AI Application Dependency and Comprehension Skills of Humanities and Social Sciences Students

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ABSTRACT

The growing reliance on artificial intelligence (AI) applications raises concerns about declining comprehension and critical thinking skills. This study examined the relationship between AI dependency and comprehension skills among HUMSS students using a descriptive-correlational design. Data from 300 Grade 11 and 12 students were analyzed using Mean and Pearson's correlation, revealing a strong positive relationship—suggesting AI supports rather than weakens comprehension. These findings challenge the common belief that using AI weakens thinking skills and suggest that AI may play a more supportive role in learning. The study highlights the importance of understanding how technology influences education and provides ideas for future research on AI in learning. It is recommended that schools create an environment that fosters these elements, alongside AI use, to ensure students' overall academic growth. Encouraging group work, providing mentorship opportunities, and promoting a supportive classroom atmosphere can enhance the benefits of AI tools. Furthermore, future research should employ a mixed-method approach to gain deeper insights into the nuances of AI's impact on comprehension and critical thinking. Additionally, a longitudinal approach is necessary to track changes in students' cognitive skills over time, ensuring a more comprehensive understanding of AI's long-term effects on learning.

Keywords: AI application dependency, Comprehension skills, Humanities and Social Sciences students

THE PROBLEM AND ITS SCOPE

Comprehension skills is one of the most complex cognitive processes that humans perform and makes it difficult to teach, assess and research (A.Elleman & E.Oslund, 2019). Based on the news article Chi (2024), 90% of Filipino children aged 10 struggles to understand simple text. According to the study of Abu Abeeleh et al. (2021), students have high estimation to certain problems they encounter in comprehension as a result of the complexity of the texts, anxiety, and word recognition (decoding).

Globally, the inability of students to comprehend has also been observed. In the United States, a comprehensive study revealed that twothirds of students are unable to read proficiently by the fourth grade, as reported by the National Assessment of Educational Progress in 2022. This deficiency in comprehension skills has a ripple effect, undermining progress in other subjects and contributing to the academic achievement gap (Gryffin, 2023). In Italy, based on the research of Shea and Ceprano (2017), research indicates that about 11% of Italian children aged 7-11 demonstrate low comprehension levels. Similarly, in the study of De Oliveira et al. (2023), in Brazil, the results from the International Student Assessment Program (PISA) indicate that a significant portion of Brazilian students struggle with comprehension. In the 2018 assessment, only 24.5% of Brazilian schoolchildren reached level two, which is the minimum proficiency for reading.

In the Philippines, at least 90% of Filipino children aged 10 struggles to read or understand simple text, according to the World Bank's 2022 data on learning poverty. But even before the COVID-19 pandemic set back students' learning, the pre-pandemic figure pegged learning poverty in the Philippines at 70% (Chi, 2024). The Philippines has consistently ranked low in reading comprehension in international assessments. In the 2022 Program for International Student Assessment (PISA), the country placed 76th out of 81 countries, showing minimal improvement since 2018 when it ranked second lowest.

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Numerous researches are conducted on comprehension skills yet accurate effects of these behaviors on senior high school learners are unknown. The imbalance of this highlighted the urgency to create and evaluate focused interventions to address this low comprehension skills. Wide vocabulary, learn about the world, understand complex concepts and improved understanding or comprehension depend on addressing this issue. In order to find practical approaches for intervention and development, the purpose of this study is to examine the comprehension abilities of senior high school students.

Significance of the Study

This research is made with the aim to provide crucial information and knowledge regarding the ai application dependency and comprehension skills of students. The researchers believed that the ability to understand the text or message is important. The result of the study may give advantage to the following:

School Administration.

This may help them use the study's findings to keep reminding and encouraging students to learn answering their school works independently. School heads may also implement school policies such as no gadgets allowed inside the school premises.

Teachers.

The data from this research may help guide teachers on how to handle students who submit their outputs using AI application or have plagiarized. This will also enable teachers to improve their way of teaching.

Parents and Guardians.

Involvement of parents and guardians in education is important because this could help enhance their child's academic success and emotional well-being. Their awareness about the enhancement of technology is crucial so they can guide their child and teach them how to use it in a manner way.

Students.

The respondents will benefit from improved comprehension skills. This will help them reduce the time spent decoding statements or text and enhance their logical thinking in analysis, leading them to have a better understanding of the text.

Future Researchers.

This study serves as valuable reference for future researchers, providing a foundation for further investigation and contributing to the existing body of knowledge in education.

Statement of the Problem

The study aims to determine the significant relationship between AI application dependency and comprehension skills among Humanities and Social Sciences students. Specifically, it could answer the following questions:

1. What is the level of AI application dependency among Humanities and Social Sciences students in terms of:
   1.1 Increased Automation
   1.2 Error Reduction; and
   1.3 Dynamic Adjustment?
2. What is the level of comprehension skills among Humanities and Social Sciences students in terms of:
   2.1 Decoding
   2.2 Fluency; and
   2.3 Retell?
3. Is there a significant relationship between AI application dependency and comprehension skills among Humanities and Social Sciences students?

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Hypothesis

This study was tested at 0.05 level of significance.

H_o: There is no significant relationship between technology reliance and comprehension skills among Humanities and Social Sciences students.

REVIEW OF RELATED LITERATURE

The growing reliance on AI application among students, particularly in the Humanities and Social Sciences, has become a significant focus of educational research. This review of literature explores how AI application dependence impacts students' comprehension skills, including decoding, fluency, and retelling. As digital tools and resources become increasingly integrated into learning environments, understanding their effects on these critical cognitive abilities is essential for educators and policymakers.

AI Application Dependency

Artificial intelligence (AI) is rapidly becoming a part of our everyday lives. From smartphones to self-driving cars, AI is already having a major impact on the way we live and work. And as AI continues to develop, it is likely that our dependence on it will only grow stronger. There are many reasons why we are becoming increasingly dependent on AI. One reason is that AI is becoming more powerful and capable. AI systems are now able to learn and make decisions on their own, which means that they can take on tasks that were once the exclusive domain of humans. Another reason for our growing dependency on AI is that it is becoming more affordable. The cost of developing and deploying AI systems has been steadily decreasing, which means that more and more businesses and organizations are able to adopt them (Outschoorn, 2023).

Increased Automation. Automation is the use of machines to accomplish jobs that were previously performed by humans or, more recently, tasks that would otherwise be impossible. Although the term mechanization is sometimes used to refer to the simple substitution of human labor with machines, automation normally refers to the integration of machines into a self-governing system. Automation has transformed the sectors in which it has been implemented, and there is hardly a facet of modern life that has been unaffected by it. It was in around 1946 that the term ‘automation’ was first employed by the automotive industry and this referred to the increasing use of automated machines and controls in mechanized production lines. The term is said to have been invented by D.S. After Harder who was at the time engineering manager at Ford Motor Company. The term is popularly associated with the manufacturing sector but even goes beyond it with regards to many systems where there is a replacement of human as well as cognitive effort with mechanical, electric or computerized processes (Groover, 2024).

Recent developments in automation technologies can result in situations where operators are rendered ineffective due to overreliance on automated equipment. Sufficient evidence, on the contrary, has demonstrated that opportunities of constant operation for an operator and their enhancement by automation can elicit an agentic state. However, it is quite difficult to ensure the operator's control over the highly automated tasks when such advanced tools completely remove the operator from the control loop. In demonstrating a tracking task where participants were required to control the cursor with a joystick to keep track of a moving target at set levels of automation, we show the changes in sense of agency and tracking performance of participants with respect to the levels of automation. The finding was that their sense of agency was improved with limited automation but began to decrease with higher levels of automation above 90%. More generally, this implies that giving operators minimal regulatory control over the non-stop functioning of an automated machine would be enough to keep the operators motivated to perform while at the same time bringing out the most enhancement in performance (Nature, 2024).

Error Reduction. The error reduction indicates how much the actual grouping has reduced the error. As the number of groups in a particular Channel Clustering Grouping run increase, it means the allotment of a store to a group is more precise and accurate. In the other way where the number of groups is less, the allotment of a particular store most likely will not be as precise as the earlier case. Hence in the second case, the error is high

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and the error reduction for the run is low. Error reduction is just a measure for a user to understand how best the stores are allotted into different clusters or how best the clusters are formed, the larger the number the better the grouping run (BY Support, 2016).

Lack of sleep before and after encoding may negatively impact memory for recently learnt content, according to research. Nevertheless, there are currently no quantitative evaluations of these impacts' magnitude. The effects of complete, acute sleep deprivation (i.e., at least one full night of sleep deprivation) on memory were examined in two meta-analyses of research published between 1970 and 2020: one for deprivation that took place before to learning, and one for deprivation that took place following learning. The effect on memory of sleep deprivation following learning was linked to Hedges' g = 0.277, 95% CI [0.177, 0.377]. The effect was modified by whether testing was conducted just after deprivation or after recovery sleep, with immediate tests showing noticeably greater effects. Additionally, procedural memory tests revealed much greater effects as opposed to declarative memory exercises. Prior to learning, the effect of sleep deprivation was linked to Hedges' g = 0.621, 95% CI [0.473, 0.769]. Both meta-analyses showed considerable publication bias, according to Egger's tests for funnel plot asymmetry. In the majority of the examined studies, statistical power was extremely poor. To more accurately estimate the underlying effect sizes, highly powered, preregistered replications are required (Newbury et al., 2021).

Dynamic Adjustment. Dynamic adjustment is a procedure in which numerical algorithms update their parameters dependent on the behavior of the function being integrated. This enables more efficient and precise calculations, particularly when dealing with complex integrals with varied degrees of difficulty across domains. The precision of numerical approximations is improved by employing approaches that dynamically alter intervals or sample locations based on error estimations (Dynamic Adjustment - (Computational Mathematics) - Vocab, Definition, Explanations | Fiveable, 2015.)

Lo et al. (2016) during the manipulation period, the SR group demonstrated incremental deterioration in sustained attention, working memory and executive function, increase in subjective sleepiness, and decrease in positive mood. Subjective sleepiness and sustained attention did not return to baseline levels even after 2 recovery nights. In contrast, the control group maintained baseline levels of cognitive performance, subjective sleepiness, and mood throughout the study. Incremental improvement in speed of processing, as a result of repeated testing and learning, was observed in the control group but was attenuated in the sleep-restricted participants, who, despite two recovery sleep episodes, continued to perform worse than the control participants.

Comprehension Skills

Lastiri (2022), lists several causes of comprehension failure. After learning about these causes, students should be able to apply the proper comprehension methods to determine the remedies that will help them succeed in understanding the text or message. Limited perceptual span, poor eye movement, poor attention, and concentration habits, lack of practice, lack of interest, poor assessment of important and less important parts, and reasonable wholesome remembering as opposed to selective remembering are the main factors that impede comprehension.

Kelly (2024), lists practical advice and techniques that educators can impart to their students in order to help them understand a text better. It's a good idea to teach all readers to generate questions at the end of a chapter or passage rather than just skimming through them. They may ask these regarding recent events or speculate about potential future events. Stopping while reading aloud to pupils is a good way to make sure they understand. Students should read texts with paper and pen in hand and take notes or annotate them. After that, they can make notes about what they comprehend or predict. They are able to jot down inquiries. All the highlighted terms in the chapter as well as any new terms they need to define can be added to a vocabulary list. Use Context Clues: Students must make use of the cues that authors leave in their works. Pupils might have to examine context clues, which are words or phrases that come right before or after a word they might not be familiar with.

Decoding. Orpi (2024), developed a list of techniques to enhance decoding proficiency. For simple words like VC and CVC words, segmenting and blending are sufficient; however, students working with more complex

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words will probably need to use additional strategies. The foundation of learning to read and spell is phonological awareness. Students cannot sound out a word if they are unaware of the sounds that grapheme produce.

Fluency. According to Matters (2023), fluency is the ability to read with speed, accuracy, and proper expression. In order to understand what they read, both students must be able to read fluently, whether they are reading aloud or silently. When reading aloud, fluent readers read in phrases and add intonation appropriately. Fluent reading supports understanding meaning but kids also need instruction that maximizes comprehension (Jiban, 2024).

Retell. Retelling is the act of recollecting a story's events beginning, middle, and end in chronological order. Comprehension is the process of understanding what is being read and expanding on the knowledge gained by making connections between it and other stories or actual occurrences. Retelling is used to help with this process. By having the person retell the story and use vocabulary from the story, retelling helps to expand vocabulary (Monistere, 2024).

Relationship between Technology Reliance and Comprehension Skills

The more you think about the relation between the dependence on the applications of AI and the levels of comprehension skills, the more intricate it becomes because the use of AI tools can facilitate cognitive processes, and at the same time, impede them. For instance, the emergence of AI applications has eased the burden of searching for information, comprehension and engagement with the material through providing brief, focused explanations, breaking down difficult ideas, and offering engaging methods of learning. In contrast, over-reliance on the above technologies can hamper the user's critical and analytical thinking skills because they are less likely to engage fully in thinking and solving of issues. It is therefore important to integrate the use of AI in improving education and development of comprehension skills which might be detrimental and as a result give rise to such imbalanced gender roles.

Synthesis

The literature focuses on the influence of Ai application dependency on students' comprehension skills. Nowadays, students are relying on the digital tools for learning, their ability to comprehend texts and retell information are developed. When Ai is used effectively in education, it helps students enhance their comprehension skills.

Conceptual Framework

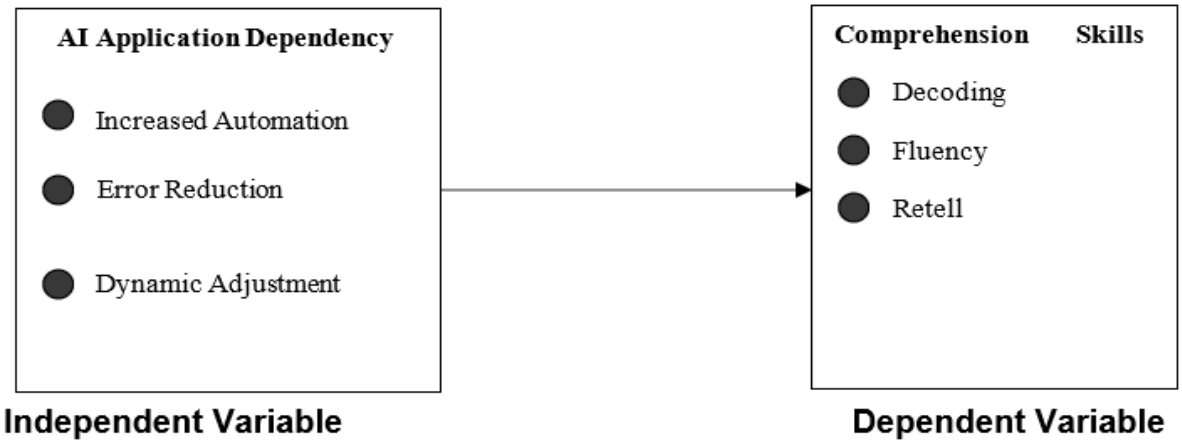

Figure 1: Conceptual Framework of the Study

The independent variable in this study is AI application reliance, which will be assessed in three ways: user engagement, cognitive burden, and adaptability in learning. User involvement relates to how much students rely on AI systems for various academic tasks, which may affect their understanding skills. Cognitive load is the assessment of how AI applications affect the mental work necessary to comprehend and retain information, which might influence learning outcomes. Adaptability refers to students' ability to change their learning tactics

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in response to input from AI applications, which may improve or hinder their knowledge. According to research, the integration of AI tools has a considerable impact on cognitive functions such as information retention and critical thinking (Zhai et al., 2024).

The dependent variable is comprehension skills which include the following indicators: decoding, fluency, and retelling. Comprehension therefore is a process of getting involve with an understanding and interpretative result as a result of reading, it is therefore an achievement. For it is an interplay between the reader and the content, that takes place through thinking and rationality. In terms of the cognitive components required by the student to understand text Pajor (2023), was of the opinion that students had to decode words and the referents of those words. Comprehension skill involves decoding, fluency, and retell. According to What Is Decoding in Reading? | the Secret Stories (2019), decoding is a major reading skill, which comes when you take the sounds in words apart (segmenting), blending parts together. Decoding includes the ability to know letter-sound relationships and be able to use this knowledge effectively in reading written words. Fluency involves the ability to read smoothly and accurately, as well with proper expression. Competent readers effortlessly pick up words, not having to reinvent the process of decoding a word. Fluency is a necessary function that serves as the bridge to help them move from guided word recognition activities into understanding.

This does give students the time to concentrate on what is being said in the text. They can relate what they are reading to their own prior knowledge. As a result, they can focus on understanding cited by Hoffman (2021). Lastly is retell. Retell (Mat, 2024) is a brief and uniform practice students are able to execute in order to remember things of text (word recall), sequence the texts (sequence ordering) and summarize some or all parts (summary making). During this routine, and these skills of retelling valuable students learn to guide the way for key comprehension or critical thinking like skill as identifying important details in order, understanding text structure. making predictions inference question and summarizing condensed central idea.

The contention posits that dependency on AI applications may significantly impact the comprehension skills of students at Carlos P. Garcia Senior High School. Students with lower comprehension may face challenges in decoding, fluency, and retelling abilities. Additionally, reliance on AI applications has become a crucial aspect of students' academic lives, influencing their study habits. While incorporating AI into the classroom has demonstrated benefits, such as increased student engagement and enhanced learning experiences, it also presents certain drawbacks. Overall, understanding the relationship between AI application dependency and comprehension skills is essential for optimizing educational outcomes (Carstens et al., 2021).

METHOD

This chapter outlines the study’s methodology, which includes research design, respondents of the study, sampling design, research instrument, data gathering procedure, data analysis, and ethical considerations.

Research Design

This study will utilize a non-experimental quantitative approach to collect data. Non-experimental research is characterized by observing and measuring variables as they naturally occur without manipulating them. This approach is ideal for examining inherent variables that cannot be controlled or altered, such as AI application dependency and comprehension skills.

This study will use a descriptive quantitative research design, specifically a descriptive correlational design. According to Johnson and Christensen (2019), the purpose of a correlational study is to assess whether and to what extent there is a relationship between two or more variables. Additionally, Patel and Gupta (2021), define correlation as a statistical technique used to identify and describe patterns of relationships between variables.

Research Locale

The study will take place in public senior high schools located in Clusters 1 Division of Davao City, Region XI. These schools are known for their emphasis on incorporating technology into their educational programs, making them suitable for investigating students' AI application dependency and how it affects their learning.

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Davao City was chosen as the research site because of its substantial investment in educational technology and resources that promote digital literacy and learning improvement. Furthermore, the city is highly urbanized, providing a sophisticated infrastructure that facilitates the integration of technology in education.

Research Respondents

In this study, the respondents will be the HUMSS learners of Carlos P. Garcia Senior High School, Davao City. The researchers select this strand to be part of the study since they require higher thinking ability which is necessary for understanding complex texts. Their strand consists more of situational studies. It's crucial for them to exercise their mentality.

Sampling Design

This study will use simple random sampling design in which the researcher randomly selects a subset of participants from a population. This method is the most straightforward of all the probability sampling methods, since it only involves a single random selection and requires little advance knowledge about the population. Because it uses randomization, any research performed on this sample should have high internal and external validity, and be at a lower risk for research biases like sampling bias and selection bias (Thomas, 2020).

Research Instrument

The two variables of this study will be measured using two instruments:

The AI application dependency questionnaire consists of three (3) domains: Increased automation, error reduction, dynamic adjustment and comprehension skill questionnaire which consists of three (3) domains such as decoding, fluency, and retelling. The items were restructured to make the instruments more applicable to the current local educational context.

For validation, the survey questionnaire will be forwarded to three (3) experts. A validation sheet will be used by the three (3) experts to rate the survey questionnaire. All of the experts' opinions and recommendations will be followed. Following the validity test, the survey questionnaire will be piloted among Humanities and Social Sciences students. A survey questionnaire is a research tool featuring a series of questions used to collect useful information from respondents. Questionnaires are popular research methods because they offer a fast, efficient, and inexpensive means of gathering large amounts of information from sizeable sample volumes. These tools are particularly effective for measuring subject behavior, preferences, intentions, attitudes, and opinions. Their use of open and closed research questions enables researchers to obtain both qualitative and quantitative data, resulting in more comprehensive results (*What Is a Questionnaire | Types of Questionnaires in Research*, 2022).

Technology Reliance. The items for technology reliance were researchers made with a Likert scale that focuses on a detailed evaluation of the construct of technology reliance in terms of students' reliance on AI applications, higher productivity and improved efficiency, and individuals' attitude towards technology. The rating scale for these attributes is as follows:

Range of Means	Description	Interpretations
4.21 - 5.00	Strongly Agree	This means that the AI application dependency of Humanities and Social Sciences students are always demonstrated.
3.41 - 4.20	Agree	This means that the AI application dependency of Humanities and Social Sciences students are sometimes demonstrated.
2.61- 3.40	Neutral	This means that the AI application dependency of Humanities and Social Sciences students are demonstrated.
1.81 – 2.60	Disagree	This means that the AI application dependency of Humanities and Social Sciences students are rarely demonstrated.
1.00 – 1.80	Strongly Disagree	This means that the AI application dependency of Humanities and Social Sciences students are never demonstrated.

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Comprehension skills. The items for comprehension skills were researchers made with a Likert scale that focuses on a detailed evaluation of the construct of comprehension skills in terms of decoding, fluency, and retelling. The following is the rating scale that was used with this variable.

Range of Means	Description	Interpretations
4.21 - 5.00	Strongly Agree	This meansthat the Comprehension skills of Humanities and Social Sciences students always demonstrated.
3.41 - 4.20	Agree	This means that the comprehension skills of Humanities and Social Sciences students are sometimes demonstrated.
2.61- 3.40	Neutral	This means that the comprehension skills of Humanities and Social Sciences students are demonstrated.
1.81 – 2.60	Disagree	This means that the comprehension skills of Humanities and Social Sciences students are rarely demonstrated.
1.00 – 1.80	Strongly Disagree	This means that the comprehension skills of Humanities and Social Sciences students are never demonstrated.

Ethical Considerations

Ethical considerations play a crucial role in upholding the integrity and accuracy of research, especially when delving into sensitive subjects like student AI application dependency and their comprehension skills. This research study follows ethical principles that are founded on four key components.

Informed Consent. Ensure that participants (HUMSS students) are fully informed about the study's purpose, procedures, and any potential risks. Consent should be obtained voluntarily.

Confidentiality. Maintain the confidentiality of participants' identities and responses. Data should be anonymized to protect individual privacy.

Data Integrity. Ensure the accuracy and integrity of data collected. Avoid manipulation or misrepresentation of findings.

Impact on Participants. Consider how the research might impact students. For example, if technology reliance is found to negatively affect comprehension skills, provide recommendations or resources to help mitigate this.

Inclusivity. Ensure diverse representation within the participant sample to avoid bias in findings and acknowledge various perspectives on technology use.

Data Gathering Procedure

The study will be conducted strictly in accordance with the following steps: Getting Approval to undertake the Study. The researcher will begin the procedure by writing a letter of approval about the study, the respondents, and the purpose that will be given to the Carlos P. Garcia Senior High School principle. The researcher will then inform the class advisers that a study will be done in the sections of the class that they advise.

Distribution and Survey Questionnaire Retrieval: The researchers will deliver the questionnaire to the respondents after the approval of the request letter and circulation of the same. At their first encounter, the researchers will brief the respondents on the details of the study and the significance of their contribution as well as the questionnaires. To ensure proper completion of the questionnaires the researchers will monitor the respondents as they complete the questionnaires. The participants will be guaranteed anonymity throughout the study and will be told that they are free to withdraw from the study at will.

Further, for each item that assesses the survey participants' comprehension skills, the participants will tick or check the corresponding box. Compilation and *Statistical Analysis.*

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Data Analysis

The analyst plans to utilize a range of statistical methods to examine the data provided by the respondents, such as the mean and Pearson product moment correlation coefficient. Each method will yield distinct perspectives on the data and enrich the understanding of the relationships between the variables being studied.

Mean. The mean will be employed to compute the average values in the dataset, specifically focusing on the extent of students' dependency on AI application and their proficiency in comprehension. By establishing the mean, analysts can evaluate the central tendency of the dataset, providing valuable insights into the overall technological involvement of students and their reading or comprehension skills.

Pearson's Correlation. This will be used to gauge the strength of the relationship between AI application dependency and comprehension skills. The extent to which changes in comprehension levels correspond to variations in technology use will be understood by researchers with the help of this statistical measure, giving a better understanding of how these two variables interact.

RESULTS AND DISCUSSION

This chapter presents the findings and discussion based on the data gathered. The presentation is organized and based on the sequence of the problem statement in the first chapter.

Level of AI Application Dependency

Presented in Table 1 is the level of AI application dependency in terms of increased automation, error reduction, and dynamic adjustment.

Table 1. Level of AI Application Dependency among Humanities and Social Science Students

Domains of AI Application Dependency	SD	Mean	Descriptive Level
Increased Automation	.592	3.97	High
Error Reduction	.652	4.00	High
Dynamic Adjustment	.649	3.91	High
OVERALL	**.569**	**3.96**	**High**

The table reveals that the overall mean value of AI Application dependency is 3.96 which is described as high, with a standard deviation of .569. This means that the AI application dependency of Humanities and Social Sciences students are sometimes demonstrated. This finding suggests that AI applications are becoming a big part of students' study habits, likely helping them with tasks like researching, writing, analyzing data, and coming up with ideas. The high dependency level might mean that students are looking for efficiency and support through AI tools. It could also mean that schools might want to offer guidance on how to use AI effectively and responsibly, helping students use these tools without becoming overly dependent on them.

Griffiths et al. (2016) discuss how AI is increasingly used in education to help students with tasks like researching and writing. While AI can make learning easier, they also warn that students might become too dependent on it. Similarly, Sutherland and Tian (2021) focus on how AI is used in the humanities for research and analysis, showing that AI can be a helpful tool but cautioning against over-reliance. Both studies highlight the need for guidance to help students use AI responsibly and avoid losing important skills.

Furthermore, it shows that the domain error reduction obtained the highest mean value among the three domains, gaining a mean score of 4.00, with a standard deviation of .652, which is described as high; that is, error reduction are sometimes demonstrated in HUMMS students. This finding implies that students rely on AI to help them catch mistakes and improve accuracy in tasks like writing, researching, and analyzing information. The high score shows that reducing errors is an important benefit that many students look for in AI tools, helping them create better, more accurate work. It also suggests that students feel comfortable using AI to support their academic tasks and see it as a helpful part of their study routine.

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The findings show that error reduction in academic tasks is highly valued by HUMMS students, with AI tools helping them minimize mistakes in writing, researching, and analyzing information. This is reflected in the high mean score of 4.00, indicating that many students depend on AI for improving accuracy in their work. Grimes and Warschauer (2015) highlight how AI writing tools like Grammarly and Turnitin assist students in catching errors and improving the quality of their writing. Similarly, Valverde and Pérez (2020) emphasize the role of AI in enhancing research accuracy by reducing common errors in data analysis and citations. Both studies support the idea that AI is an essential tool for error reduction in academic work.

This is followed by the domain increased automation with a mean value of 3.97 descriptively interpreted as high with a standard deviation of .592. This means that the increased automation are sometimes demonstrated in HUMMS students. This finding means that students frequently rely on AI to make tasks faster and easier like organizing information, summarizing content, or generating ideas. Using AI for automation helps them save time, allowing them to focus more on tasks that need critical thinking or creativity. This trend shows that automation is becoming an important part of their study routine and might change how they complete academic work in the future.

The domain of increased automation in academic tasks scored a high mean value of 3.97, indicating that HUMMS students often rely on AI to automate tasks like organizing information, summarizing content, and generating ideas. This use of AI helps students save time, allowing them to focus on more complex, creative tasks. Lavigne and Mouza (2021) discuss how AI tools in education can automate these types of tasks, boosting productivity and helping students focus on higher-level assignments. Similarly, Brynjolfsson and McAfee (2017) explore how automation is reshaping various fields, including education, by streamlining work processes and encouraging innovation. Both studies show that automation is becoming a key part of students' academic routines.

Nevertheless, the domain dynamic adjustment had the lowest mean value among the three indicators, at 3.91, which is still considered as high, with a standard deviation of .649. This means that the dynamic adjustment of Humanities and Social Sciences students are sometimes demonstrated. This implies that Humanities and Social Sciences students do use dynamic adjustment in AI tools, but it’s not as frequently or consistently applied as other features. While the mean score is still high, it suggests that students may only demonstrate dynamic adjustment in specific situations or tasks, rather than as a regular practice. This could mean that students are still learning how to effectively incorporate this feature into their academic work, or they may not see it as essential for every task. It may also indicate that they are more comfortable with other AI capabilities, using dynamic adjustment less often or with more effort.

Tsai and Chen (2020) discuss how adaptive learning systems, which adjust based on student performance, are not always consistently applied, often due to uneven implementation or resistance. Similarly, Zhang and Zhang (2019) explore how dynamic adjustment features in AI learning tools hold potential but require deeper student engagement and understanding, which may explain their less frequent use. Both studies highlight that while dynamic adjustment offers benefits, its application is still evolving among students.

Level of Comprehension Skills

Presented in Table 2 is the level of comprehension skills in terms of decoding, fluency, and retelling.

Table 2. Level of Comprehension Skills among Humanities and Social Science Students

Domains of Comprehension Skills	SD	Mean	Descriptive Level
Decoding	.618	4.13	High
Fluency	.510	3.94	High
Retell	.669	4.04	High
OVERALL	**.513**	**4.04**	**High**

The table reveals that the overall mean value of comprehension skills is 4.04 which is described as high, with a standard deviation of .513. This means that the comprehension skills of Humanities and Social Sciences students

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are sometimes demonstrated. This finding suggests that Humanities and Social Sciences students demonstrate a relatively strong level of comprehension skills, which is critical for success in HUMSS fields. The mean score indicates that these students are frequently able to understand and interpret information effectively, though there may still be some areas for improvement to ensure consistent and comprehensive understanding across all contexts. Overall, the high mean value highlights that these students frequently demonstrate the ability to process and analyze information in ways that align well with the expectations of their academic fields.

Van den Broek and Espin (2016) emphasize that strong comprehension skills are essential for academic achievement, particularly in the humanities, where interpreting complex texts and ideas is critical. Similarly, Elder and Paul (2015) argue that comprehension and critical thinking are foundational for engaging deeply with materials in fields like HUMSS, further supporting the importance of these skills for student success.

Moreover, it shows that the domain decoding obtained the highest mean value among the three domains, gaining a mean score of 4.13, which is described as high with a standard deviation of .618; that is, decoding is sometimes demonstrated in HUMSS students. This means that these students are often able to interpret and understand text accurately. Their strength in decoding shows they can break down information and make sense of it, a key skill for understanding complex ideas in their studies.

The results of the study align with existing literature, emphasizing the importance of decoding skills in academic success. Adams (2021) highlights decoding as a foundational ability essential for proficient reading and comprehension, enabling students to break down and interpret text effectively, which is crucial in fields like the humanities and social sciences. Similarly, Snow (2018) underscores the role of decoding and academic language proficiency in navigating complex academic material, noting that students with strong decoding abilities are better equipped to understand and critically evaluate intricate concepts in both scientific and humanities contexts.

This is followed by the domain retell with a mean value of 4.04 descriptively interpreted as high with a standard deviation of .669; that is, retell is sometimes demonstrated in HUMSS students. The high score in the retell domain suggests that HUMSS students demonstrate a solid ability to understand, summarize, and convey information in their own words, reflecting both comprehension and effective communication skills. This is particularly valuable in the Humanities and Social Sciences, where students need to interpret complex ideas and express them clearly in discussions, writing, and presentations. By rephrasing information accurately, they can retain key concepts, engage more deeply in critical thinking, and contribute meaningfully to academic conversations.

McNamara (2019) emphasizes that summarization is a critical cognitive skill that enhances reading comprehension, retention, and understanding of complex material, which is essential in humanities disciplines that require critical analysis and text interpretation. Similarly, Gallimore and Tharp (2016) highlight the instructional significance of retelling and summarizing as key strategies for solidifying comprehension and expressing academic content effectively, fostering deeper engagement with the material in fields like the humanities and social sciences.

However, domain fluency had the lowest mean value among the three indicators, at 3.94, which is still described as high with a standard deviation of .510. This means that the fluency of Humanities and Social Sciences students are sometimes demonstrated. This implies that while students are generally able to express their ideas clearly, there may be times when their ability to do so smoothly and effortlessly is less consistent. It suggests that while HUMSS students are capable of fluent communication, there might be areas where they could further develop their ability to express ideas with greater ease and confidence.

The study's findings, showing that fluency had the lowest mean value among the three indicators at 3.94, align with literature exploring the complexities of fluency in academic contexts. Kintsch (2018) highlights that effective communication relies on fluency in idea expression but acknowledges that students' fluency may fluctuate depending on the complexity of the subject matter and their confidence in their communication skills. Similarly, Dillon and Toth (2019) emphasize the connection between writing fluency and academic performance, noting that while most students can articulate their ideas, more complex assignments can challenge their ability to communicate fluidly and confidently.

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Significance of the Relationship between AI Application Dependency and Comprehension Skills

Table 3 presents the relationship between AI application dependency and comprehension skills.

Table 3. Significance of the Relationship between AI Application Dependency and Comprehension Skills among Humanities and Social Science Students

		Comprehension Skills			
	r	**r^2**	**p-value**	**Decision on H_0 @ 0.05 level of significance**	**Interpretation**
AI Application Dependency	.673	.453	.000	Reject H_0	Significant

Table 3 shows a significant relationship between AI application dependency and comprehension skills, with a p-value of .000 at the 0.05 level of significance. This indicates that the null hypothesis is rejected, confirming that a significant relationship exists between AI application dependency and comprehension skills. The r-value of .673 suggests a moderate positive correlation, meaning that as AI application dependency increases, comprehension skills also tend to improve. The analysis reveals that 29 percent of the variance ($r^2 = 0.29$) in the comprehension skills of Humanities and Social Sciences students can be attributed to their dependency on AI applications.

Mahendran and Sanchez (2020) identify a positive correlation between the use of educational technologies, including AI applications, and cognitive skills such as comprehension, suggesting that higher reliance on technology enhances academic performance. Similarly, Woolf (2015) highlights how AI-powered tools, by offering individualized learning experiences, can improve students' cognitive abilities, particularly comprehension, critical thinking, and understanding.

In comparison, other factors account for the remaining 71 percent of the variance. The results suggest that students tend to have better comprehension skills when they rely more on AI applications. This indicates that AI tools may play a role in improving their ability to understand and process information. However, the relationship between comprehension skills and AI dependency in HUMSS students also highlights that other factors, apart from AI use, are important in shaping their comprehension abilities. While AI can be a useful tool in enhancing learning, it is clear that multiple influences contribute to students' overall comprehension skills. Håkansson and Jönsson (2015) highlight that while technology, including AI tools, supports comprehension and learning, other factors such as instructional quality, prior knowledge, and motivation also play significant roles. Similarly, Wang and Heffernan (2017) underscore the influence of peer relationships, classroom dynamics, and cognitive development on academic performance, suggesting that while AI tools contribute to improved comprehension, they are only one of many factors affecting students' abilities to process and understand information.

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents conclusions that were drawn from the findings of the study. This section further offers recommendations as to how the findings of this study can improve practice.

This study aimed to determine the extent of AI application dependency and comprehension skills of Humanities and Social Sciences students at Carlos P. Garcia Senior High School. Specifically, this study sought to determine if a relationship exists between ai application dependency and comprehension skills of Humanities and Social Sciences students at Carlos P. Garcia Senior High School, as well as the degree of their relationship.

This study utilized the descriptive correlational design to determine the extent of AI application dependency and comprehension skills of Humanities and Social Sciences students and if they are significantly related. The respondents of this study were one hundred (300) HUMSS students of Carlos P. Garcia Senior High School in Davao City using a random sampling design. The researchers used researcher-made survey questionnaires to collect the necessary information. Data collection involves strict compliance with ethical considerations. Mean and Pearson's r were used to analyze the data that had been collected.

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The results of the analysis revealed the following:

HUMSS students demonstrated a high extent of dependency on AI applications. This suggests that AI usage is frequently, but not always, part of their academic habits.

The comprehension skills of HUMSS students were also found to be highly manifested. This indicates that while these skills are often demonstrated, there is room for consistent application.

A significant positive relationship was identified between AI application dependency and comprehension skills, with a very high degree of correlation ($r = 0.673, p < 0.05$). This indicates that increased reliance on AI applications is associated with improved comprehension skills.

Conclusion

Based on the findings of the study, the following conclusions are drawn by the researchers:

The findings of this study highlight the significant role AI application dependency plays in shaping the comprehension skills of Humanities and Social Sciences (HUMSS) students. With AI application dependency rated as highly demonstrated among students, it is evident that these tools have become an integral part of their learning process. AI tools provide accessible, personalized, and efficient ways to process information, helping students enhance their ability to interpret and understand complex texts. This integration of AI into academic practices demonstrates the growing reliance on technology as a catalyst for academic success.

Comprehension skills among HUMSS students were also highly demonstrated, indicating their ability to effectively interpret, analyze, and communicate information. However, these skills are sometimes inconsistent, suggesting areas where further development is needed. The strong positive correlation between AI dependency and comprehension skills emphasizes the complementary relationship between technology use and learning outcomes. AI tools help bridge gaps in learning by providing additional resources, explanations, and interactive experiences that foster better understanding.

While the findings show that AI applications help improve comprehension skills, learning is influenced by many other factors, such as teacher support, peer interaction, and motivation. AI tools should complement, not replace, traditional teaching methods. A balanced approach that combines technology with strong teaching and learning strategies is essential to fully support students' academic growth.

Recommendations

Based on the conclusions, the following recommendations are made:

It is important to use a mixed-methods approach that combines quantitative and qualitative methods for deeper insights. Broadening the scope of AI applications by categorizing types of AI tools can help understand their impact on comprehension skills. Additionally, measuring critical thinking separately by designing a specific assessment component will provide a clearer picture of students' cognitive abilities. Including longitudinal data is essential to track changes in comprehension and critical thinking over time, while addressing potential bias through objective measures can enhance the reliability of findings. Examining negative effects is crucial to balance the findings by investigating potential downsides of AI dependency. Furthermore, providing statistical depth through additional statistical analyses and contextualizing findings by comparing results with existing literature will strengthen research conclusions.

Moreover, it is recommended that schools continue integrating AI tools into the learning process but ensure they complement, rather than replace, traditional teaching methods. Teachers should encourage students to use AI applications as a supplementary resource to improve their comprehension skills while also emphasizing the development of critical thinking, problem-solving, and communication skills through face-to-face interactions

and class activities. Additionally, schools should invest in training programs for both students and educators, focusing on how to effectively use AI tools in ways that enhance learning and comprehension.

Furthermore, it is also essential for schools to consider other factors that influence students' learning, such as teacher support, peer collaboration, and student motivation. Schools should create an environment that fosters these elements, alongside AI use, to ensure students' overall academic growth. Encouraging group work, providing mentorship opportunities, and promoting a supportive classroom atmosphere can enhance the benefits of AI tools.

Finally, further research should be conducted to examine the long-term impact of AI on students' learning outcomes. Studies should explore how AI tools affect students' comprehension over time and identify other factors, such as family background and personal learning habits, that may influence academic success. This will help schools develop more effective, comprehensive strategies to improve students' academic performance and prepare them for future challenges.

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APPENDIX

Survey Questionnaire

AI Application Dependency And Comprehension Skills Of Humanities And Social Sciences Students

General Instruction: Please complete the questionnaire and do not leave any items unanswered. Rest assured that any information you have shared will be kept confidential.

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Part I. AI Application Dependency

Instruction: Check (/) the corresponding degree of each statement about **AI Application Dependency** in terms of **Increased Automation, Error Reduction,** and **Dynamic Adjustment.** Each item is measured in five levels, these are the following.

Scale	Description
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

	1.1 Increased Automation	5	4	3	2	1
1.	Automation has reduced the number of repetitive tasks I have to perform.					
2.	AI applications have enhanced collaboration within my team.					
3.	AI tools help identify trends that would be difficult to spot manually.					
4.	AI applications help me manage my workload more effectively.					
5.	I rely on AI to provide insights that help shape my strategies and decisions.					
	1.2 Error Reduction	5	4	3	2	1
1.	Using AI tools helps me identify mistakes I might overlook in my work.					
2.	I rely on AI applications (e.g., grammar checkers, citation tools) to reduce errors in my assignments.					
3.	AI applications significantly enhance my ability to produce error-free work.					
4.	I have noticed a decrease in the number of errors in my work since I started using AI tools.					
5.	Using AI tools helps me to better understand my mistakes.					
	1.3 Dynamic Adjustment	5	4	3	2	1
1.	The suggestions provided by AI tools become more relevant the more I use them.					
2.	AI tools adapt their recommendations based on the type of assignments I am working on.					
3.	The dynamic adjustments made by AI tools help me to reduce errors effectively.					
4.	I feel more confident in my work due to the real-time adjustments provided by AI applications.					
5.	I find that AI tools give more specific guidance when I am working on complex tasks.					

Part II. Comprehension Skills

Instruction: Check (/) the corresponding degree of each statement about **Comprehension Skills** in terms **of Decoding, Fluency,** and **Retelling**. Each item is measured in five levels, these are the following.

Scale	Description
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

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	2.1 Decoding	5	4	3	2	1
1.	I can easily break down complex words into smaller parts to understand their meaning.					
2.	My decoding skills help me understand the meaning of the text better.					
3.	My ability to decode words has improved over time through practice.					
4.	My ability to decode words helps me read faster with better comprehension.					
5.	It saves me time in comprehending text without struggling.					
	2.2 Fluency	5	4	3	2	1
1.	I do not suffer when I speak and read a statement.					
2.	I can easily adopt the meaning of the story.					
3.	I can read with proper speed, accuracy, and expression.					
4.	I read in phrases and show I understand the punctuation in the text.					
5.	I can make connections among the ideas in the texts.					
	2.3 Retell	5	4	3	2	1
1.	I state the exact information when retelling a story or statement.					
2.	Retelling helps me promote comprehension and vocabulary development.					
3.	I can easily summarize and process information in what I read or hear.					
4.	I can create imaginative twists to the story with my creativity.					
5.	I can form a comprehensive presentation or written work.					