.2% for postgraduates (Strzelecki, 2025).
A study exploring the effectiveness of AI tools in enhancing student learning by examining their impact on study habits, time management, and academic performance, while also identifying the challenges and barriers to their adoption.	Student feedback exposed robust endorsement for AI tools, with the study reporting a notable decrease in time spent studying and a concurrent rise in student GPA. A substantial majority—83%—of participants cited some level of academic improvement attributable to the use of AI tools. Despite these positive outcomes, the research also highlighted notable challenges, including students' potential over-reliance on AI and the difficulties encountered when blending AI tools with conventional teaching methods. Drawn from a survey of 71 university students, the findings showed high levels of comfort and confidence in using AI technologies, which positively influenced study routines and motivation. Tutoring systems and study planning applications emerged as the most frequently used AI tools among students (Ward et al., 2024).
Cogent Education.	The research highlighted a strong constructive impact of AI tools on students' academic experiences, enhancing their comprehension, creativity, and productivity. Furthermore, the study developed and validated a survey tool that measures five key aspects of AI usage: overall effectiveness of AI tools, effectiveness of ChatGPT,

	proficiency of students, proficiency of teachers, and advanced skills among students. The findings highlight the standing of AI competence for both students and educators, with the newly created index acting as a diagnostic tool for institutions to identify areas with varying levels of AI adoption. The study found that the educators in field of science and management are using AI tools more as compared to educators in field of arts. (Grájeda et al., 2024).
Implementation of Models of AI to enhance learning	The study explores the relationship between student engagement and its academic achievements. the study concludes a positive relation between student engagement and academic achievements. It also highlights the need for more personalized applications for students to enhance the outcome of AI it also addresses various ethical issues like privacy violation while using various AI tools. (Mirdad et al., 2024).
An investigation into the integration of metaverse and AI technologies to improve learning experiences, with a focus on understanding educators' readiness and competence.	The study uses a mixed research method and explores the relationship between student engagement and knowledge retention. it finds a positive relation between student engagement and knowledge retention of respondents of the study. Additionally, the research identified a positive link between educators' higher AI competence and greater levels of online collaboration. This study addressed a notable gap by offering a comprehensive perspective on the educational ecosystem through the eyes of educators (Svoboda & Knihová, 2025).

3. Research Questions

The study explores the following questions:

1. What is the extent of AI tool usage among students across disciplines?
2. Is there a association between daily AI tool usage and trust in these tools?
3. Does trust in AI tools influence students' academic outcomes?
4. Can AI adoption patterns indicate digital readiness for future learning environments like the Metaverse?

4. Research Objectives

By exploring the gap analysis on the basis of above literature review the research objectives of the said study are as under:

1. To examine patterns of AI tool usage among students.
2. To analyze the level of trust in AI tools.
3. To measure the perceived impact of AI tools on academic performance.
5. To explore how current AI adoption behavior may reflect preparedness for Metaverse-style education.

5. Conceptual Model

In the current study the variables under study are as follows:

Independent Variables: AI Tools Used, Daily Usage Hours, Stream, Year of Study

Mediating Variable: Trust in AI Tools

Dependent Variable: Impact on Grades

Supporting Variables: Awareness Level, Preferred AI Tool

Figure 1 represents of the conceptual model is as follow:

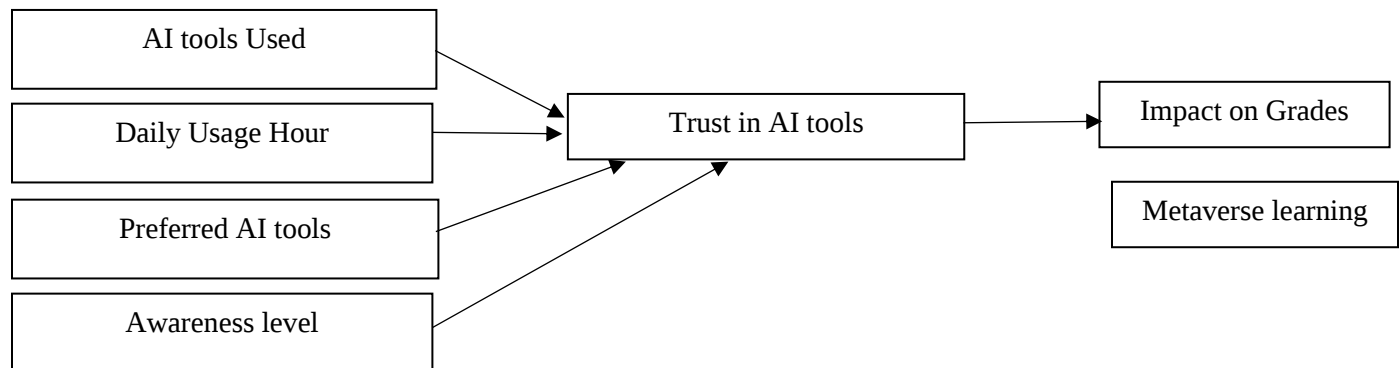


Figure 1: Conceptual Model

5.1 Reliability Analysis

The Cronbach alpha value of 0.964 shows a high reliability of the scale. The said values are with in the limit of acceptable range that shows that the data is consistent, stable and dependable.

5.2 Hypothesis Development

Null Hypothesis 1: There is no statistically significant correlation between daily AI tool usage and trust in AI.

Alternative Hypothesis 1: There is a statistically significant correlation between daily AI tool usage and trust in AI.

Null Hypothesis 2: There is no statistically significant correlation between students' trust in AI and the impact of AI tool usage on their academic grades.

Alternative Hypothesis 2: There is a statistically significant correlation between students' trust in AI and the impact of AI tool usage on their academic grades.

5.3 Research Design

Type of Study: Descriptive and exploratory quantitative study

Population: The population of the above study is youth in between the age 18-25.

Sample: The data set comprises of college students from Engineering, commerce, science, art, medical, law and pharmacy students of Delhi/NCR region.

Sample size: The size of the sample is 200.

Sampling Technique: Non-probability convenience sampling.

As stated, the use of AI tools is more prevalent in Tier I cities due to good infrastructure facilities provided hence for selecting the location of sample Delhi /NCR region is selected from North India.

Data collection method: The data is collected through a method of questionnaire comprises of key variables used in the study. First variable is of demographics, second variable deals with AI tool usage pattern, variable third deals with trust in AI variable where as fourth variable explores the data related to impact on grades. The questionnaire is designed of 20 questions taking the details related to each variable.

Statistical Analysis Framework: The study employed both descriptive and inferential statistical techniques to analyses data collected from 200 college students in age bracket of 18-25 in the Delhi/ NCR region. Descriptive statistics included calculation of means and medians to understand central tendencies, along with frequency distributions to examine response patterns across the 5-point Likert scale items. To explore relationships between variables, correlations were computed. Regression analysis was then used to predict behavioral intentions toward usage and trust in AI tools which gives a base for adoption of metaverse in education.

6. Data Analysis and Interpretation

Table 2: Descriptive Statistics

Aspect	Details
AI Tool Preferences	- ChatGPT: 44 users - Copilot: 51 users - Gemini: 58 users - Average (Mean): 50 users - Most Preferred: Gemini - Least Preferred: ChatGPT
Patterns of Tool Usage	- Most Commonly Used: Copilot alone (41 users) - Least Common Pattern: All three tools together (24 users) - Average Users per Tool/Combo: ≈ 33
Daily Usage Habits	- Mean Daily Usage: 2.47 hours (~2 hr 28 min) - Variation: Significant (users range from casual to heavy usage)
Trust vs. Academic Outcomes	- Statistical Relationship: None significant - Trust Doesn't Predict Grades: Trust in AI tools doesn't have a meaningful impact on academic performance
Readiness for Metaverse	- Varied Readiness: Mixed willingness to adopt new tech like the Metaverse - No Uniform Trend: Adoption depends on perceived usefulness, not just exposure or trust

Analysis of Daily Usage Hours of AI Tools

The data on daily AI tool usage reveals an average time spent of approximately 2.47 hours per day. This figure, close to two and a half hours, suggests that most users dedicate a moderate amount of time each day interacting with AI technologies. It provides a useful benchmark for understanding the typical daily engagement level across the surveyed group.

The data reveals a standard deviation of 1.44 hours that shows less reliability on hours spent by respondents on AI tools. Some might have used for longer time and some have less hours of usage rate.

This shows a large disparity in usage of AI tools Some are using it frequently others don't find it useful. Factors like interest areas, usage needs, reliability and awareness need to be studied further.

Analysis of Inter-Variable Correlations

For this study the researcher has studied the inter relationship between three key variables -daily AI tool usage, trust in AI and perceived effect of AI on academic grade.

Correlation Between Daily AI Tool Usage and Trust in AI

The results found $r=0.050$ which is nearly to 0 highlighted a weak positive relationship between variables use of AI and Perceived level of trust.

Interpretation:

It is interpreted that the ones who use AI tools much and not the same who have high level of trust on these AI tools when privacy concerns are highlighted. This finding implies that factors beyond mere exposure or usage frequency, such as personal attitudes, prior experiences, or external influences, likely show a more critical part in determining trust in AI.

Hypothesis Result:

Given the very low correlation coefficient, we fail to reject the null hypothesis, indicating no meaningful linear relationship between these two variables.

Correlation Between Trust in AI and Impact on Grades

The correlation coefficient (r) between trust in AI and the AI-related impact on academic grades is 0.070. Like the prior correlation, this is a very weak positive association, barely different from zero.

Interpretation:

An individual's level of trust in AI does not substantially predict changes or improvements in their academic performance. The minimal positive correlation suggests that trust alone does not lead to better grades. Instead, factors such as study habits, learning strategies, or the actual effectiveness of AI tools in academic tasks likely have a larger influence.

Hypothesis Result:

Given the negligible correlation value, the null hypothesis cannot be rejected, indicating an absence of a significant linear relationship.

Overall Interpretation and Study Limitations

Both correlation values (0.050 and 0.070) fall within the "negligible" or "very weak" range, indicating virtually no linear associations between the studied variables. These results highlight that neither the amount of time spent using AI tools nor the level of trust in AI sufficiently explains variations in academic performance or trust based on usage.

Regression Analysis: Trust in AI Tools and Impact on Grades

This analysis investigates whether trust in AI tools is a significant predictor of the impact on student grades. A simple linear regression was conducted using data from 200 participants, where "Trust in AI Tools" is the independent variable and "Impact on Grades" is the dependent variable.

Table 3: Model Summary

Statistic	Value	Interpretation
Multiple R	0.0703	Indicates a very weak positive correlation between trust in AI tools and grades.
R Square	0.0049	Only 0.49% of variance in grades is explained by trust in AI tools, this is extremely low.
Adjusted R Square	~0.000	Even after adjusting for sample size, the model shows no real explanatory power.
Standard Error	1.4387	Reflects the typical difference between observed grades impact and model predictions.

ANOVA Results

The ANOVA table assesses the overall significance of the regression model:

Table 4: Anova Results

Source	Df	SS	MS	F	Significance F (p-value)
Regression	1	2.036	2.036	0.984	0.3225
Residual	198	409.784	2.070	-	-
Total	199	411.820	-	-	-

Interpretation:

The p-value for the F-test is 0.3225, which is well above the usual significance level of 0.05. This means that the overall regression model is not statistically significant, suggesting that trust in AI tools does not have a meaningful predictive relationship with academic grades in this sample.

Table 5: Regression Coefficients

Predictor	Coefficient (β)	Standard Error	t-stat	p-value	95% confidence interval
Intercept	3.0374	0.1020	29.78	<0.001	[2.8363, 3.2385]
Trust in AI Tools	0.0511	0.0515	0.992	0.3225	[-0.0505, 0.1526]

The intercept (3.0374) is significant, indicating that with zero trust in AI tools, the predicted impact on grades is about 3.04.

The trust coefficient (0.0511) is positive but not statistically significant ($p = 0.3225$, CI includes zero). This means an increase in trust in AI tools does not reliably predict an improvement in grades.

Key Findings

There is no statistically significant relationship between trust in AI tools and the impact on grades. The regression model explains less than 1% of the variability in grades.

This analysis concludes that trust in AI tools alone is not a meaningful predictor of grade outcomes in this dataset.

7. Overall Findings

The study concludes the following findings:

1. No correlation between the use of AI tools and perceived trust in those AI tools.
2. The study concludes that there is no relationship between the use of AI tools and their impact on the academic grades of students.
3. The data set of Gen Z shows a wide variability in the usage pattern of AI tools. Some respondents are using AI tool for a longer duration of time, say 4 hours, rest are using for a very small-time hour.
4. The most preferred AI tool among the students surveyed was Gemini, while ChatGPT was the least preferred.
5. The study found no uniform trend in students' readiness for new technologies like the Metaverse. Their willingness to adopt such technologies depended on the perceived usefulness of the tools, rather than just their exposure to or trust in them.

Table 6: Key Study Insights mapped with Technologies Acceptance Theories

Study Findings	UTAUT/TAM Connection	Interpretation
No link between using AI and trust or grades	Less about trust or results	Students aren't influenced much by trust or grades when choosing to use AI.
Some students use AI tools a lot; others use them very little	Ease and support matter	How easy or supported students feel using AI affects how much they use it.
Gemini chosen most; ChatGPT chosen least	Peer and environment effects	Friend recommendations and available resources shape which tool students pick.
Students try new tech (like Metaverse) if it seems useful to them	Usefulness is key	Students are drawn to tech that helps them, not just because it's new.
No single pattern in how ready students are for new technology	Individual differences	Students' backgrounds and experiences change how ready they are for new tech.

8. Strategic Implementation

1. Focus on highlighting the practical utility and perceived usefulness of metaverse technologies to students. Since the study found that students' readiness for new technologies depends on their perceived usefulness, not just exposure or trust, the successful implementation of the metaverse will require demonstrating its clear benefits for learning.
2. Develop a phased implementation plan those accounts for the diverse usage patterns of students. The data shows that student engagement with technology is on a spectrum from casual to heavy use, so a uniform, "one-size-fits-all" approach may not be effective.
3. The study shows no relationship between the usage of AI tools and their grade performance; hence, future metaverse platforms should be very engaging and effective so that the learning

curve of students can be enhanced, which will give a positive impact on their grade performance.

9. Conclusion

The study explores two dimensions in particularly the first is the use of AI tools and trust in them, and the second is student trust and its impact on their grades. The results conclude that there is no correlation between the AI tools' usage and their trust level, in between students' level of trust and impact on their grades.

The research also talks about the usage pattern of AI tools and explores the readiness of respondents for metaverse learning. The results highlight that there is lot of disparity in AI usage pattern. Some of the respondents are using in frequently rest are not with much higher frequency. Study also concludes that Gemini is most preferred AI tools amongst youth and ChatGPT is least preferred one. The preparedness for metaverse learning is not uniform in the study. Different factors such as perceived benefits efforts and cost needs to be studied further. The study suggests some prominent suggestions for developers like metaverse learning environments should be customized as per the needs and utilities of various users. This customization will increase the engagement level among students that will finally develop some level of trust in technology and improve their performance academically.

This study offers important insights by focusing on students from the Delhi/NCR area, a key educational center. To broaden the reach and relevance of the findings, future studies could include participants from different regions and use more varied sampling methods. This approach would capture a wider variety of student experiences and make the results more applicable to a larger population. If these suggestions are implemented it will be beneficial for all the prime stakeholders of metaverse learning that is students, educators and developers.

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