

# The Intelligent Technical Influence in Chat Generative Pre-Trained among Students for Modern Learning Traits

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**Abstract:** This paper explores the influence of Chat Generative Pre-Trained, which is an Artificial Intelligence tool which provides text-based responses to user queries, on students' learning motivation. The study involved 500 participants who were students in Medan, Indonesia. The research employed a quantitative approach, using surveys and questionnaires to gather data from the respondents. Previous research instruments were adapted with some modifications, which resulting in 10 items for the dependent and independent variables for each. Hypotheses were tested using linear regression, and classical assumption tests, such as multicollinearity, heteroscedasticity, and normality, were conducted. Descriptive statistics, like mean scores, were utilized to assess the extent of Chat GPT usage among students. The results showed that male students displayed a greater propensity for utilizing Chat GPT when compared to their female counterparts. Interestingly, younger students exhibited a higher degree of engagement with Chat GPT in contrast to their older peers. Additionally, the study uncovered a notable, positive, and statistically significant influence of Chat GPT usage on students' motivation to learn.

## 1. Introduction:

Chat GPT, is also known as Chat Generative Pre-Trained Transformer. It is a remarkable advancement in the world of artificial intelligence (AI). Developed by OpenAI, Chat GPT is a language model built upon the GPT-3.5 architecture, and it represents a significant leap forward in AI-driven conversational capabilities. This technology has the power to understand and generate human-like text, revolutionizing various applications across different sectors. At its core, Chat GPT is a sophisticated language model that leverages deep learning techniques to process and generate text-based responses. What sets it apart from previous iterations is its ability to engage in conversations, understand context, and produce coherent, contextually relevant replies. Chat GPT can seamlessly comprehend

the nuances of language, making it a versatile tool for a wide range of applications. One of the most notable aspects of Chat GPT is its ability to provide intelligent responses in natural language, similar to how a human would engage in a conversation. This opens up numerous possibilities across various domains. Artificial Intelligence (AI) has witnessed substantial advancements in recent years, finding applications in a diverse array of industries (Nasim et al., 2022). This progress is reshaping the way people lead their lives and perform their work, and it is anticipated that AI will assume an even more pivotal role in society as research and technological innovations continue to unfold (Lockey et al., 2021).

In the realm of education, AI has been harnessed to bring about transformative changes. It holds the potential to enhance teaching and learning experiences, tailor education to individual needs, streamline administrative tasks, and open up fresh avenues for research (Zhai et al., 2021).

AI technology can play a pivotal role in education by employing intelligent tutoring systems, adaptive learning platforms, automated grading tools, virtual reality simulations, and data analytics (Holmes & Tuomi, 2022). Among these, intelligent tutoring systems, like AI software such as Chat GPT, have the potential to aid students in creating written assignments, providing feedback and revision guidance, and assisting with writing tasks, ultimately helping students improve their skills (Abdullayeva & Musayeva, 2023) and facilitating the learning process (Ausat et al., 2023). Nevertheless, there is an ongoing debate surrounding the adoption of Chat GPT among students (Anders, 2023).

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Were Some proponents argue that the technology can enhance productivity, communication, and learning support, serving as a valuable engagement tool to address challenging educational issues on new platforms (Sandu & Gide, 2019). On the contrary, some critics express concerns about potential overreliance on Chat GPT. There is a concern that students might develop an excessive reliance on AI models, like Chat GPT, for answers and solutions, potentially detracting from the development of critical thinking and problem-solving skills. Such overreliance could impede their capacity to think independently and creativity, attributes that deals on fundamentals for academic & personal development (Fuchs, 2023).

Numerous studies have highlighted the positive influence of AI on effective learning. For instance, Huang et al. (2023), Ali et al. (2023), Lee et al. (2022), Chiu et al. (2023) have pointed out the recommendations of AI tool Chat GPT in its learning capacity & boost the efficiency through videos, also enhancing the capability of students. As a summary, AI serves as a valuable tool for efficient learning through the application of statistical methods, including regression analysis, with accompanying tables and figures to illustrate the research findings.

## 2. Overview of Chat GPT's frame:

Chat GPT, like its predecessor GPT-3, is framed through a two-step process: pre-training and fine-tuning. Here's an overview of how Chat GPT was framed:

1. **Pre-training:** During this initial phase, a large neural network model is trained on a massive corpus of text data. For Chat GPT, this data includes a diverse range of internet text, such as websites, articles, and social media posts. This pre-training process involves predicting the next word in a sentence, which helps the model learn grammar, vocabulary, and general language understanding. The neural network is designed with a deep architecture, typically consisting of multiple layers and millions (or even billions) of parameters. The main goal of pre-training is to enable the model to learn fundamental language skills, including grammar, vocabulary, and general language comprehension. The resulting model becomes a language model, capable of generating coherent text.

### Phases of pre-training:

- **Data Ingestion:** The pre-training process begins with the ingestion of a massive amount of text data from the internet. This dataset typically consists of billions of words and covers a wide range of topics, languages, and writing styles.
- **Next-Word Prediction:** The core task during pre-training is predicting the next word in a sentence.

The model is presented with a segment of text and trained to predict what word should come next based on the context. This process is repeated across the entire dataset. Predicting the next word helps the model learn the structure of language and build associations between words.

- **Deep Neural Network Architecture:** The model used in Chat GPT is a deep neural network with numerous layers and millions (or even billions) of parameters. The deep architecture enables the model to capture complex language patterns and dependencies.
- **Contextual Learning:** The model doesn't simply memorize words or phrases but learns to understand the context in which they appear. It grasps grammar rules, sentence structure, and even semantic relationships between words and phrases.
- **Embedding Information:** The model creates vector representations, or embeddings, for each word or sub word in the dataset. These embeddings encode the semantic and syntactic information of words and are used to make predictions during text generation.
- **General Language Understanding:** As a result of pre-training, the model develops a general language understanding that enables it to generate coherent and contextually appropriate text.

It's important to note that while pre-training equips the model with a strong language foundation, it also exposes it to a vast array of internet content, which includes both reliable and unreliable information. The fine-tuning phase is employed to narrow down the model's behaviour and make it more controlled, safer, and suitable for specific applications. The pre-training phase sets the stage for the model's subsequent fine-tuning, where human reviewers provide guidance to align the model with ethical and practical guidelines.

2. **Fine-tuning:** After pre-training, the model is further refined through fine-tuning. In this stage, the model is trained on a narrower dataset that is carefully generated with human reviewers. These reviewers follow specific guidelines provided by OpenAI. They review and rate model-generated responses for various inputs, and the model is fine-tuned to produce more desirable and safer responses based on this feedback. Fine-tuning helps make the model more controlled and safer for practical applications. It follows the initial pre-training phase, where the model learns general language understanding from a diverse range of internet text.

### Fine-Tuning process:

- **Dataset Preparation:** To fine-tune Chat GPT, a dataset is created that contains text generated by the

model in response to various inputs. This dataset includes both model-generated responses and the corresponding human-generated feedback or ratings. The quality of this dataset is of paramount importance, as it helps the model understand how to respond to different inputs in a more controlled and desired manner.

- **Human Reviewers:** Human reviewers are engaged to assess and rate the model's responses in this specific dataset. These reviewers follow guidelines provided by OpenAI. The guidelines may include instructions on potential issues, desired behaviour, and points to consider when reviewing the responses. Reviewers help determine whether the model's responses align with human values and ethical considerations.
- **Fine-Tuning Iterations:** Fine-tuning is an iterative process. OpenAI maintains an ongoing feedback loop with the human reviewers. There are regular meetings to address questions, provide clarifications, and continuously improve the model's performance. The model is updated based on the feedback and ratings provided by the reviewers. This process helps train the model to produce more controlled, safe, and contextually relevant responses.
- **Balancing Safety and Utility:** One of the key challenges in fine-tuning is balancing safety and utility. OpenAI aims to make the model safe and responsible, while also ensuring that it remains useful and effective for a wide range of applications. This involves addressing issues such as bias, harmful content, and inappropriate responses.

The fine-tuning process is critical for adapting the model's behaviour to specific applications, making it safer and more reliable for practical use. It helps mitigate risks associated with uncontrolled language generation and ensures that the model produces more contextually appropriate and user-friendly responses. OpenAI maintains a strong and iterative feedback loop with its human reviewers, and the process continues to evolve as part of OpenAI's commitment to responsible AI development.

OpenAI maintains an ongoing relationship with human reviewers during the fine-tuning process. There's a feedback loop that includes weekly meetings to address questions, provide clarifications, and improve the model's performance. The aim is to align the model's behavior with human values and ethical guidelines. It's important to note that the process of framing Chat GPT is an iterative one. OpenAI continuously refines the model's behaviour based on feedback from reviewers and user input. The objective is to strike a balance between generating human-like text and ensuring that it aligns with ethical and

responsible use. OpenAI is committed to transparency and addressing concerns about AI behaviour, and it actively works on improving the model's default behaviour to make it as useful and safe as possible in various applications.

### Significance and applications of Chat GPT:

- **Conversational AI:** Chat GPT serves as the foundation for building conversational AI systems. It enables chatbots, virtual assistants, and customer support agents to engage in meaningful conversations with users. Whether it's answering queries, providing information, or even offering emotional support, Chat GPT enhances the quality of interactions in the digital realm.
- **Content Generation:** Content creation is another area where Chat GPT shines. It can generate articles, reports, product descriptions, and other written materials with a high degree of fluency and coherence. This is particularly beneficial for businesses and content creators looking to streamline the content production process.
- **Language Translation:** The language capabilities of Chat GPT make it a valuable asset for language translation. This technology has the ability to rapidly and precisely transform written content from one language into another, effectively dismantling language barriers and promoting seamless cross-cultural communication.
- **Educational Support:** In the field of education, Chat GPT can serve as a personalized tutor. It can assist students with homework, answer questions, and provide explanations on a wide range of subjects. This technology is a valuable learning tool that complements traditional educational methods.
- **Research and Innovation:** Chat GPT also plays a role in research and development. It can assist researchers by providing insights, summarizing documents, and generating hypotheses. This accelerates the pace of innovation across various disciplines.

Despite its remarkable capabilities, Chat GPT is ensuring ethical use, addressing potential biases, and maintaining data privacy are critical considerations when deploying AI language models. Chat GPT represents a significant stride in AI-driven language generation and understanding. Its ability to converse, comprehend context, and produce human-like text is transforming how we interact with technology. As it continues to evolve and find new applications, Chat GPT is poised to become an integral part of our daily lives, enhancing our digital experiences and supporting various industries in their endeavours.

### Learning software tools:

There are numerous software tools and applications that can enhance the learning experience for students of all ages and in various subjects. These tools cater to different learning styles and needs. Here are some of the commonly used software tools for learning:

- **Learning Management Systems (LMS):** LMS platforms like Moodle, Canvas, and Blackboard provide a centralized place for educators to manage and deliver course content, assignments, quizzes, and discussions. Students can access resources and interact with their instructors and peers.
- **Chat GPT:** This AI tool can be considered a type of learning software, although it serves a specific role in enhancing the learning experience rather than being a comprehensive learning platform. Chat GPT is primarily a language model developed by Open AI that can engage in text-based conversations and provide information, explanations, and support on various subjects like Answering Questions, Tutoring, Content Generation, Language Learning, Research Assistance were Students and educators uses Chat GPT for educational purposes.
- **Video Conferencing and Webinar Tools:** Applications like Zoom, Microsoft Teams, and Google Meet enable virtual classrooms, webinars, and online meetings, fostering remote and distance learning.
- **Online Tutoring Platforms:** Services like Khan Academy, Coursera, and edX offer interactive lessons, videos, and quizzes on a wide range of subjects. They can also provide feedback and personalized learning paths.
- **Language Learning Apps:** Duolingo, Rosetta Stone, and Babbel are examples of apps that help users learn new languages through gamified lessons and exercises.
- **Math and Science Software:** Tools like GeoGebra, Wolfram Alpha, and Desmos assist students in solving complex math problems and visualizing mathematical concepts. Simulators and interactive software also support science learning.
- **Note-Taking Apps:** Software such as Evernote, OneNote, and Notion help students organize class notes, lecture recordings, and research materials.
- **Mind Mapping Software:** Tools like Mind Meister and X Mind allow students to create visual maps to brainstorm ideas, outline projects, and study concepts.
- **Coding and Programming Environments:** Platforms like Scratch, Python, and Code academy introduce students to coding and programming, supporting computer science education.

- **Flashcard Apps:** Apps like Anki and Quizlet enable students to create and study digital flashcards for memorization and self-assessment.
- **Educational Games:** Platforms like Kahoot! and Quizizz gamify learning by turning quizzes and assessments into competitive, interactive experiences.
- **STEM Education Tools:** Robotics kits, 3D modelling software, and engineering simulations encourage hands-on learning in science, technology, engineering, and mathematics.
- **Virtual Reality (VR) and Augmented Reality (AR) Apps:** VR and AR applications offer immersive experiences for subjects like history, geography, and science, making learning more engaging.
- **Research and Citation Tools:** Software like Zotero and EndNote help students manage and cite sources for research projects and papers.
- **Art and Creativity Software:** Tools like Adobe Creative Cloud, Canva, and Tinker cad support artistic and creative learning in graphic design, music, and 3D modelling.
- **Collaboration and Productivity Tools:** Applications such as Google Workspace (formerly G Suite), Microsoft Office 365, and Slack promote collaboration, document sharing, and project management.
- **Online Resources and Databases:** Access to digital libraries, academic databases, and research resources such as JSTOR, Google Scholar, and PubMed.
- **Accessibility Tools:** Software like Read & Write and Kurzweil 3000 assist students with disabilities by providing text-to-speech, speech-to-text, and other accessibility features.
- **eBooks and e-Readers:** Digital books and e-Readers, such as Kindle and Adobe Digital Editions, allow students to access a vast library of books and reading materials on various devices.

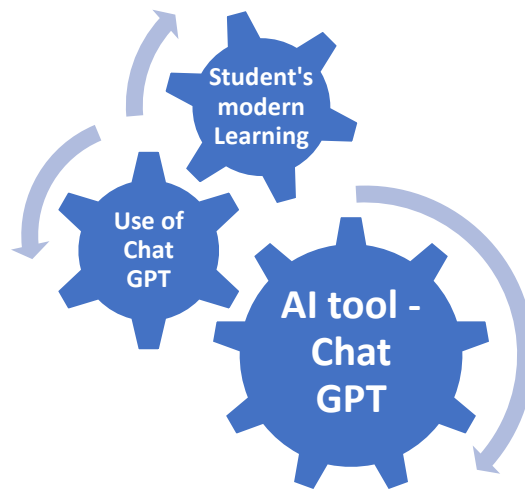
These tools can be used in a variety of educational settings, from traditional classrooms to online courses and self-paced learning. The choice of software depends on the specific learning objectives and individual preferences of students and educators.

#### **Chat GPT's assist on educational support:**

On a comparison with many learning & educational software and tools we have considered only Chat GPT in our research paper. Were Chat GPT can provide educational support in several ways, making it a valuable tool for both students and educators. The following details shows how Chat GPT can assist with educational support:

- **Answering Questions:** Chat GPT can answer a wide range of educational questions. Whether it's a math problem, a historical fact, or an explanation of a scientific concept, Chat GPT can provide quick and accurate answers.
- **Homework Assistance:** Students can use Chat GPT to get assistance with their homework. The model can explain concepts, offer step-by-step solutions to problems, and even provide writing tips for essays and reports.
- **Tutoring:** Chat GPT can act as a virtual tutor, offering personalized explanations and guidance on various subjects. Students can receive one-on-one tutoring in areas where they need additional support.
- **Language Learning:** Chat GPT can help language learners by offering translations, providing practice sentences, and explaining grammar rules.
- **Research Assistance:** Chat GPT can assist with research by summarizing articles, offering suggestions for further reading, and helping students formulate research questions.
- **Brainstorming and Creativity:** Students can use Chat GPT to brainstorm ideas for essays, projects, or creative writing. It can suggest topics, titles, and even help generate content.
- **Test Preparation:** Chat GPT can help students prepare for tests by offering practice questions, explanations of correct answers, and study tips.
- **Accessibility:** Chat GPT can be a valuable resource for students with disabilities. It can provide text-to-speech services, assist with reading and writing, and offer support for various learning needs.
- **24/7 Availability:** Chat GPT is available around the clock, making it a convenient resource for students who need help outside regular school hours.

It's important to note that while Chat GPT can be a valuable educational support tool, it should be used as a complement to traditional learning and not as a replacement for teacher guidance and in-depth instruction. Additionally, educators and students should critically evaluate the information provided by Chat GPT and verify it as needed, as AI models may not always have access to the most up-to-date or context-specific information.



**Fig 1:** Chat GPT model's Framework

**HYPOTHESIS:**

Using Chat GPT in an educational context can provide numerous benefits, especially in terms of boosting students' motivation to learn, as elaborated in the preceding section. The outline of the concept of this paper is shown in Figure 1. This study has formulated that the hypothesis that will be subject to investigation through regression analysis, which is as follows:

H0: No effectiveness in students learning using Chat GPT.

H1: Effectiveness in students learning using Chat GPT.

**Population sample:** The population survey from a specific Countries like Indonesiq, Medan based on comparison of students effective learning from the learning tool Chat GPT. Around a sample size of more over 500 rough samples are collected from these countries for research purpose as data sets. In this paper we consider about the effective learning on high school students. From table 1 demographic characteristic of the students are shown. Quantitative approach of studies is followed by employing with the numerical data. Statistical methods are considered for this research purpose (Lubi et al. 2021).

**TABLE 2a**

Variables – (The use of Chat GPT) & Item codes (USE)	Questionaries
USE01	1. Do you agree Chat GPT powered by artificial intelligence?
USE02	2. Do you agree Chat GPT understand and generate text in multiple languages?
USE03	3. Do you agree Chat GPT continually improving through updates and training?
USE04	4. Do you agree Chat GPT have the capability to engage in real-time conversations?
USE05	5. Do you agree Chat GPT used for a wide range of applications, including customer support?
USE06	6. Do you agree Chat GPT designed to assist with natural language understanding and generation?
USE07	7. Do you agree Chat GPT respond to a variety of questions and prompts?
USE08	8. Do you agree Chat GPT's knowledge based on a vast amount of text from the internet?
USE09	9. Do you agree Chat GPT accessible to the public for various tasks and interactions?
USE10	10. Does Chat GPT have the potential to evolve and adapt to new challenges and tasks over time?

**TABLE 2b**

Variables – (Students' learning motivation) & Item codes (MOV)	Questionaries
MOV01	1. How is Chat GPT different from traditional chatbots?
MOV02	2. Can Chat GPT provide medical or legal advice?
MOV03	3. What are the potential privacy concerns when using Chat GPT for personal conversations?
MOV04	4. Is Chat GPT capable of generating code for software development?
MOV05	5. How does Chat GPT handle controversial or sensitive topics in its responses?
MOV06	6. Can Chat GPT create poetry or artistic content?
MOV07	7. Are there limitations on the length of text that Chat GPT can generate in one response?
MOV08	8. How does Chat GPT deal with multiple questions or prompts in a single input?
MOV09	9. Can Chat GPT assist in language translation for professional documents?
MOV10	10. What are some common use cases for Chat GPT in business and education?

Through questionaries a huge amount of data set has been is collected for this study purpose. Dependent variables were adopted from (Lubi et al. 2017) Independent variables a total of ten items are extracted and adopted

from Shofan (2023). Data sets were collected on the survey scale options like Strongly Disagree, Disagree, Neutral, Satisfying, strongly disagree. Which are represented in table 2(a & b).

**Table 3:**

The Validity Test Result	Mean USE	Mean MOV
USE01	USE1 0.86**	
USE02	USE2 0.79**	
USE03	USE8 0.75**	
USE04	USE4 0.82**	
USE05	USE5 0.79**	
USE06	USE6 0.88**	

USE07	USE7 0.88**	
USE08	USE8 0.76**	
USE09	USE9 0.86**	
USE10	USE10 0.87**	
MOV01		MOV1 0.83**
MOV02		MOV2 0.75**
MOV03		MOV8 0.83**
MOV04		MOV4 0.79**
MOV05		MOV5 0.88**
MOV06		MOV6 0.77**
MOV07		MOV7 0.84**
MOV08		MOV8 0.84**
MOV09		MOV9 0.84**
MOV10		MOV10 0.88**

**Table 3.** The Validity Test Result

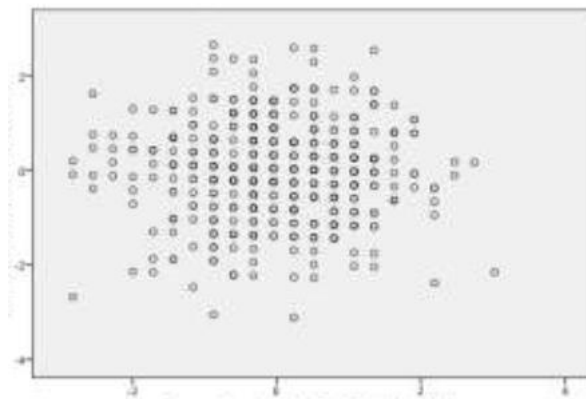
**Table 4:**

Variable	Total Item	Cronbach Alpha ( $\alpha$ )	Collinearity-Tolerance	Collinearity - VIF	Kolmogorov-Smirnov Score
USE	10	0.821	0.67	7.13	0.0151
MOV	10	0.861	0.49	6.99	

**Table 4.** The Reliability Test Result & Multicollinearity and Normality Test Result

This validity survey test is collected and examined with the correlation between the items in both mean score & instruments. As indicated in Table 3, each variable displayed a strong and statistically significant positive

correlation with the mean score. By using Cronbachs Alpha, is used for reliability testing where a value above 0.7 is typically considered indicative of good reliability (Black & Babin, 2019).



**Fig 2.** Scatter Plot

As presented in Table 4, both variables exhibited favourable Cronbach's Alpha values, with 0.866 as dependent and 0.82 for independent variables which has good reliability. In addition to validity and reliability, the

study employed various classical assumption tests. By using Kolmogorov-Smirnov test normality test was conducted.

**TABLE 5:**

VARIABLE	CATEGORY	MEAN SCORE
Age	17	3.703
	18	3.484

School grade	11 <sup>th</sup>	3.478
	12 <sup>th</sup>	3.328

**Table 5.** Usage level of Demography

while the VIF and Tolerance testing was considered in multicollinearity test this identifies the potential issues of this model which results in the test values also shown in table 6 and 7 and also to examine heteroscedasticity of the models. This study employed specific criteria to assess multicollinearity in the regression model. And the result is visualized through the figure 2. The value of Tolerance for every variable exceeds 0.10, and VIF value should be below 10 to pass the multicollinearity test in a regression model (Lubis et al., 2021). From table 4, both the Tolerance values and VIF values for each variable surpass these thresholds. Consequently, it could be concluded that this model successfully avoids the problems occur due to multicollinearity. Additionally, Table 4 indicates that 0.015 is the score of Kolmogorov-Smirnov score, it falls down the significance level of 0.05. This result suggests that the model also clears the normality test. Moreover, as depicted in Figure 2, there is no discernible pattern in the scatter plot, and the data points are widely dispersed. This observation indicates that the model also clears the heteroscedasticity test.

### 3. Results:

#### The degree of Chat GPT used by individuals or students:

This research study conducted an analysis to investigate the usage of the Chat GPT among respondents. The mean

TABLE 6:

MODEL	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate
1	.757 <sup>a</sup>	.572	.589	.65080

**Table 6.** The R value table

TABLE 7:

MODEL	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
1 (Constant mean)	0.521	0.572	-	24.020	0.00
	-0.56	0.044	-0.57	-1.273	0.023

**Table 7.** The Table of Coefficients

The data presented in Table 7 reveals important information about the regression analysis:

1. R<sup>2</sup> (R-squared): The R<sup>2</sup> value is 0.573, indicating that approximately 57.3% of the variance in students' learning motivation can be explained by the usage of this tool. In other words, Chat GPT has a substantial influence on

scores of the "USE" variable were examined across different demographic factors, including age, gender and grade level, on evaluating the Chat GPT use. Table 5 provides a summary of the Chat GPT utilization level based on these factors.

Based on the data presented in Table 5, the study found the following insights regarding Chat GPT usage among the respondents:

1. Gender: Male respondents had a higher mean score (3.849) in terms of Chat GPT usage compared to female respondents (3.081).
2. Age: Among different age groups, younger age exhibited the highest mean score for Chat GPT usage (3.938). In contrast, students aged 17 years old had a slightly lower mean score (3.703), while the oldest students among the respondents, who were not specified but likely older than 17, had the lowest mean score (3.484).
3. Grade Level: Chat GPT usage varied across grade levels, with students of 10<sup>th</sup> grade having the score (3.478), followed by 11<sup>th</sup> grade students (3.328) and 12<sup>th</sup> grade students (3.328).

These findings provide insights into how Chat GPT usage differs based on gender, age, and grade level among the study's respondents.

student's effective learning, with the remaining variance attributed to other factors not covered in this research.

2. Beta (β) values: Beta values represent the strength and direction of the influence of independent variables on the dependent variable. Beta value is absolutely higher, which indicates a significant role of independent variable in explaining the dependent variable. In this context, Chat



GPT appears to play a notable role in explaining students' learning motivation, although the specific beta values are not provided in the text.

3. Significance (p) values: Significance values (p) are used to assess whether the hypotheses are accepted or not. The test result is considered significant when the p-value is below the specified alpha ( $\alpha$ ) level, often set at 0.05. The specific results of the significance test are not detailed in the text but are provided in Table 8.

These findings suggest that Chat GPT significantly influences students learning, as indicated by R-squared value and beta values. However, the specific significance test results in Table 8 would provide more information about the statistical significance of the model and the relationships between variables.

Based on the information provided in Table 8 and the subsequent analysis:

- The usage of Chat GPT has a statistical and positive significant effect on students' effective learning, as indicated by the beta ( $\beta$ ) value of 0.521 and the significance level (p) of 0.023, which is less than the commonly used significance threshold of 0.05.

- Consequently, H1 is accepted, signifying that Students who actively engage with Chat GPT often encounter a boost in their learning motivation.

- It's also suggested that younger students are more likely to utilize the AI tools & technology like Chat GPT for educational activities, although this inference is not directly related to the previous statement about Chat GPT's impact on learning motivation.

These findings support the idea that Chat GPT can positively influence students' learning motivation and provide support for the use of such AI technology in education.

#### 4. Discussions:

##### The extent to which students utilize Chat GPT:

Data's presented in Table 5 indicates certain trends related to the usage of Chat GPT among different demographic groups:

1. Gender: The survey findings indicate that there is a greater propensity Male students tend to use Chat GPT as an educational tool when contrasted with their female peers.

2. Age: younger students often have a more innate familiarity with technology, having grown up in a digital age where AI applications have become increasingly prevalent. They tend to adapt quickly to new tools, including AI-driven educational assistance like Chat GPT, as it aligns with their digital fluency and learning preferences.

3. Grade Level: Lower-grade students (e.g., 10th grade) exhibit a higher level compared to their senior counterparts (11th and 12th grade students).

In conclusion, the data implies that younger students are more likely to use AI technology, such as Chat GPT, for their learning activities, and this trend is reflected in higher usage rates among male students and lower-grade students. However, it's important to note that these observations are based on the specific sample and may not necessarily reflect broader trends in all educational contexts.

The study explores the connection among the utilization of Chat GPT and students' learning:

It appears you'd like to explore the research investigates the correlation between Chat GPT usage and students' motivation to learn. This relationship has been discussed in the context of your previous text, indicating that Utilizing Chat GPT has a great impact on enhancing students' learning. As a summary, this research findings suggest that the more students use Chat GPT, the higher their learning motivation tends to be. This positive relationship is supported by statistical analysis and the acceptance of Hypothesis 1.

#### 5. Conclusion

In recent years AI tools have made great impact on new advancements and its applied across a multitude of industries and domains. Within the field of education, AI holds the promise of reshaping the educational landscape by enhancing the quality of personalizing teaching & learning abilities. Many roles and administrative tasks are carried out using AI technics. AI technologies, including intelligent tutoring systems like Chat GPT, have the capacity to aid students in various ways, such as assisting with assignment writing, providing feedback, and offering revision guidance to enhancement in education & learning. This study also reveals that male students tend to use Chat GPT more frequently than their female counterparts, and younger students exhibit a higher utilization rate on comparison.

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