



**KNOWLEDGE UTILIZATION UPTAKE ON e-BOOKS, STUDY HABITS,
AND MATHEMATICS PERFORMANCE OF GRADE 10 LEARNERS**

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ABSTRACT

This study aimed to determine the relationship of the knowledge utilization uptake on e-books and study habits on mathematics performance of the Grade 10 learners. This study utilized descriptive-correlational design. The researcher made use of adapted questionnaires for knowledge utilization uptake on e-books and study habits. The data were collected from Grade 10 learners who fit the criteria were selected using purposive sampling. This study used mean, standard deviation, and Pearson product moment correlation in treating the data of the study. The results showed that the level of the knowledge utilization uptake on e- books obtained a descriptive rating of moderately high, while the status of the study habits obtained a descriptive rating of high. The mathematics performance of the Grade 10 learners in Mathematics obtained a descriptive rating of low. There was no significant relationship between the utilization uptake on e-books and mathematics performance. However, two among the indicators, reception and cognition, of the knowledge utilization uptake on e-books were found to have significant relationship to the academic performance in Mathematics. In other words, the increase in the knowledge utilization uptake in terms of reception and cognition led to the increase in the academic performance of the Grade 10 learners in Mathematics. Further, there was no significant relationship between study habits and mathematics performance of grade 10 learners.

Keywords: education, knowledge utilization uptake on e-books, study habits, mathematics performance, descriptive-correlation, Philippines



INTRODUCTION

Problem-solving has long been recognized as a critical component of the mathematics curriculum, requiring students to apply and integrate various mathematical concepts and skills while making informed decisions. However, many students report significant challenges in solving mathematical problems (Panerio, 2016; Pepin & Kock, 2021). Reports from national and international organizations, such as the International Mathematics Union (IMU), highlight weaknesses in mathematics education, particularly at the primary and secondary levels in many African countries. These shortcomings reduce the pool of talented students who pursue mathematics majors at the university level. Similarly, in the United States, students increasingly struggle with effective studying due to distractions from new technologies and social media. Poor study habits are cited as a key factor behind academic struggles (Kostaki & Karayianni, 2022).

Research consistently demonstrates the importance of study habits in influencing students' academic achievement, particularly in mathematics. Tus et al. (2020) found that good study habits correlate with better mathematics performance. Siahi and Maiyo (2015) further noted that improvements in study habits are directly proportional to increased academic achievement, emphasizing that effective learning depends on the time actively devoted to learning tasks. Additionally, Kissinger (2011) identified the potential of e-books to enhance mathematics learning, noting their positive impact on student engagement compared to traditional print materials. The study also highlighted that e-books foster collaboration and competition among learners, contributing to improved mathematical skills.

Despite these advantages, challenges remain in the integration of e-books into academic learning. Thompson (2021) reported that the e-book industry focuses more on digitizing printed content rather than leveraging new technologies to enhance learning outcomes. Consequently, research shows mixed outcomes regarding the use of e-books. While some studies suggest that e-books encourage self-directed learning (Azevedo, 2005), others find that both students and teachers often regard them as supplementary rather than replacements for printed books (Alexandrov, 2020; Alfiras & Bojiah, 2020; Yalman, 2015). Nonetheless, the ability of e-books to support active learning decisions and foster engagement makes them a promising tool for improving academic performance.

In the Philippine context, Andaya (2019) highlighted that Filipino students excel in knowledge acquisition but struggle with higher-order thinking skills, particularly in mathematics. This is evident in poor performance in both national and international assessments. For example, the Philippines consistently ranks below the top 50 in the Trends in International Mathematics and Science Study (TIMSS), in stark contrast to Singapore, which has led in



both science and mathematics for two decades (Gurney-Read, 2016). This underperformance is also reflected in the Professional Board Examinations for pre-service and mathematics teachers. Contributing factors include poor study habits, time management, and the inherent difficulty of mathematics as a subject.

Davao City exemplifies these challenges, as it ranks low in mathematics performance among divisions in Region XI. Observations point to poor time management, competing home and school responsibilities, and difficulties in mathematics as key reasons for this underachievement. The researcher posits that integrating technology, particularly e-books, could promote learning by fostering more positive attitudes toward mathematics and improving study habits. Hence, this study aimed to investigate the relationship between the knowledge utilization uptake on e-books and the study habits of Grade 10 learners and their mathematics performance. Specifically, the study assessed the level of knowledge utilization uptake on e-books in terms of awareness, reception, cognition, discussion, reference, adoption, implementation, and impact. It also examined the status of learners' study habits, focusing on aspects such as where to study, when to study, how to study, management and procrastination, concentration and memory, and test anxiety. Furthermore, the study sought to determine the learners' mathematics performance and explore the significant relationships between knowledge utilization uptake on e-books and mathematics performance, as well as between study habits and mathematics performance.

Although studies have explored the relationship between study habits and academic achievement, limited research has examined the role of e-books in this context. Despite access to e-book subscriptions from international and local journals, these resources are underutilized by stakeholders. Leveraging available technology, such as e-books, offers a promising avenue to improve study habits and, ultimately, academic performance. This study seeks to address this gap and contribute valuable insights for educators and policymakers. Dissemination of findings is planned through research conferences, Learning Action Cell sessions, and annual research forums organized by DepEd and private institutions. The researchers aimed to publish the findings on accessible platforms like Google Scholar, Scribd, and Academia to maximize reach and impact.

FRAMEWORK

This study is anchored on Cognitive Development Theory by Piaget (2000) and Self-Regulated Learning Theory by Zimmerman (2002). Piaget's theory emphasizes how learners construct knowledge through active engagement, experience, and cognitive processes. It asserts that learning occurs as students assimilate and accommodate new information, ultimately



achieving equilibrium. In the context of this study, e-books serve as a cognitive tool that facilitates learning by providing interactive, accessible, and visually engaging resources. This supports cognitive growth in complex subjects like mathematics, as students interact with digital materials that promote comprehension and problem-solving. Dimensions like awareness, reception, and cognition in e-book utilization align with Piaget's emphasis on the active role of learners in constructing their knowledge through engaging stimuli.

Zimmerman's Self-Regulated Learning Theory complements this by focusing on how learners take control of their study processes, including planning, monitoring, and evaluating their academic strategies. Effective study habits, such as time management, goal-setting, and test preparation, resonate with Zimmerman's framework, as they empower students to regulate their behaviors toward academic success. In this study, the integration of e-books and structured study habits exemplifies self-regulated learning practices, potentially enhancing mathematics performance. By bridging cognitive engagement with proactive learning behaviors, the study underscores the interplay of technology and self-regulation in shaping educational outcomes.

METHOD

Research Design

This study employed a quantitative research approach, specifically a descriptive-correlational design, to systematically collect and analyze data to address the study's primary objective. Dodgson (2017) defines quantitative research as the systematic empirical investigation of observable phenomena using statistical, mathematical, or computational techniques. Its conclusive nature aims to quantify the problem and understand its prevalence by producing findings that can be generalized to a larger population. Additionally, quantitative descriptive research involves observing and describing a subject's behavior without manipulation (Nassaji, 2015). The descriptive-correlational research design, as explained by Sutherland (2016), examines the relationship between variables, identifying how the independent variable affects the dependent variable to establish potential cause-and-effect relationships.

Given these theoretical underpinnings, the combination of descriptive and correlational research design was deemed most appropriate for this investigation, as it sought to explore and quantify the relationships between knowledge utilization uptake on e-books, study habits, and mathematics performance among Grade 10 learners.

Participants

This study focused on 150 Grade 10 learners from Schools A, B, and C under the Schools Division of Davao City. In accordance with the K to 12 guidelines, junior high school students encompass Grades 7 to 10, and the



study specifically targeted those in Grade 10 for the School Year 2021–2022. The study employed purposive sampling as the method for participant selection. Purposive sampling, also referred to as judgmental, selective, or subjective sampling, is a non-probability technique where researchers exercise their judgment to choose participants based on their suitability for the study. According to Rai and Thapa (2015), this method is particularly effective when researchers need access to a specific subset of individuals who meet predefined criteria. Researchers must have a clear understanding of their study's objectives to accurately identify and approach eligible participants, ensuring they align with the study's purpose.

For this research, participants were selected based on a specific inclusion criterion: all respondents had to be officially enrolled as Grade 10 students in the Junior High School Program of the identified schools during the designated academic year. This criterion ensured the relevance and reliability of the data collected for the study.

Materials and Instruments

The research utilized a questionnaire divided into three parts, each tailored to measure distinct variables under study. The first section was an adapted and modified questionnaire based on Balbuena's (2016) study, *The Use of e-Books: Just a Hype or a Necessity?*. It evaluated the level of knowledge utilization uptake on e-books across eight dimensions: awareness, reception, cognition, discussion, reference, adoption, implementation, and impact. The instrument comprised 24 indicators measured on a 5-point Likert scale. The instrument demonstrated high internal consistency with a Cronbach's alpha value of 0.955. The descriptive parameters for interpreting the level of knowledge utilization uptake on e-books are as follows:

Range of Means	Description	Interpretation
4.21 – 5.00	very high	The knowledge utilization uptake on e-books is always evident.
3.41 – 4.20	high	The knowledge utilization uptake on e-books is often evident.
2.61 – 3.40	moderate	The knowledge utilization uptake on e-books is sometimes evident.
1.81 – 2.60	low	The knowledge utilization uptake on e-books is rarely evident.
1.00 – 1.80	very low	The knowledge utilization uptake on e-books is never evident.

The second section assessed the level of study habits using an adapted and modified instrument from Sabbah's (2016) study, *The Effect of Study Habits on English Language Achievement*. It examined six areas: where to study, when to study, how to study, management and procrastination,



concentration and memory, and test anxiety. This section contained 71 indicators, also measured on a 5-point Likert scale. The reliability of this instrument was equally strong, with a Cronbach's alpha value of 0.951. The levels of study habits were interpreted using the following range:

<i>Range of Means</i>	<i>Description</i>	<i>Interpretation</i>
4.21 – 5.00	very high	The study habits are always evident.
3.41 – 4.20	high	The study habits are often evident.
2.61 – 3.40	moderate	The study habits are sometimes evident.
1.81 – 2.60	low	The study habits are rarely evident.
1.00 – 1.80	very low	The study habits are never evident.

The third part measured the mathematics performance of Grade 10 learners using a validated examination sourced from the Department of Education, Region XI. The students' scores, expressed as the percentage of correct answers, were categorized into performance levels using the following matrix:

<i>Range of Means</i>	<i>Description</i>	<i>Interpretation</i>
81.00 – 100	very high	The academic achievement of the students is outstanding.
61.00 – 80.00	high	The academic achievement of the students is very satisfactory.
41.00 – 60.00	moderate	The academic achievement of the students is satisfactory.
21.00 – 40.00	low	The academic achievement of the students is low.
1.00 – 20.00	very low	The academic achievement of the students is very low.

Procedure of the Study

The data collection process adhered to a structured and ethical approach to ensure participant safety and the integrity of the study results. Initially, the researcher sought formal approval from the Office of the Dean of the Graduate School, University of the Immaculate Conception (UIC), to conduct the study. Ethical clearance was then secured from the UIC Research Ethics Committee (UIC-REC) to ensure adherence to ethical standards, particularly concerning the rights and welfare of participants. Following this, permission was obtained from the presidents of the three participating institutions where the students were enrolled. Formal letters outlining the study's purpose, methods, and ethical safeguards were submitted to these institutional heads, and once approvals were granted, coordination with relevant personnel facilitated the study's implementation.



The informed consent process was conducted entirely online to comply with health protocols during the COVID-19 pandemic. Using Google Forms, participants provided their signatures on an electronic Informed Consent Form before participating in the study. The consent form included the contact information of a UIC-REC member to address any queries or concerns regarding the research. Parental consent was also secured for participants under 18 years old. Participation was entirely voluntary, and respondents were informed of their right to decline participation or withdraw at any stage without consequences.

Once permissions and consents were finalized, a virtual orientation was conducted via Google Meet. This session provided participants with an overview of the study's objectives, data collection methods, and confidentiality protocols. Clear instructions on completing the survey were also provided. The survey questionnaires, focusing on knowledge utilization uptake on e-books and study habits, were distributed digitally via Google Forms, ensuring no face-to-face interaction and minimizing risks associated with the pandemic. After data collection, the responses were securely downloaded and systematically tabulated. Data were analyzed using appropriate statistical methods and interpreted according to the study's objectives. The findings were documented meticulously, ensuring compliance with academic and ethical standards. This process upheld the principles of ethical research while maintaining participant confidentiality and safety during a public health crisis.

Data Analysis

The study utilized various statistical tools to analyze and interpret the data collected. The mean, a measure of central tendency, was employed to summarize datasets by representing the center point or average value of variables. Specifically, it was used to evaluate the levels of knowledge utilization uptake on e-books, study habits, and the mathematics performance of Grade 10 students, providing a clear understanding of the overall trends in the data. Complementing the mean, standard deviation was utilized to measure the dispersion of the dataset relative to its mean. This tool assessed how spread out or consistent the learners' responses were regarding the levels of knowledge utilization uptake on e-books, study habits, and mathematics performance, offering insights into variability within the responses.

To examine relationships, the study applied Pearson's product-moment correlation, a statistical measure used to determine the strength and direction of the association between two quantitative variables measured on at least an interval scale (Schober, Boer & Schwarte, 2018). This tool was pivotal in exploring the relationships between students' academic achievement and their levels of knowledge utilization uptake on e-books as well as their study habits. The application of these statistical tools ensured a comprehensive and rigorous analysis of the data, allowing for meaningful conclusions about the relationships and patterns present in the study.



RESULTS AND DISCUSSIONS

Level of Knowledge Utilization Uptake on E-Books of Grade 10 Learners

The study examined the level of knowledge utilization uptake on e-books among Grade 10 learners, focusing on various dimensions such as awareness, reception, cognition, discussion, reference, adoption, implementation, and impact. As shown in Table 1, the overall mean score is 3.40 (SD = 0.72), categorized as "moderately high," indicating that the uptake of e-books is sometimes evident among the learners. This implies that while students occasionally engage with e-books, their usage remains limited. Supporting this, Roesnita and Zainab (2013) noted that students often prefer printed books due to familiarity and lack of knowledge about e-books. Similarly, Kim et al. (2021) highlighted that despite awareness of e-books, students often favor traditional books for their perceived content quality and usability.

Awareness, as a dimension, achieved a category mean of 4.12 (SD = 0.75), described as "High," suggesting that students are often aware of e-books and their potential use in academic settings. This aligns with Bennett and Landoni (2015), who reported high awareness of e-books among students. Reception, with a category mean of 3.51 (SD = 0.91), also falls under the "High" category, indicating that learners find it useful to install and access e-books on mobile devices, consistent with Jantz's (2001) findings on the ubiquity of e-books across various digital platforms.

Table 1. *Level of knowledge utilization uptake on e-books of Grade 10 learners*

Dimension	Mean	SD	Description
awareness	4.12	0.75	high
reception	3.51	0.91	high
cognition	3.54	0.81	high
discussion	3.09	1.05	moderately high
reference	3.32	0.95	moderately high
adoption	3.37	0.89	moderately high
implementation	3.10	0.94	moderately high
impact	3.20	1.09	moderately high
Overall	3.40	0.72	moderately high

On the other hand, cognition garnered a mean of 3.54 (SD = 0.81), described as "High," reflecting frequent acquisition of knowledge and understanding through e-books. This is in line with Wijaya et al. (2022), who emphasized that students can process e-books similarly to traditional books. Conversely, discussion received a category mean of 3.09 (SD = 1.05), categorized as "moderately high," implying limited peer interaction regarding e-books. Bölen, Yildirim and Yildirim (2021) attributed this to the perceived



complexity of e-book platforms and software, which hinders broader discussions among users.

The reference dimension scored a mean of 3.32 (SD = 0.95), described as "moderately high," indicating that learners occasionally cite e-books in assignments or use them to influence decisions. Similarly, adoption achieved a mean of 3.37 (SD = 0.89), also categorized as "moderately high," showing that while students sometimes favor e-books, they are yet to fully integrate them into their daily academic routines. Rockinson-Szapkiw et al. (2013) noted that the limited availability of certain textbooks in digital format remains a barrier to widespread adoption.

Implementation was rated 3.10 (SD = 0.94), described as "moderately high," suggesting that students occasionally implement the use of e-books in their studies. This finding aligns with Liu, Xie and Johnson (2017), who highlighted practical challenges, such as screen-related eye strain, as barriers to full integration of e-books. Lastly, impact scored 3.20 (SD = 1.09), categorized as "moderately high," indicating that the influence of e-books on learners' academic practices is limited, consistent with Doyo (2011), who emphasized the financial and technical limitations of e-book adoption in the Philippines.

Status of Study Habits of Grade 10 Learners

The study evaluated the status of study habits among Grade 10 learners, encompassing dimensions such as where to study, when to study, how to study, management and procrastination, concentration and memory, and test anxiety. As shown in Table 2, the overall mean score was 3.53 (SD = 0.53), categorized as "High," indicating that learners often demonstrate good study habits. This suggests that learners generally have effective study routines, including selecting conducive study locations, managing their time effectively, and preparing adequately for exams. These findings are consistent with that of Lacida and Murcia (2015) on study habits of college student cohort, which highlighted that effective study habits such as regular attendance, focused studying, and preparation significantly enhance academic achievement.

Table 2. Extent of study habits of Grade 10 learners

Dimension	Mean	SD	Description
where to study	3.69	0.61	high
when to study	3.50	0.67	high
how to study	3.70	0.64	high
management and procrastination	3.65	0.65	high
concentration and memory	3.41	0.58	high
test anxiety	3.22	0.55	moderately high
Overall	3.53	0.53	high



The indicator **Where to Study** scored a category mean of 3.69 (SD = 0.61), categorized as "High." This indicates that students often choose quiet, well-lit, and distraction-free environments for studying, a practice emphasized by Newcomer, Lindahl and Harriman (2016), which recommended natural or appropriately simulated lighting for optimal focus. However, the study also noted moderate habits, such as studying while lying down, which may impede productivity (Barnwal, 2021).

The indicator **When to Study** had a category mean of 3.50 (SD = 0.67), also "High," reflecting that students often allocate their most alert times for studying and set specific goals for their sessions. Zimmerman (2023) stressed the importance of setting clear goals to enhance focus and productivity. However, some students preferred studying late or during weekends, which may not align with optimal learning strategies (Moral et al., 2023).

Also, the indicator **How to Study** scored a category mean of 3.70 (SD = 0.64), categorized as "High," indicating that learners frequently employ effective techniques such as using visual aids, taking notes, and engaging in group discussions. Shabiralyani et al. (2015) supported the role of visual aids in fostering conceptual understanding. However, the findings also revealed that students moderately prepare lessons in advance, suggesting a tendency to focus more on immediate academic demands rather than proactive learning.

Management and Procrastination indicator had a mean score of 3.65 (SD = 0.65), categorized as "High." Learners often manage their time effectively, attend classes, and submit assignments promptly, consistent with Kim et al. (2020), which emphasized the benefits of regular attendance and time management for academic success. However, some students admitted to procrastinating on major tasks until deadlines, aligning with Tuckman (2005), which linked such behavior to suboptimal academic outcomes.

Concentration and Memory indicator scored a mean of 3.41 (SD = 0.58), categorized as "High," suggesting that learners often rely on teachers' handouts and maintain focus during study sessions. A study of Duke et al. (2011) highlighted the value of well-structured handouts in aiding comprehension and retention. Nevertheless, students moderately engage in collaborative group work, despite its potential to enhance problem-solving and critical thinking (Suh, 2005).

Finally, the indicator **Test Anxiety** scored a category mean of 3.22 (SD = 0.55), categorized as "Moderately High," indicating that learners sometimes experience anxiety during exams. Effective test-taking strategies, such as understanding questions and pacing, were evident (Roth, Paris & Turner, 2000). However, the very low score for endorsing cheating (M = 1.02, SD = 0.14) reflects students' general rejection of unethical practices, consistent with Harland (2019), who emphasized the severe consequences of academic dishonesty.

The findings suggest that Grade 10 learners demonstrate good study habits overall, with strengths in location selection, time management, and



effective study techniques. However, moderate results in areas like proactive lesson preparation and collaborative study highlight opportunities for intervention to further optimize study practices.

Mathematics Performance of Grade 10 Learners

The status of mathematics performance among Grade 10 learners, as presented in Table 3, revealed a grand mean of 40.75 (SD = 21.50), categorized as "Low." This result indicates that learners' overall academic achievement in mathematics falls below satisfactory levels, with substantial variability in their scores, as evidenced by the relatively high standard deviation.

Table 3. Status of Mathematics performance of Grade 10 learners

Variable	Mean	SD	Description
Mathematics Performance	40.75	21.50	Low

The results underscore the need for improved teaching strategies, better alignment of resources with the curriculum, and a focus on fostering a more interactive and engaging learning environment to address gaps in mathematics performance. This finding aligns with Avong's (2013) conclusion that students' mathematics performance remains consistently low despite its critical role in academics and the integration of technology in instruction. Furthermore, Kita (2004) attributed such underperformance to the inadequacy of teaching materials, which hinders effective instruction. Similarly, Metto and Makewa (2014) and Sunzuma and Luneta (2023) emphasized the necessity of learner-centered teaching methods in mathematics but noted that available school resources, particularly textbooks, often fail to support this pedagogical approach.

Relationship Between Knowledge Utilization

Uptake on E-books and Mathematics Performance

The results of the correlation analysis in Table 4.1 indicate a significant, albeit low, positive relationship between two domains of knowledge utilization uptake on e-books — reception ($r = .17$, $p = .037$) and cognition ($r = .18$, $p = .029$) — and mathematics performance. These findings suggest that as students improve their reception of e-books, such as installing e-book readers and accessing relevant content, and as their cognitive engagement with e-books increases, their mathematics performance is also likely to improve. However, no significant relationship was observed for other domains of knowledge utilization uptake (e.g., awareness, discussion, reference, adoption, implementation, and impact), or for the overall mean ($r = .117$, $p = .154$).

**Table 4.1. Relationship between knowledge utilization uptake on e-books and Mathematics performance**

Knowledge Utilization Domains	r	p-value	Remarks
awareness	.125	.129	not significant
reception	.170	.037	significant
cognition	.179	.029	significant
discussion	.084	.307	not significant
reference	.076	.358	not significant
adoption	.043	.603	not significant
implementation	.038	.644	not significant
impact	.045	.582	not significant
Overall Mean	.117	.154	not significant

The results partially align with Ludvigsen and Arnseth (2017), who emphasized that e-books promote cognitive development by enhancing understanding of complex subjects like mathematics. However, the findings contradict Chen and Su (2019), who reported a meaningful correlation between e-book usage and academic performance. The current study's mixed results suggest that while certain aspects of e-book usage (reception and cognition) may support cognitive learning, their broader adoption and impact on performance require further investigation.

Relationship Between Study Habits and Mathematics Performance

As shown in Table 4.2, the overall test of relationship between study habits and mathematics performance revealed no significant relationship ($r = .051$, $p = .534$), indicating that the two variables are independent. Similarly, none of the domains of study habits, such as where to study, when to study, how to study, management and procrastination, concentration and memory, or test anxiety, exhibited significant relationships with mathematics performance ($p > .05$).

Table 4.2. Relationship between study habits and Mathematics performance

Study Habits Domains	r	p-value	Remarks
where to study	.041	.622	not significant
when to study	.008	.926	not significant
how to study	.072	.383	not significant
management and procrastination	.060	.464	not significant
concentration and memory	.062	.452	not significant
test anxiety	.023	.782	not significant
Overall Mean	.051	.534	not significant



This finding corroborates the conclusions of Barcenas and Bibon (2022), who found that study habits alone cannot reliably predict academic performance in the context of their study. However, it contradicts Ebele and Olofu (2017), who reported that good study habits lead to better grades and future academic success, and Nonis and Hudson (2010), who suggested that effective study strategies are strongly linked to improved academic outcomes. These discrepancies highlight the context-dependent nature of the relationship between study habits and academic performance, particularly in mathematics.

CONCLUSIONS

The findings revealed that the **knowledge utilization uptake on e-books** was generally at a moderately high level, with awareness, reception, and cognition being the most evident domains. However, the overall uptake did not exhibit a significant relationship with mathematics performance. Notably, only the domains of **reception** and **cognition** showed significant but low positive relationships with performance. These findings suggest that while e-books have potential in supporting cognitive engagement and providing accessible learning tools, their broader adoption and integration into learning may require enhancements to maximize their impact on academic outcomes.

The **study habits** of Grade 10 learners were generally rated as high, with learners demonstrating good practices in determining where and when to study, managing time effectively, and concentrating on tasks. Despite this, no significant relationship was found between overall study habits or any specific domain (e.g., where to study, how to study, management, or test anxiety) and mathematics performance. This implies that study habits, though essential for general academic discipline, may not directly predict mathematics outcomes in the context of this study.

The **mathematics performance** of the learners was found to be low, as indicated by the mean score of 40.75. This suggests a need for targeted interventions to improve mathematics competencies, particularly in light of its importance in academic and professional pursuits.

Overall, the study highlights the nuanced roles of e-book utilization and study habits in shaping academic performance. While certain domains, such as cognitive engagement with e-books, may contribute positively to mathematics achievement, other factors may play a more critical role in improving performance. These results underscore the importance of integrating effective digital tools and promoting evidence-based learning strategies to enhance mathematics education outcomes. Further research is recommended to explore the contextual and instructional factors that mediate these relationships and to develop interventions tailored to the specific needs of learners.



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