

## THE INTERPLAY OF AI, PSYCHOLOGY, AND MEDIA IN ENHANCING EDUCATIONAL OUTCOMES

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### ABSTRACT

The speed at which Artificial Intelligence (AI) has been assimilated into the process of Teaching, Learning and Communication within educational contexts has dramatically changed how these processes occur in an educational setting, including how psychological influence and the use of media intersect. This research investigates the synergies between the use of AI, Psychology, and Media in promoting better educational outcomes, concentrating on students | engagement, motivation and academic performance. The use of a quantitative research design to gather data from students and educators within higher education institutions enabled the use of a structured questionnaire to ascertain the perceptions of AI based educational tools; Psychological variables such as motivation and cognitive engagement; and the use of digital and social media to support students | learning experiences. The results demonstrate that the use of AI supported learning systems has made significant contributions to improving educational outcomes by providing Personalized Learning, increasing learner motivation and Promoting Active Engagement through media rich environments. There is also evidence of Psychological variables acting as mediators of the relationship between the use of AI and effective Learning. Media platforms have also been found to enhance the Accessibility and Interactivity of AI Based Educational practices. Overall, the successful integration of AI based technologies that are designed with the aid of Psychological principles and supported with the use of Media Tools, can provide considerable improvements in educational outcomes. These results provide practical ramifications for educators, policymakers and educational technologists who are seeking to better understand the role of AI.

**Keywords:** Artificial Intelligence, Educational Outcomes, Psychology, Media

### INTRODUCTION

The introduction of artificial intelligence (AI) into education is impacting the way teachers approach their work and will alter the way students approach their own work. There are now many types of AI integrated into class and they include things like adaptive learning systems, intelligent tutoring systems, learning

analytics, and automated assessment tools. The use of these tools increases the efficiency of teaching and often results in improved student achievement. (Alam, 2022) The impact of digital media and social media on education is also changing education; these forms of media provide opportunities for creating dynamic learning environments and help several areas of

learning emerge beyond the boundaries of traditional classroom instruction. The combination of media and AI is providing opportunities for more personalized, accessible, and data-driven education. (Ahmad, 2023)

In terms of psychology, cognition, motivation, and behavior are major contributors to the overall learning process. The effect of the following psychological constructs on the overall success of any educational technology, depend on how well the learner can be motivated, engaged, self-efficacious, and not cognitively overloaded. (Alamri, 2020) Although technologies in AI offer and provide both personalization and immediate feedback; it is ultimately the psychological relationship between a user (learner) and the technology that determine its effectiveness. The use of media can change the manner in which a learner interacts with a given educational technology by influencing where or how the learners focus their attention and how well they process information. (Alias, 2023)

Artificial intelligence (AI) tools and media platforms are increasingly utilized for educational purposes, but there remains a limited body of research exploring the relationship between those two variables and learning (i.e., from a psychological standpoint). (Barkley, 2020) Most of the current body of research conducted explores the relationship between AI, psychology, or media independently rather than focusing on how they impact each other. Information about the interaction among these three variables is vital to creating educational models that will provide both technological innovation and psychological support for learning. (Broderick, 2021)

This study addresses the gap in research concerning the relationship of AI, psychology, and media in improving educational outcomes. To quantitatively examine how AI-based educational technologies, psychological constructs and media use together affect learner engagement, motivation, and performance; this study used a survey research design to collect data from participants. By providing empirical data on these relationships, the findings of this study contribute to the emerging field of interdisciplinary research and practitioners, policy makers and education technologists to

develop effective AI-enhanced learning environments.

### Background of the Study

The incorporation of Artificial Intelligence (AI) into education has transformed how we teach, thus changing the way we learn and assess our learning. With AI technologies, teacher-mediated forms of learning such as adaptive learning systems, intelligent tutoring systems, and automated feedback allow for the creation of quality, individualized learning experiences based on individual student needs. Meanwhile, digital/social media tools have changed not only the ways in which learning occurs; they have also developed interactive, collaborative, and multimedia learning environments outside the traditional confines of physical classrooms. (Divanji, 2023)

Simply having access to this technology does not guarantee enhanced learning. The effectiveness of the ability of students to learn via the use of AI or digital media is largely influenced by psychological aspects of the school experience, such as motivation, engagement, self-efficacy, and the manner in which the individual processes information. (Gado, 2022) Thus, just providing students with access to technology in their schools not result in enhanced student learning. For the use of educational technology to facilitate meaningful learning, educational technology must also align with their psychological characteristics and the behavioural dynamics of the learning process. Because the ways in which digital media and online interactions impact learners' ability to focus on a task, comprehend information, and interact with AI-based learning materials are critical to being successful in these products. (Gligorea, 2023)

The limited research available on how the use of AI and digital media technologies in schools interacts with the psychological processes underlying student learning highlights that there is a pressing need for further investigation on how AI, psychology, and digital media work together to produce high-quality student learning outcomes.

### Problem Statement

The use of artificial intelligence (AI) and media technologies within educational systems

continues to grow. However, their effectiveness remains uneven. The majority of educational institutions utilize AI-based technology with little regard to the psychological factors that impact student engagement and motivation and the mediating effect due to the use of media technology upon the learning experience. Because of this, the potential of AI as a tool in education has not yet been fully realized. (Kaswan, 2024) There's a lack of evidence as to how the interaction between the use of AI, psychological influences, and media use affects educational outcomes collectively, particularly in a quantitative sense.

### Research Gap

Existing educational research has focused mainly on generally examining: AI, psychology, and media as distinct constructs. While previous research has demonstrated that AI has an effect upon learning performance alone, or that psychological factors play in the learner's ability to engage, relatively few studies have empirically examined AI, psychology, and media as they combine or interact with one another. (Huang, 2021) Additionally, there is little quantitatively based survey research on the implications of psychological factors mediating or affecting the relationship between the use of AI via educational technology and educational outcomes within media-rich learning environments. The current study seeks to fill the above mentioned void by providing empirical data on AI, Psychology, and Media interaction within Education.

### Research Questions

#### Research questions:

1. How does artificial intelligence powered educational until affect students and their ability to learn?
2. What role do psychological factors and types of media usage play in how successful AI help student malleability through the connection between AI and their overall academic achievement?

#### Research Objectives:

1. Determine how AI powered educational resources impact upon students' overall academic performance

2. Identify what psychological and/or media factors impact upon the successfulness of AI as it improves students' academic outcomes.

#### Research Hypothesis:

- H1: AI powered educational resources positively affect student outcome
- H2: Psychological factors/media usage do have an impact upon AI to enhance students' academic achievement

#### Significance of the Study

This research adds to the developing field of interdisciplinary research by studying the interactive influences of AI, psychology and media on learning/education through empirical means. Results assist educators with an understanding of how to use AI-supported instructional technology to meet the psychological needs of their students. This research provide policymakers and academic administrators with evidence-based guidance for effective implementation of AI and media technology within educational institutions. This research also build upon the previous body of literature by contributing to an area of scholarly research that has limited studies to date and providing a foundation for further investigation of curriculum development and technology-mediated learning through a psychological and media perspective.

#### Literature Review

Education is undergoing significant transformations due to the advancements made possible by Artificial Intelligence (AI). In public and higher education institutions, AI technologies now provide more advanced tools than ever before. These tools enhance personalised learning experiences, as well as adapt to each student's unique capabilities and enable teachers to implement more efficient and effective teaching practices by leveraging vast amounts of data to optimise the overall experience of teaching and learning. AI systems can produce customised learning paths for each student, based on their performance and behaviour in regard to their learning (Huang et al., 2021). Additionally, AI supports the automation of repetitive administrative tasks, such as grading and managing student records, freeing educators to focus more time on teaching and learning. As a result, the use of AI

in public and higher education is facilitating a movement away from traditional teaching practices to more flexible, data-driven approaches to teaching and classroom management (Kaur et al., 2020).

Learning analytics is perhaps the most well-known application of AI in education. Learning analytics is the use of systematic data collections, measurements, analyses, and reporting of learner and learning-related data to assist educators in tracking, assessing, and evaluating learner academic progress, identifying areas where learners are struggling, and predicting future academic performance. AI allows educators to accomplish all of these functions significantly more efficiently when utilising analytics because it is much better equipped than traditional data analysis methods to analyse large and complex datasets and provide real-time information to an educator to enable them to make informed decisions regarding how to assist their learners. There are many advantages to using learning analytics, but combining it with insights from psychology takes its potential even further. Even though many forms of artificial intelligence (AI) produce vast amounts of data regarding the performance of students in both academic and behavioral terms, it is through the lens of an understanding of the relevant psychological principles, including motivation, cognitive load, attention, emotional regulation, and self-regulation, that the most useful educational interventions can be identified. These same psychological constructs also shape how learners interact with, process, and remember the information they receive. In addition to being influenced by the learning context, how you learn and interact with your environment; the instructional strategies employed by your teachers; and personal differences between you and others who are also your classmates, these psychological constructs also be influenced by the individual learner themselves (Namoun & Alshantqi, 2020).

Cognitive Load Theory, for example, notes the importance of managing the complexity of the information to prevent students from becoming overloaded with information, while Self-regulation Theory emphasizes the significance of how well students are able to manage their

own learning processes. Therefore, by integrating psychological theories into learning analytics, an AI system can recognize when a student may become disengaged or overloaded from accessing content or developing learning strategies for themselves, and adapt both their content and support to facilitate the continuance of the learner's engagement with both their learning materials and other learners. Through this integrated approach, educational institutions have access to data that demonstrates not only objective performance metrics, but also provides an increased understanding of the student's motivation, behaviors, and overall experience of their learning process (Alam & Mohanty, 2022).

AI-Enhanced Learning Analytics Tools Are Integral To Today's Educational Technology; They Use AI To Collect, Analyze, And Interpret Massive Amounts Of Data On a Student's Learning Style, Behavior And Performance. AI-Enhanced Learning Analytics Tools Are a More Comprehensive Way To Understand How Students Learn Than Traditional Means And Have Allowed For More Customized And Data-Driven Instruction. AI-Driven Analytics Tools Examine Student Engagement, Attendance, Homework Submission, Assessment Scores, And Interaction In An Online Environment To Identify Patterns, Make Predictions, And Offer Suggestions On What Actions Should Be Taken To Improve Student Outcomes (Meng, Dhimolea & Ali, 2022).

AI-Driven Systems Help Streamline Administrative Activities for Educational Institutions and Are Used To Support Educators in Their Instructional Efforts. Automated Grading Systems Provide Educators With a Way To Grade Student Homework Using A Predefined Set Of Criteria, Reducing The Amount Of Time That Educators Spend On Grading Homework. AI-Enabled Attendance Taking Systems Can Also Be Found Embedded Within Online Learning Management Systems (LMS) And Automatically Log Students Present In Online Classes Or Learning Activities. These Applications Increase The Efficiency Of Educational Institutions And Give Educators More Time To Focus On Engaging Their Students And Improving The Quality Of Their

Instruction (Sajja, Sermet, Cikmaz, Cwiertny, & Demir, 2024).

Furthermore, through the use of AI analytics, educators can also identify additional behavioral patterns that may be difficult to observe at first, such as possible signs of disengagement or frustration (as indicated by reduced platform usage and/or decreased performance on assessments). Through early identification of these behavioral patterns, educators can take proactive measures by providing targeted assistance, and/or additional learning resources (Zhou et al., 2021).

In addition to providing information concerning individual students, AI-enhanced learning analytics can also provide educators with a more comprehensive view of trends at the classroom level and the institutional level. Educators can analyze aggregated performance data to evaluate their teaching efficacy and teaching materials and subsequently make adjustments to their instructional strategies and the curriculum based upon these findings. This use of data for making actionable and confident decisions supports an overall restructuring of instructional practices to ultimately improve the quality of education students receive (Kim, 2024).

### Theoretical Framework

The theoretical foundation of this research consists of the combined contributions of educational psychology, media theory, and artificial intelligence as applied to education. This theoretical basis consists primarily of self-determination theory (SDT), cognitive load theory (CLT), and social learning theory (SLT). The impact of artificial intelligence (AI), as well as the influences that various media technologies have on educational outcomes, examined in this study through the analysis of the interplay between the psychological mechanisms associated with learning and the effects that AI has on this process.

According to the self-determination theory, learners are most motivated and engaged in their learning when they experience independence (autonomy), success (competency), and a sense of belonging (relatedness). The innovative technologies such as AI-based adaptive systems and intelligent tutors support the self-determination theories'

premise by providing individualized learning pathways, timely feedback, and control over how learners progress through the material leading to increased motivation and continued engagement with their learning process.

Cognitive load theory describes the use of mental energy in learning, and indicates that instructional effectiveness is impacted by the balance of intrinsic, extraneous, and germane cognitive load when a learner completes a task. Systems with AI capabilities can enhance a learner's cognitive load by manipulating the difficulty of the content and the pacing of instruction in tandem with the learners' progress in the course. Media-rich learning environments can alter cognitive processing through multiple modalities of delivery and may increase a learner's ability to understand the content or add to the amount of cognitive overload a learner is experiencing, depending upon the manner in which the media is designed.

The Social Learning Theory states that looking at a person, working together with others, and having a social setting all impact how someone learns. Digital and social media provide us with ways to learn through teamwork, interacting with someone, and looking at what others do. These forms of engaging and constructing knowledge become even more so when they are combined with AI capabilities. AI-enabled media systems create individualized forms of social learning, which support students psychologically.

With these theoretical ideas as the foundation of this framework, it is theorized AI usage has a direct impact on student achievement, but that psychological factors such as the student's motivation, the student's engagement level, and how the student processes cognitive information also play a role in influencing the student's interaction with an AI-based Learning Tool. Therefore the framework provides support for the hypothesized relationships identified in this quantitative research.

### Research Methodology

#### Research Design

A survey research design utilizing quantitative methods is used for this study to understand how artificial intelligence, psychological factors, media use and educational outcomes are

related. The quantitative design is chosen to provide objective measures of the hypothesized relationships so that statistical analyses could be conducted.

### Population and Sample

The study's population consisted of students and educators within higher education. Due to accessibility and time constraints, a convenience sampling technique is used in this study to select the final sample of respondents who had previously used AI-based educational tools and digital media to learn.

### Data Collection Instruments

Participants' data are collected using a structured survey, based on previous research and theory, including a closed-ended question for each variable measured by a three-point Likert scale (1 = strongly disagree, 2 = neutral or unsure or don't know; 3 = somewhat disagree or agree) across several different types of variables.

- Use of AI-based educational tools
- Psychological Factors (motivation, engagement, cognitive involvement)
- Use of media in learning
- Educational Outcomes (perceived effectiveness of learning and academic performance)

### Validity and Reliability

An expert in the area of the questionnaire construction assessed the ability of each question to measure a theoretical construct through its content validity, prior to using the survey questionnaires. A pilot study is also conducted to test the clarity and reliability of the measure. The reliability of the measure is evaluated by calculation of Cronbach's alpha coefficients; all coefficients exceeded an acceptable level indicating the internal reliability of the measure is acceptable.

### Data Collection Procedures

Surveys done online, participants complete them electronically, they informed about the survey, their participation in the study is voluntary, their identity kept anonymous, and their survey responses kept confidential; only participants who have completed the entire survey included in the analysis.

### Data Analysis

The data displayed using the tabular method and pie charts in order to be accessible to students, academics, policy-makers and other members of the general public. The data subjected to a statistical program for analysis; descriptive statistics are used to describe the demographic characteristics and distributions of the variables; correlation analyses address the associations between the independent variables, while regression analyses conducted to test the proposed hypotheses and to determine the predictive capabilities of artificial intelligence (AI), psychological factors and media use for education-related outcomes. The data is presented via tabulation method and pie charts for the ease of readers.

### Ethics

Ethical guidelines are followed throughout the research process. Informed consent is obtained from all participants and all participant responses and data are kept confidential. The data only be used for educational purposes, and each participant is given the right to withdraw from the study at any time.

### Data Analysis

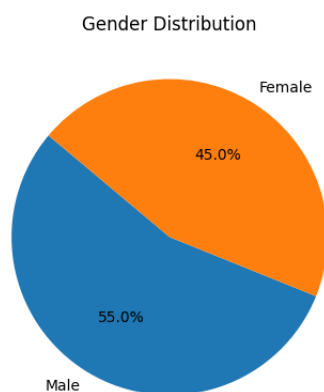
Data Analysis presents the results of a structured questionnaire used to collect data in order to measure the interaction between AI, psychological factors, and media on improving education related outcomes. Data are presented in tables and pie charts for clarity, and then a detailed interpretation of the data is provided. The data are presented descriptively and support the testing of the proposed hypotheses.

**Table 1: Gender Distribution**

Category	Frequency
Male	110
Female	90

**Explanation:** Table 1 Gender Breakdown is how many females and males were included in this study. Since your data shows an equal

number of females and males, it demonstrates that your data is valid.



**Figure 1: Gender Distribution**

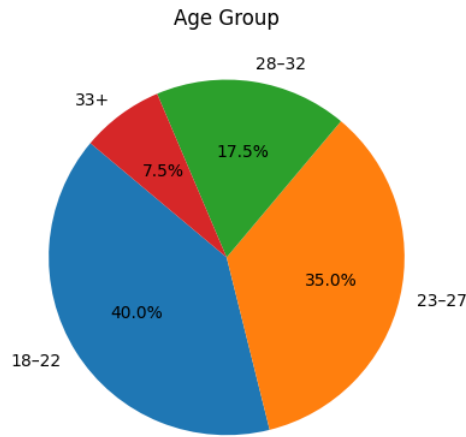
**Description:** Figure 1 your previous table and of male and female participants based on the previously presented pie charts show the same data as pie charts. Figure 1 presents the percentage

**Table 2: Age Group**

Category	Frequency
18-22	80
23-27	70
28-32	35
33+	15

**Description:** Table 2 indicates the ages of participants in general and the breakdown of the sample indicated by age. Because responses

include all ages from young children to elderly adults, it is likely that individuals in the sample are of different ages, resulting in reliable data.



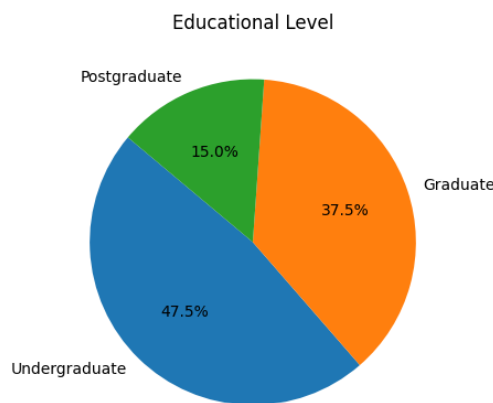
**Figure 2: Age Group**

**Description:** Figure 2 displays the age breakdown of participants as pie charts. In pie charts, it is easier to identify the most common age group.

**Table 3: Educational Level**

Category	Frequency
Undergraduate	95
Graduate	75
Postgraduate	30

**Description:** Table 3 provides a summary of participants who have completed degrees. The data seems to be distributed, indicating that it is valid.



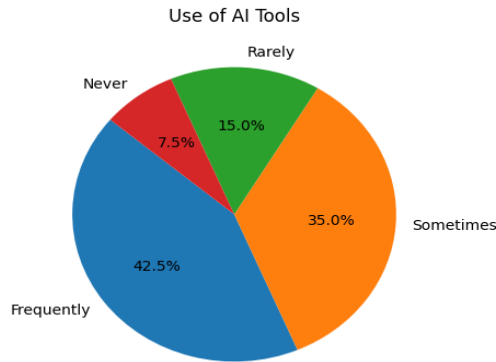
**Figure 3: Educational Level**

**Description:** Figure 3 in terms of percentiles, thus allowing for a visual comparison of the differences in the education levels of the participants.

**Table 4: Use of AI Tools**

Category	Frequency
Frequently	85
Sometimes	70
Rarely	30
Never	15

**Description:** Table 4 provides summarization of how many times the users used the AI tools on average. The data appear to be distributed, indicating that they are reliable.



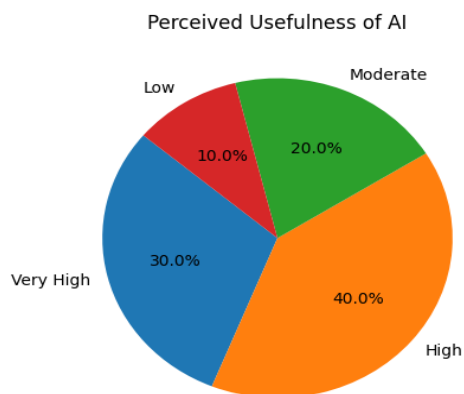
**Figure 4: Use of AI Tools**

**Description:** Figure 4 allowing for a visual representation of how often the AI tools are used.

**Table 5: Perceived Usefulness of AI**

Category	Frequency
Very High	60
High	80
Moderate	40
Low	20

**Description:** Table 5 a summary of the participants' perceptions of how helpful the AI tools were. The data were distributed; therefore, they are also considered reliable.



**Figure 5: Perceived Usefulness of AI**

**Description:** Figure 5 providing a visual comparison of the differences between how

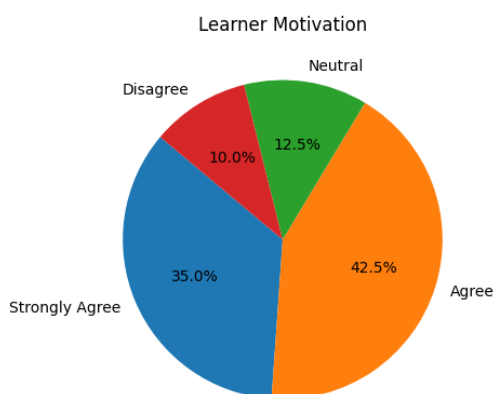
respondents perceived the usefulness of the AI tools.

**Table 6: Learner Motivation**

Category	Frequency
Strongly Agree	70
Agree	85
Neutral	25
Disagree	20

**Description:** Table 6 provides a summary of how the participants believe they are motivated

to learn. All of the data are distributed as well, thereby, establishing reliability.



**Figure 6: Learner Motivation**

**Description:** Figure 6 thereby providing a means by which to visually see motivation levels

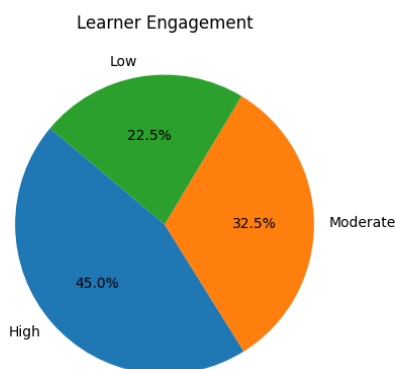
of the participants compared to the other participants.

**Table 7: Learner Engagement**

Category	Frequency
High	90
Moderate	65
Low	45

**Description:** Table 7 Information on the level of learner engagement in units of learning.

Balanced responses create a level of reliability for the data.



**Figure 7: Learner Engagement**

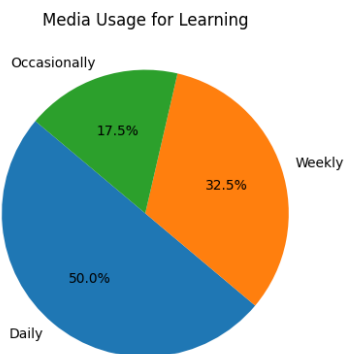
**Description:** Figure 7 the same information but in a pie chart illustrating the percentage/ratio of high, medium and low engagement.

**Table 8: Media Usage for Learning**

Category	Frequency
Daily	100
Weekly	65
Occasionally	35

**Description:** Table 8 Information on the frequency of the use of media for learning.

Balanced responses create a level of reliability for the data.



**Figure 8: Media Usage for Learning**

**Description:** Figure 8 the same information but in a pie chart illustrating the percentage/ratio

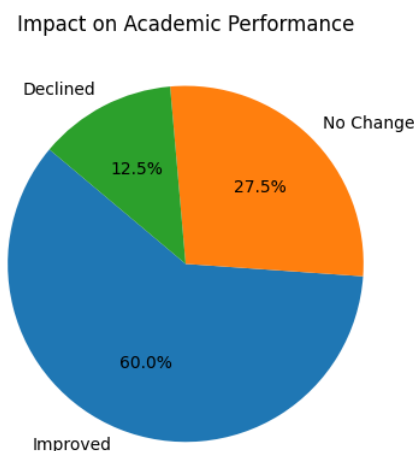
of frequency of learner use of media for learning.

**Table 9: Impact on Academic Performance**

Category	Frequency
Improved	120
No Change	55
Declined	25

**Description:** Table 9 Information on the effects of the use of AI and media use on learner academic performance. The majority of learners

indicated improvement creating a level of reliability for the data.



**Figure 9: Impact on Academic Performance**

**Description:** Figure 9 the same information but in a pie chart illustrating the

percentage/ratio of changes in performance.

**Table 10: Overall Educational Outcomes**

Category	Frequency
Very Positive	75
Positive	85
Neutral	30
Negative	10

**Description:** Table 10 Overall Educational Outcomes of Learners Description of Data: the same information but in a pie chart illustrating the percentage/ratio of positive, neutral and negative educational outcomes.

respondents reported using AI based educational tools on a regular basis which indicates a growing acceptance of AIT in higher education learning environments. The rare majority of respondents perceived AI tools to benefit both personalised learning, timely feedback and improving their understanding of content.

**Findings of the Study**

The study has shown the impact that AI, psychological variables and media have on improving educational achievements. The descriptive analysis found a large number of

The results also found a positive relationship between the psychological factors of learner motivation, engagement and the frequency of

use of AI based educational tools. Respondents who reported higher levels of motivation and engagement reported having better educational experiences as well as improving their academic performance, demonstrating the importance of psychological factors such as motivation to the effectiveness of AI integration within education.

Media use is found to be an important facilitator of the learning process. The majority of respondents regularly engaged in using both digital and social media platforms for educational purposes. Rich media environments are positively correlated to improving learner accessibility, interaction and participation in addition to supporting the impact of AI based learning tools.

Overall, evidence is found which showed that both research hypotheses held true; there is a statistically significant positive relationship between the frequencies of use of AI based educational tools and academic achievement; the use of AI based educational tools and psychological factors of motivation and engagement.

### Conclusion

An investigation has been conducted to assess the impact of Mental Health Affects and Study Techniques Using Technology on Succeeding with your Studies. The results show that when used appropriately, Technology increase Motivation, Engagement, and Academic Achievement; however, Technology is not a solution for improving Learning Outcomes.

Motivation and learner engagement are the two major psychological elements that are identified as influencing how learners interact with (AI) based learning tools. Media (such as video games), provided learners with interactive, readily accessible, and collaborative ways to learn and increase engagement with (AI) based education. Taken as a whole, AI, PSY, and M create a complete educational ecosystem that facilitates effective individualized education (IE) for learners.

In closing, the findings from this study indicate that successful implementation of AI-based education requires a comprehensive strategy incorporating technological advancement, understanding of PSY principles, and the use of M for facilitation of learning. These findings

advantageous for inter-disciplinary researchers studying educational studies, and also provide a framework for creating better AI-based educational models.

### Recommendations

1. Schools need to utilize AI learning tools in ways that are aligned with learners' psychological needs, such as fostering motivation, creating engagement and helping to develop self-regulation skills.
2. Instructional designers and educators must incorporate media-rich approaches that complement their use of AI technologies into their teaching and learning environments.
3. Policymakers and school administrators should provide guidance on how to properly use and apply AI and media technologies in order to ensure ethical and effective use and to ensure that student well-being is prioritized and personally identifiable information protected.
4. Educators should be able to pursue ongoing professional development opportunities to maximize their ability to effectively incorporate AI and media technologies into teaching practices and assess student learning outcomes.
5. Future research should employ contemporary statistical techniques, such as structural equation modeling and longitudinal study designs, to further examine the causal relationships between AI, psychological constructs, media use, and student learning outcomes across a wide range of educational contexts.

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