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Academic Performance in the Age of AI-Powered Social Networks: The Mediating Influence of Big Five Personality Traits

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ABSTRACT

A substantial number of empirical research have been conducted on student academic motivation and its potential antecedents, including aspects connected to the classroom teacher, contextual elements, and individual student characteristics that promote academic drive. This study aim at "Exploring the Academic Performance in the Age of AI-Powered Social Networks: The Mediating Influence of Big Five Personality Traits.". The objectives of the study were, 1) To examine the relationship between AI-powered social network site usage and academic performance, 2) To investigate the correlation between the Big Five personality traits and academic performance, 3) To analyze the mediating role of Big Five personality traits in the relationship between AI-powered social network site usage and academic performance. This study utilized a mixed methods approach, combining qualitative techniques with quantitative analysis, to investigate the relationship between Social Network Site usage and the personality traits of secondary school pupils. The utilization of a triangulation design in mixed methods research is warranted by the inherent limitations present in all research strategies. The study population included 8,617 10th grade students in District Attock, comprising 4,868 boys and 3,749 girls, enrolled in 248 public secondary schools. The study sample comprised 530 pupils from the population. The Proportional Sampling method was utilized for sampling. The sample size of each stratum is directly proportionate to the total population size of that stratum. This signifies that each sample inside every stratum is selected utilizing a consistent sampling percentage. Two unique self-created research instruments were utilized to achieve the study's objectives. Big Five Personality Traits Assessment (BFPTs) The Big Five Personality Tool consists of 39 measures that evaluate five specific traits: Agreeableness, Extraversion, Openness, Conscientiousness, and Neuroticism. Utilization of Social Networking Sites (SNSs) The Social Network Sites tool consists of twenty-nine unique elements related to five essential and commonly used Social Network Sites. The Coefficient of Correlation data analysis technique was employed. The correlation analysis indicates a strong positive association between AI Usage and Academic Performance (AP), evidenced by a moderate positive correlation ($r = .531$, $p = .000$). This suggests that increased AI usage correlates with improved academic achievement, indicating a beneficial effect on learning outcomes. Therefore, it is advisable for educational institutions to include AI tools into the learning environment to improve academic achievement through tailored learning experiences and effective resource management.

Introduction

A social networking site is an interactive platform for verbal exchange, allowing users to create accounts to join a particular network. They typically utilize their personal accounts to maintain connections with their respective persons through social networking sites. Social Network Sites are mostly utilized for communication and have become significant as an efficient method of remote interaction. Their contemporary needs have significantly benefited from the extensive contributions of modern technology (Mahnaz et al., 2022).

Social networking services provide varying features based on users' abilities to disseminate their knowledge, opinions, activities, personal details, emotions, significant events, and areas of interest. Social networking sites present numerous advantages, the most fundamental being the ability to register and establish various profile types, whether public or semi-public, within a connected system that facilitates communication with individuals from diverse regions. Social networking sites have emerged as the most active web-based applications, known as Web 2.0. They enable students to create profiles, facilitating social interaction with peers and providing opportunities for engagement with instructors. The popularity of the social networking site is steadily rising due to its unrestricted access for individuals seeking to engage with educators and peers to generate collective knowledge, irrespective of the prominence of various social networking platforms among users (Mahnaz et al., 2022).

Different educational system in the Pakistan, the basic variable is the "TEACHER." Teaching is aptly described as an art, wherein the quality of output direct relation to the teacher's contribution in terms of faith, diligence, and dedication. Consequently, it is reasonable to assert that no educational program may exceed the caliber of its instructors (Mehrukh et al., 2022).

The Big Five Personality Traits— Conscientiousness, Agreeableness, Extraversion, Openness, and Neuroticism, represent extensive facets of human personality. These characteristics encompass variations in inventiveness, discipline, friendliness, cooperativeness, and emotional stability. The Big Five Personality Traits are considered a thorough framework for comprehending individual variations. These characteristics affect many behaviors, encompassing social interactions, learning inclinations, and technology uptake. Individuals with high openness typically welcome innovative experiences and technology, whereas those with elevated conscientiousness are more inclined to participate in structured and goal-directed activities, such as academic endeavors. Extraverts frequently demonstrate robust social networking behaviors, employing platforms such as Facebook and WhatsApp for social interaction, whereas pleasant persons display collaborative inclinations, rendering them more amenable to online social relationships. Conversely, neuroticism might result in adverse emotional experiences and dependence on social media for coping, potentially affecting academic performance and mental health (Mahnaz & Kiran, 2024b).

According to Wajid Mahnaz and Dr Sidra Kiran (2024), Academic Performance refers to the extent to which a student has successfully attained their educational goals. It is typically measured by grades, test scores, and overall performance in school or academic programs. Academic achievement can also encompass other indicators of success, such as completing assignments, mastering specific skills or subjects, and earning degrees or certifications. It reflects both the level of knowledge and skills a student has acquired and their ability to apply this knowledge in an academic setting.

A substantial number of empirical research have been conducted on student academic motivation and its potential antecedents, including aspects connected to the classroom teacher, contextual elements, and individual student characteristics that promote academic drive. This can be

interpreted as a reaction to the numerous empirical studies conducted on student academic motivation (Mahnaz, Mehmood & Umar, 2022).

The widespread integration of Facebook and WhatsApp into students' daily routines has raised significant questions about their impact on academic performance, particularly when analyzed through the lens of personality psychology. Secondary school students, who form a significant portion of these platforms' users, experience varying outcomes based on their usage patterns, influenced by underlying personality traits (Mahnaz & Kiran, 2024b).

Transitions facilitate the physical and psychological progression of children from one activity to another. Smooth transitions are intended to guarantee that all pupils possess the requisite materials and mindsets for a new activity. Teachers must actively supervise their pupils to sustain an effective learning environment. Classroom management study indicates that active monitoring involves meticulously observing student behavior, intervening to rectify inappropriate actions before they escalate, consistently addressing misconduct, and focusing on student learning (Shaheen et al., 2022).

The integration of SNS into the flipped classroom model presents a unique opportunity to enhance academic achievement. SNS platforms can serve as extensions of the classroom, enabling students to access instructional content, engage in discussions, and collaborate on projects beyond school hours. For example, teachers can use YouTube to deliver lecture videos, Facebook groups for class discussions, and WhatsApp for sharing assignments and providing feedback (Mehnaz et al., 2025).

The condition of education in Australian government schools was anticipated to advance, update, and refine teaching competencies and comprehension in each primary subject through the quality teacher program. The subjects comprised Mathematics, Numeracy, Information Technology, Literacy, and Vocational Education (Mahnaz et al., 2023).

Objectives of the Study

Following were the main objectives of the study.

1. To examine the relationship between the use of AI-powered social networking sites and students' academic performance.
2. To investigate the association between the Big Five personality traits and students' academic performance.
3. To analyze the mediating role of the Big Five personality traits in the relationship between AI-powered social networking site usage and students' academic performance.

Hypotheses for the Study

- H1:** There is a significant relationship between the use of AI-powered social networking sites and students' academic performance.
- H2:** The Big Five personality traits significantly correlate with students' academic performance.
- H3:** The Big Five personality traits mediate the relationship between AI-powered social network site usage and academic performance.

Significance of the Study

This study is significant as it examines the complex relationship between AI usage, Big Five Personality Traits (BFPTs), and academic performance, providing important insights into how

modern educational technologies and personality characteristics influence students' academic achievement. The findings indicate a positive association between the use of AI-powered tools and academic performance, highlighting the potential of AI technologies to enhance learning outcomes through personalized learning experiences and efficient access to educational resources. This emphasizes the importance for educational institutions to integrate AI-based solutions in order to support diverse learning needs and improve academic success. Furthermore, the study reveals that personality traits play a significant role in academic achievement, as students who demonstrate positive traits such as conscientiousness, openness, and agreeableness tend to achieve better academic results. The research also identifies Big Five personality traits as an important mediating factor in the relationship between AI usage and academic performance, thereby contributing to a deeper understanding of how personality development can influence the effectiveness of AI in educational contexts. In addition, the study offers practical implications for educators, policymakers, and researchers by highlighting the need for a holistic educational approach that combines AI-supported learning environments with personality development initiatives. Such an approach can enhance academic outcomes by leveraging AI technologies while simultaneously fostering positive personality traits, thereby providing a valuable framework for designing effective educational policies and strategies that meet the evolving needs of students in the digital age.

Literature Review

The emergence of artificial intelligence (AI)-driven features in social networking services has significantly transformed the way individuals communicate, access information, and engage with digital content. These platforms employ AI algorithms to personalize user experiences, recommend content, and facilitate social interactions. Although these technological advancements offer several benefits, concerns have been raised regarding their potential impact on students' academic performance, particularly among those who spend considerable time on these platforms. In addition, the Big Five personality traits play an important role in shaping individuals' behaviors and their interaction with technology. Understanding how these personality characteristics influence the relationship between AI-powered social networking site usage and academic performance is therefore essential for developing strategies that minimize negative outcomes and promote positive educational results.

AI-Powered Social Network Sites and Academic Performance

AI-powered social networking sites utilize machine learning algorithms to curate content, recommend connections, and enhance user engagement. Features such as personalized news feeds, targeted advertisements, and adaptive notifications are designed to capture users' attention and encourage prolonged usage. While these features improve user experience, they may also increase screen time, cause distractions, and promote procrastination, which can negatively influence students' academic activities. Previous research indicates that excessive engagement with social networking sites may lead to reduced academic achievement because of time displacement and decreased focus on educational tasks. For instance, Wang et al. (2023) found that students who spent more time on social networking sites achieved lower grades and reported difficulties in managing their study time effectively. The personalized nature of AI-driven content may further intensify this issue by creating echo chambers that reinforce users' interests and divert their attention away from academic responsibilities (Haq et al, 2025).

The Mediating Role of Big Five Personality Traits

Personality traits significantly influence how individuals interact with technology and how social networking site usage affects their academic outcomes. The Big Five personality traits—openness, conscientiousness, extraversion, agreeableness, and neuroticism—shape individuals' tendencies related to time management, susceptibility to distractions, and patterns of online engagement. Research shows that individuals with high levels of conscientiousness are better able to regulate their social networking site usage, thereby reducing its negative impact on academic performance (Mammadov, 2021). In contrast, individuals with higher levels of neuroticism may rely on social networking platforms as a coping mechanism for stress, leading to excessive or compulsive usage that interferes with academic responsibilities (Wang et al., 2023). Similarly, Liu and Campbell (2017) found that extraversion and openness were positively related to social networking site usage, whereas conscientiousness was negatively associated with excessive social media engagement (Batoool et al., 2025).

Empirical Evidence and Discussion

Empirical studies further support the relationship between personality traits and academic achievement. A meta-analysis conducted by Mammadov (2021), which examined data from 267 independent samples involving more than 413,000 participants, found that conscientiousness had the strongest positive relationship with academic performance, whereas neuroticism demonstrated a negative association with academic success. Openness to experience also showed a positive but relatively weaker relationship with academic achievement. Another study by Wang et al. (2023) explored the mediating roles of major identity and self-efficacy in the relationship between personality traits and academic performance. The findings revealed that conscientiousness positively influenced academic achievement through enhanced self-efficacy and stronger identification with one's academic major, while neuroticism negatively affected academic performance by weakening these factors.

The Big Five personality framework also provides insights into behavioral differences in digital environments. For example, individuals with high levels of extraversion tend to prefer interactive platforms such as Instagram and Facebook that align with their sociable nature, while conscientious individuals often prefer platforms that support professional or goal-oriented activities, such as LinkedIn or academic discussion forums. Conversely, individuals with higher levels of neuroticism may use social networking sites as a form of escapism, engaging in passive browsing behaviors that may hinder productive activities, including academic tasks. These differences highlight the importance of examining how personality traits shape students' engagement with digital technologies, particularly as technological tools become increasingly integrated into educational environments (Mahnaz & Kiran, 2024).

Furthermore, Umair et al. (2022) emphasized that the effective use of information and communication technologies (ICTs) by educators is a significant predictor of students' academic success. Their study reported that computer science students achieved grades ranging between 88.18% and 87.80%, indicating that the integration of digital technologies in education can positively influence academic outcomes. Similarly, studies conducted during the COVID-19 pandemic highlighted the role of social networking sites as alternative communication tools between teachers and students. In many public educational institutions where learning management systems were not widely implemented, teachers and students relied heavily on social networking platforms to maintain communication and continue the learning process during school closures (Mehnaz et al., 2022).

Research Methodology

Research Design

This study utilized a mixed methods approach, combining qualitative techniques with quantitative analysis, to investigate the relationship between Social Network Site usage and the personality traits of secondary school pupils. The application of a triangulation design in mixed methods research is justified by the intrinsic constraints seen in all research methodologies.

Research Philosophy

This study is grounded in the philosophy of pragmatism, which emphasizes the practical application of research and focuses on solving real-world problems. Pragmatism allows researchers to use different research methods and approaches depending on what is most suitable for answering the research questions. Rather than adhering strictly to either positivism or interpretivism, pragmatism supports the integration of both quantitative and qualitative perspectives to gain a comprehensive understanding of the research problem.

Population:

The study population comprised all 8,617 10th grade students in District Attock, consisting of 4,868 boys and 3,749 girls, enrolled in 248 public schools at the secondary level.

Sample and Sampling Technique:

The study sample included 530 students from the population. The Proportional Sampling method was utilized for sampling. The sample size of each stratum is directly proportionate to the total population size of that stratum. This indicates that every sample within each stratum is chosen using a uniform sampling percentage.

Research Instruments:

Two distinct adopted research instruments were employed to fulfill the study's aims.

Research Tool No. 1:

Big Five Personality Traits Tool (BFPTs) developed by Wajid Mahnaz and Sidra Kiran (2024) The Big Five Personality Tool comprises 39 items that assess five distinct characteristics, namely the Big Five personality traits: Agreeableness, Extraversion, Openness, Conscientiousness, and Neuroticism.

Research Tool No. 2:

Usage of Social Networking Sites (SNSs) developed by Wajid Mahnaz and Sidra Kiran (2024) The Social Network Sites tool comprises twenty-nine distinct things pertaining to five fundamental and widely utilized Social Network Sites.

Reliability of the Tools:

The reliability of the instruments was determined using Cronbach's Alpha. The reliability analysis of the Big Five Personality Traits (BFPTs) tool demonstrates robust internal consistency across all subscales, with Cronbach's Alpha values between 0.916 and 0.972, signifying a highly reliable instrument. Openness ($\alpha = 0.916$), conscientiousness ($\alpha = 0.972$), extraversion ($\alpha = 0.933$), agreeableness ($\alpha = 0.956$), and neuroticism ($\alpha = 0.951$) exhibit outstanding reliability, affirming that each subscale accurately evaluates its respective trait. The BFPTs scale exhibits robust internal

consistency, evidenced by a Cronbach's Alpha of 0.867, so affirming the instrument's reliability in assessing personality traits among secondary school students. The findings indicate that the BFPT's instrument is dependable for acquiring accurate and consistent data within the study's context.

The reliability assessment of the Usage of Social Network Sites (USNSs) tool demonstrates outstanding internal consistency across all subscales, with Cronbach's Alpha values ranging from 0.965 to 0.979, signifying a very reliable instrument. Facebook ($\alpha = 0.965$), WhatsApp ($\alpha = 0.969$), Instagram ($\alpha = 0.979$), Twitter ($\alpha = 0.979$), and TikTok ($\alpha = 0.974$) exhibit remarkable reliability, ensuring consistent evaluation of social media usage behaviors. The overall USNSs scale, with a Cronbach's Alpha of 0.917, further corroborates the instrument's trustworthiness. The findings demonstrate that the USNSs instrument reliably acquires accurate data concerning students' social media usage patterns in the study.

Validity of the Research Tools:

Content Validity: The research instrument employed in this study was enhanced by the systematic recommendations and contributions of five distinct professionals in educational research. Their perspectives and observations were gathered to assess the instrument's validity.

Construct Validity: Construct validity refers to the extent to which a measurement tool accurately represents the theoretical construct it intends to evaluate. It assesses the instrument's accuracy in measuring the abstract concept or characteristic it claims to evaluate. Construct validity is crucial in research as it ensures that the outcomes obtained from a tool accurately reflect the underlying theoretical concept, rather than being affected by extraneous variables or biases.

Data Collection Procedure

Researchers developed an online Google form as a questionnaire and being a computer teacher, shared with the computer teachers of the schools of the District Attock. Items of the questionnaire were explained for better results. The procedure was initially applied on 50 students for pilot testing, items difficulty level was observed and then changes were made to get maximum of accurate results.

Data Analysis Technique

Co-efficient of Correlation

The correlation coefficient is a numerical measure of correlation, indicating a statistical relationship between two variables. The variables in question may be depicted as two columns inside a particular dataset including observations, typically known as a sample. Alternatively, they may be considered as two elements of a multivariate random variable that adheres to a recognized distribution.

Data Analysis

H1: There is a significant relationship between the use of AI-powered social networking sites and students' academic performance.

The correlation analysis demonstrates a strong positive association between AI Usage and Academic Performance (AP), evidenced by a Pearson correlation coefficient of .531, signifying a moderate positive correlation. This indicates that increased utilization of AI tools correlates with enhanced academic performance, implying that as students engage more with AI resources, their academic success tends to elevate. The affirmative nature of this link suggests that AI usage may

be positively influencing learning results, potentially by improving study efficiency or offering superior educational assistance.

Correlations			
AI_Usage	Pearson Correlation	AI_Usage	AP
	Sig. (2-tailed)	1	.531**
	N	530	530
AP	Pearson Correlation	.531**	1
	Sig. (2-tailed)	.000	
	N	530	530

** . Correlation is significant at the 0.01 level (2-tailed).

The significance value (.000) demonstrates that this connection is highly significant at the 0.01 level (2-tailed), indicating that the probability of this finding arising by chance is quite low. This reinforces the veracity of the observed correlation between AI usage and AP. The investigation utilized a sample size (N=530), establishing a solid foundation for extrapolating the findings to a broader population, hence enhancing the credibility and significance of the results.

H2: The Big Five personality traits significantly correlate with students' academic performance.

Correlations			
BFPTs	Pearson Correlation	BFPTs	AP
	Sig. (2-tailed)	1	.550**
	N	530	530
AP	Pearson Correlation	.550**	1
	Sig. (2-tailed)	.000	
	N	530	530

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis reveals a strong positive association between Big Five Personality Traits (BFPTs) and Academic Performance (AP), evidenced by a Pearson correlation coefficient of .550, indicating a moderate positive correlation. This indicates that pupils exhibiting elevated positive personality qualities, including conscientiousness, openness, extraversion, and agreeableness, are likely to attain superior academic achievement, although diminished neuroticism may also provide beneficial effects. The affirmative nature of this link suggests that these personality traits may significantly contribute to improved learning outcomes and academic achievement. The significance value (.000) indicates that this association is highly significant at the 0.01 level (2-tailed), suggesting a minimal likelihood of this finding arising by chance. This substantiates the dependability of the correlation identified between BFPTs and AP. The analysis utilized a sample size (N=530), providing a robust foundation for generalizing the findings to a wider student population, hence augmenting the validity and significance of the conclusions reached.

H3: The Big Five personality traits mediate the relationship between AI-powered social network site usage and academic performance.

The mediation analysis employing PROCESS Model 4 investigates the function of Big Five Personality Traits (BFPTs) as a mediator between AI Usage and Academic Performance (AP). The initial model demonstrates a substantial positive impact of AI usage on BFPTs, with a coefficient

of 1.001 ($p = .000$), signifying that augmented AI usage is closely linked to elevated positive personality traits. This model accounts for 91.77% of the variance in BFPTs ($R^2 = .9177$), indicating a strong correlation.

The second model indicates that BFPTs exert a substantial positive influence on AP, evidenced by a coefficient of .5356 ($p = .0001$), implying that students possessing more advantageous personality traits are likely to achieve superior academic performance. The direct impact of AI usage on academic performance is not significant (coefficient = .0608, $p = .6697$), suggesting that AI usage does not directly affect academic achievement when adjusting for BFPTs. The indirect effect via BFPTs is substantial, with a value of .5361 (BootCI = .2484 to .8121), indicating partial mediation.

The results indicate that AI usage positively influences AP indirectly via its effect on BFPTs, hence corroborating the idea that personality traits moderate this relationship. This underscores the significance of constructive personality development in utilizing AI tools for enhanced academic results.

Findings

1. The correlation analysis indicates a strong positive association between AI Usage and Academic Performance (AP), evidenced by a moderate positive correlation ($r = .531$, $p = .000$). This suggests that increased AI usage correlates with improved academic achievement, indicating a beneficial effect on learning outcomes.
2. The correlation study indicates a substantial positive association between Big Five Personality Traits (BFPTs) and Academic Performance (AP), evidenced by a moderate positive correlation ($r = .550$, $p = .000$). This suggests that children possessing positive personality traits generally attain superior academic achievement, underscoring the influence of personality in improving learning outcomes.
3. The mediation analysis shows that AI Usage indirectly influences Academic Performance (AP) through Big Five Personality Traits (BFPTs), as indicated by a significant indirect effect (.5361, BootCI = .2484 to .8121). While AI Usage positively affects BFPTs (coefficient = 1.001, $p = .000$) and BFPTs significantly enhance AP (coefficient = .5356, $p = .0001$), the direct effect of AI Usage on AP is not significant ($p = .6697$), confirming partial mediation by BFPTs.

Discussion

AI Usage and Academic Performance:

The significant positive correlation between AI Usage and Academic Performance ($r = .531$, $p = .000$) aligns with previous research indicating that AI tools enhance learning efficiency and academic outcomes. Jabar and Yousif (2023) found that the integration of AI in educational settings improved learning processes and student performance by offering personalized learning experiences and efficient resource management. Similarly, Zhang and Aslan (2022) demonstrated that AI-assisted learning platforms contribute to better academic achievement by facilitating adaptive learning environments. These findings suggest that AI usage supports students' academic performance by optimizing study methods and enhancing engagement (Jabar & Yousif, 2023; Zhang & Aslan, 2022).

Big Five Personality Traits and Academic Performance:

The positive association between Big Five Personality Traits (BFPTs) and Academic Performance ($r = .550$, $p = .000$) substantiates the influence of personality on educational achievement. These findings align with those of Komarraju et al. (2011), who identified conscientiousness and openness as key determinants of academic success, highlighting that students possessing these traits are generally better organized and motivated. Furthermore, Ibrahim et al. (2025) determined that conscientiousness is a robust predictor of GPA, hence confirming the association between favorable personality traits and improved educational results. These investigations underscore the impact of personality on academic achievement, corroborating the existing findings (Komarraju et al., 2011; Poropat, 2009).

Mediation by Big Five Personality Traits:

The mediation analysis indicates that BFPTs partially mediate the relationship between AI usage and academic performance, suggesting that positive personality traits indirectly enhance this influence. While direct studies on this mediation are sparse, the role of personality as a mediator in educational environments is supported by past research (Mahnaz, 2023). Chamorro-Premuzic and Furnham (2003) discovered that personality factors regulate the connection between cognitive ability and academic success, highlighting the intricate interaction between individual variability and learning outcomes. The findings suggest that personality qualities directly influence academic achievement and also mediate the impacts of external educational aids such as AI (Nasir & Mahnaz, 2026).

Recommendations

1. The correlation analysis shows a significant positive relationship between AI Usage and Academic Performance (AP), with a moderate positive correlation ($r = .531$, $p = .000$). This indicates that higher AI Usage is associated with better academic performance, suggesting a positive impact on learning outcomes. Hence, it is recommended that educational institutions integrate AI tools into the learning environment to enhance academic performance by providing personalized learning experiences and efficient resource management.
2. The correlation study indicates a substantial positive association between Big Five Personality Traits (BFPTs) and Academic Performance (AP), evidenced by a moderate positive correlation ($r = .550$, $p = .000$). This suggests that children possessing positive personality traits generally attain superior academic achievement, underscoring the influence of personality in improving learning outcomes. Therefore, it is advisable that educational programs emphasize the cultivation of good personality traits, like conscientiousness, openness, and agreeableness, via character development workshops and mentorship initiatives to enhance students' academic performance.
3. The mediation analysis shows that AI Usage indirectly influences Academic Performance (AP) through Big Five Personality Traits (BFPTs), as indicated by a significant indirect effect (.5361, BootCI = .2484 to .8121). While AI Usage positively affects BFPTs (coefficient = 1.001, $p = .000$) and BFPTs significantly enhance AP (coefficient = .5356, $p = .0001$), the direct effect of AI Usage on AP is not significant ($p = .6697$), confirming partial mediation by BFPTs. Hence, it is recommended that educational policymakers design AI-enhanced learning environments that not only provide academic support but also encourage the development of positive personality traits, thereby maximizing the overall educational impact.

Conclusion

The findings indicate that AI Usage positively influences Academic Performance (AP), suggesting that integrating AI tools into educational settings can enhance learning outcomes through personalized learning experiences. Additionally, the positive relationship between Big Five Personality Traits (BFPTs) and AP highlights the importance of fostering positive personality traits to improve academic achievements. The mediation analysis further reveals that AI Usage indirectly impacts AP through BFPTs, emphasizing the role of personality development in maximizing the educational benefits of AI tools.

These results demonstrate the interconnectedness of AI Usage, personality traits, and academic performance, suggesting that a holistic educational approach combining technology and character development is essential for optimizing student outcomes. The partial mediation effect of BFPTs underscores the significance of positive personality traits as a mechanism through which AI enhances academic success.

Conclusion for Hypothesis: The study concludes that AI Usage positively affects Academic Performance indirectly through its influence on Big Five Personality Traits, supporting the hypothesis of partial mediation. This emphasizes the dual role of technological integration and personality development in enhancing academic achievements, guiding educational stakeholders in designing comprehensive strategies for improved learning experiences.

References

1. Batool, U., Chaudhary, A., Afzal, A., & Mahnaz, W. (2025). Diverging Perspectives: A Study of Student and Parent Opinions on Parental Involvement in Education, *The Critical Review of Social Sciences Studies*, 3(1), 3580-3595
2. Bibi, A., Kiran, S., Mahnaz, W., Sarfaraz, S., Habib, M. (2023). Relationship between Vocational Education and Leadership Style of Vocational Instructors at Higher Secondary Level: An Exploratory Study, *Journal of Positive Psychology*, 7(6), 903-917
3. Chamorro-Premuzic, T., & Furnham, A. (2003). Personality predicts academic performance: Evidence from two longitudinal university samples. *Journal of Research in Personality*, 37(4), 319-338.
4. Haq, M.Z., Mahnaz, W., Ain, Q., Batoo., U., & Safdar, M., (2025). The Influence of Leadership and Management on School Effectiveness in Secondary School, *Remittances Review*, 9(2), 5768 - 5793
5. Ibrahim, S., Kiran, S., & Mahnaz, W (2025). The Role of Disaster Preparedness Training in Shaping Students' Attitudes Toward Earthquake Response, *The Critical Review of Social Sciences Studies*, Volume 3, Issue 1, 3610-3631.
6. Jabar, J., & Yousif, A. (2023). The impact of AI integration on student performance: A case study in higher education. *Journal of Educational Technology and Society*, 26(2), 45-56.
7. Kiran, S., Mahnaz, W., Bukhari, S.I.I., Ahmed, M., Shah, S.Z.H., & Ain, Q. (2022). Conflict Management Strategies Adopted By Teachers Of Special Education Schools: An Exploratory Study, *Journal of Positive School Psychology*, 6 (9), 3150-3161
8. Komarraju, M., Karau, S. J., Schmeck, R. R., & Avdic, A. (2011). The Big Five personality traits, learning styles, and academic achievement. *Personality and Individual Differences*, 51(4), 472-477.

9. Liu, D., & Campbell, W. K. (2017). The Big Five personality traits and social media use: A meta-analysis. *Computers in Human Behavior*, 72, 265-275. <https://doi.org/10.1016/j.chb.2017.03.011>
10. Mahnaz, W., & Kiran, S. (2024b). Exploring the Impact of WhatsApp, Facebook Usage and Big Five Personality Traits on Scholastic Performance among Secondary School Students, *Dialogue Social Science Review (DSSR)*, 2(4), 199-217 DOI: <https://zenodo.org/records/14280812>
11. Mahnaz, W., & Kiran, S., (2024a). Big Five Personality Traits and Social Network Sites Preferences: The Mediating Role of Academic Achievement in Educational Outcomes of Secondary School Student, *Social Science Review Archives*, Volume 2(2), 1353-1370, DOI: <https://doi.org/10.70670/sra.v2i2.187>
12. Mahnaz, W., & Kiran, S., (2024c). Personality-Driven Adoption of WhatsApp and Facebook for Educational Collaboration: Academic Performance as a Mediator, *Social Science Review Archives*, Volume 2(2), 1461-1473
13. Mahnaz, W., (2023). Principals' Intermediations Role for School Efficacy: A Case Study of Secondary Schools of District Attock, *Open Access Education and Leadership Review*, 1(1), 36-47
14. Mahnaz, W., Gulzar, Bibi, S., & Ullah, S. (2025). The Influence of Flipped Classroom Pedagogy on Academic Achievement of Students at Higher Secondary Level: Usages of Social Network Sites as a Key Mediator, *Social Science Review Archives*, 3(1), 1056–1070. <https://doi.org/10.70670/sra.v3i1.387>
15. Mahnaz, W., Kiran, S., Mehmood, U., Arif, S., & Taqadees, N. (2023). Effects Of Regular Monitoring Of Monitoring Evaluation Assistant (Meas) On The Quality Of Schools: A Case Study Of Tehsil Jand District Attock, Punjab, *Journal of Positive School Psychology*, 7(6), 967-980
16. Mahnaz, W., Mehmood, U., & Umar, M. (2022). How Classroom Enjoyment Influence Efl Students' Academic Motivation, *Pakistan Journal of Social Research*, 4(3), 659-665, DOI: <https://doi.org/10.52567/pjsr.v4i03.755>
17. Mahnaz, W., Mehmood, U., Mehrukh, N., & Shaheen. A., (2022). Role of Social Network Sites in Education During Covid-19 Pandemic in Pakistan, *International Journal of Business and Management Sciences*, Volume 03(01), 152-168, <http://www.ijbms.org>
18. Mahnaz, W., Mehmood, U., Mehrukh, N., Shaheen, A. (2022). Role of Social Network Sites in Education During Covid-19 Pandemic in Pakistan, *International Journal of Business and Management Sciences* Volume 03(01), 152-168
19. Mammadov, S. (2021). The Big Five personality traits and academic performance: A meta-analysis. *Personality and Individual Differences*, 168, 110346. <https://doi.org/10.1016/j.paid.2020.110346>
20. Mehmood, U., Mahnaz, W., Mehrukh, N., Shabbir, W. (2022). Relationship Between Utilization of ICT and Academic Achievement of Students at Secondary Level -- Palarch's *Journal of Archaeology of Egypt/Egyptology* 19(2), 317-324.
21. Mehrukh, N., Mahnaz, W., Iqbal, H., & Basit, I. (2022). Attitude of Teachers Towards Delayed Students In Mainstream Classrooms At Elementary Level In Pakistan, *PalArch's Journal of Archaeology of Egypt/Egyptology* 19 (2), 409-419
22. Nasir, M. & Mahnaz, W. (2026). Adoption of AI Learning Tools And Their Effect On Students' Academic Outcomes At Secondary Level, *International Journal of Social Sciences Buletin*, Volume 4, Issue 1, 2026
23. Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin*, 135(2), 322-338.

24. Sarfaraz, S., Shoukat, H., Shaheen, N., & Mahnaz, W. (2025). Cognitive and Social Influences of Social Media: Examining the Effects of Big Five Personality Traits of Students at Secondary Level, *Social Science Review Archives*, Volume 3(1), 685-695, DOI: <https://doi.org/10.70670/sra.v3i1.353>
25. Shaheen, A., Ain, Q., Kiran, S., Basit, I., Mahnaz, W., Shahzad, W. (2022). Implementation of Effective Strategies Regarding Classroom Management in Public and Private Schools: A Comparative Study, *Turkish Online Journal of Qualitative Inquiry (TOJQI)*, 13(1), 194-203
26. Wang, X., Li, Y., & Chen, Z. (2023). The mediating effects of major identity and self-efficacy on the relationship between personality traits and academic performance. *Frontiers in Psychology*, 14, 1065554. <https://doi.org/10.3389/fpsyg.2023.1065554>
27. Zhang, X., & Aslan, S. (2022). Effects of AI-driven adaptive learning systems on student academic performance. *Computers & Education*, 17(9), 104-117