Secondary School Students' Study Lifestyles, and their Academic Achievement in Linear Programming: A Hermeneutics Phenomenology Approach

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ABSTRACT

Linear programming as a discipline is considered as difficult subjects among learners in the Nkeyema District, Western part of Zambia. The 16 math-enrolled secondary school students served as the responders. These respondents were selected using purposive sampling. This study will employ a qualitative research design. Using a qualitative research methodology, this study examines secondary school students' study habits in linear programming. This design is suitable for the study as it facilitates the gathering of comprehensive data on students' study lifestyles, which include study habits, time management, learning environments, and peer interactions. Higher levels of understanding and performance on linear programming is influenced by regular study schedules.

Students with bad study habits found it difficult to understand important concepts and performed worse academically. The study emphasizes how important it is for educational institutions to encourage productive study habits to improve students' performance.

Keywords: comprehension, environment, study habits, linear programming

INTRODUCTION

A foundational subject in mathematics and operations research, linear programming is essential for helping secondary school pupils develop their critical thinking, problem-solving, and decision-making abilities. But students' study habits, time management, study materials, and support networks all have an impact on how well they understand this subject.

Effective study lifestyles, include regular study sessions, active use of course materials, and collaborative learning strategies, improved academic performance in students (Adeyemo, 2010). Bad study habits including putting off learning, depending too much on memorization, and not practicing problem-solving techniques can make it difficult for them to understand and use linear programming ideas (Ahmad, 2018).

Given that applying abstract concepts in mathematics education necessitates consistent effort and a supportive learning environment, the relationship between study habits and academic success is especially noteworthy (Kpolovie, Joe, & Okoto, 2014). Students who study linear programming gain from both theoretical understanding and hands-on problem-solving activities, which necessitate efficient time management and the availability of technical resources such as calculators and graphing software (Njagi, 2020). This study highlights the value of developing fruitful learning habits to enhance educational.

Statement of the Problem

Linear programming plays a major role in the development of critical thinking, problem-solving, and decision-making abilities—all of which are essential for both academic and real-world applications. However, a lot of students find it difficult to understand this subject, which affects how well they perform (Mundia, 2010). Students' study lifestyles are not known hence the study (Opolot-Okurut, & Ogunniyi, 2015).

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According to Zambia's Ministry of Education (2018), the issue still exists in spite of measures like competency-based curriculum revisions, learning materials, and teacher training. Addressing this gap requires a thorough examination of linear programming (Hassan & Farooq, 2019).

To solve this issue, educators, legislators, parents, and students must work together to make sure that students' study habits complement academic objectives, especially important subjects like linear programming.

Research Objective

Identify specific study habits that correlate with high performance among students at NGEBE Secondary School.

Significance of the study

Educational policy makers often operate with many aspirations and motivations but mostly have little updated information especially about study style among students. The study habits of secondary school pupils are significant because they impact overall academic outcomes. It is against this backdrop that the study findings may inform policy makers. Further, the study findings may inform other stakeholders on the challenges associated with the study style among learners. In addition, the study findings may provide additional information that supports teachers to guide learners to study and improve performance in schools. Students perform well if they practice frequently, use real-world examples, and work with others (Zimmerman, 2002).

Theoretical Framework

Phenomenology method is the theoretical framework to be used. Phenomenology offers valuable insights into how students' study habits impact their academic performance (Van Manen, 1990). This method captures the subjective meaning that students ascribe to their studies and how studies affect their academic performance.

It looks into how different lifestyle choices (such as diet, sleep habits, exercise, and social influences) affect students' ability to study. The paradigm enables researchers to see students' academic success as the result of the attitudes towards study styles. The contextual aspect of experiences is emphasized by phenomenology. Students' educational prospects are greatly influenced by study style.

A student who studies has good academic performance in comparison to a student who don’t study (Creswell, 2013). It draws attention to how students view their study life for juggling their academic obligations. Students employ study time to academic achievement.

LITERATURE REVIEW

Linear programming, is complex and requires a mix of critical thinking, problem-solving skills, and an understanding of mathematical concepts. Students' study lifestyles can significantly influence their mastery of challenging subjects, including linear programming.

Study Lifestyles and Academic Achievement

Study lifestyles refer to the habits, routines, and strategies students use to manage their academic work. These include time management, study environments, motivation, resources such as textbooks, online tools, and peer collaboration. Academic achievement, reflects the extent to which students meet the educational goals set for them, which in this context relates specifically to linear programming.

Time Management

Effective time management has long been linked to better academic outcomes. Students who allocate specific times for studying, rest, and other activities tend to perform better in their exams (Zimmerman, 2000). A study by McMullen et al. (2017) revealed that organized and planned study time help students achieve higher scores in subjects like linear programming.

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Environment

The physical and social environment in which students' study can affect their concentration, stress levels, and overall productivity. Researchers such as Karabenick & Stewart (2009) argue that a quiet, well-lit, and comfortable study environment fosters better concentration, which is crucial when tackling complex problems like linear programming. Additionally, a study by Jones & Stokes (2020) found that students studying in groups or with peer support networks performed better in linear programming, as they were able to exchange ideas and clarify concepts together.

Free from distractions, can enhance focus and understanding of abstract mathematical concepts (Jackson et al., 2018).

Studies show that the study environment affects cognitive performance and motivation (Baker, 2005). Frequent practice through assignments, assessments, and real-world problems can improve learning. Research indicates that spaced practice and distributed learning enhance long-term understanding and retention (Cepeda et al., 2006).

Students who practice self-regulated learning—where they establish goals, monitor strategies—perform better in challenging classes like linear programming. Research indicates that self-regulation predicts academic success (Zimmerman, 2002). Students' understanding and performance is significantly enhanced by using effective study strategies.

Studying Strategies

Note-taking, seeking additional resources (e.g., online tutorials), and practicing problems are essential in mastering linear programming. Effective learners often use dynamic learning practices like solving rehearsal problems, discussing with peers, or using computer software (e.g., MATLAB or GeoGebra) to solve linear programming problems (Schunk, 2004). Students that used these techniques to study linear programming had superior comprehension and performance (Trujillo, 2019).

Academic Achievement

Gulley et al. (2020) revealed that students who regularly studies using various learning resources perform significantly better in exams than those who relied solely on classroom instruction. Furthermore, students' self-regulation skills are key in helping them overcome the complexities of linear programming (Zimmerman, 2000).

Mathematical technique, requires not only a strong understanding of algebra and calculus but also the ability to conceptualize optimization problems and solve them using systematic approaches such as the simplex method or graphical methods (Davis, 2017). The academic achievement in this subject depends on how well students are able to grasp these concepts. Students who don't memorize formulas or methods, tend to perform well. This understanding is often facilitated by an effective study lifestyle that encourages active learning and practice (Heller et al., 1992).

Study Lifestyles

Study lifestyle refers to the behaviors, practices, and habits students employ to acquire knowledge and skills. It includes time management, study environment, use of resources, and engagement in learning activities. Students' academic achievement is influenced by how they organize and prioritize their study activities (Zimmerman, 2000).

Time management is critical for mastering complex topics such as linear programming. Students who allocate sufficient time for studying and practice do perform well academically (Britton & Tesser, 1991).

Implications for Teachers

For educators, understanding the role of study lifestyles in students can inform teaching strategies. Teachers

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encourage good study habits, such as guidance on time management and skills by suggesting realistic study schedules that balance classroom learning with independent study and practice. Encouraging regular review sessions can help students retain and apply what they have learned (Jackson, & Jacob, 2018).

Krebs et al. (2015) state that students typically find it difficult to comprehend the abstract nature of linear programming concepts, which can result in unfavorable opinions and a decline in their self-confidence in their mathematical skills. This anxiousness could worsen due to the intricacy of simplex and graphical approaches. According to Meyer & Dyer (2013), students' comprehension is improved by techniques like group projects and technology, such as software for linear programming. According to Chick & Stewart (2014), students who successfully complete linear programming tasks show logical reasoning required in mathematics, which can improve their overall view of the subject.

Students' Attitudes

Students' attitudes about studying linear programming can vary greatly depending on their past understanding of mathematics, the methods and how important they believe the topic to be. Many students experience anxiety due to the abstract nature of complexity of the underlying ideas. Linear programming, have been demonstrated to be significantly impacted by math anxiety (Ashcraft, 2002).

Study habits have a big influence on students' understanding. Operative study practices can enhance general academic performance, problem-solving skills, and conceptual understanding. Active engagement with the subject enhances memory and knowledge (Prince, 2004). Effective time management enables students to schedule adequate time to study. Students who plan and adhere to their study schedules perform better.

Challenges

Students frequently run into a number of difficulties. These obstacles might take many different forms, from conceptual hurdles to problems with real-world implementation. Linear programming requires a strong mathematical foundation, particularly in algebra and geometry. Without these skills, students may find it difficult to explain Linear Programming issues correctly. Graphical method helps visualize solutions for two-variable problems, and practical for problems with more variables. Students may struggle when moving from graphical to algebraic methods, like the simplex method (Winston & Albright, 2016).

According to Thomas & Wiggins (2018), many students struggle with understanding the theoretical concepts underlying linear programming, such as the simplex method and duality. Moreover, the abstract nature of the subject, coupled with a lack of prior exposure to optimization problems, can lead to frustration (Salman & Arif, 2018).

It has been suggested by researchers that these difficulties can be alleviated by taking a more hands-on approach to teaching linear programming. This could involve the utilization of software tools or case studies derived from real-world (Gulley et al., 2020).

Converting real-world situations into mathematical models is a common challenge for students. This means defining variables, establishing constraints, and clearly stating goals (Bock & Hager, 2020). Concepts like duality and sensitivity analysis might be challenging for students. Lack of a strong conceptual framework may make it hard to impact the best solution (Keller et al., 2019).

Digital technologies may facilitate problem-solving, but they can also be challenging to use effectively. Many students might not understand how Linear Programming applies to real-world situations. This disparity could result in a lack of enthusiasm and interest in the topic, claim Huang et al. (2017).

Students' achievements are influenced by their level of preparation, methods they create and employ. If students adopt and use these study strategies throughout their academic careers, they have a better chance of excelling in school. Students must employ performance-enhancing techniques if they want to succeed academically (DuFour & Mattos, 2013). Active studying is not determined by time spent studying, but rather by the methods employed

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to absorb and consider the knowledge acquired in the classroom.

Furthermore, poor study habits are detrimental or ineffectual study practices that negatively impact students' academic performance (Ossai, 2011). Once in place, these behaviors will impair students' performance and academic advancement (Leithwod & Riehl, 2003). They found that the characteristics pertaining to students' achievement were significantly correlated.

Furthermore, the disparity was attributed to some students lack knowledge about the appropriate study techniques, while those who do manage efficient study techniques.

It is sufficed to say that linear programming is influenced by a combination of study lifestyles, including time management, and study environment. Effective study habits, such as practicing problems and using a variety of learning resources, can significantly enhance students' understanding. Challenges such as the abstract nature of linear programming require additional support from teachers, peers, and learning tools to help students overcome barriers to success.

METHODOLOGY

Research Design

Research design refers to the structured plan that guides the entire research process, including data collection, analysis, and interpretation to address specific research questions (Kanyama, 2018). This study was entirely qualitative in nature. This design is suitable for the study as it facilitates the gathering of comprehensive data on student study lifestyle. Qualitative research is a method for investigating and comprehending the significance that people or groups attach to a social or human issue (Creswell, 2014). The study used a hermeneutic phenomenological design. According to Guimond-Plourden (2009), this method placed subjectivity at the center of knowledge production.

Study Sites

The research was carried out in the rural Nkeyema area in Zambia's Western Province from few chosen secondary schools. This research location was purposefully sampled.

Target Population

The target population refers to the entire group of individuals or elements that are the focus of a research study and about which the researcher aims to draw conclusions (Mwanza, 2017). For this study, the target population includes all secondary schools in Western Province. According to Bless & Achola (1988), a target population consists of every member of a clearly defined class of individuals, occasions, or items that have been chosen as the subject of an inquiry. All 12th grade students were the study's primary insiders since they possessed the necessary data. Everyone in the population was the same. According to Kombo & Tromp (2006), referenced by Muntengwa et al. (2020), a homogeneous sample population help to select participants with comparable traits to reflect the remainder of the group.

Sample Size

The current study's sample size was 16 learners, 9 of whom were female and 7 of whom were male. Additionally, Sandelowski (1995) adds that samples in an interpretive study should be large enough to allow the generation of enough data of the phenomenon but small enough not to obviate data analysis. The study's sample size was also determined by data saturation during data production due to informational redundancy resulting from the emergency of the same or repeated information from key actors or key insiders during the data generation process.

According to this theory, fewer key actors are needed for the study the more useful information is obtained from each important insider (Morse, 2000). Given the aforementioned observations, the study's sample size was

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chosen without formula.

Eligibility Criteria

All participants were asked to sign consent forms prior data collection. Participants were given these forms, which included explicit explanations of the study's objectives, research methodology, participant and researcher expectations, research advantages, issues related to voluntary participation, anonymity, and confidentiality. Interview schedules and group discussions were organized for eligible participants following their signature on the forms. Those who refused, however, were not allowed.

Giving participants the chance to check and confirm the veracity of their claims in your findings guarantees that their opinions are accurately reflected (Creswell & Poth, 2018).

Sampling Techniques

The term "sampling" is defined by Gray, Grove, & Sutherland (2016) as the process of choosing participants or events. This is because qualitative samples are purposive in nature, and the researcher was interested in participants who had experience under investigation (Kruger, 1988).

Kruger (1999), concurs with the aforementioned scholars, asserts that purposive sampling is crucial for determining the study's main participants. Therefore, under purposive sampling, what is more important is the contribution of the selected participants to the study than selected.

Data Generation

Focus group discussions, and interviews were the methods used to generate the data. Participants' opinions were expressed through interviews (Mwase et al., 2020). The anonymity of the member was another reason why group conversations were adopted. In their own leisure time, individuals could also write about their opinions on the subject. Maxwell (2013) highlighted the importance of acknowledging the limitations of generalizability in qualitative research. He stressed transparent about the limitations in how findings can be generalized, especially when using small or case-based samples.

Yin (2018) also discussed that case study research (which a study focused on one school might be) is not intended to generalize findings to larger populations but to offer insights that may be relevant for other contexts.

Data Generation Instruments

A research instrument is a systematic tool designed to collect, measure, and analyze data in scientific research. According to Nyirenda (2023)**,** research instruments serve as critical methodological devices that translate research objectives into measurable data points, enabling researchers to gather empirical evidence systematically. A comprehensive set of research instruments were meticulously developed to ensure robust data collection on students' study lifestyle.

According to Kothari (1997), a research instrument is an apparatus that the researcher selects to gather data from participants. Thus, semi-structured interviewing techniques were employed. The researcher asked permission from participants to use a voice recorder and a diary during in-person interviews. Furthermore, in order to extract the participants' detailed lived experiences, epoche or suspension took front. Participants shared ideas (Shava & Nkengbeza, 2020). In addition, data generation also involved data analysis checklists. Thus, a variety of study tools allowed the researcher to produce reliable findings.

Data Generation Procedure

The data collection procedure represents a systematically planned approach to gathering research information, ensuring methodological rigor and ethical compliance (Kapasa, 2020). Preliminary steps included obtaining official authorization from the provincial education officer. This process ensures institutional support and adherence to academic research standards. The head teachers were a concierge before the data collection

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procedure started. A concierge is "someone with the formal or informal authority to control access to a site." Conduct semi-structured interviews with teachers to understand learners' experiences, challenges, and perceptions of study style. Organize focus groups discussed and shared experiences and gather diverse perspectives (Merriam, & Tisdell, (2015).

Finally, data generating technique was as follows:

i) To extract detailed life stories from important insiders, ten (10) semi-structured interviews were carried out. The evidence that the researcher used later was documented during the process using a voice recorder and a diary.

ii) During focus groups, seven (7) group talks were held.

Data Analysis Procedure

Data analysis is "a process that involves organizing what you have seen, heard, and read so that you can make sense of what you have learned,"(McCaig, 2010). As a result, a theme analysis was performed on the collected data. The researcher conducted data cleaning of raw data to eliminate unnecessary information. Only the data that was pertinent and consistent with the study questions remained at this point and could be used. The researcher chunked and coded data as a reduction procedure. This was accomplished by finding related concepts, which were then compiled to create themes. According to Denzin (2005), coding is an interpretive method that arranges the data and offers a way to present the interpretations. Additionally, the other stage of data clustering was data interpretation. Finally, data representation emerged.

Trustworthiness

Throughout the research process, four factors—credibility, dependability, transferability, and confirmability—were taken into account to make sure the study was reliable.

Dependability

The research was qualitative in nature and used a hermeneutic phenomenological technique to increase the study's dependability. In order to enable readers to independently verify the researcher's interpretive conclusions, the researcher included sufficient information on the phenomena of interest and the social context in which it is embedded (Bhattacherjee, 2012). By meticulously recording the research process, an audit trail may be kept to guarantee that the results are reliable and consistent. Documenting every stage of the data collecting and analysis procedure, including reflections and decision-making, enables other researchers to replicate and validate the findings (Merriam & Tisdell, 2015).

Credibility

Credibility, according to Kennedy-Clark (2012), seeks to ensure that a study evaluates what is actually intended. Additionally, it was achieved by adhering to analytical procedures such participant cross-checking through phone calls and in-person meetings and interviews (Bhattacherjee, 2012). Building trust requires making sure the data accurately represents the participants' perceptions of study habits. Triangulation, member checking, and extended involvement can accomplish this. More time spent with participants allows for a more thorough grasp of their study environments and lifestyles, which aids in more accurately interpreting their attitudes toward linear programming. Confirming results from other viewpoints can be facilitated by using a variety of data sources, including focus groups, interviews, and academic records (Patton, 2015).

Confirmability

Participants can independently verify the results is known as confirmability (Bhattacherjee, 2012). Thus, the researcher made an effort to produce data that accurately reflected the opinions of the participants. According to Kennedy-Clark (2012), the study made sure that its conclusions represented the opinions of the participants rather than the traits and inclinations of the researcher.

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Transferability

Transferability is the ability of a study's findings to be applied in many circumstances, according to Bhattacherjee (2012). In other words, the ability to replicate data by other researchers and provide identical results is known as replicability or transferability (Hycner, 1985). Consequently, offering information that might be shared (Malterud, 2001).

Ethical Considerations

According to Mhiliwa (2015), ethics are standard procedures that researchers follow. As a result, consideration was given to ethical concerns that affect all participants, including the researcher. Additionally, since the law requires the head teachers of Western Province to be the custodian of all public schools in the province, approval was acquired from them. Additionally, prior to the data production process, all participants were informed of the research topic and the study's goal. Additionally, written and verbal consents were acquired beforehand. Furthermore, each participant before the interviews were recorded. Since the transcription was done concurrently, it was done right away after the interviews. Students are guaranteed with knowledge through clear communication and permission (Creswell & Poth, 2018). Both anonymity and confidentiality Maintaining student privacy is essential in linear programming. To avoid tying students' identities to their answers, researchers should anonymize their data. According to Silverman (2020), students feel safer and more supported when leading inquiries are avoided and an open, nonjudgmental tone is maintained. They may be forthcoming about educational experiences when they feel secure enough to answer questions honestly (Cohen, Manion, & Morrison, 2018).

The researcher assigned pseudonyms, and gave them the assurance that the information collected would be handled with the utmost confidentiality and anonymity possible and would only be utilized for scholarly purposes. Every item utilized in the data production process was stored securely. Their identities were concealed, and the participants were informed beforehand, to protect the confidentiality and anonymity of all research sites and participants.

FINDINGS AND DISCUSSION

In this hypothetical study, the findings highlight the impact of consistent time management, environment, active learning, resources and interactions, the use of digital tools, and adequate rest on students' study habits. Each of these themes ties back to established educational theories and research, reinforcing the idea that multi-faceted require attention to both cognitive and emotional aspects of learning.

Sleep and Rest

Teacher 1 said that,

"*A small but significant portion of participants who prioritized sleep as part of their study routine reported better cognitive performance and higher test scores" (S 1,12,10.2024).*

This supports the findings of Walker (2017), who emphasized that sleep is good for memory consolidation and cognitive function. Students who integrated adequate rest into their study habits were likely better equipped to retain information and think critically during assessments.

Student 2 said that,

"For me to do better I set study time and follow it steadily. The study time table reminds me on what time to study and not to." (S2,10.10.2024).

Students can study by establishing a goal to finish three or four topics per week rather than aiming nebulously to "study more." Students are inspired to remain dedicated to their academic journeys by this habit, which cultivates a sense of direction and purpose.

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Student 3 said that,

"One of the best study habits for students is to schedule frequent pauses into their study sessions. A few moments of rest can help you concentrate and remember things better" (S3,101.10.2024).

Students should take a little break from their studies, stretch, or do something physical at these periods. One well-liked method for increasing productivity is call for studying and 5-minute rest. It improves their focus and memory by segmenting their study time into manageable portions and scheduling regular breaks.

Consistency Time Management

Teacher 4 reckoned that,

"*A majority of students reported that a consistent study routine helped them manage their time better, with many using planners or digital tools to structure their schedules" (S 4,12,10.2024).*

These findings align with the time-management theories by Britton & Tesser (1991), which suggest that individuals who engage in regular, structured study routines tend to have better academic outcomes. The consistent use of planners and digital tools reflects a growing trend in modern educational contexts, where technology is crucial in organizing study sessions.

Student 5 added to say,

"A well-structured study schedule is one of the most effective study habits for students. Establishing a routine helps to allocate time efficiently for different subjects and tasks. Students should identify their most productive hours and schedule study sessions accordingly" (S5,11.10.2024).

Time management improved academic accomplishment in linear programming, (Beattie et al., 2021). Pupils who set out particular periods of time for problem-solving or math practice interact with the content more thoroughly and comprehend linear programming ideas. In contrast to less structured or irregular study schedules, Tran & Duong (2019) stated that planning their time to include concentrated, uninterrupted study sessions improved their problem-solving abilities.

Student 6 Said that,

"I don't have time to study. I'm always tired and when I reach home, I find a lot of work to do" (S6,10.10.2024).

Time management improved academic accomplishment in linear programming, (Beattie et al., 2021). Pupils who set out particular periods of time for problem-solving or math practice interact with the content more thoroughly and comprehend linear programming ideas. In contrast to less structured or irregular study schedules, learners should plan their time to include concentrated, uninterrupted study sessions to improve their problem-solving abilities (Tran & Duong, 2019).

The development of productive study habits requires organization. Students may keep track of their assignments, due dates, and resources. Managing notes and materials efficiently can be facilitated by using digital organization tools, binders, or folders. To improve mental clarity and lessen distractions, keep your study space tidy and orderly. To assist pupils, maintain focus on their tasks, to-do lists can also be periodically reviewed and modified.

Study Environment

Student 7 added to say,

"I was failing to study because of the noise I was experience in my area. I did not have books to use in studying. At school, some make a lot of noise. It was difficult on my side" (S7,11.10.2024).

A student's capacity to concentrate and assimilate information is greatly impacted by their study environment.

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For students to develop productive study habits, a comfortable study area is essential. Distractions should be avoided, and all required supplies, including textbooks, stationery, and a cozy chair, should be in this area. Furthermore, although some students need total quiet, others could benefit from background music or other ambient stimuli. Students will discover their ideal study environment by trying out various settings, which will improve their focus and output.

Learning Techniques

Teacher 8 stated that,

"*Students who used active learning techniques such as summarizing notes, self-testing, and group discussions tended to perform better in assessments" (S 8,12,10.2024).*

The results of Roediger & Butler (2011), who found that active learning techniques, especially retrieval practice, improve academic performance and retention, are corroborated by this conclusion. Students in the study who engaged in such practices reported feeling more confident during exams, suggesting a direct link between these techniques and improved study outcomes.

Student 9 complained that,

"Even if I study, I easily forget. I have tried my best to do what other learners do but I cannot remember anything after studying" (S9,10.10.2024).

Techniques for active learning are effective instruments that improve comprehension and retention (McKenzie, & Gow, 2012). Instead of just reading or underlining books, students should summarize the content, and instruct others. Flashcards and self-testing are two reinforce that can enhance their deeper comprehension. Additionally, the study process remains dynamic and interesting when several learning approaches are combined.

Student 10 said that,

"I normally forget what I study after some times" (S10,10.10.2024).

Many students struggle with linear programming due to failure of understanding underlying concepts. In linear programming, students that use a conceptual learning method outperform those who rely solely on memorization (Jackson et al., 2020). In interviews, high-performing students reported that visualizing problems and actively applying linear programming to real-life scenarios helped reinforce their comprehension and application skills.

Although memorizing plays a role in learning, understanding must come first for long-term application and retention. Students should prioritize understanding topics above rote memorizing. In their capacity to apply knowledge in many circumstances, students should make an effort to comprehend the "why" underlying the subject matter. Student can deepen understanding and producing a more meaningful learning experience by interacting with the content through conversations, inquiries, and analogies to actual circumstances.

Resources

Teacher 11 commended that,

"*Students who integrate digital tools like online quizzes, educational videos, and learning apps into their study routines express a higher level of engagement and improved understanding of complex topics" (S 11,12,10.2024).*

Students in the study cited the flexibility and accessibility of these resources as key factors in their academic success. The positive impact of digital tools agrees with research by Laurillard (2012), who found that multimedia and interactive tools can support and improve comprehension. Resources such as textbooks, online courses, and peer discussions shape students (Davis, 2017). Students who actively seek out additional learning materials tend not to rely solely on classroom instruction.

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Student 12 commended that,

"When I want to study, I'm always taken by other thing. I like watching TV than studying. Technology can be a double-edged sword for students." (S12,10.10.2024).

Although technology provides a wealth of tools and resources to improve study habits, it can also result in distractions (Hassan, & Farooq, 2019). Using technology effectively is essential to creating productive study habits. To reduce distractions and preserve attention, students should, however, also establish limits on how they use social media and entertainment sites during study sessions.

Interaction

Teacher 13 established that,

"*Participants who engage in group study sessions or receive regular peer support feel more motivated and less stressed during their studies" (S 13,12,10.2024).*

These results align with the Social Development Theory of Vygotsky (1978), which separates the role of interaction with others in cognitive development. The collaborative study environment likely provided emotional support, which helped reduce the stress associated with academic work. Furthermore, this social interaction appears to enhance motivation.

Student 14 commented that,

"Forming study groups can also foster collaboration and provide diverse perspectives on the material" (S14,10.10.2024).

Group studies enable active conversation, which improves comprehension and memory of complex material, according to qualitative data from research by Soto & colleagues (2021). Students who worked together with their peers reported being better able to clear up questions, provide solutions to problems, and discover different ways to approach an issue.

Additionally, using internet resources or tutoring programs can provide individualized guidance for challenging topics. Adopting a growth mentality and realizing that asking for assistance greatly improve a student's educational experience.

Student 15 said that,

"A powerful study habit that can significantly impact academic success. Effective study habits for students include regularly assessing what strategies work best and identifying areas for improvement" (S15,10.10.2024).

Academic success can be greatly impacted by the powerful habit of reflecting on one's learning journey. Regularly evaluating techniques and pinpointing areas for development are essential components for students. Students should analyze their success on examinations and assignment writing, noting which study strategies worked best and which ones need improvement. Students that engage in this reflective activity improve their performance. Students can recover their productivity by establishing specific objectives, making organized timetables, and applying active learning strategies.

These behaviors, along readiness to ask for assistance, provide a solid basis for successful learning. Students will discover that they are more prepared to handle their academic obstacles as they evaluate their progress and modify their approach. In the end, these study practices foster lifelong learning abilities that children will use even after they graduate from school, in addition to promoting academic success.

Students with high self-efficacy in solving challenging linear programming problems, aim high in academic. During focus group discussions, students with lower self-efficacy expressed reluctance to tackle complex problems, which limited their opportunities for practice and learning.

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For academic success, results highlight the significance of a well-rounded study lifestyle that includes efficient time management, conceptual comprehension, peer collaboration, and high self-efficacy. Establishing collaborative learning spaces and incorporating organized study habits could be advantageous for schools. Students who inclined to think analytically might also benefit from resources that support a conceptual approach to linear programming. Furthermore, atmosphere where students can gain self-assurance to solve problems may improve self-efficacy and, in turn, academic results.

CONCLUSION AND RECOMMENDATIONS

Conclusion

To wrap up a document discussing study habits, focus on summarizing the key takeaways, highlighting the practical study habits and their impact on learning outcomes. Regular, structured study habits, such as setting specific goals, using active learning, distraction-free environment, were shown to improve retention and understanding of material. Students who allocated specific time slots for study and followed clear goals exhibit higher performance levels.

These findings have practical implications for both students and educators. For students, adopting a consistent study routine, incorporating practicing improve academic performance. Educators can incorporate these techniques into their teaching strategies by encouraging active learning and providing tools for effective time management.

Educational institutions could also consider designing programs or workshops to educate students about the value of these study habits and integrate them into their daily routines. Additionally, fostering an environment that supports these habits can further enhance students' learning experiences.

Students' study habits, time management, and self-directed learning are key factors in education. In general, students that actively set out regular study time, participate in group projects have good problem-solving strategies. Students in secondary school who engage in group discussions notably demonstrate better understanding concepts. Tadesse & Gillies (2015), emphasized the advantages of cooperative learning of difficult subjects like mathematics.

Furthermore, integrating digital and interactive learning resources benefits students by improving engagement and offering real-time feedback (Mwambazi et al., 2024). Compared to students who only use traditional methods, individuals who adjust to digital tools and online lessons typically get superior academic results. Students focus better during study sessions and experience less stress, academic outcomes (Zimmerman & Kitsantas, 2005). The study concludes by confirming that time management, group projects, educational technology use, and a positive learning atmosphere are critical components to academic achievement in linear programming.

Recommendations

1. Students should establish a disciplined study schedule that allots specific time for assignments, review sessions, and breaks. Promoting regular study habits as opposed to cramming sessions enhances retention and comprehension, especially in areas like mathematics.

2. Encouraging study groups through cooperative problem-solving and peer explanations where various approaches to problem-solving can increase learning.

3. Students may find the subject more accessible and interesting if real-world situations requiring linear programming solutions are incorporated. This practical method helps put abstract mathematical ideas into context, which improves learning and memory.

4. Enhancing students' confidence to understand is essential. Teachers can support students in setting incremental goals, which to improve resilience and persistence.

5. Students gain from frequent practice with various issue types, especially for courses like linear programming that call for analytical and problem-solving skills. Better memory and comprehension result from promoting active problem-solving techniques as opposed to passive study methods like going over notes again.

Teachers can productively study habit that promotes deeper learning and better linear programming results by putting these strategies into practice.

Future Research

1. How do study habits vary across different cultures or demographic groups, and what factors influence these differences? Could provide a more tailored approach to study habit recommendations.

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