

Artificial Intelligence (AI) Driven Study Tools and Critical Thinking Skills Among BSED English Students with Motivation to Read as a Mediator

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Abstract. The study aimed to investigate the mediating effect of teachers' motivation to read on the relationship between the effect of AI-driven tools and critical thinking skills. It employed a descriptive-correlation technique, and path analysis was used to determine the mediating effect between variables. The researcher considered all 100 research participants out of 134 bona fide students enrolled in Davao del Sur as study respondents. The findings revealed that the extent of AI-driven study tools among the BSED English students in Davao del Sur was extensive. The extent of critical thinking skills of BSED English students in Davao del Sur was extensive. Moreover, finally, the motivation to read was extensive. A significant positive relationship with the Motivation to Read of BSED English students. However, there was no relationship between Motivation to read and Critical thinking skills of BSED English students in Davao del Sur. Finally, the Effect of AI-driven tools has a significant positive relationship with the critical thinking skills of BSED English students in Davao Del Sur. Motivation to read partially mediates the relationship between the Effect of AI-driven tools and the critical thinking skills of BSED English students in Davao Del Sur. Furthermore, College students may continue to take responsibility for improving themselves by using AI-driven tools or correctly reading digital texts, as their results are only at a moderate level.

KEY WORDS

1. AI- driven study tools
2. critical thinking skills
3. BSED English students;
4. Motivation to read as a mediator.

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1. Introduction

AI-driven study tools can help BSED English students think critically and develop a desire to read more by making learning more personalized, providing instant feedback, and offering a variety of learning materials. However, if you depend on it too much, it might be harder to think for yourself and understand. AI can make learning more personal by ensuring that each student gets the help they need and learns in the way that works best for them. It can also provide students with quick feedback on

their work. AI's ability to access a wide range of learning materials encourages students to think critically and become more involved by allowing them to examine complex texts and diverse perspectives. Flashcards and quizzes that use AI can also help you remember what you have learned. There are other possible problems, however. For example, relying too heavily on AI technologies could hinder critical thinking and creativity, lead to shallow learning, and raise moral concerns about biases and data privacy. To address these issues, teachers should

help students utilize AI effectively. They should stress the importance of critical thinking and promote a balanced approach that combines traditional learning methods with AI tools. The use of AI in education has caused both enthusiasm and worry worldwide. Because generative AI can replicate human thought processes and create new things, knowledge workers are paying closer attention to this crucial field. These tools could change things, especially in schools, but they also raise fundamental moral problems about fairness, trust, and job loss. For example, students and teachers use generative AI in different ways. Teachers use it to make their lecture notes more useful, while students use it to help them finish their homework and review lectures (Clos Chen, 2024). Even if AI has its advantages, there are still problems with ensuring everyone has equitable access to it, establishing clear rules for its use, and determining whether it could supplant traditional educational duties. These problems make it more challenging to utilize AI effectively in schools, particularly considering its potential impact on students' learning and their ability to think critically over time. Generative artificial intelligence (AI) technologies have evolved rapidly, significantly impacting various fields, including research, education, the arts, and communication. These technologies have transitioned from research labs to nearly every aspect of daily life. AI-powered tools are transforming the way teachers teach, grade students, and students learn in the field of education. These tools offer innovative methods to enhance student outcomes, yet they also present challenges, particularly in terms of student involvement and critical thinking (Mao et al., 2024). Because it necessitates a thorough examination of how it may impact fundamental cognitive skills, such as critical thinking, the application of AI in education is not straightforward. After examining these possibilities and problems, it is evident that AI plays a complex role in education, and effective learning meth-

ods are necessary beyond surface-level interactions (Almasri, 2024). For digital technologies to effectively support kids' learning and growth, they must be integrated into schools in a manner that complements AI (Timotheou et al., 2023). The rapid adoption of AI in education has also underscored the need for further research on its impact on cognitive abilities, particularly critical thinking. Although generative AI technologies are praised for increasing student participation and teamwork, they may unintentionally impede the growth of higher-order cognitive abilities. In higher education, 64 percent of students felt that artificial intelligence (AI) enhanced their critical thinking skills. However, several students voiced concerns about relying too heavily on these technologies, particularly due to inadequate technical support and ethical training (Ruiz-Rojas et al., 2024). Furthermore, over-reliance on AI might hinder students' ability to make decisions and apply analytical reasoning, as they may accept recommendations from the AI without giving them sufficient thought (Zhai et al., 2024). This is especially true when students use AI as a cognitive shortcut. The introduction of AI into the Philippine educational system has sparked numerous scholarly debates, particularly over how technology may impact the way people teach and learn. Artificial intelligence in education (AIED) makes data-driven decision-making, improved learning experiences, and scholarly innovation possible. However, implementing it may be challenging, requiring a robust technological foundation, comprehensive regulatory frameworks, and sufficient computing power (Estrellado Miranda, 2023). In the Davao Region, incorporating AI-driven tools aids into education aligns with global trends in leveraging technology for enhanced learning experiences. Still, there is serious concern about the underdevelopment of critical thinking abilities. Many schools, particularly in rural areas, have utilized these tools to enhance traditional learning methods.

However, the lack of formal programs that focus on enhancing critical thinking skills, combined with students' declining interest in reading, creates obstacles to achieving educational goals. Studies demonstrate that AI technologies, such as intelligent tutoring systems and virtual learning environments, have the potential to tailor educational experiences and enhance academic performance (Salido, 2023). However, a lack of ongoing faculty training and infrastructure problems frequently restrict their effectiveness (Estrellado Miranda, 2023). Furthermore, although research on technology integration in the Philippines (Aguadera et al., 2020) suggests that AI tools may enhance student interest and engagement, measures are still necessary to ensure that AI tools significantly advance the development of critical thinking skills. Ongoing training and support are crucial for fully leveraging AI's potential in developing cognitive skills, such as teamwork and critical thinking (Ruiz-Rojas et al., 2024). Artificial intelligence is becoming increasingly integrated into educational environments, which could enhance cognitive skills and lead to more personalized learning experiences. However, some issues must be addressed, such as the over-reliance on AI dialogue systems that may impair important cognitive functions. This study offers valuable insights that can inform future educational practices and policies, enhancing student learning outcomes by focusing on critical thinking and reading motivation. Teachers may be better able to adapt their methods to the needs of the modern world if they have a better understanding of the relationship between AI tools and cognitive development (Ruiz-Rojas et al., 2024). A dearth of research remains on the connection between reading motivation, critical thinking abilities, and AI-driven study tools, particularly among Filipino college students. Few studies have examined the impact of AI on critical thinking, particularly when reading motivation serves as a mediator, despite numer-

ous investigations into how AI can enhance academic performance. This study closes that gap by offering actual information regarding how these variables are related. AI has been demonstrated in earlier research to improve learning motivation and overall self-efficacy, promoting critical thinking. Furthermore, despite the potential advantages of AI, concerns regarding its ethical use, over-reliance, and accessibility persist, underscoring the need for ongoing support and training. Integrating AI-driven study tools into education presents an opportunity to enhance educational outcomes by promoting critical thinking and learning motivation among students (Estrellado Miranda, 2023). This study examines the perceived impact of these tools on critical thinking skills among BSED English students, with motivation to read as a mediating factor. By examining this relationship, the research seeks to provide actionable insights for refining instructional practices and curriculum design. These findings hold the potential to benefit not only individual learners but also the broader educational community by supporting the development of essential cognitive skills in an increasingly technology-oriented learning environment. Moreover, English students at the Southernisation College of Padada face challenges such as declining proficiency, inadequate resources, teacher competency issues, and curriculum problems, which hinder the development of language skills and academic success. In this regard, the researcher determines the need to conduct a research study further to investigate whether AI-driven study tools can significantly enhance English students' motivation to read by fostering critical thinking skills, personalized learning experiences, and engaging interactions, ultimately leading to a more enjoyable and effective learning process.

1.1. Review of Significant Literature—

This section synthesizes the literature on the integration and effectiveness of AI-driven tools in education, with particular focus on AI study

tool use, student and teacher proficiency, critical thinking development, and reading motivation. The discussion draws on both local and international studies and considers instructional applications, ethical concerns, and learning outcomes.

1.1.1. Use and Effectiveness of AI Tools in Education—AI-driven tools such as intelligent tutoring systems, generative AI (e.g., ChatGPT), and adaptive learning platforms are increasingly utilized to personalize instruction and assessment. These tools offer real-time feedback, enhance instructional quality, and support learning in STEM and language education (Ouyang et al., 2023; Almasri, 2024). AI assessments automate grading and tailor content to students' needs, improving engagement and efficiency while reducing teacher workload.

Generative AI, especially ChatGPT, has become a popular learning assistant, helping students revise lectures, understand concepts, and complete assignments (Clos Chen, 2024). Despite benefits in boosting engagement and critical thinking, concerns persist about overreliance and ethical implications (Zhai et al., 2024).

1.1.2. Student and Teacher Proficiency in AI—Students' AI proficiency is reflected in their ability to use tools effectively, critically evaluate outputs, and personalize their learning paths (Memarian Doleck, 2024). Frameworks like PROMPT and EDIT support students in developing metacognitive skills while engaging iteratively with AI tools (Stauffer Gold, 2024). In language learning, tools like Flow Speak provide immediate, tailored feedback, reinforcing learning autonomy (Chugani, 2024).

Teachers, however, often face challenges due to insufficient AI training. UNESCO's AI Competency Framework outlines essential dimensions: AI pedagogy, ethics, foundations, and human-centered design (UNESCO, 2024). Proficiency in these areas is critical for teachers to integrate AI meaningfully and equitably into instruction (INEE, 2024).

1.1.3. Critical Thinking Development—Critical thinking is a foundational 21st-century skill encompassing analyzing, evaluating, and creating. It supports informed decision-making and problem-solving (Butler, 2024). With AI tools like ChatGPT encouraging students to synthesize information and explore multiple solutions, users often show improved higher-order thinking (Ruiz-Rojas et al., 2024). However, reliance on AI without critical evaluation may hinder cognitive engagement, thus underscoring the importance of guided AI use (Zhai et al., 2024).

Alsaleh (2020) defines critical thinking indicators across six domains: remembering, understanding, applying, analyzing, evaluating, and creating. Educators must scaffold these skills using real-world applications to foster student autonomy and analytical depth.

1.1.4. Reading Motivation—Reading motivation affects literacy achievement and includes intrinsic (e.g., curiosity, involvement) and extrinsic (e.g., grades, rewards) components (Locher et al., 2020; Kheang et al., 2024). Intrinsic motivation, driven by curiosity and enjoyment, fosters deeper comprehension and lifelong reading habits (Fastrich et al., 2020). Extrinsic motivation, while useful short-term, may lead to reduced engagement once incentives are removed (Deci Ryan, as cited in Kheang et al., 2024).

Effective reading interventions should integrate both types. Providing content aligned with students' interests, using praise meaningfully, and supporting autonomy are key to cultivating sustainable reading engagement (McBreen Savage, 2021).

1.2. Synthesis—The literature on AI-driven study tools reveals the transformative potential of AI in enhancing educational practices, from personalized learning to improving critical thinking skills. AI-driven tools, including intelligent tutoring systems, ChatGPT, and adaptive learning platforms, have demonstrated

their effectiveness in providing real-time feedback, automating assessments, and promoting deeper cognitive engagement. The success of AI tools in reducing teachers' workloads while improving the personalization of student learning experiences. However, the effectiveness of AI tools also depends on both students' and teachers' proficiency in using them, which requires adequate training and a deeper understanding of AI's ethical implications. Additionally, AI tools like ChatGPT have proven beneficial in supporting students' critical thinking and problem-solving; however, caution must be exercised to avoid over-reliance, which can hinder the development of higher-order thinking skills. Critical thinking skills are essential for students to engage in meaningful learning and apply their knowledge across various contexts. The literature emphasizes the importance of developing key critical thinking skills such as analyzing, evaluating, creating, remembering, understanding, and applying. Analyzing involves breaking down complex information to assess arguments and make informed decisions while evaluating allows students to judge the credibility and strength of evidence. These skills are essential for students to develop a deeper understanding of the content and foster creativity in their academic work. Creating and synthesizing new ideas from existing knowledge is particularly important in promoting innovation and original thought. Furthermore, remembering and understanding are foundational skills that enable students to engage in more complex cognitive processes. Applying knowledge in real-world situations reinforces the practicality of critical thinking and ensures that students are well-equipped to tackle challenges beyond the classroom. Motivation to read plays a crucial role in student engagement and academic success. Both intrinsic and extrinsic motivators influence students' reading habits. Intrinsic factors, such as involvement and curiosity, encourage students to delve deeply into texts,

fostering a love for reading and enhancing comprehension. On the other hand, extrinsic factors such as grades, recognition, and competition can motivate students to engage with reading for performance-based outcomes. While these motivators can increase reading engagement in the short term, there is a risk that over-reliance on extrinsic rewards may lead to surface-level engagement with reading tasks. Over time, this pattern of extrinsic motivation can undermine the development of genuine interest and personal satisfaction in reading, limiting long-term engagement and comprehension. Therefore, a balanced approach that integrates intrinsic and extrinsic motivators is necessary to foster a genuine interest in reading and ensure meaningful academic growth.

1.3. Theoretical and Conceptual Framework—This study is based on Constructivist Learning Theory, which asserts that learners actively create knowledge through experience, interaction, and reflection. This hypothesis is pertinent to AI-driven study tools. AI facilitates individualized, adaptive learning experiences that enable students to engage with knowledge at their own pace and according to their learning styles. Through AI tools, students transition from passive recipients of information to active respondents who analyze, apply, and reflect upon the knowledge they obtain. Engagement with AI systems, which offer immediate feedback and personalized training, fosters deeper comprehension and critical thinking, aligning effectively with the constructivist learning paradigm. The Self-Determination hypothesis (SDT) corroborates the hypothesis, which highlights the significance of intrinsic and extrinsic motivation in the learning process. Self-determination theory posits that pupils require a sense of autonomy, competence, and relatedness to foster motivation for reading and critical thinking. AI-driven study tools can strengthen motivating elements by enabling students to exercise autonomy in their learning, provide

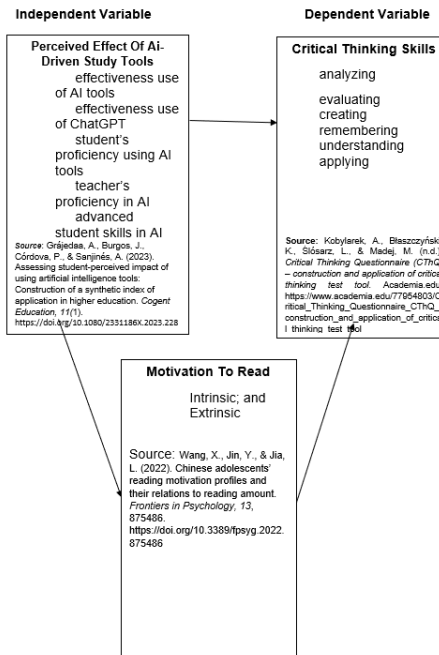


Fig. 1. Enter Caption

individualized feedback to improve their competency, and cultivate a sense of relatedness through collaborative AI tools. This idea aligns with reading motivation, highlighting how AI technologies can enhance both intrinsic motivation (e.g., curiosity and engagement) and extrinsic motivation (e.g., grades and recognition), both of which are essential for promoting student engagement and academic success. The theory above is further supported by Bloom's Taxonomy, a framework that categorizes cognitive skills into six hierarchical levels: remembering, understanding, applying, analyzing, evaluating, and creating. This taxonomy offers a structured approach to developing critical thinking skills, which is essential for effectively leveraging AI-driven study tools in education. AI tools can support students in progressing through each level of Bloom's Taxonomy, from basic knowledge recall to higher-order thinking tasks such as analysis, evaluation, and creation. By providing scaffolding for these cognitive processes, AI tools can help students deepen

their understanding and enhance their ability to apply knowledge critically and creatively, reinforcing the cognitive development central to Bloom's Taxonomy. These tools often provide instant feedback, enabling learners to reflect on their thinking and make necessary adjustments in real-time. Interactive features, such as simulations and adaptive questioning, challenge students to analyze and evaluate complex scenarios. Furthermore, AI-driven platforms can personalize learning experiences, ensuring that tasks align with each student's cognitive level and encouraging progression through Bloom's hierarchical stages. They also promote active learning by engaging students in tasks that require higher-order thinking skills, such as creating solutions and justifying arguments. Additionally, AI tools can support metacognition by helping students monitor their learning and identify areas that need improvement. Visual and auditory aids integrated into these tools cater to various learning styles, making abstract concepts more concrete and accessible.

Figure 1 shows the conceptual framework and serves as the schemata of the study. In this study, two variables are illustrated. The first variable, which serves as the remediation variable, is the Perceived Effect Of AI-driven study Tools that has an indicator, namely, the effectiveness use of AI tools, the effectiveness of the use of ChatGPT, student's proficiency using AI tools, teacher's proficiency in AI and advanced student skills in AI, while the endogenous variable in this study namely the Critical Thinking Skills with six corresponding indicators namely analyzing, evaluating, creating, remembering, understanding, and applying. Lastly, the study's mediating variable is Motivation to Read, which is measured by two corresponding indicators: intrinsic and extrinsic efficacy in instructional strategies and efficacy in classroom management. The first box serves as the study's independent variable, which is connected by an arrow to the second box, which primarily serves as the dependent variable. The box in the middle

serves as the mediating factor that connects the independent variable to the dependent variable. The box in the middle serves as the mediating factor of motivation, connecting the independent variable to the dependent variable. The arrow indicates that the first variable, Perceived Effect of AI-Driven Study Tools, impacts the dependent variable, Critical Thinking Skills. This causal pathway highlights how students' perceptions of AI tools as facilitators of learning directly impact their ability to critically analyze, evaluate, and synthesize information, thereby enhancing their overall academic proficiency.

1.4. Statement of the Problem—The study aims to determine the mediating effect of motivation to read on the relationship between the perceived effect of AI-driven study tools and critical thinking skills among BSED students in higher education institutions in Davao del Sur. Specifically, this study aimed to find answers to the following questions:

- (1) What is the extent of the effect of AI-driven study tools on BSED English students in terms of:
 - (1) Use of AI tools
 - (2) Use of ChatGPT
 - (3) proficiency in using AI tools; and
 - (4) Advanced Student Skills in AI?
- (2) What is the extent of critical thinking skills in literary interpretation of BSED English Students in terms of:
 - (1) Remembering;
 - (2) understanding
 - (3) applying;
 - (4) analyzing;
 - (5) Evaluating, and
 - (6) Creating?
- (3) What is the extent of motivation to read among BSED English students in terms of:
 - (1) Intrinsic Motivation; and
 - (2) Extrinsic Motivation?
- (4) Is there a significant relationship between the perceived effect of AI-driven study tools, critical thinking, and motivation to read among BSED students in Davao del Sur?
- (5) 5. Does motivation to read mediate the relationship between the perceived effect of AI-driven tools and critical thinking among BSED students in Davao del Sur?

1.5. Hypotheses—The following null hypotheses may be tested at a 0.05 level of significance: Ho: There is no significant relationship between the perceived effect of AI-driven tools, critical thinking, and motivation to read among BSED students in Davao del Sur. And Ho: Motivation to read does not mediate the relationship between the perceived effect of AI-driven study tools and critical thinking among BSED students in Davao del Sur. This study is entitled “AI-driven study tools on critical thinking skills among BS-ED English students with motivation to read as a mediator. Results may be of significance to the following: Students Students are also significant beneficiaries of this research. The findings may directly impact their educational experiences and personal growth. If the study focuses on improving learning outcomes, fostering engagement, or addressing specific challenges faced by students, they stand to gain the most from implementing recommendations. Students may benefit from enhanced teaching practices, better learning environments, and policies tailored to meet their needs. Teachers The findings may offer recommendations for teachers’ professional growth and well-being. Teachers may use these insights to advocate for changes in their working conditions, access to development opportunities, and support systems. Teachers may benefit from the study by incorporating evidence-based practices into their classrooms. For example, if the research discusses effective teaching methods or

strategies for student engagement, teachers can apply these techniques to improve their teaching. Armed with the study’s results, teachers can advocate to address issues highlighted in the research. They can work collaboratively with administrators and policymakers to implement positive changes within their schools. By building strong partnerships, they can help shape educational policies that directly address the needs of both teachers and students. Their collaborative efforts can lead to more informed decisions that enhance teaching practices and improve student outcomes. AI-Driven Study Tools It refers to technology-based learning applications or platforms that leverage artificial intelligence to provide personalized, adaptive, or interactive learning experiences. In this study, these tools are measured by students’ perceived usability, effectiveness, and relevance in enhancing their learning process, assessed through a 5-point Likert-scale questionnaire. Critical Thinking Skills It refers to the ability of students to analyze, evaluate, and synthesize information to make reasoned judgments. In this study, critical thinking skills are assessed using a test or a self-reported questionnaire that evaluates abilities such as problem-solving, logical reasoning, and decision-making.

Motivation to Read It represents the internal drive or interest that encourages students to engage in reading activities. This is assessed through a Likert-scale questionnaire measuring enjoyment, perceived value of reading, and the frequency of voluntary reading activities.

2. Methodology

This chapter presents the philosophical assumptions, research design, research respondents, research instruments, ethical considerations, the role of the researcher, data collection, data analysis, and the study’s trustworthiness.

2.1. Research Design—Using motivation to read as a possible mediating variable, this study employs a quantitative, non-experimental

research approach to investigate the impact of AI-driven study tools on critical thinking skills. The non-experimental design is appropriate be-

cause the study aims to observe and analyze existing interactions among the factors in a realistic educational setting rather than randomly manipulating variables or assigning respondents. According to Creswell and Creswell (2021), this method aligns with educational research goals to comprehend naturally occurring phenomena without interfering with experimental controls. With this design, the research may offer a transparent and impartial analysis of the relationships among AI-driven study tools, reading motivation, and critical thinking skills. The study employs descriptive-correlational methods to investigate the correlations between key variables within this non-experimental framework. The data were summarized using descriptive statistics, revealing the extent to which each student utilizes AI-driven study tools, their motivation to read, and their ability to think critically. The direction and intensity of the associations between these variables may subsequently be investigated using correlational analysis. The descriptive-correlational approach is particularly well-suited to this study, as it enables the identification of noteworthy patterns and associations, providing a thorough understanding of the interactions between AI tools and motivation, as well as the development of critical thinking skills (Chen et al., 2020). The study employs a mediation model and descriptive-correlational analysis to investigate the indirect effects of AI-driven study tools on reading motivation and critical thinking skills. Researchers can investigate whether a third variable, in this case, motivation to read, acts as a mediating factor through which an independent variable, AI-driven study tools, influences a dependent variable, critical thinking skills, by using the mediation model, an advanced statistical technique (Hayes, 2022). This method provides a deeper understanding of the mechanics underlying the observed associations, offering insightful knowledge about the processes that support the development of critical thinking.

2.2. *Ethical Considerations*—The ethical considerations section of this study addresses the principles that ensure the protection and well-being of the student respondents involved. This includes maintaining confidentiality, obtaining informed consent, ensuring the voluntary nature of participation, and conducting the research with integrity and respect for the rights of all respondents.

2.3. *Research Respondents*—The respondents in this study were Bachelor of Secondary Education (BSED) students majoring in English from Southeastern College of Padada, Inc. (SC), comprising 134 BSED students majoring in English. The sample size was determined using the Raosoft formula, which included a 5 percent margin of error. The calculation yielded a total sample size of 100 respondents out of a total population of 134. Moreover, the research considered only fourth-year BSEd English students. The deliberate selection of BSED English majors as respondents highlights their relevance to the study's objectives. These students are training for professions in education, where critical thinking and reading motivation are essential competencies. By focusing on this specific group, the study aims to explore the influence of AI-driven study tools on future educators who would play a pivotal role in fostering literacy and critical thinking in their students. The respondents considered students at the fourth level in the academic year 2024–2025. This stratified selection provides diverse perspectives, reflecting the varying experiences and academic stages of BSED students. Such diversity ensures that the study captures a comprehensive view of how AI tools impact learners at different phases of their educational journey. A simple random sampling technique was employed to select the respondents from each institution. The method effectively avoided selection bias, ensuring that the sample was representative of the entire population of BSED English students. Random sampling also enhances the validity

and reliability of the findings, aligning with best practices in educational research (Creswell Creswell, 2021). The sample size of 100 respondents was deemed adequate for this study's mediation model and descriptive-correlational analysis. This size ensures sufficient statistical power to detect meaningful relationships between the variables, such as the influence of AI-driven study tools on reading motivation and critical thinking (Hayes, 2022). Additionally, the feasibility of data collection within the scope of the study is maintained, ensuring robust and actionable results. This study examines the experiences of BSED English students in Davao del Sur to contribute to the development of educational practices and policies that foster critical thinking and reading motivation. The insights gained were valuable for preparing future educators to effectively integrate AI-driven tools into their teaching, thereby fostering a culture of lifelong learning and innovation.

2.4. Research Instruments—This study used three primary research instruments to measure the key variables: AI-driven study tools, critical thinking skills, and motivation to read. The scale developed by Grájedaa, Burgos, Córdova, and Sanjinés (2023) to measure the various dimensions of students' perceptions of the impact of AI tools on their academic experience was used to assess the perceived effect

of AI-driven study tools. These research instruments were modified to jive in the present study. This scale was detailed in their study "Assessing Student-Perceived Impact of Using Artificial Intelligence Tools: Construction of a Synthetic Index of Application in Higher Education." The tool assesses important variables, including the perceived value of AI technologies in enhancing learning, boosting academic achievement, facilitating individualized learning pathways, and promoting engagement with study materials. Its reliability statistical result is 0.90, indicating a high level of consistency in the measurement. The scale provides a comprehensive framework for understanding how students perceive AI-powered study aids and their overall effectiveness in postsecondary education. The tool is particularly suitable for this research as it provides insights into how AI technologies impact students' reading motivation and critical thinking abilities. With this tool, the research gathered comprehensive information about the advantages and potential drawbacks of AI tools as perceived by students, which enhanced our understanding of the significance of these tools for skill development and academic performance. The responses were collected using a 5-point Likert-type scale, where the interpretation of the results was categorized as follows:

Range of Mean	Descriptive Level	Interpretation
4.20 – 5.00	Very Extensive	The effect of AI-driven study tools is always manifested.
3.40 – 4.19	Extensive	The effects of AI-driven study tools are often evident.
2.60 – 3.39	Moderately Extensive	The effects of AI-driven study tools are sometimes evident.
1.80 – 2.59	Less Extensive	The effect of AI-driven study tools is seldom manifested.
1.00 – 1.79	Not Extensive	The effect of AI-driven study tools is not yet evident.

The Critical Thinking Questionnaire (CThQ), developed by Kobylarek, Błaszczyski, Ślósarz, and Madej (n.d.), was employed to as-

sess critical thinking abilities. The study "Critical Thinking Questionnaire (CThQ) – Construction and Application of a Critical Thinking

Test Tool” describes how to utilize this tool to assess various critical thinking skills, including synthesizing knowledge, analyzing information, and evaluating arguments. The questionnaire aims to evaluate respondents’ thought processes, their capacity to recognize assumptions, and their ability to distinguish between pertinent and irrelevant information, in order to determine how they approach problem-solving and decision-making. The CThQ was a suitable tool

for this study because it addresses critical thinking skills essential for academic performance, including applying reasoning, challenging presumptions, and making well-informed decisions. With this tool, the research gained extensive insights into the respondents’ critical thinking abilities. Similar to the perceived effect of AI-driven study tools, the critical thinking skills were assessed using a 5-point Likert-type scale, with interpretations as follows:

Range of Mean	Descriptive Level	Interpretation
4.20 – 5.00	Very Extensive	Critical thinking skills are always manifested.
3.40 – 4.19	Extensive	Critical thinking skills are often manifested.
2.60 – 3.39	Moderately Extensive	Critical thinking skills are sometimes manifested.
1.80 – 2.59	Less Extensive	Critical thinking skills are seldom manifested.
1.00 – 1.79	Not Extensive	Critical thinking skills are never manifested.

The Reading Motivation Questionnaire (RMQ) was used to gauge readers’ motivation to read. This instrument is designed to assess various aspects of reading motivation, including intrinsic and extrinsic motivation, the importance of reading, and the factors influencing a student’s motivation to engage with reading materials. The RMQ assesses various aspects, including interest, participation, acknowledgment, rivalry, and the impact of reading on academic achievement. It enables a thorough examination of the various motivational elements that influence pupils’ reading habits. Given that the goal

of this study is to understand how AI-driven study tools may influence students’ readiness to read, this questionnaire is a suitable fit. The project successfully captured both intrinsic and extrinsic motivational elements by utilizing the RMQ, providing valuable insights into the relationship between motivation and critical thinking, as well as the application of AI tools to enhance academic achievement. The responses were collected using a 5-point Likert-type scale, where the interpretation of the results was categorized as follows:

Range of Mean	Descriptive Level	Interpretation
4.20 – 5.00	Very Extensive	The motivation to read is always manifested.
3.40 – 4.19	Extensive	The motivation to read is often manifested.
2.60 – 3.39	Moderately Extensive	The motivation to read is sometimes manifested.
1.80 – 2.59	Less Extensive	The motivation to read is seldom manifested.
1.00 – 1.79	Not Extensive	The motivation to read is never manifested.

Before administering the questionnaires, a pilot test was conducted to ensure the reliability and validity of the instruments. This pilot testing would involve a smaller sample of students from the same population to identify any

potential issues with the questions and ensure that the scales accurately measure the intended constructs. The feedback from the pilot test was used to refine the questionnaires, ensuring that the final instruments were both clear and

effective in capturing the necessary data. The results from these instruments were analyzed and interpreted to provide insights into the relationships between the perceived effect of AI-driven study tools, critical thinking skills, and motivation to read. By utilizing validated scales and interpreting the results within well-defined categories, this study aims to provide a comprehensive understanding of these key factors in the educational outcomes of BSED students in Davao del Sur.

2.5. Data Gathering Procedure—Upon validating the research questionnaire, the researcher employed a systematic approach to data collection, starting with obtaining the necessary permissions to conduct the study.

The first step involves an endorsement. This endorsement was accompanied by permission letters addressed to the College Deans of the selected private higher education institutions in Davao del Sur. The researcher delivered these letters to the dean's offices, ensuring clear communication of the study's objectives and gaining their cooperation.

Following approval from the college deans, the researcher distributed the research instruments to the identified respondents. This phase is scheduled for the second quarter of the 2024-2025 school year. The researcher would personally oversee the distribution process, providing a brief orientation to the respondents about the purpose and significance of the study. This explanation would help ensure that respondents understand the context of the survey and the importance of providing honest and thoughtful responses. The questionnaires were distributed simultaneously, allowing all respondents adequate time to complete them in a setting that minimizes distractions. After the respondents had completed the questionnaires, the researcher collected them promptly to maintain the integrity of the data. Collation and Statistical Treatment of Data Once the questionnaires have been retrieved, the researcher collated and

analyzed the data statistically. The responses were systematically aggregated, with each respondent's scores organized according to the specific measured indicators. The data were then entered into SPSS (Statistical Package for the Social Sciences) for comprehensive analysis and interpretation. Descriptive and inferential statistical methods were employed to analyze the data, allowing for a detailed examination of the relationships between parental involvement, learners' motivation, and reading proficiency. This rigorous analytical process would ensure that the findings are accurate and meaningful, providing valuable insights into the research questions.

Data Analysis

This study employed a combination of descriptive and inferential statistical methods to analyze the data collected from BSED English students in Davao del Sur. The mean was used to determine the overall level of perceived effectiveness of AI-driven study tools, critical thinking skills, and motivation to read. To examine the relationships among these key variables, the Pearson Product-Moment Correlation was applied, revealing the strength and direction of their associations. Furthermore, Structural Equation Modeling (SEM) with mediation analysis was conducted to explore the mediating role of motivation to read in the link between AI-driven study tools and critical thinking skills. The inclusion of the Sobel Test provided additional statistical validation of the mediation effect, offering a deeper understanding of the pathways through which these variables interact. The mean was utilized to measure the extent of the perceived effectiveness of AI-driven study tools, critical thinking skills, and motivation to read among BSED English students in Davao del Sur. Pearson Product-Moment Correlation This statistical technique was applied to determine the significance and strength of the relationships between the perceived effectiveness of AI-driven study tools, critical thinking skills,

and motivation to read. It would serve as a key indicator of the linear associations between these variables, highlighting how changes in one factor might correspond to changes in another. Structural Equation Model through Mediation Analysis This study employed Structural Equation Modeling (SEM) through mediation analysis to assess the mediating role of motivation to read in the relationship between the perceived effectiveness of AI-driven study tools and critical thinking skills. By incorporating mediation

analysis, SEM enables the examination of both direct and indirect effects, providing a nuanced understanding of how the variables interact. The Sobel Test would also be used to evaluate the significance of the mediation effect statistically. This test aimed to determine whether motivation to read significantly mediates the relationship, thereby offering robust insights into the mechanisms underlying the connections between AI-driven study tools and critical thinking skills.

3. Results and Discussion

This chapter presents the results generated from the data gathered. It was sequenced based on the study's objectives, as presented in the first chapter. Thus, it presents the moderating effect of the extent of AI-driven Study Tools and critical thinking skills, as well as their significant relationship.

3.1. Extent of AI-driven Study Tools in Terms of the Use of AI Tools —Table 1 shows that the extent of AI-driven Study Tools, in terms of the Use of AI Tools, is extensive, with a category mean of 4.08, interpreted as Extensive. The mean rating of the different items ranges from 4.00 to 4.20. On the other hand, item 4. The A.I. tools used in my studies increased my productivity.' has a mean rating of 2.99, described as moderately extensive and interpreted as sometimes observed by respondents, as the correlative approach makes the learning process more interactive. On the other hand, item 2. By using A.I. tools in my studies, I was

able to improve my understanding of the course material, which has a mean of 4.20, described as extensive and interpreted as often observed. The results suggested that AI-driven study tools can have a significant impact on learning by offering personalized experiences, immediate feedback, and enhanced engagement, ultimately leading to improved academic performance and the development of critical thinking skills. However, over-reliance on these tools can also diminish critical thinking and analytical skills, highlighting the importance of a balanced approach, which the BSEd students consider one of the most important indicators of AI-driven tools.

Table 1. The Extent of AI-Driven Study Tools in Terms of the Use of AI Tools

Statement	Mean	Descriptive Rating
1. A.I. tools helped me solve my doubts effectively in my studies.	4.10	Extensive
2. By using A.I. tools in my studies, I was able to improve my understanding of the course material.	4.20	Very Extensive
3. The A.I. tools used in my studies encouraged my creativity and innovation.	4.11	Moderately Extensive
4. The A.I. tools used in my studies increased my productivity.	4.00	Extensive
5. The A.I. tools used in my studies helped me find answers faster than other available resources (such as Google search).	4.02	Extensive
Overall Mean	4.08	Extensive

This supports the idea of Holmes and Tuomi (2022) and Edtech (2020), who emphasize that the rapid advancement of Artificial Intelligence (AI) is transforming various sectors, with education being no exception. AI plays a significant role in both general and higher education, influencing students' academic development by offering a mix of opportunities and challenges. From personalized learning experiences to intelligent tutoring systems that provide tailored guidance, support, and feedback based on individual learning patterns and knowledge levels (Hwang et al., 2020), AI has the potential to revolutionize education and address the diverse needs of learners. However, positive educational outcomes are not guaranteed solely by adopting advanced AI technologies. Integrating AI in academic environments raises critical questions related to equity, accessibility, and the evolving role of traditional teaching methods. In addition to assessments, AI tools have also been found to be effective in enhancing instructional practices. AI-powered tools in education, such as intelligent tutoring systems and virtual learning environments, can provide students with tailored learning experiences that cater to their learning paces and styles (Almasri, 2024). The adaptive nature of these systems ensures that students remain engaged in the learning process, receiving personalized feedback

that fosters a deeper understanding. By offering quizzes, assessments, and study plans tailored to each student's needs, these AI tools enhance engagement and contribute to improved academic outcomes. Furthermore, AI tools can help identify learning gaps, enabling educators to intervene more effectively and ensure that students remain on track with their learning objectives.

3.2. *Use of ChatGPT*—Table 2. The Effect of AI-driven study Tools in Terms of the Use of ChatGPT is extensive, with a category mean of 3.53, interpreted as often observed. The mean rating of the different items ranges from 3.03 to 4.02. On the one hand, item 3.I enhanced my academic research skills by integrating ChatGPT into my studies, which received a mean rating of 3.03, described as moderately extensive and interpreted as sometimes observed by students. On the other hand, item 5.I consistently received accurate and satisfactory answers to my questions from ChatGPT during my studies. Has a mean of 4.02, described as extensive and interpreted as often observed by the BSED students in Davao del Sur. The results may show that AI-driven study tools, such as ChatGPT, can significantly impact student learning and academic performance by offering personalized learning, essay grading, and enhanced research capabilities.

Table 2. The Extent of Effect of AI-Driven Study Tools in Terms of Use of ChatGPT

Statement	Mean	Descriptive Rating
1. I found ChatGPT to be an effective tool for enhancing my interaction with classmates.	3.41	Extensive
2. I improved my ability to apply acquired knowledge to real-world situations by using ChatGPT in my studies.	3.71	Extensive
3. I enhanced my academic research skills through the integration of ChatGPT in my studies.	3.03	Moderately Extensive
4. I found ChatGPT to be a reliable tool for facilitating my learning.	3.48	Extensive
5. I consistently received accurate and satisfactory answers to my questions from ChatGPT during my studies.	4.02	Extensive
Overall Mean	3.53	Extensive

However, concerns about over-reliance, potential erosion of research skills, and ethical implications surrounding the use of AI in education also require careful consideration. Moreover, AI tools like ChatGPT provide personalized learning by adapting to individual student needs, enhancing essay writing through support with structure and grammar, and improving research skills by facilitating access to various sources. They can automate essay grading, allowing educators to focus on other tasks, and enhance accessibility for students with diverse needs through real-time translation and assistive technologies. However, challenges such as over-reliance on AI leading to diminished independent thinking, concerns regarding academic integrity and plagiarism, ethical implications related to data privacy, and the potential erosion of research skills must be addressed. Additionally, the role of educators may need to be redefined as AI assumes some responsibilities. Overall, while AI-driven tools offer significant benefits, it is essential to develop guidelines for their responsible integration into education, empowering students rather than hindering their learning. This agrees with studies that have shown 64 percent of students believe ChatGPT has significantly improved their critical thinking abilities (Ruiz-Rojas et al., 2024). This is primarily because ChatGPT allows students to explore complex topics more thoroughly, encouraging them to question, evaluate, and synthesize information rather than simply memorizing it. As a result, ChatGPT not only acts as a study aid but also fosters higher-order thinking skills, making it a valuable tool in promoting intellectual development. While ChatGPT's effectiveness as a learning tool is undeniable, concerns have surfaced regarding the potential for over-reliance on AI systems. Zhai et al. (2024) caution that students may become too dependent on generative AI tools like ChatGPT, using them as cog-

nitive shortcuts rather than engaging fully in the learning process. This over-reliance can impair decision-making and critical thinking skills, as students might accept AI-generated responses without sufficient scrutiny or analysis. Therefore, while ChatGPT is effective in providing immediate answers and assistance, educators must guide students in using the tool as a supplement to, rather than a replacement for, active learning. Strategies to mitigate over-reliance include encouraging students to critically assess AI-generated content and integrate it with their knowledge and reasoning. Furthermore, Memarian and Doleck (2024) asserted that ChatGPT is equally effective in supporting educators. By helping educators create personalized lesson plans, generate classroom materials, and offer differentiated instruction, ChatGPT alleviates the workload on teachers and tailors its support to their current level of understanding.

3.3. The Effect of AI-Driven Study Tools
In terms of proficiency in using AI tools —Table 3 shows that the Effect of AI-driven study tools on students' proficiency in using AI tools is extensive, with a category mean of 3.46, indicating that this was a commonly observed phenomenon. The mean rating of the different items ranges from 3.13 to 4.17. On the one hand, item 3, The A.I. tools used in my studies, was easy to use for problem-solving, had a mean rating of 3.13, was described as moderately extensive, and was interpreted as sometimes observed by respondents. On the other hand, item 5. I mastered the use of the ChatGPT tool in my studies, which has a mean of 4.17, described as extensive and interpreted as oftentimes observed. The result means that the development of skills such as critical thinking, analytical reasoning, problem-solving, and the ability to recognize and apply relationships between ideas is oftentimes observed among BSED English students, Davao del Sur.

Table 3. The Effect of AI-Driven Study Tools in Terms of Proficiency in Using AI Tools

Statement	Mean	Descriptive Rating
1. I had no difficulties formulating questions in ChatGPT in my studies.	3.23	Moderately Extensive
2. I found it easy to use A.I. tools to formulate my questions in my studies.	3.33	Moderately Extensive
3. The A.I. tools used in my studies were easy to use for problem-solving.	3.13	Moderately Extensive
4. I frequently used A.I. tools in my studies.	3.45	Extensive
5. I master the use of the ChatGPT tool in my studies.	4.17	Extensive
Overall Mean	3.46	Extensive

These results enable students to identify their proficiency levels in specific subjects, allowing them to receive customized learning paths that target their individual needs and learning styles. This adaptability is crucial for enhancing student engagement and performance, as demonstrated in language proficiency assessments, where AI tools like ChatGPT and Claud.ai are utilized to efficiently assess reading, writing, listening, and speaking skills (Chugani, 2024). These tools' ability to provide immediate, tailored feedback enables students to address their learning gaps in real time, making AI a powerful resource for self-directed learning. Moreover, the iterative nature of AI tools promotes deeper cognitive engagement, allowing students to refine their use of these technologies over time. For example, the "PROMPT" and "EDIT" frameworks encourage students to design, analyze, and adjust their AI inputs, leading to a more critical and reflective use of AI (Stauffer Gold, 2024). These frameworks help students develop metacognitive skills by encouraging them to question the AI's output, evaluate its relevance, and refine the AI-generated responses to better align with their learning goals. This iterative engagement fosters a deeper understanding of how AI tools can be used effectively, promoting digital literacy and enhancing students' critical thinking and problem-solving skills. Despite the potential benefits of AI tools, concerns have been raised about students' over-reliance on these systems.

Research highlights that while AI tools can provide valuable assistance, students must develop the skills to critically assess AI outputs rather than accepting them at face value (Zhai et al., 2024). Educators play a pivotal role in guiding students on how to use AI tools responsibly. By incorporating AI into classroom activities, teachers can provide structured opportunities for students to assess the quality of AI-generated content, allowing them to develop the necessary proficiency to use these tools effectively (Sharma, 2023). In language learning contexts, AI tools have proven to be particularly effective in enhancing students' proficiency in English and other languages. AI-powered platforms, such as Flow Speak, offer real-time feedback on students' speech patterns, grammar, and vocabulary, allowing them to enhance their language skills in a targeted and efficient manner (Chugani, 2024). AI-driven study tools are important because they offer personalized learning, enhance engagement, and can be utilized for tasks such as research, writing, and even automated grading. These tools can make learning more accessible and efficient for students while also helping educators streamline their work.

3.4. Advanced Student Skills in AI—Table 4 shows that the data on the extent of AI-driven study Tools in terms of Advanced BSED English Students' Skills is extensive, with a category mean of 3.85, indicating that this is oftentimes observed. The mean rating of the different items ranges from 3.55 to 4.09. On the

one hand, I utilized A.I. tools in my studies to verify the relevance of the teacher’s evaluation, which has a mean rating of 3.55, described as moderately extensive and interpreted as sometimes observed by the students. On the other

hand, I utilized A.I. tools in my studies to refine a text that I wrote myself, with a mean score of 4.09, described as extensive and interpreted as often observed.

Table 4. The Extent of AI-Driven Study Tools in Terms of Advanced BSED English Students’ Skills

Statement	Mean	Descriptive Rating
1. I used A.I. tools in my studies to improve a text that I wrote myself.	4.09	Extensive
2. With the help of the A.I. used in my studies, I was able to expand or synthesize a text that I wrote.	4.02	Extensive
3. I used A.I. tools in my studies to evaluate the works that I sent to the teacher.	3.68	Extensive
4. I used A.I. tools in my studies to verify the relevance of the teacher’s evaluation.	3.55	Extensive
5. I used A.I. tools in my studies to get feedback and suggestions on my written assignments.	3.92	Extensive
Overall Mean	3.85	Extensive

The result implies that awareness and consideration of time as an essential factor in the learning process are often observed among BSED English students in Davao del Sur. The result supports the idea of Chang et al. (2021), Gayed et al. (2022), Jeanjaroonsri (2023), and Zhao (2022), who note that the use of Artificial Intelligence (AI)–powered writing tools in English as foreign language (EFL) classroom is increasing rapidly. These tools include grammar checkers, writing aids, and programs that can generate written works, such as essays, without human assistance. They are easy to use and effective, saving students and educators time and effort. Additionally, AI writing tools have been used particularly for EFL learners with low English proficiency. Using these tools, students can receive immediate feedback and assistance, improving their writing skills more quickly. Likewise, Hosseini et al. (2023), Strobl et al. (2019), and Thorp (2023) stressed that AI writing tools are designed to analyze written materials and provide feedback on various aspects of writing, including grammar, vocabulary, syntax, content, and structure. Such feedback

is created by machine-learning algorithms that compare the written text to a big database of correct and incorrect instances of writing. In other words, EFL students can obtain instant and tailored feedback on their writing, which can assist them in identifying and correcting faults more rapidly. Similarly, this real-time feedback can also help students understand the fundamental concepts of successful writing and provide them with direction for improving their writing abilities (Akgun Greenhow, 2022; Nazari et al., 2021; Rudolph et al., 2023).

3.5. Summary of Extent of the Effect of AI-Driven Study Tools—Lastly, Table 5 summarizes the effect of AI-driven study tools. The overall mean of the AI-driven study tool’s effect was 3.73, described as extensive and often observed by students. Moreover, the Effect of AI-driven study Tools, in terms of the Use of AI Tools, achieved the highest mean score of 4.08, described as extensive and often observed. In contrast, the correlative teaching approach, in terms of Proficiency in Using AI Tools, received the lowest mean score of 3.46, described as extensive and often observed by the respondents.

This means that the approach often involves skills are related and how they complement each other. showing how various pieces of information or other.

Table 5. Summary of Extent of Effect of AI-Driven Study Tools

Indicators	Mean	Descriptive Equivalent
Use of AI Tools	4.08	Extensive
Use of ChatGPT	3.53	Extensive
Proficiency in Using AI Tools	3.46	Extensive
Advanced Student Skills in AI	3.85	Extensive
Overall Mean	3.73	Extensive

The result aligns with a systematic review conducted by Ouyang et al. (2023), which examined the functions and effects of AI-driven educational assessments, highlighting how AI tools can assess learning status, academic performance, and instructional quality in real-time. The integration of both traditional and advanced algorithms, such as deep learning and neural fuzzy systems, has led to more personalized and efficient assessments, further supporting the educational outcomes of students in STEM fields.

3.6. Critical Thinking Skills of the BSED Students in terms of Remembering —Table 6 shows that the students' Critical Thinking Skills, in terms of Remembering, are moderately extensive, with a category mean of 3.29. This indicates that it is sometimes manifested. The mean rating of the different items ranges from 3.01 to 3.78. The item 2. If needed, I can accurately recall information from texts I have read in the past, with a mean rating of 3.01, which is described as moderately extensive and interpreted as this item sometimes manifests in students. Moreover, the item that I can connect to current information, which I have previously learned, helping me better remember the material, has a

mean rating of 3.78, described as extensive and interpreted as this item often manifests. These results suggest that remembering is a foundational element of critical thinking. While critical thinking involves higher-order cognitive processes, such as analysis and evaluation, a robust knowledge base is essential for these processes to function effectively. Students need to recall facts, concepts, and principles to analyze information, make connections, and formulate arguments. Building a robust knowledge base through effective recall is essential for students, as it provides foundational information necessary for higher-order thinking. The ability to remember relevant facts enhances their capacity to analyze complex ideas, identify patterns, and critically evaluate claims. Additionally, recalling information supports problem-solving and informed decision-making, enabling students to construct well-reasoned arguments backed by evidence. Improved comprehension of key terms and concepts further deepens their understanding of nuanced information. Ultimately, while critical thinking skills are crucial, they depend on the ability to recall and access knowledge effectively.

Moreover, building a robust knowledge base through effective recall is essential for students, as it provides foundational information necessary for higher-order thinking. The ability to

remember relevant facts enhances their capacity to analyze complex ideas, identify patterns, and critically evaluate claims. Additionally, recalling information supports problem-solving and

Table 6. The Extent of Critical Thinking Skills of the BSED Students in Terms of Remembering

Statement	Mean	Descriptive Rating
1. After reading a text, I can clearly recall and summarize its main points and key arguments.	3.12	Moderately Extensive
2. If needed, I can accurately remember information from texts I have read in the past.	3.01	Moderately Extensive
3. I can quickly retrieve information related to topics I have previously studied or encountered.	3.46	Extensive
4. I am confident in my ability to retain and recall details from academic content that I have learned.	3.11	Moderately Extensive
5. I can connect current information to what I have previously learned, helping me better remember the material.	3.78	Extensive
Overall Mean	3.30	Moderately Extensive

informed decision-making, enabling students to construct well-reasoned arguments backed by evidence. Improved comprehension of key terms and concepts further deepens their understanding of nuanced information. Ultimately, while critical thinking skills are crucial, they depend on the ability to recall and access knowledge effectively. This finding was supported by Alhowail and Albaqami, (2024), who asserted that critical thinking skills are a pivotal notion within the realm of education, inspiring educational reforms that advocate for schools to prioritize lifelong skills applicable across all academic disciplines, professional environments, and civic engagements (Halpern Albaqami, 2024). Similarly, Lai et al. (2024) asserted that years of experience, feedback, evaluation, and teachers' perceptions of students' learning impact teaching approaches, communication skills, and classroom teaching (CT). Students can enhance their academic performance by utilizing CT to organize, analyze effectively, and complete assignments. Education, psychology, and philosophy have all considered the concept of CT. In education, teaching approaches, communication skills, and classroom teaching (CT) are influenced by years of experience, feedback, evaluation, and how teachers perceive students' learning (Lai, cited in Alhowail Albaqami, 2024). Paul, cited in Alhowail, and Albaqami

(2024), noted that critical thinking skills help students organize, analyze, and complete assignments, boosting their academic performance. It also enhances students' critical thinking processes, enabling them to grasp course requirements and absorb course material more effectively. In contrast, explaining and fixing a problem encourages students to respect the concept of theory and recognize that prior knowledge and experience can influence how individuals interpret and apply CT skills. To ensure optimal student development, it is crucial to strike a balance between practical application, prior knowledge, and conceptual thinking (CT).

3.7. Understanding—Table 7 Critical thinking skills of the BSED students in Terms of Understanding as extensive with a category mean of 3.46. This indicates that it is sometimes manifested. The mean rating of the different items ranges from 3.12 to 3.49. Item 2. I enjoy comparing different opinions to gain a deeper understanding of diverse perspectives. It has a mean rating of 3.12, described as moderately extensive and interpreted as indicating that this item sometimes manifested in the responses of the respondents. Meanwhile, the item that identifies the central themes and implicit messages conveyed in different types of text has a mean rating of 3.99, described as extensive and interpreted as this item often manifests.

Table 7. The Extent of Critical Thinking Skills of the BSED Students in Terms of Understanding

Statement	Mean	Descriptive Rating
1. I can comprehend texts from various fields and apply their concepts in different contexts.	3.33	Moderately Extensive
2. I enjoy comparing and contrasting different opinions to understand diverse perspectives.	3.12	Moderately Extensive
3. I sometimes struggle with rephrasing complex ideas in my own words.	3.49	Extensive
4. I pay attention to the contexts, nuances, and underlying meanings within the statements I read.	3.39	Moderately Extensive
5. I can identify the central themes and implicit messages conveyed in different texts.	3.99	Extensive
Overall Mean	3.46	Extensive

Critical thinking is the ability to understand, analyze, evaluate, and interpret information to reach reasoned conclusions, making it a vital skill for 21st-century citizens. It involves various components, including interpretation, analysis, evaluation, inference, explanation, and self-regulation, which are essential for higher education and empower students to solve problems, make informed decisions, and communicate effectively. By integrating critical thinking into education, students engage in active learning, analyze complex problems, make informed decisions, and improve their communication skills. Furthermore, it fosters self-regulation and supports lifelong learning, equipping individuals to adapt continuously to new information and challenges while valuing diverse perspectives. The result is congruent with the article by Normile (2025), which asserts that it draws on existing theory in a project of synthesis and integration to develop a terminological, conceptual, and graphical model for understanding the scope of critical thinking. She begins by explaining why the concept of critical scope is important and then develops a model that maps the scope of critical thinking across individual, sociocultural, and existential domains in conjunction with the ontological, epistemological, emotional, and political dimensions. Building on this, she outlines the relationships between contexts, critical

frameworks, and metacritique as essential to understanding the scope of critical thinking. The model also includes a means for organizing the attributes, or character traits, of critical thinkers. This project provides resources to encourage and guide critical thinking on a broader scale in education, society, and daily life, helping people understand the contours and potential limitations of critical thinking. This has profound implications for education and society, enhancing the rigor, reach, and diversity of critical thinking. This model is far from complete and is designed to invite ongoing engagement, including critique. It is intended as a rubric to prompt and inspire, not as a device to 'measure' or 'assess' critical thinking. Educationally, the intention is to provide resources for understanding, negotiating, and facilitating critical thinking at an expansive scope. This also supports Alsaleh (2020), who states that students may struggle to engage in higher-order critical thinking tasks without a solid grasp of foundational knowledge. Therefore, educators must ensure that students develop strong remembering and understanding skills as part of their critical thinking development.

3.8. Applying—Table 8 presents the data on the critical thinking skills of the BSED students, specifically in the 'Applying' category, which was described as extensive, with a cat-

egory mean of 3.53. This indicates that it is oftentimes manifested. The mean rating of the different items ranges from 3.30 to 3.55. The item “I often use a variety of examples to illustrate my points when speaking” has a mean rating of 3.30, described as moderately extensive and interpreted as indicating that this item sometimes manifests among BSED students. Furthermore, the item “incorporate newly learned

knowledge and skills into my personal or academic projects” has a mean rating of 4.00, described as extensive and interpreted as this item oftentimes manifests among the BSED students. This suggests that the ethical principles, attitudes, and behaviors that students develop as they engage with technology and livelihood education content are oftentimes manifested by the BSED students in Davao del Sur.

Table 8. The Extent of Critical Thinking Skills of the BSED Students in Terms of Applying

Statement	Mean	Descriptive Rating
1. I am eager to share my newly acquired information and insights with others.	3.37	Moderately Extensive
2. I often use a variety of examples to illustrate my points when speaking.	3.30	Moderately Extensive
3. I use practical examples to support and justify my position when discussing a topic.	3.55	Extensive
4. I actively apply my learned information to solve real-life situations and challenges.	3.46	Extensive
5. I incorporate newly learned knowledge and skills into my personal or academic projects.	4.00	Extensive
Overall Mean	3.54	Extensive

According to research by Velayati et al. (2020), rote memorization and limited exposure to diverse viewpoints lead to pupils frequently failing when attempting to apply critical thinking skills in reading. These can be chained together to create a logical inquiry that any student can follow. The idea is that over time, children develop critical thinking dispositions that foster reflective thinking and advance their mental processes. Increasing our repertoire of cognitive actions improves students’ decision-making process, as they are more aware of the directions their learning could take. Educational systems often need to cultivate these abilities adequately in students. Students must develop critical thinking skills to navigate the complex

nature of the 21st century. The absence of emphasis on critical thinking techniques in educational institutions has been noted as a significant barrier (Supriyatno et al., 2020).

3.9. *Analyzing*—Table 9 Critical thinking skills of BSED students in terms of analyzing are extensive, with a category mean of 3.56. This indicates that it is sometimes manifested. The mean rating of the different items ranges from 2.95 to 4.18. The item that I believe engages in a detailed analysis of real-world situations contributes meaningfully to my academic growth and has a mean rating of 3.22, described as moderately extensive and interpreted as this item sometimes manifests in the students.

Furthermore, the item, which I regularly question and analyze to deepen my understanding, has a mean rating of 3.90, described as extensive and interpreted as this item often man-

ifests. These results suggest that developing critical thinking skills, particularly the ability to analyze, is crucial for BSED students. It enables them to effectively evaluate information,

Table 9. Critical Thinking Skills of BSED Students in Terms of Analyzing

Statement	Mean	Descriptive Rating
1. I believe engaging in detailed analysis of real-world situations contributes meaningfully to my academic growth.	3.22	Moderately Extensive
2. I enjoy discovering connections between seemingly unrelated phenomena.	3.28	Moderately Extensive
3. I can identify and extract the most significant information from complex texts.	3.41	Extensive
4. When reading a text, I actively seek to understand its relationship to other texts I have read and connect it to broader themes or ideas.	3.98	Extensive
5. I regularly question and analyze the underlying assumptions in the information I encounter to deepen my understanding.	3.90	Extensive
Overall Mean	3.56	Extensive

solve problems, and make informed decisions, which are essential for their future careers as educators. Critical thinking skills are crucial for analyzing information effectively. They enable individuals to break down complex information, identify patterns, and evaluate the components of a problem to draw a conclusion. This includes skills like logical reasoning, evidence evaluation, and identifying assumptions. This result was supported by Martins (2025), who agreed that Analytical thinking involves evaluating data from various sources to arrive at well-informed conclusions, enabling individuals to overcome cognitive biases and effectively tackle intricate subject matter while solving complex problems. Those who excel in analytical thinking can identify patterns and trends within the data, decompose complex issues into manageable components, recognize cause-and-effect relationships, and critically assess the strength of arguments and evidence. The result is also congruent with Rohmah and Yudo Nugroho (2023), who asserted that cognitive quality is undoubtedly related to student learning success. Furthermore, students' reading skills significantly impact their learning success. In reading skills, a person may be able to determine the structure of the text, the purpose of reading, and mastery

of vocabulary [10]. In other words, students can understand the material in all the subjects they cover with practical reading skills. As a result, reading comprehension becomes a fundamental skill that students must possess to learn effectively.

3.10. Evaluating—Table 10 shows that the critical thinking skills of BSED students in terms of Evaluation are extensive, with a category mean of 3.53. This indicates that it is sometimes manifested. The mean rating of the different items ranges from 2.96 to 3.39. The item is that I assess the credibility of sources and the evidence provided before accepting information as factual. This assessment has a mean rating of 2.96, which is moderately extensive and interpreted as indicating that this item sometimes manifests in the students. Furthermore, I critically evaluate arguments by considering potential biases and assumptions that may influence the presented information, which has a mean rating of 4.01, described as extensive and interpreted as this item often manifests. This suggests that teachers can provide students with hands-on experiences and practical insights, fostering interest and engagement in technology and livelihood education subjects.

The result supports the study of Paul and Elder (cited in Gürsan and Sweden, 2022), who

explain it as a mental process formed by analyzing, evaluating, and reorganizing the qual-

Table 10. The Extent of Critical Thinking Skills of BSED Students in Terms of Evaluating

Statement	Mean	Descriptive Rating
1. In discussions, I prioritize justifying my own position while also making an effort to understand and evaluate others' perspectives.	3.39	Moderately Extensive
2. When I find information piques my interest, I actively verify its accuracy before forming an opinion.	3.91	Extensive
3. After reading important information, I double-check its validity, even if it initially appears credible.	3.38	Moderately Extensive
4. I assess the credibility of sources and the evidence provided before accepting information as factual.	2.96	Moderately Extensive
5. I critically evaluate arguments by considering potential biases and assumptions that may influence the presented information.	4.01	Extensive
Overall Mean	3.53	Extensive

ity of an individual's perception of a particular topic, issue, or problem in a thoughtful manner. Kurnaz (cited in Gürsan and Seden, 2022) expressed critical thinking as the process of investigating the truth, with all its positive and negative aspects, both visible and invisible to us, and making a judgment about it. Lastly, critical thinking is the process of employing cognitive abilities or techniques that enhance the likelihood of success. Egmir (2019). expressed critical thinking as a systematic process of doubting, using critical questions to improve our thinking, carry out more effective ideas, and reach better decisions. As can be understood from the definitions of critical thinking, adapting this important skill to education systems is crucial to achieving a critical society structure consisting of individuals who can think critically. As can be understood from the definitions of critical thinking, adapting this important skill to education systems is crucial to achieving a critical society structure consisting of individuals who can think critically. Embedding critical thinking into curricula empowers learners to question assumptions, analyze information deeply, and arrive at well-reasoned conclusions.

It also cultivates independence in thought, enabling students to navigate complex social and academic challenges with confidence.

3.11. The Summary of the Critical Thinking Skills of BSED students in Davao Del Sur — Table 11 summarizes the critical thinking skills of BSED students in Davao del Sur. As shown in the table, the summary of BSED students' critical thinking skills yielded an overall mean score of 3.48, with a descriptive rating of 'extensive', indicating that BSED students often exhibit this skill. It was observed that Analyzing is the highest mean rating, with 3.56 or extensive; applying was second, with 3.54 or extensive; Evaluating was the third, with 3.53 or extensive; Understanding was fourth, with a mean rating of 3.46 or extensive; and the last indicator is remembered with 3.30 or moderately extensive. The result indicates that BSED students' critical thinking is oftentimes manifested in Davao del Sur. The result is congruent with Supriyatno et al. (2020) idea that critical thinking is an analytical process that involves drawing conclusions, analyzing, explaining, and disputing while also developing one's cognitive processes. It also involves analyzing pertinent evidence.

Table 11. The Summary of Critical Thinking Skills of BSED Students

Indicators	Mean	Descriptive Equivalent
Remembering	3.30	Moderately Extensive
Understanding	3.46	Extensive
Applying	3.54	Extensive
Analyzing	3.56	Extensive
Evaluating	3.53	Extensive
Overall Mean	3.48	Extensive

However, educational systems often need to cultivate these abilities adequately in students. To effectively navigate the complex nature of the 21st century, students must cultivate critical thinking abilities. The lack of emphasis on critical thinking techniques in educational institutions has been identified as a significant barrier. Similarly, according to research by Velayati et al. (2020), rote memorization and limited exposure to diverse viewpoints often lead to pupils frequently failing when attempting to apply critical thinking skills in reading. In a similar vein, Aydin et al. (2023) suggest that a discrepancy may exist between curriculum goals and actual classroom practices, where critical thinking is not deliberately promoted.

3.12. Motivation to Read of BSED students in Davao Del Sur in terms of Intrinsic

—Table 12 presents the extent of Motivation to read among BSED students in Davao Del Sur, specifically in terms of Intrinsic motivation, which yields an overall mean of 3.54, described as extensive and interpreted as often manifested. The mean ratings of the items range from 3.39 to 3.71. The item “I read because that is how I can learn more about interesting things” reflects a mean rating of 3.39, described as moderately extensive and interpreted as an indication of information communication strategies employed by learners, which are sometimes evident. Meanwhile, the item “I read because that is how I can learn something new” has a mean rating of 3.71, described as extensive and interpreted as oftentimes evident among BSED students.

Table 12. The Extent of Motivation to Read of BSED Students in Davao Del Sur in Terms of Intrinsic

Statement	Mean	Descriptive Rating
1. I read because books and stories often are fascinating.	3.69	Extensive
2. I read because sometimes I can forget everything around me.	3.54	Extensive
3. I read because that is how I can learn something new.	3.71	Extensive
4. I read because that is how I can learn more about interesting things.	3.39	Moderately Extensive
5. If the teacher discusses something interesting, I might read more about it.	3.36	Moderately Extensive
Overall Mean	3.54	Extensive

The result suggests that the Extent of Motivation of BSED students in Davao Del Sur is crucial for intrinsic motivation to read, as it fosters a genuine love for learning, independent

of external factors such as grades or pressure. This inherent drive leads to increased engagement, improved comprehension, and a higher likelihood of lifelong reading habits. The find-

ing aligns with Ang and Schleppegrell (2021), who state that "reading attitude refers to an individual's overall affective response to reading, including their feelings of enjoyment, interest, and confidence in their ability to read." This definition highlights the emotional and motivational aspects of reading attitude that can affect engagement with reading. They further explain that reading attitude has many factors, including previous reading experiences, a cultural background, and individual interests, that shape it into an intricate and multidimensional structure. Attitude is defined by the individual's views about the results or attributes of executing the behavior (behavioral beliefs), weighted by evaluations of those outcomes or features. Consequently, a person who believed that such behavior would yield positive results was more likely to adopt it. Likewise, Tomas et al. (2021) asserted that reading comprehension problems can make it difficult for people to understand instructions in an examination, as well as pertinent documents such as a birth certificate, a marriage contract, and a housing agreement. People with a low level of reading comprehension struggle to be successful in their jobs or school because

they have low self-esteem and fear, and cannot communicate well. Given this, the Department of Education (DepEd) has committed to making every student a reader at their grade level by launching the Hamon: Bawat Bata Bumabasa (3Bs Initiatives) and stepping up reading advocacy, according to Tomas et al. (2021).

JThe Motivation to Read of BSED Students in Davao Del Sur in terms of Extrinsic

Table 13 presents the extent of Motivation to read among BSED students in Davao Del Sur, specifically in terms of Extrinsic motivation, which yields an overall mean of 3.53, described as extensive and interpreted as often manifested. The mean ratings of the items range from 3.34 to 3.73. The item "The teacher can gauge student comprehension of what you have taught" reflects a mean rating of 3.34, which is moderately extensive and interpreted as indicating the information communication strategies of learners, which are sometimes evident. Meanwhile, "The teacher can provide appropriate challenges for competent students" shows a mean rating of 3.73, which is described as extensive and interpreted as often evident among BSED students in Davao Del Sur.

Table 13. The Extent of Motivation to Read of BSED Students in Davao Del Sur in Terms of Extrinsic

Statement	Mean	Descriptive Rating
1. I read to improve my grades in school.	3.54	Extensive
2. I read because it helps me do better in school.	3.34	Moderately Extensive
3. I read because I know that my friends also read a lot.	3.39	Moderately Extensive
4. I read because I like it when other people think I am a good reader.	3.36	Moderately Extensive
5. I read because it is important to me to always be the best at reading.	3.50	Extensive
Overall Mean	3.43	Extensive

The findings underscore the significance of Extrinsic motivation, where reading is driven by external rewards or avoidance of negative consequences, which can be important for initial engagement and building a culture of reading. Extrinsic motivation, such as the desire for good

grades or recognition, can be a crucial driver for college students, particularly when completing reading assignments. It can help them engage with material they might otherwise find unappealing and ensure they complete the necessary reading. While it is less effective than intrinsic

motivation in the long run, extrinsic motivation can be a powerful tool for initial engagement and can contribute to a positive learning experience. The extrinsic motivation for BSED students in Davao Del Sur to read is often driven by external factors, such as achieving high grades, gaining recognition, and fulfilling academic requirements. Students may be motivated to read to avoid poor grades or to impress their parents and teachers. Conversely, extrinsically motivated students are more likely to read interesting topics, stories, or articles that align with their interests. The discovery aligns with Kheang et al. (2024), who argued that motivation is a crucial yet frequently neglected element of language acquisition and pedagogy, particularly in English language education. In this context, reading motivation is paramount, as reading is a fundamental ability essential for academic and psychological growth. Many pupils, however, encounter difficulties with reading, which results in inadequate understanding and a limited vocabulary. In addressing this difficulty, experts have emphasized the significance of reading motivation in enhancing pupils' reading skills. By fostering an authentic enthusiasm for reading and providing the necessary support and encouragement, educators can enhance reading competency and cultivate a lasting affection for books. Recent scholarly attention has been on investigating the application of reading rewards to improve reading comprehension. This paper intends to investigate the subject by defining

reading motivation, categorizing types of motivation, analyzing reading comprehension, and reviewing several models of reading comprehension. A thorough literature study reveals that motivation significantly influences learners' reading comprehension.

3.13. The Summary of the Motivation to Read of BSED Students in Davao Del Sur — Table 14 summarizes that the extent of Motivation to read among BSED students in Davao Del Sur is 3.49, which is described as extensive. The results range from the highest, 3.54, which was intrinsic motivation, to the lowest, 3.43, which was extrinsic motivation. This summary suggests that BSED students' Improved academic performance in college is significantly influenced by students' motivation to read, which is essential for engaging with coursework that relies heavily on diverse texts. Motivated readers are more likely to actively engage with materials, enhancing their comprehension and retention skills while developing critical reading abilities necessary for success. Intrinsically motivated students delve deeper into content, broadening their knowledge base and fostering long-term information retention. Additionally, this motivation nurtures a lifelong love for learning, encourages curiosity, and promotes critical thinking by allowing students to evaluate diverse perspectives and arguments. Ultimately, reading serves as a gateway to personal and professional development, equipping students for future success.

Table 14. The Summary of the Extent of Motivation to Read of BSED Students in Davao Del Sur

Indicators	Mean	Descriptive Equivalent
Intrinsic	3.54	Extensive
Extrinsic	3.43	Extensive
Overall Mean	3.49	Extensive

This overall outcome aligned with Damanhuri's (2020) study, which observed a decline in student learning motivation during lectures. Some students arrive tardily to virtual classrooms, resulting in their frequent non-participation in online conversations, even with their webcams deactivated. Moreover, when instructors pose questions, students frequently seem ill-prepared to deliver substantive responses, and several students exhibit disheveled appearances and a lack of enthusiasm. This issue highlights that individuals have varying motivations for learning. Students exhibit high motivation in virtual classrooms, as seen by their persistence, perseverance, and attempt to comprehend the material taught by instructors. This is further augmented by consulting diverse sources and maintaining concentration during the learning process, allowing individuals to align their actions with goal attainment. Students without motivation may experience feelings of hopelessness, boredom, and disinterest in online learning, which can adversely affect the educational process. His research indicated that the impact of the coronavirus outbreak on higher education, especially inside Indonesian

institutions, was inconsistent. Online education has been found to diminish motivation among certain college students (Lestari Sri Nugraheni, 2022).

3.14. Relationship Among AI-Driven Study Tool, Motivation to Read, and Critical Thinking Skills of BSED Students—The results of the analysis of the relationship among AI-driven study tools, Motivation to read, and Critical Thinking Skills of BSED Students in Davao Del Sur are presented. Bivariate correlation analysis, using the Pearson product-moment correlation, was employed to determine the relationship among the mentioned variables. Table 15 shows that AI-driven study tools, Motivation to read, with a p-value of less than 0.0001, at a two-tailed significance level ($r = 0.567$, $p < 0.05$). This means that the extent of AI-driven study tools or units also increases the Motivation they are significantly associated with. While Motivation to Read Moreover, Critical thinking skills showed a p-value of 0.023, which is greater than 0.05 on the two-tailed test. It is statistically safe to conclude that there is no significant relationship between the Motivation to Read and Critical Thinking Skills.

Table 15. Relationship Among AI-Driven Study Tools, Motivation to Read, and Critical Thinking Skills of BSED Students

Variables	Pearson r	Number of Cases	Sig. (2-tailed)
Effect of AI-Driven Tools and Motivation to Read	.567**	100	<.001
Motivation to Read and Critical Thinking Skills	.227*	100	.023*
Critical Thinking Skills and Effect of AI-Driven Tools	.551**	100	<.001

On the one hand, the results indicate a significant positive correlation between Critical Thinking Skills and the Effect of AI-driven tools on BSED students in Davao Del Sur, with a p-value of less than 0.00 at an alpha level of 0.05 ($r = 0.551$, $p < 0.05$). This means that the extent of AI-driven study tools among learners has a significant association. This leads to rejecting the null hypothesis of no signifi-

cant relationship between digital text reading and teacher's teaching efficacy. The findings align with Bosman and Schulze's (2018) proposition that the preference for individual learning is most closely correlated with motivation for achievement. Learners who performed well were significantly more inclined to learn individually than the low achievers. The results align with Banditvilai's (2020) study, which

demonstrated that reading techniques positively influenced pupils' reading comprehension. The duration required to perform the activity may influence the study outcomes, as indicated by the research of Martina et al. (2020), which demonstrated that time limitations impact reading comprehension assessments. Reading comprehension is essential for pupils to understand and effectively utilize the author's message, thereby enhancing their knowledge and refining their cognitive abilities. Comprehending the information the author intends to communicate in a work is essential. Students, by their skills, are eager to undertake the tasks assigned by their teacher. Therefore, it is essential to understand the impact of teacher efficacy on students' English acquisition, specifically in reading comprehension. Most educators effectively instruct reading. They must provide their students with tools for text comprehension and instruct them to read the text before answering the questions.

Consequently, the kids exhibit advanced reading skills and habits for text comprehension.

3.15. Mediating Effect of Motivation to read on the Relationship Between Effect AI-driven tools and Critical thinking skills—Results in Table 16 show the mediating Effect of Motivation on the Relationship Between the Effect of AI-driven tools and Critical thinking skills in Davao Del Sur. As shown in the table, the Effect of AI-driven tools, as the independent variable, significantly affects the critical thinking skills of BSED students, which is the dependent variable in this study, as evident in the estimated coefficient of 0.659 and $p \leq 0.05$. On the one hand, the direct effect of AI-driven study tools on teachers' motivation to read (MTR) is significant, as indicated by an estimated value of 0.669, $p = < 0.05$. The results of the estimates indicate a strong and directionally consistent influence of one variable on another.

Table 16. Regression Weights of Mediating Effect of Motivation to Read on the Relationship Between Effect of AI-Driven Study Tool, Teachers' Teaching Efficacy, and Critical Thinking Skills of BSED Students

Path	Estimate	Std. Error	C.R.	p-value
MTR $\leftarrow$ EAST	0.669	0.098	6.854	< .005
CTS $\leftarrow$ MTR	-0.122	0.097	-1.254	.210
CTS $\leftarrow$ EAST	0.707	0.115	6.164	< .005

Legend. MTR – Motivation to Read; CTS – Critical Thinking Skills; EAST – Effect of AI-Driven Study Tools.

Note. C.R. = Critical Ratio. Significant paths ($p \leq .05$) are from EAST to both MTR and CTS, but not from MTR to CTS.

On the one hand, MTR has no direct effect on Motivation to read and Critical thinking skills (CTS), as indicated by an estimated value of -.122, $p = 0.210$. The estimates indicate a weak and non-directionally consistent relationship between the two variables. Lastly, the effect of AI-driven study tools on the Critical thinking skills of BSED students is significant, as indicated by an estimated value of 0.707, $p < 0.05$. The results of the estimates indicate a strong and directionally consistent relationship between the variables. The regression weights

are crucial in determining and quantifying a variable's mediating effect. In mediation analysis, these weights represent the strength and direction of the relationships between the independent variable, the mediating variable, and the dependent variable. Regression weights offer insights into how the mediating variable influences the relationship between the independent and dependent variables, facilitating an understanding of how the independent variable affects the outcome.

Table 17. Mediating Effect of Motivation to Read on the Relationship Between AI-Driven Study Tool Teachers' Teaching Efficacy and Critical Thinking Skills of BSED Students

Path	Total Effect	Direct Effect	Indirect Effect
MTR $\leftarrow$ EAST	0.669, $p = .000$	0.669, $p = .000$	0.000
CTS $\leftarrow$ MTR	–	–	–
CTS $\leftarrow$ EAST	0.625, $p = .000$	0.707, $p = .000$	-0.082, $p = .000$

Note. MTR – Motivation to Read; CTS – Critical Thinking Skills; EAST – Effect of AI-Driven Study Tools.

Total effect = Direct effect + Indirect effect. A negative indirect effect from EAST to CTS via MTR indicates a potential suppressor or inconsistent mediation.

Complete mediation in which the direct(c') between the predictor (x) and the outcome variable (y) is zero. On the contrary, partial mediation is when the direct relation between the predictor variable (x) and the outcome variable (y) is non-zero. Therefore, the path of 0.707 with a coefficient of -0.127 indicates partial mediation. Therefore, partial mediation took place. Hence, the null hypothesis that information teaching efficacy does not mediate the relationship between digital text reading and learners' reading comprehension is rejected. The table also indicates the results of the effect size computation in the mediation test conducted between the three variables. The effect size measures how much of the effect of learning preferences on the classroom engagement of learners can be attributed to the indirect path. Motivation can act as a mediator between the use of AI-driven tools and the development of critical thinking skills,

meaning that motivation can help explain how the use of AI tools influences the development of critical thinking. Research indicates that elevated motivation levels can enhance interaction with AI technologies and promote a favorable disposition towards their utilization, cultivating critical thinking abilities. A deficiency of motivation may result in the shallow application of AI technologies and impede the cultivation of profound critical thinking. Figure 2 illustrates the mediation model of reading motivation in the relationship between teachers' efficacy with AI-driven study tools and the critical thinking skills of BSED students. The d1 and d2 stances for disturbance variables of the two endogenous variables, motivation, exhibit squared multiple correlation values of 0.32 for reading motivation and 0.31 for critical thinking skills, in addition to their route coefficient of variation.

This study is grounded in Constructivist Learning Theory, which posits that learners actively construct knowledge through experience, interaction, and reflection. In the context of AI-driven study tools, this theory is highly relevant, as AI enables personalized, adaptive learning experiences that allow students to explore content at their own pace and in ways that suit their learning styles. By engaging with AI tools, students are not passive recipients of information

but active respondents who analyze, apply, and reflect on the knowledge they acquire. The interaction with AI systems, which provide real-time feedback and individualized instruction, promotes more profound understanding and critical thinking, aligning well with the constructivist approach to learning. The theory above is supported by the theory of Self-Determination (SDT), which emphasizes the role of intrinsic and extrinsic motivation in learning. SDT sug-

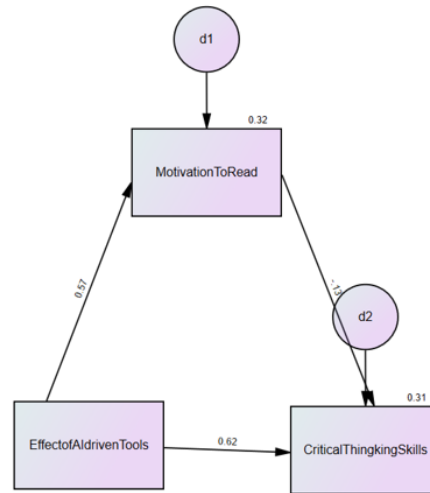


Fig. 2. Mediation Model

gests that for students to be motivated to read and engage in critical thinking, they need to feel a sense of autonomy, competence, and relatedness. AI-driven study tools can promote these motivational factors by allowing students to take control of their learning (autonomy), providing personalized feedback to enhance their skill development (competence), and fostering

a sense of connection through collaborative AI tools (relatedness). This theory aligns with the motivation to read, as it highlights how AI tools can foster both intrinsic motivation (such as curiosity and involvement) and extrinsic motivation (such as grades and recognition), both of which are key to driving student engagement and academic achievement.

4. Conclusions and Recommendations

This section presents the researcher's conclusions and recommendations. The literature supports the discussions in the first chapters, and the conclusions are statements about the problem presented in this study. The study investigated the mediating effect of motivation to read teachers on the relationship between the effect of AI-driven tools and critical thinking skills, employing a non-experimental quantitative design with a descriptive-correlation technique. This study employed path analysis through mediation to investigate the mediating effect of motivation to read on the relationship between the impact of AI-driven tools and critical thinking skills among BSED English students in Davao Del Sur. The researcher considered all respondents who were bona fide students enrolled in Davao del Sur as study respondents or samples. The researcher used modified and enhanced survey questionnaires pilot-tested in a nearby school to ensure the reliability and internal consistency of the instrument's items.

4.1. Findings—Based on the results, the summary of the findings was the following: The extent of AI-driven study tools among the BSED English students in Davao del Sur has a descriptive rating of extensive. The extent of critical thinking skills of BSED English stu-

dents in Davao del Sur has a descriptive rating of extensive. In addition, the following mean ratings of the indicators are as follows: remembering, understanding, applying, analyzing, and evaluating. Finally, the motivation to read is evaluated in terms of intrinsic motivation and

extrinsic motivation. The results showed that the Effect of AI-driven tools has a significant positive relationship with the Motivation to read of BSED English students in Davao del Sur. There is no relationship between motivation to read and critical thinking skills among BSED English students in Davao del Sur. Finally, the Effect of AI-driven tools has a significant positive relationship with the critical thinking skills of BSED English students in Davao Del Sur. Motivation to read partially mediates the relationship between the Effect of AI-driven tools and the critical thinking skills of BSED English students in Davao Del Sur. The analysis obtained the estimated value of complete mediation in which the direct(c') between the predictor (x) and the outcome variable (y) is zero. On the contrary, partial mediation is when the direct relation between the predictor variable (x) and the outcome variable (y) is non-zero.

4.2. Conclusions—Based on the findings of this study and within the limitations and restrictions (such as the survey questionnaire and number of respondents), several conclusions were generated: The extent of AI-driven study tools among the BSED English students in Davao del Sur was extensive. The critical thinking skills and motivation to read of BSED English students in Davao del Sur are extensive. The results showed that the effect of AI-driven tools has a significant positive relationship with the motivation to read for BSED English students in Davao del Sur. There is no relationship between the Motivation to Read and the Critical thinking skills of BSED English students in Davao del Sur. Finally, the Effect of AI-driven tools has a significant positive relationship with the critical thinking skills of BSED English students in Davao Del Sur. The motivation to read partially mediates the relationship between the impact of AI-driven tools and the critical thinking skills of BSED English students in Davao Del Sur. Constructivist Learning Theory posits that BSED English students

actively construct knowledge through engagement with information and reflection on their experiences. When it comes to AI-powered study tools, they should be made to help people build knowledge, not just give them information. They should motivate learners to interact with the content, connect it to their prior knowledge, and contemplate their learning journey. Additionally, Constructivist Learning Theory asserts that BSED students acquire knowledge most effectively by actively constructing their understanding through experiences, interactions, and reflection. Regarding AI-powered study tools, this means using AI to make learning more personal, help people work together, and promote reflective practices instead of just giving them information. Self-Determination Theory (SDT) focuses on how intrinsic and extrinsic motivations affect learning, especially for BSED students. SDT emphasizes the significance of autonomy, competence, and relatedness in cultivating both forms of motivation, which are essential for effective learning and overall well-being. SDT differentiates between intrinsic and extrinsic motivation, asserting that autonomous extrinsic motivation is superior to controlled extrinsic motivation. Three basic psychological needs—autonomy, competence, and relatedness—are key to educational SDT. When these needs are met, students feel intrinsically motivated and internalize extrinsic motivations, which leads to more engagement and better learning results. SDT says that BSED students should make learning spaces that encourage independence, competence, and connection by giving them choices, helpful feedback, and a sense of community.

4.3. Recommendations—The researcher recommends that higher education institutions (HEI) and the Department of Education formulate policies that may improve educational practices regarding learners' classroom engagement. This policy would establish quality standards for learning and teaching, setting expectations

and accountability, particularly in light of the current trend of AI engagement among college students. Furthermore, teachers may develop interventions that emphasize the importance of AI-driven tools and motivation to read, aiming to enhance the critical thinking skills of college students. These interventions can benefit students' reading motivation and engagement, as they demonstrate a relationship between reading motivation and critical thinking skills. Moreover, college students may persist in taking charge of their personal development by utilizing AI-driven tools or engaging with digital texts, given that their current outcomes are moderate. This may enable them to expand their capabilities and fortify their strengths, thereby improving the overall effectiveness of their learning experience. Moreover, individuals can enhance their digital text-reading abilities by engaging with digital books that offer integrated tools, such as text-to-speech, highlighting options, and glossaries. Promoting active reading techniques, such as note-taking and summarizing, can enhance understanding. Utilizing graphic organizers enhances information visualization while encouraging discussions within reading groups, which leads to a more profound engagement. Future investigations could concentrate on respondents from alternative settings, employing varied metrics for perceived AI-driven tools, reading motivation, and additional factors, including multi-rater evaluations. This can have a considerable impact on personal growth by helping individuals acquire the skills, knowledge, understanding, and values

necessary for effectively pursuing their objectives. Ongoing education stimulates the mind and maintains its vitality, which may help mitigate cognitive decline as we age. Furthermore, it prepares individuals to adjust to change and manage new circumstances, which is becoming ever more crucial in our swiftly transforming environment. Acquiring new knowledge and skills enhances confidence and self-esteem, as it leads to a sense of achievement. Further investigation could focus on different respondents or settings, employing diverse metrics such as multi-rater evaluations to assess respondents' perceptions of AI-driven tools and their impact on reading motivation. Helping individuals acquire the skills, knowledge, understanding, and values essential for successfully achieving their goals can profoundly influence personal growth. Continuous learning engages the mind and fosters involvement, potentially mitigating cognitive decline as we grow older. Furthermore, it equips individuals with the necessary tools to adapt to new situations and transformations, which is essential in our rapidly evolving environment. Acquiring new skills and knowledge enhances self-esteem and confidence, as it fosters a sense of accomplishment. The results of this study hold promise for publication in a respected academic journal. This growth in competence often leads to increased motivation and satisfaction in both personal and professional endeavors. Such findings are crucial for academic journals focused on educational psychology, highlighting the profound impact of continuous learning on holistic development.

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