Learning Space, Lifestyle Practices and Assessment of Teacher's Teaching Quality: Implications on Academic Performance in Technical-Vocational Livelihood Subjects

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.903SEDU0261

Received: 04 May 2025; Accepted: 08 May 2025; Published: 07 June 2025

INTRODUCTION

The academic performance of students is a significant indicator of educational achievement and reflects the effectiveness of instructional delivery, school systems, and student engagement (Wang et al., 2022). Educational success is influenced by a variety of interconnected factors including the quality of teaching, learning environment, and lifestyle practices. Over the past decade, research has emphasized the growing importance of psychosocial and contextual factors that support student learning beyond mere content delivery (Rahmadi et al., 2023; Huang et al., 2022).

However, much of the existing literature tends to focus on general education settings—such as basic education or higher education institutions—leaving a gap in understanding the unique dynamics experienced by students in technical-vocational and livelihood (TVL) tracks. These students often exhibit lower levels of academic motivation and engagement, frequently settling for minimal academic achievement (Domingo et al., 2024). Moreover, the pandemic has further disrupted learning experiences, adding new challenges that disproportionately affect students in more practice-based tracks like TVL (Navas et al., 2021).

This study aims to explore the influence of learning space, motivation, lifestyle practices, and teaching quality on the academic performance of TVL students. By investigating these under-researched but critical components, the study contributes to the growing body of knowledge addressing the educational needs of learners in technical-vocational contexts, and proposes targeted strategies to improve their academic outcomes.

A positive and supportive learning environment plays a crucial role in enhancing students' academic performance. When students perceive their classrooms as welcoming and structured, they are more likely to feel emotionally supported, cognitively engaged, and academically motivated (Yang et al., 2022). These environmental conditions are especially influential for TVL students, whose performance often hinges on practical engagement and experiential learning.

In the case of TVL students, limited academic interest has been observed, with many students aiming only to meet passing marks (Domingo et al., 2024). This underscores the urgent need to enhance teacher effectiveness, create more supportive learning environments. A recent study emphasized that positive teacher-student interactions, meaningful instructional practices, and well-organized learning spaces all contribute significantly to students' engagement and academic performance (Al-Mahdi et al., 2021).

The pandemic has forced educational institutions to reevaluate teaching strategies and classroom dynamics. While online learning became the norm, disparities in teaching quality and student engagement became more evident. Teacher effectiveness, particularly in delivering clear, relevant, and adaptive instruction, emerged as a decisive factor in student success (Olosunde et al., 2023). This is especially critical in the context of TVL education, where applied and practical learning remains central to curriculum delivery.

In addition, students' lifestyle practices—such as nutrition, physical activity, sleep quality, and screen time—have been found to significantly affect their cognitive functioning and academic outcomes (Suthar et al., 2023). Healthy behaviors not only improve mental and physical well-being but also correlate positively with academic

success. For instance, high intake of fruits and vegetables is linked to better grades, while excessive consumption of sugary foods is associated with poorer performance (Chan et al., 2019).

The classroom learning environment—comprising physical conditions, instructional strategies, and peer interactions—has a direct impact on student motivation and achievement. Creating a positive, interactive, and inclusive learning atmosphere is crucial for fostering academic engagement, especially for students in practice-oriented tracks like TVL (Fitria et al., 2023). These factors collectively shape how students perceive their academic responsibilities and respond to challenges, which in turn affects their performance.

Connecting this investigation to the United Nations Sustainable Development Goal 4: Quality Education, this study aligns with efforts to ensure inclusive, equitable, and quality education for all. Enhancing the academic performance of TVL students by focusing on teaching quality, learning environments, and personal well-being contributes to this goal by empowering learners with the skills needed for decent employment and lifelong learning. Addressing the specific educational needs of TVL students not only promotes individual development but also supports broader social and economic progress (UNESCO, 2023).

Theoretical and Conceptual Framework

This study argues that students' learning space, lifestyle practices, and assessment of teachers' teaching quality significantly influence their academic performance, particularly within the Technical-Vocational-Livelihood track. This study is grounded in four fundamental theories—Constructivist Theory (Piaget, 1952; Bada, 2015), Vygotsky's Sociocultural Theory (Vygotsky, 1978), Social Cognitive Theory (Bandura, 1986). These theories help explain how students learn, how they are affected by their surroundings, and what motivates them.

Constructivist Theory says that students build or "construct" their own knowledge based on their experiences. Learning is not just about receiving facts from teachers, but about actively thinking, asking questions, and solving problems. In a constructivist classroom, students are encouraged to explore ideas, share what they know, and make connections. Teachers are not the only source of knowledge—they guide students and give them activities that help them learn on their own.

In this study, Constructivist Theory supports the idea that a good learning environment helps students perform better. If the classroom is engaging, safe, and allows students to participate actively, they are more likely to understand lessons deeply. This is especially true for TVL students who learn better when they do hands-on tasks. Good teaching, based on constructivism, means allowing students to discover and practice what they are learning, instead of just listening to lectures.

Vygotsky's theory explains that learning happens through social interaction and is strongly influenced by culture. According to this theory, students learn better when they work with others—such as classmates, teachers, or even family members. The idea of the "Zone of Proximal Development" means students can do more with help than on their own. In short, learning is not just a personal process—it's a social one.

For TVL students, this theory is important because their learning often happens in groups and real-life situations. Studies have shown that group projects and peer collaboration help students stay motivated and improve their performance (Clark & Peterson, 2019). When TVL students feel supported by classmates and teachers, they are more likely to do well in school. The sociocultural environment—how people interact and the culture of the school—matters a lot in their learning process.

Social Cognitive Theory says that people learn by watching others and copying what they do. Bandura believed that learning is not only from personal experience but also from observing how others behave and what happens to them. For example, if a student sees another student being praised for studying hard, they might also try to study hard to get the same praise.

In this study, this theory explains how students' lifestyle habits, like eating healthy food, exercising, or managing their time, are often influenced by others around them. Students also learn good or bad habits from friends, teachers, or people at home. Their environment affects how they behave, and in turn, this behavior can affect

their school performance. If students are in a positive environment where healthy and productive habits are shown, they are more likely to succeed.

The first variable investigated in this study associated to *learning spaces*, which are thought a substantial influence on students' academic performance. The study of learning spaces has received substantial attention in educational research, acknowledging their substantial implications on student outcomes. In line with this context, the study embraces three essential dimensions of learning spaces: the physical environment, the social environment, and the technological environment.

The *physical environment* of learning spaces includes the physical organization, layout, and materials in the learning setting. Recent studies highlight, the factors such as classroom layout, lighting, temperature control, and availability of instructional materials on student learning outcomes (Falchikov & Goldfinch, 2019). For instance, studies quoted by Harvey and Kenwright (2019) emphasize the need of incorporating natural lighting, flexible seating arrangements, and well- designed learning resources create an environment that supports comfort and intellectual stimulation.

Simultaneously, the *social environment* in learning spaces established the recognition for its importance in shaping student experiences and achievements. Research has shown the importance of positive teacher-student relationships, a supportive classroom climate, and encouraging collaborative learning in promoting academic growth (Hamre & Pianta, 2018). Recent research cited by Rimm-Kaufman and associates (2020) emphasized the benefits of a respectful and inclusive learning community, where students experience belongingness and actively contribute to peer interaction.

Furthermore, the *technological environment* has become significant dimension of a modern learning environment. The integration of educational technology tools and digital resources have changed the teaching and learning process. Recent studies emphasize the crucial nature of relevant and collaborative technology integration in improving student engagement (Kay, 2019). For instance, studies mentioned by Kebritchi, Hirumi, and Bai (2019) show that personalized and adaptive learning technologies are positively correlated with motivation, knowledge acquisition, and critical thinking skills.

Recent literature emphasizes the profound of lifestyle practices specifically food intake, sleep patterns, and physical activity on individual health outcomes. Diet quality has come under renewed scrutiny, particularly due to the increasing consumption of ultra-processed foods (UPFs). A 2024 study published in the American Journal of Preventive Medicine found that a 10% increase in UPF intake correlates with a 2.7% increase in the risk of premature mortality, highlighting the need to prioritize whole, nutrient-dense foods (Lane et al., 2024). Similarly, the role of sleep has expanded beyond duration to include regularity. A recent study by Monash University (2023) revealed that individuals with highly irregular sleep patterns are 53% more likely to develop dementia, reinforcing the importance of sleep hygiene and circadian rhythm stability (Zhou et al., 2023). Physical activity continues to be a cornerstone of preventive health. According to a 2024 umbrella review published in the British Journal of Sports Medicine, regular exercise not only improves cardiovascular and metabolic health but also significantly mitigates the side effects of cancer treatments and enhances psychological well-being (Nguyen et al., 2024). These findings align with the Social Cognitive Theory and Health Belief Model, both of which propose that health behaviors are influenced by a combination of individual beliefs, environmental factors, and perceived barriers or benefits. Taken together, the literature suggests that promoting consistent and healthy food intake, stable sleep patterns, and regular physical activity can significantly reduce the risk of chronic illness and improve overall quality of life.

The significant impact of *Food Intake* on students' academic performance. Adherence to a Mediterranean-style diet—rich in fruits, vegetables, and whole grains—has been linked to enhanced cognitive functions and superior academic outcomes among adolescents, outperforming peers consuming Western or high-sugar diets. A comprehensive cross-national study involving over 46,000 adolescents revealed that daily consumption of fruits, vegetables, and regular breakfast correlates with higher perceived school performance, whereas frequent intake of sweets and soft drinks is associated with lower academic achievement.

Simultaneously, the sleep pattern in lifestyle, recent studies show that students who sleep less than six hours a night perform significantly worse on memory and problem-solving tasks (Frontiers in Psychology, 2024). Meanwhile, Self-Regulation Theory suggests that poor sleep disrupts emotional and behavioral control, which in turn affects study habits and academic persistence. Irregular sleep schedules have been found to reduce students' capacity for focus and time management, leading to lower academic outcomes (Journal of Adolescence, 2023).

Furthermore, physical activity enhances brain functions such as attention, working memory, and cognitive flexibility—skills directly tied to academic success. Recent studies, confirmed that students who regularly engage in moderate to vigorous physical activity show improved executive functions and higher academic outcomes (Donnelly et al., 2023).

A contemporary study for assessing teaching quality and its implications for student academic performance integrates several key dimensions. Recent studies highlight that teaching quality encompasses factors such as classroom management, cognitive activation, and supportive climate, all of which significantly influence student outcomes. Furthermore, the Scholarship of Teaching and Learning (SoTL) emphasizes systematic inquiry into student learning, aiming to enhance teaching practices through evidence-based strategies. Additionally, frameworks like the Quality Teaching (QT) Model focus on intellectual quality, quality learning environments, and the significance of learning, providing a comprehensive approach to evaluating teaching effectiveness. Collectively, these perspectives underscore the multifaceted nature of teaching quality and its direct and indirect effects on student academic performance.

Changeover to a more localized perspective, the significance of *academic performance* in Technology and Livelihood Education (TLE) acquire significant adhesions in the Philippine context. Technology and Livelihood Education programs are indispensable to the educational ecosystem in the Philippines as they are the blueprints to prepare students for technical and vocational careers (Alekhina, et al., 2020). The bosom aim of these programs is to deck out students with practical skills and knowledge in diverse fields, enclose areas such as agriculture, entrepreneurship, information and communication technology, and home economics.

Academic performance in Technology and Livelihood Education is exert influenced by several elements particular to the field. The curriculum design, quality of instruction, and assessment methods used in TLE courses all provide to students' academic achievement. Impactful teaching methodologies that comprise hands-on experiences and real-life applications have been found to amplify students' comprehension and mastery of technical skills, leading to enhanced academic performance of the students' (Gallego & Raymundo, 2020).

Additionally, the continuity of Technology and Livelihood Education programs with industry standards and the inclusion of industry collaborations and partnerships are fundamental in ensuring students globally competent for their preferred vocations (Lopez, 2013). Ingenuities bestow students with internships and opportunities for practical application of their skills, which can positively give impact to their academic performance by bridging the hole between classroom learning and industry requirements.

Pinpointing the dominance of academic performance in Technology and Livelihood Education, the Philippine government has administered policies and programs to strengthen the transparency of TLE education. The K to 12 Basic Education Program, which incorporates TLE as an interior component, run after to enhance the academic performance by straighten up the curriculum with industry demand and providing specialized training for Technology and Livelihood Education teachers (Department of Education, 2013).

The Department of Education (DepEd) in the Philippines has administered an extensive feedback approach for students in the Technical Vocational Livelihood (TVL) track, the diverse competencies these courses work toward to prosper. This multi-faceted evaluation strategy is characterized by a variation of assessment methods (DepEd Order No. 8, s. 2015).

These feedback piece typically bound with written exams, which test the students' theoretical perception. In addition, hands-on demonstrations of skills are decisive role, particularly in the TVL track, where the prominence

is on practical skill attainment (DepEd Order No. 58, s. 2017). Students' active participation in class, a crucial aspect of their comprehensive development, is also deliberate over in the grading system.

Moreover, homework assignments and other forms of student work accord to the final grade. These are designed to reinforce learning, stimulate practice, and enable students to apply the knowledge and skills acquired in class in an independent setting (DepEd Order No. 8, s. 2015).

It is crucial to highlight, however, that the specific weightage assigned to each of these components can alter, reflecting the unique needs and objectives of different courses within the TVL track. This allows for the assessment process to be tailored to the specific learning outcomes and competency standards set out for each course (DepEd Order No. 58, s. 2017).

Figure 1, shown on the next page, presents a schematic diagram illustrating the relationships between the variables investigated in this study.

Statement of the Problem

This study aims to investigate the relationship between assessment of teacher's teaching quality, lifestyle practices, learning space, students' motivation, and academic performance in the Technical Vocational Livelihood (TVL) Strand. To achieve this goal, the study will address the following research questions:

What is the participants' assessment on their learning space considering the following;

Physical Environment;

Social Environment; and

Technological Environment?

How do the participants characterize their lifestyle practices in terms of:

Food Intake

Sleeping Pattern; and

Physical Activities?

What is the participants assessment of the teacher's teaching quality?

What's the participants' academic performance in TLE?

Do the participants' learning space motivation, lifestyle practices and assessment of teachers' teaching quality significantly influence their academic performance?

Hypothesis

Problems 1, 2 and 3 are hypothesis free. On the basis of Problem 4, the null hypothesis will be tested at .05 level of significance:

Ho1: The participants learning space do not significantly influence their academic performance.

Ho2: The participants lifestyle practices do not significantly influence their academic performance.

Ho3: The participants assessment of teachers' teaching quality does not significantly influence their academic performance.

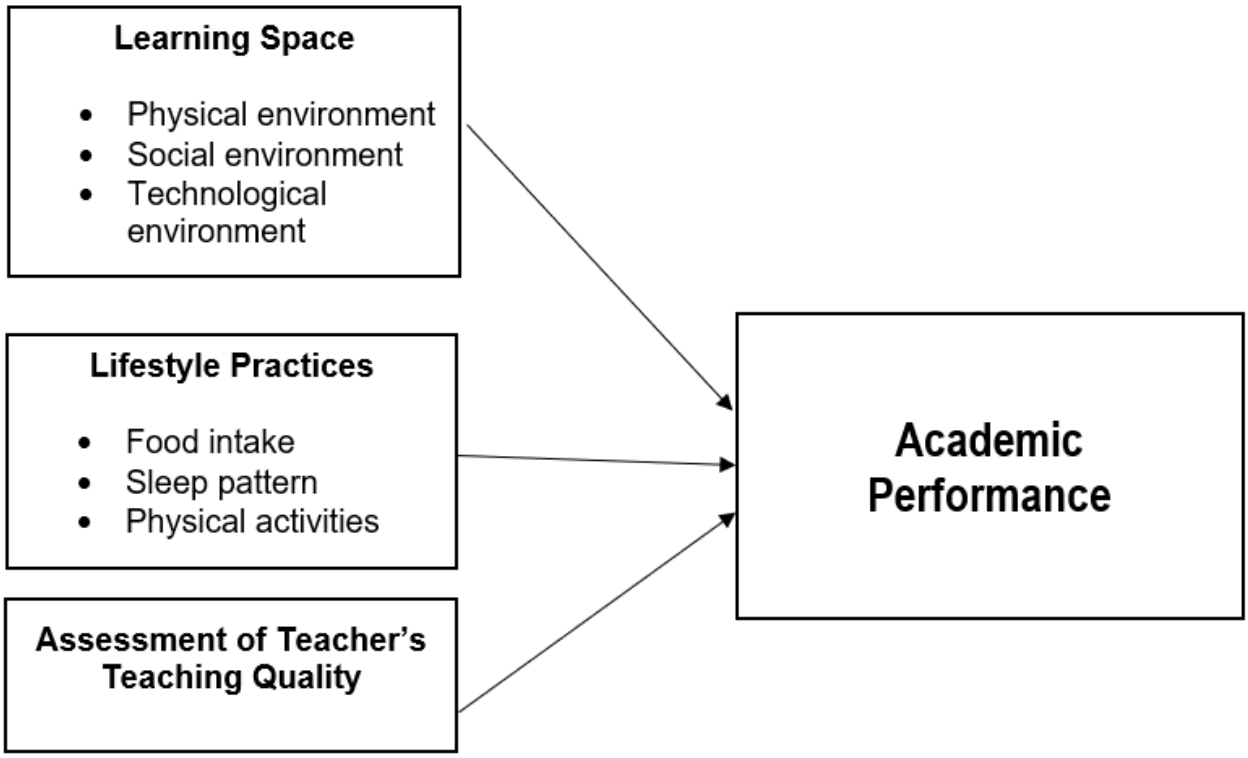

Figure 1. Schematic Presentation of the Study

Significance of the Study

The findings of this study would be beneficial to TVL students, teachers, and future researchers in improving the quality of education in the Technical Vocational Livelihood (TVL) Strand, as well as in understanding the factors that contribute to academic performance in this field.

Technical-Vocational and Livelihood (TVL) Track Students. This study will help TVL students understand how their learning space, motivation, and lifestyle choices affect their academic performance, empowering them to make informed decisions that support their learning.

Technical-Vocational and Livelihood (TVL) Teachers. The findings will guide TVL teachers in improving teaching practices and learning environments that better motivate students and enhance their academic outcomes.

Future Researchers. This research serves as a foundation for future studies aiming to explore deeper connections between learning environments, teaching quality, and student performance in TVL education.

Scope and Delimitation of the Study

This study focuses on investigating the influence of learning space and students' motivation on the academic performance of G11 and G12 students in a private school situated in Cagayan de Oro City. The study aims to assess students' perspectives regarding the physical environment, social environment, and technological environment of the learning space, as well as their evaluation of motivation, lifestyle practices and assessment of teachers' teaching quality. Academic performance will be evaluated based on the students' final grades for the school year 2022-2023. By exploring into these aspects, the study aims to provide valuable insights into the factors that impact academic achievement among TVL students in a specific educational context.

Definition of Terms

For the purpose of clarification, the important terms used in this study are defined:

Academic Performance. This term refers to the measurable success of students in their studies, usually shown through their final grades in various subjects.

Learning Space. This term pertains to how students' expectations, learning activities, and the use of technology influence their experience within the educational setting.

Physical Environment. This term refers to the classroom's physical features such as layout, furniture, lighting, temperature, and design, which can affect how students learn.

Social Environment. This term refers to the interactions among students, teacher-student relationships, and the overall classroom atmosphere that contribute to student motivation and engagement.

Technological Environment. This term refers to the presence and use of digital tools, software, internet access, and other technologies that enhance the learning experiences.

Lifestyle Practices. This term pertains to students' daily habits and routines related to health, well-being, and personal development that influence academic performance.

Food Intake. This term refers to the eating habits and nutritional choices made by students that can affect their energy, focus, and overall academic functioning.

Sleep Pattern. This term refers to the regularity and quality of students' sleep habits, which are essential for maintaining concentration, memory, and academic performance.

Physical Activities. This term means any movement involving physical effort, such as exercise or active routines, which support both physical health and academic success.

Teaching Quality. This term refers to the effectiveness of a teacher's instructional methods, ability to engage students, and use of strategies that support diverse learning needs.

Review of Related Literature and Studies

This phase provides an outline of the theories that bolsters up the study and their importance in relation to the topic. In addition, it also presents the current literature that investigates the between learning space, lifestyle practices, assessment of teachers' teaching quality and academic performance.

Academic Performance

Technology and Livelihood Education (TLE) plays a vital role in equipping students with practical skills necessary for real-world applications. In recent years, research has increasingly highlighted multiple factors that influence students' academic performance in TLE, including motivation, teaching strategies, and the integration of technology.

Equally important is the use of instructional strategies that promote active engagement. Project-based learning (PBL), which aligns closely with the practical nature of TLE, has proven to be effective in enhancing student performance. Dullente and Namoco (2023) demonstrated that PBL positively influences learners' creativity, collaboration, and innovation skills. By actively involving students in meaningful, real-life tasks, PBL increases engagement and improves learning outcomes.

These findings are further supported by Zhang and Ma (2023), whose meta-analysis revealed that PBL significantly improves academic achievement, critical thinking, and affective attitudes among students. Compared to traditional methods, PBL offers more opportunities for applied learning, which is essential in the context of TLE where skill development is a core objective.

Another influential factor in academic performance is the use of digital technology in education. According to Kilag et al. (2024), integrating technology into TLE not only enhances access to learning resources but also facilitates personalized instruction and skill-building relevant to today's digital economy. Their study showed that students exposed to digital tools in livelihood education are more likely to develop competencies that support both academic and career success.

Furthermore, Aflalo (2024) highlighted the value of digital technology in promoting active and self-directed learning. The study emphasized that when students take ownership of their learning through the use of digital platforms, their motivation and academic performance improve. Aflalo also noted that teachers play a key role in this process by developing techno-pedagogical skills that create more engaging and effective learning environments.

In summary, current literature suggests that academic performance in TLE is shaped by a combination of learner motivation, student-centered teaching strategies such as project-based learning, and the effective integration of technology. These elements collectively contribute to improved learning outcomes and better prepare students for both academic and vocational success.

Learning Space

The design and atmosphere of learning spaces significantly influence students' academic performance by facilitating effective interactions between students and instructors. Schools serve not only as institutions for academic instruction but also as social environments where adolescents develop holistically. To optimize learning outcomes, it is essential to consider proper teaching methods, appropriate physical spaces, and a supportive psychological environment. Creating an innovative learning environment becomes a primary concern for educators, as it encompasses various elements that contribute to student comfort and engagement (Alam, 2022).

Recent research provides valuable insights into the impact of learning environments on academic performance. For instance, Ferrer et al. (2020) highlighted that effective classroom design creates a positive and conducive learning environment that fosters engagement, collaboration, and active participation, leading to improved academic outcomes. Similarly, a study by Terada and Merrill (2023) emphasized that using learning zones—a low-cost approach to tailoring instruction—can motivate and engage students more effectively.

These findings underscore that academic achievement is shaped by multiple aspects of the learning space, including physical design, social dynamics, and environmental stimuli. Educators who create inclusive, supportive, and well-structured learning environments can significantly enhance student engagement and academic success.

The physical setting of a learning environment—including classroom layout, seating arrangements, lighting, temperature, and availability of resources—plays a crucial role in students' academic success. A thoughtfully designed classroom can create a learning environment that boosts student engagement, enhances focus, and promotes emotional well-being (TeachHUB, 2024).

Ferrer et al. (2020) emphasized that effective classroom design fosters engagement, collaboration, and active participation. Flexible seating arrangements have been associated with increased student engagement and motivation, as they allow students to choose seating that best suits their learning preferences (Alzahrani, 2021). Furthermore, research by Alam (2022) indicates that natural lighting and acoustic considerations significantly impact students' concentration and overall academic performance.

Overall, the physical context of the learning environment plays a critical role in students' academic performance. A comfortable, visually stimulating setting equipped with appropriate materials and resources can enhance student engagement, motivation, and overall academic accomplishment.

The social dynamics within a learning environment—including student interactions, teacher-student relationships, and the overall classroom atmosphere—significantly influence academic performance. Recent research highlights the importance of a constructive and supportive social environment in enhancing students' motivation and academic achievement.

A study by Abid and Akhtar (2020) demonstrated that high-quality teacher-student relationships are associated with greater student engagement, higher academic achievement, and decreased behavioral problems. Similarly, Zhou et al. (2023) indicated that positive teacher- student relationships contribute to better teaching practices and student outcomes.

Peer relationships also play a crucial role. Li and Lerner (2023) reported that perceived support from teachers and peers is directly linked to improved academic performance and emotional well-being.

These studies underscore the significance of the social context in shaping students' academic success. By fostering positive teacher-student relationships, creating a supportive classroom climate, promoting positive peer interactions, and providing social support, students' motivation, engagement, and overall academic achievement can be significantly enhanced.

The integration of technology within the educational setting has become increasingly important, encompassing the accessibility and utilization of digital tools, online learning platforms, and other technological resources. Recent research provides valuable insights into the impact of a well-integrated technological environment on students' engagement and academic performance.

Schmid et al. (2020) conducted a meta-analysis demonstrating that the use of technology in postsecondary education positively affects classroom applications, leading to improved student engagement and learning outcomes. Additionally, Sharma (2023) highlighted that students engage deeply in class when tech tools encourage them to construct ideas, collaborate with peers, and create unique work.

Emerging technologies, such as augmented reality (AR), have shown promise in enhancing learning experiences. For instance, a study by Bacca et al. (2020) found that AR applications in education can improve students' motivation and engagement by providing immersive and interactive learning experiences. Similarly, research by Wang et al. (2021) indicates that the use of digital simulations in STEM education enhances students' conceptual understanding and interest in the subject matter.

Furthermore, the use of mobile devices in classrooms has been associated with increased student collaboration and engagement. Kay and Greenhill (2020) demonstrated that mobile devices facilitate student-to-student collaboration, thereby enhancing learning experiences. However, it is essential to manage the use of technology to prevent potential distractions and ensure that it serves as a tool for enhancing learning rather than hindering it.

These studies collectively point that when technology is thoughtfully integrated into the learning environment, it can enhance student motivation, engagement, and overall academic achievement.

Lifestyle Practices

The benefits of a healthy lifestyle go further than enhancing healthy lifestyle condition. Adolescence stage and less screen time as well as good eating habits and sleeping habits associates with students to better cognitive control and academic performance. In addition, lifestyle behaviors such as eating habits, sleeping patterns, and physical activity are daily practices that are molded by a combination of students' choice and social, cultural factors. Hence, the need to explore whether there will be any significant influence of health education and healthy lifestyle of students' academic performance.

Nutrition, particularly food intake patterns such as breakfast consumption, plays a vital role in shaping students' academic performance. Numerous studies have emphasized the positive link between healthy dietary habits and cognitive functioning. In a large-scale study conducted in Korea involving 75,643 students aged 12 to 18, regular breakfast consumption was significantly associated with higher academic performance (Kim, Lee, & Kim, 2022). Skipping breakfast, on the other hand, was linked to poor concentration, reduced energy levels, and lower test scores (Kim et al., 2022).

Other components of dietary quality have also been linked to academic outcomes. Jerre, Aerts, and Michiels (2020) emphasized that students who adhere to healthy dietary routines—such as eating balanced meals and minimizing intake of sugary snacks—are more likely to exhibit improved memory retention, mental focus, and overall academic achievement. Students with consistent, nutritious food intake habits are also better equipped to handle academic and emotional stressors (Jerre et al., 2020). Likewise, Nourian et al. (2021) found a significant positive correlation between overall dietary quality and academic scores among adolescents in urban schools.

Further, Morales et al. (2023) noted that higher consumption of processed foods and sugar-sweetened beverages was associated with lower GPA and reduced test performance. Similarly, Horta et al. (2020) demonstrated that students who consumed fruits, vegetables, and whole grains regularly had better cognitive outcomes and school attendance than those with poor dietary diversity.

Moreover, unhealthy eating behaviors, such as those associated with disordered eating patterns, have been tied to poor academic outcomes. Colantuoni, Schumann, and Büchel (2021) noted that eating disorders are often linked to impaired emotional regulation, which interferes with learning and academic engagement. Their findings suggest that the brain's reward-processing system is influenced by eating patterns, especially under stress, and may impact students' motivation and focus. Papadaki et al. (2022) added that students experiencing stress often rely on poor eating habits, which in turn contribute to fatigue, irritability, and lower academic engagement.

In addition, Geng et al. (2020) emphasized the role of nutrition education in improving adolescents' food choices, which directly contributes to better academic functioning. Supportive findings by de Pinho et al. (2021) indicated that students with higher nutritional knowledge and better eating habits were less likely to miss classes or report concentration problems in school. Lastly, Wong et al. (2023) identified sleep and dietary quality as interactive predictors of academic achievement, reinforcing the interdependence of lifestyle habits.

In summary, good nutrition supports not only physical health but also enhances mental alertness and emotional regulation, which are essential for effective learning. Promoting awareness of healthy food intake habits, especially among young learners, may serve as a preventive strategy against academic underperformance and cognitive decline.

Sleep plays a pivotal role in cognitive development and academic performance. Lack of adequate sleep has emerged as a significant concern among students, with numerous studies identifying its detrimental effects on learning and mental functioning. Students who experience insufficient sleep often struggle with increased daytime sleepiness, reduced alertness, and diminished concentration, which negatively influence classroom performance and academic outcomes.

Recent studies have highlighted the direct link between poor sleep quality and weakened cognitive functions, particularly working memory and executive functioning. For instance, Becker et al. (2023) reported that adolescents with inadequate sleep performed significantly worse on academic tasks compared to their well-rested peers. This finding aligns with research by Lovato and Gradisar (2022), who emphasized that disrupted sleep patterns impair memory consolidation, making it difficult for students to retain and process new information.

Moreover, Alfonsi et al. (2020) demonstrated that sleep deprivation is associated with impaired attention and information processing speed, both of which are critical for successful learning. In a similar vein, Bowers and Moyer (2021) found that chronic sleep restriction leads to cumulative academic difficulties and reduced motivation to study. A study by Shochat et al. (2021) also indicated that sleep-deprived students exhibit greater emotional reactivity and stress, which further compromises their academic performance.

Notably, students with consistent and high-quality sleep patterns are more likely to engage in self-regulated learning strategies. According to Xiao et al. (2024), sufficient sleep fosters improved planning and goal-setting behaviors, which are essential for academic success. Dewald-Kaufmann et al. (2022) further supported this by showing that students who maintain regular sleep schedules report higher academic satisfaction and better grades.

Given the overwhelming evidence, it is essential that schools and families collaborate to promote healthy sleep hygiene among students. Educational programs that emphasize the importance of consistent sleep patterns can help mitigate academic struggles associated with poor sleep quality.

Physical Activities

Physical activity is widely acknowledged in the literature as a critical lifestyle habit influencing students' academic performance. Recent empirical studies reinforce the long-standing assertion that engaging in regular

physical activity not only benefits students' physical well-being but also significantly enhances their academic outcomes. According to Li (2023), junior high school students in China who engaged in moderate levels of daily exercise demonstrated better academic performance than those with insufficient or excessive activity. This finding supports the notion of an optimal range of physical exertion beneficial for cognitive and scholastic success.

Rao (2024) conducted a comprehensive meta-analysis across educational levels, revealing that consistent physical activity leads to improvements in academic performance regardless of age. Supporting this, Álvarez-Bueno et al. (2023) concluded through multi-level meta-analytic research that school-based physical activity programs positively impact students' cognitive function and learning outcomes.

The beneficial effects of even short-term exercise were observed by Donnelly et al. (2023), who found that a single session of moderate physical activity can enhance students' academic results in core subjects such as mathematics and language. Zeng et al. (2023) noted a non-linear relationship, emphasizing that while two hours of exercise correlated with optimal academic results, performance could decline with excessive exercise beyond three hours.

In addition, Liu et al. (2023) identified self-esteem as a key mediating factor linking physical activity and academic success, arguing that physically active students tend to feel more confident, which in turn contributes to better performance. Similarly, Kantomaa et al. (2024) highlighted that students involved in regular physical activity perform better in mathematics, and this relationship held across genders.

Complementary findings by Sember et al. (2023) point to the broader social and emotional benefits of physical activity, noting improvements in classroom behavior, attention span, and interpersonal relationships. These psychosocial gains reinforce the importance of integrating structured physical activity into school curricula.

Overall, the reviewed studies provide robust evidence that physical activity plays a crucial role in fostering academic excellence. The consistent association across multiple educational contexts and methodological designs affirms the integration of exercise as a fundamental element of educational success strategies.

Assessment of Teachers' Teaching Quality

Improving the quality of teaching has become central to enhancing student academic outcomes in the 21st century. A growing body of research underscores the link between effective teaching practices and improved academic performance, as well as the importance of teacher development. For instance, König et al. (2020) highlight the necessity of pedagogical content knowledge, classroom management, and teacher self-efficacy in achieving successful student outcomes. In the context of the Philippines, the K to 12 Basic Education Curriculum launched in 2012 emphasized the enhancement of teacher competencies and standards for effective classroom instruction (Department of Education, 2012).

Professional development remains a cornerstone of teacher quality. According to Bowe and Gore (2021), ongoing and collaborative professional learning significantly contributes to teachers' instructional quality. It involves training, practice, feedback, and sustained support that encourage reflective teaching. Similarly, Ghavifekr and Ibrahim (2020) argue that effective professional development requires alignment with classroom realities and student learning needs. This ensures relevance and applicability, increasing the likelihood of improved academic achievement.

Recent studies emphasize that high-impact professional development leads to measurable improvements in student performance. For example, Kraft and Hill (2021) found that coaching-based models of teacher training had significantly greater effects on instructional practice and student achievement than traditional workshops. Likewise, Opper (2022) reports that teachers who engage in data-driven and student-centered PD programs tend to facilitate more equitable and effective learning environments.

Teacher evaluation systems are also essential for assessing and improving teaching quality. OECD (2020) recommends multidimensional evaluations—including classroom observations, student feedback, and peer reviews—as more accurate and holistic methods. Similarly, Bautista and Ortega-Ruíz (2021) advocate for

reflective self-assessment frameworks that support teacher agency and continuous improvement. When conducted constructively, evaluations serve not as punitive tools but as foundations for professional growth.

The instructional context and school climate further influence teaching quality. According to Sun and Leithwood (2020), supportive school leadership and a collaborative culture significantly boost teacher morale, instructional quality, and ultimately, student learning. Teachers who feel supported by peers and administration are more likely to engage in innovative and student-centered practices.

Teacher characteristics also play a critical role. Kim et al. (2021) found that teachers' beliefs in their professional capacity and emotional regulation correlate positively with their instructional effectiveness. Additionally, García and Weiss (2022) emphasize that respect for the teaching profession and job satisfaction are essential for long-term educational quality.

In sum, high-quality teaching is not an isolated factor but the result of continuous professional development, supportive evaluation systems, conducive school environments, and policy frameworks that recognize and invest in teacher effectiveness. These elements, when integrated, build a resilient education system that fosters student success.

The literature collectively emphasizes that academic performance, particularly in Technology and Livelihood Education (TLE), is influenced by multiple interconnected factors, including student motivation, instructional methods, technology integration, learning environments, lifestyle practices, and teaching quality. Effective student motivation, such as intrinsic interest and self-efficacy, combined with engaging teaching strategies like project-based learning, significantly enhances students' practical skills and academic outcomes. Additionally, the thoughtful integration of digital technologies enriches educational experiences and aligns learning with modern economic demands. Physical, social, and technological aspects of learning spaces also play vital roles in fostering student engagement and achievement, providing environments conducive to positive interactions and effective learning. Furthermore, healthy lifestyle habits, including proper nutrition, adequate sleep, and regular physical activity, substantially contribute to students' cognitive development and academic success. Lastly, teacher effectiveness, supported through continuous professional development and constructive evaluation practices within collaborative institutional climates, remains central to maximizing students' educational outcomes. These insights collectively inform the present investigation by providing a comprehensive understanding of the holistic factors influencing academic performance in TLE.

RESEARCH METHODS

This chapter deals with the methodologies of research that will be employed in the study. It discusses the design, participants and sampling procedure, the research instrument, content validation as well as the reliability test, the scoring procedure, the data gathering procedure and the statistical treatment.

Research Design

This study employed a descriptive correlational research design to examine the connections between learning space, lifestyle practices, assessment of teachers teaching quality and academic performance among Technical Vocational Livelihood subjects at a private school in Cagayan de Oro City. According to Polit and Beck (2012), a descriptive correlational design is a non-experimental research method that seeks to explore and describe the existing relationships between variables without manipulating them, allowing researchers to identify patterns, examine associations, and understand the nature and extent of connections among different factors.

The research utilized a survey approach with a questionnaire to collect information about these different aspects, allowing the researchers to gather detailed insights into the current situation and understand how these factors might be related. By using this research method, the study aimed to identify potential relationships between the variables without changing or manipulating them. The approach helped the researchers explore how different elements like learning environment and student motivation might connect to academic performance, providing a clear picture of the natural connections that exist among these factors in the school setting.

Research Participants and Sampling Procedure

The participants of this probe encompass Grade 11 and Grade 12 students enrolled in the Technical-Vocational-Livelihood (TVL) strand at a privately managed Senior high school in Cagayan de Oro City. A random sampling method was employed to select the study participants, a paradigm that allows more focused examination of the specific population of interest.

In this occasion, the population of students enrolled in the TVL strand formed the participant pool for this study. Significantly, eligibility criteria for participation included official enrolment in the TVL strand of the senior high school for the academic year 2023-2024. This targeted approach ensured that the study captures data from the most relevant and representative group, enhancing the potential for insights directly applicable to the TVL student population.

Research Instruments

The survey instrument to be used in this study will be two-way in nature. The first section will solicit participants' perceptions regarding their learning environment, exploring their experiences and attitudes towards the physical, virtual, and cultural aspects of their educational context.

The second component will explore into the domain of lifestyle practices specific to their enrolled strand, probing the factors that drive their academic engagement and efforts. The survey items in these two sections will be meticulously crafted, grounded in the conceptual frameworks of learning environments, thereby ensuring their relevance and applicability.

This collection tool assimilates a modified version of the Learning Environment survey from the School Education Gateway. The researcher will tailor this existing tool to meet the specific requirements of the present study, ensuring alignment with the unique context and objectives at hand. Meanwhile, the motivation survey component will be a tailored creation, drawing from a variety of scholarly references to fashion an instrument that accurately captures the nuances of student motivation within the TVL strand.

Validity and Reliability

The knowledge and expertise of subject-matter experts will be sought to ensure the content validity of the research instrument used for data collection in this study. A panel of experts, along with the research adviser, will review the questionnaire and provide recommendations and comments. These valuable inputs will be integrated into the modified questionnaire.

To assess the questionnaire's strength of value, a pilot test was conducted with 30 voluntary students who were not part of the study participants, specifically excluding Grade 11 TVL students. The pilot test aims to evaluate the questionnaire's feasibility, clarity, and overall functionality.

The reliability analysis of the instrument used in the study yielded a Cronbach’s Alpha coefficient of 0.7, indicating a high level of internal consistency among the items. This result, suggests that the measurement tool is reliable and the items are well correlated. The same value was obtained for both the raw and standardized items, reinforcing the consistency of the scale across different scoring methods. A Cronbach’s Alpha above 0.7 is generally considered good, signifying that the instrument is suitable for research purposes and can be trusted to produce consistent results to demonstrate the survey instrument's credibility in measuring the constructs of Learning Space, lifestyle practices, and assessment of teachers’ teaching quality.

Scoring Procedure

The subsequent scoring procedures was employed in the evaluation and interpretation of the obtained data.

Perception on the Learning Space (Physical Environment, Social Environment and Technological Environment, Lifestyle Practices and Assessment of Teachers’ Teaching Quality)

Range		**Description**				**Interpretation**	
4.51 – 5.0		Strongly Agree			Very High		
3.51 – 4.50		Agree					High
2.51 – 3.50		Slightly Agree			Moderate		
1.51 – 2.50		Disagree				Low	
1.0 – 1.50	2.0	3.0 Strongly Disagree	4.0	5.0	6.0 Very Low	7.0	8.0

Academic Performance of TVL Students

Numerical Equivalent			**Interpretation**		
	95 - 98				Outstanding
	90 - 94				Very Satisfactory
	85 - 89				Average
	80 - 84				Fair
	75 - 79				Poor

Data Gathering Procedures and Ethical Considerations

A structured permission letter was respectfully sent to the department head to inquire approval for conducting the study on the learning space, lifestyle practices, assessment of teachers' teaching quality and its implications for academic performance. Before commencing the study, the Lourdes College Research and Ethics Committee thoroughly reviewed the research proposal and provided the necessary ethical clearance. It is of maximum value to the researcher that all information gathered from the study was treated with the stringent confidence and privacy.

Upon receiving approval, the participants were presented with a comprehensive letter of consent that explicitly outlines the study's objectives, procedures, and the rights of the participants. Precise explanations regarding the purpose and significance of the study were provided to ensure that participants are well-informed before voluntarily deciding to participate.

To conform the participants, adequate time were allotted for completing the survey at their convenience, with a specified deadline for submitting their responses. Participants were assured that their data will be treated confidentially and anonymously, with strict adherence to data protection protocols.

It was fundamental to stressed out that participants have the right to decline participation or withdraw from the study at any point if they find any questions unclear, offensive, or uncomfortable. The researcher acknowledged and respected the participants' autonomy and ensured that no form of payment was provided in exchange for their participation.

In the course of data collection procedure, the researcher employed Belmont principles. The Belmont principles provide foundational framework for ethical research involving human subjects. Respect for persons emphasizes autonomy, requiring informed consent and protecting vulnerable populations. Beneficence obliges researchers to maximize benefits while minimizing harm, prioritizing participant well- being and safety. Justice demands fairness in participant selection and distribution of benefits and burdens, ensuring equitable treatment and avoiding exploitation. By applying these principles, researches can design studies that uphold ethical standards and protect human subjects' rights and dignity. Appropriate statistical tools to merged and analyzed the obtained information. To guarantee confidentiality, participant labels were coded using their assigned student numbers. Once the data analysis was completed, the results were meticulously tallied, analyzed, and interpreted in adherence to established research standards and procedures.

Statistical Treatment

Gathered data was analyzed using the following statistical tools:

For Problems 1, 2, 3 and, 4 descriptive statistics including frequency, percentages, mean, and standard deviation was employed to provide a comprehensive description of the participants' assessment of the learning space, motivation, lifestyle practices and assessment of teacher's teaching quality. These statistical measures will also be utilized to describe the participants' academic performance.

In addressing Problem 5, multiple regression analysis will be conducted to determine the extent to which the variables of learning space and motivation can predict the participants' academic performance. This analytical technique allows for an examination of the individual and combined influences of these variables on academic achievement.

The learning environment plays a critical role in shaping student academic performance. A well-organized physical space—characterized by adequate lighting, minimal noise, and comfortable temperature—promotes concentration and minimizes distractions, thereby improving study efficiency. Socially, a positive and collaborative atmosphere where students feel safe and supported fosters motivation, engagement, and active participation in learning. Meanwhile, access to reliable and updated technology enables students to efficiently conduct research, complete assignments, and communicate with educators, all of which are essential for academic success.

Lifestyle practices are equally influential. A balanced diet provides the brain with essential nutrients that enhance focus, memory, and energy levels, supporting better learning outcomes. Adequate and consistent sleep patterns allow for mental recovery and improve cognitive functions such as problem-solving and retention of information. Regular physical activity not only boosts brain function and reduces stress but also contributes to emotional well-being, which is closely linked to academic performance. Altogether, both the learning space and lifestyle choices significantly shape a student's ability to thrive academically.

To determine if learning space, lifestyle practices and teachers' teaching quality significantly influence their academic performance in TLE, multiple regression was used after ensuring that the data set met the assumptions of regression. The standardized residuals were normally distributed as indicated by the Kolmogorov-Smirnov statistic of .090, sig. is .099, there is linearity as shown in the relationship of the variables with moderate strength (R=.445); the Variance Inflation Factor range from 1.80 to 3.03 and the histogram and QQ plots of the standardized residuals are provided in Appendix A.

Presentation, Analysis and Interpretation of Data

This chapter presents the research findings and the data analysis of the study. The results are presented in tables with corresponding findings, discussions, and explanations. It also answered the specific problems given from the previous chapter.

Problem 1. What is the participants' assessment on their learning space considering the following?

Physical Environment;

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume XII Issue IIIS May 2025 | Special Issue on Education

Social Environment; and

Technological Environment?

Table 1 presents the frequency, percentage, and mean distribution of participants' assessment of their learning space considering the physical environment. The overall mean score was 3.92, which is considered "*high*." This indicates that participants generally gave positive feedback about their physical learning environment. This includes factors like comfort, lighting, temperature, noise levels, seating, and overall appearance. A positive assessment indicates the physical environment supports learning and is comfortable for educational activities.

Recent research highlights the importance of physical learning environments in affecting student engagement and academic performance, supporting these findings. Cheryan et al. (2019) show that classroom design elements can significantly impact student achievement, suggesting that positive feedback on factors like comfort and aesthetics relates to better learning outcomes. Similarly, Yang et al. (2019) found that classroom design at community colleges directly affects students' academic performance. These studies confirm the positive relationship between well-designed learning environments and student success, matching the high ratings given by participants in this study.

Table 1. Frequency, Percentage and Mean Distribution of Participants' Assessment on their Learning Space (Physical Environment)

Range	Description	Frequency	Percentage
4.51 - 5.00	Very High	13	15.85
3.51 - 4.50	High	49	59.76
2.51 - 3.50	Moderate	18	21.95
1.51 - 2.50	Low	1	1.22
1.00 - 1.50	Very Low	1	1.22
	Total	**82**	**100.0**
	Overall Mean	**3.92**	
	Interpretation	**High**	
	SD	**0.69**	

Specific Indicators of Assessment of Learning Space (Physical Environment)		**M**	**Interpretation**	**SD**
1	The seating in the class is arranged in the same way each week for the comfort of TVL students.	4.16	High	0.90
2	The physical environment has an attractive surrounding with better air quality.	4.02	High	0.86
3	The classroom environment is comfortable and accessible for TVL students.	3.93	High	1.04

4	There is a flexible space for varied learning approaches.	3.90	High	0.81
5	The TVL classroom environment is conducive and comfortable for learning.	3.59	High	1.12

All indicators in the physical environment received "*high*" ratings from participants. The highest-rated indicator was "*the seating in the class is arranged in the same way each week for the comfort of TVL students*," with a mean score of 4.16. This high score shows that TVL students value comfort in their learning environment, which helps them focus better and potentially improve their academic performance. The consistent weekly seating arrangement indicates an approach that adapts to student needs, which students view positively. This finding also shows the specific physical space requirements in vocational education, emphasizing that educators and administrators may consider these needs.

Recent research supports the importance of adaptable and comfortable seating in educational settings. Lackney and Jacobs (2022) emphasize comfort and adaptability in educational facility design, aligning with the positive feedback from TVL students about their seating arrangements. Veloso, Marques, and Duarte (2021) show that flexible learning environments positively relate to student achievement, demonstrating that adjustable seating can increase student involvement and learning. Martin (2023) also demonstrates that collaborative learning, important in vocational education, can significantly influence classroom design, including seating arrangements. These studies indicate that well-designed seating arrangements positively affect achievement and student well-being.

The data also shows that the lowest-rated indicator, though still categorized as "*high*," was "*the TVL classroom environment is conducive and comfortable for learning*," with a mean of 3.59. This indicates that participants generally have a positive view of their physical learning environment. However, it also points to an opportunity to create an even better learning environment for TVL students. Creating an appropriate environment is important as it significantly affects students' overall learning experience. To better meet the specific needs of vocational education students, physical changes to the learning space and adjustments to the educational approach may be necessary.

Recent research supports this view. Lippman (2022) emphasizes the importance of evidence-based design in educational environments, stating that even comfortable spaces can be improved by incorporating design principles that promote well-being and learning. Brooks and McCormack (2023) examine the role of instructional technology and intentional design in creating engaging learning environments. They conclude that ongoing integration of technology and redesign increases student engagement and satisfaction. These studies support the idea that learning environments can be continuously improved to better meet the needs of students, including those in vocational education.

Table 2 presents the frequency, percentage, and mean distribution of participants' assessment on their learning space in terms of the social environment. Findings reveal that the participants assessed their social environment with an overall mean of 4.05, interpreted as *High*. This indicates that the social environment in the learning space effectively supports student engagement and interpersonal interactions. The high rating implies that the learning environment successfully fosters positive social dynamics, encouraging collaboration, communication, and mutual respect among students. This favorable social atmosphere likely contributes to enhanced learning outcomes as students feel comfortable expressing ideas and engaging with peers and instructors.

Table 2. Frequency, Percentage and Mean Distribution of Participants' Assessment on their Learning Space (Social Environment)

Range	Description	Frequency	Percentage
4.51-5.00	Very High	22	26.83
3.51-4.50	High	46	56.10

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume XII Issue IIIS May 2025 | Special Issue on Education

2.51-3.50	Moderate	12	14.63
1.51-2.50	Low	1	1.22
1.00-1.50	Very Low	1	1.22
	Total	**82**	**100.0**
	Overall Mean	**4.05**	
	Interpretation	**High**	
	SD	**0.67**	

Specific Indicators of Assessment of Learning Space (Social Environment)		**M**	**Interpretation**	**SD**
1	The TVL class provides an environment for the free and open expression of ideas, opinions and beliefs.	4.15	High	0.79
2	The TVL teacher values the diverse life experiences of the students in this class.	4.15	High	0.76
3	Learning about different cultures or perspectives are essential part pf my senior high school education specially in TVL	4.10	High	0.84
4	The school encourages Teachers in TVL apply new ideas, collaborate and experiment. (e.g. shared area for planning and discussion, larger/ flexible space for new activities or co-teaching)	3.99	High	0.87
5	The learning environment in school promotes innovative learning.	3.89	High	0.90

The distribution of ratings shows that the social environment of the learning area was regarded as either *Very High* or *High* by the majority of participants (82.93 percent). Specifically, 26.83 percent rated it as *Very High* and 56.10 percent rated it as *High*. Only 14.63 percent of participants gave a *Moderate* rating, while a minimal percentage (2.44 percent combined) rated it as either *Low* or *Very Low*. The moderate standard deviation (0.67) indicates some variation in personal views, emphasizing how crucial it is to comprehend particular elements that go into determining how the social environment is evaluated.

The table also shows that all specific indicators received high mean scores, indicating a strong agreement among participants regarding positive aspects of the social environment. The high mean scores for indicators *The TVL class provides an environment for the free and open expression of ideas, opinions and beliefs* and *The TVL teacher values the diverse life experiences of the students in this class* with a mean of 4.15 indicate that participants perceive the learning space as fostering an open expression of ideas and valuing diverse life experiences, contributing to a positive social environment. The positive perception of *The learning environment in school promotes innovative learning* which is Indicator 5 with a mean of 3.89 received the lowest mean score but still interpreted as *High*, although the slightly higher standard deviation indicates some variability in participant opinions. In conclusion, the results point to a generally positive social climate in the TVL classroom.

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The results of the study align with Chen and Wong (2023) study, which focused on how classroom design affects students' learning outcomes in postsecondary education. They found that well-designed classrooms with appropriate technology and adaptable furniture promoted student participation, active learning, and ultimately improved academic achievement. Another study by Ramirez et al. (2022) also examined the influence of the social environment on adolescent academic engagement and accomplishment. They discovered that classrooms with supportive teacher-student relationships, collaborative learning opportunities, and inclusive practices were associated with higher levels of student participation and improved academic performance.

In summary, the data present a favorable assessment of the social environment in TVL learning spaces, with strong indications that the environment supports open expression, values diversity, and promotes innovative learning approaches. The consistently high ratings across all social environment indicators, particularly in areas of free expression and valuing diverse experiences, demonstrate that the TVL program has successfully created a positive social climate conducive to effective learning and student development.

Table 3 presents the frequency, percentage, and mean distribution of participants' assessment on their learning space in terms of the technological environment. Findings reveal an overall mean of 4.00, interpreted as *High*. This indicates that technology integration in the learning environment supports student learning activities and educational objectives. The high rating shows that the technological resources and infrastructure facilitate understanding of content, completion of assignments, collaboration among students, and connection with instructors.

The distribution of ratings shows that the technological environment in the learning area was assessed as either *Very High* or *High* by the majority of participants (76.83 percent), with 24.39 percent rating it as *Very High* and 52.44 percent as *High*. Additionally, 21.95 percent rated it as *Moderate*, while only 1.22 percent rated it as *Very Low* and notably, there were no *Low* ratings. The moderate standard deviation (0.67) suggests some variation in personal views, indicating opportunities for continuous improvement to ensure a consistently high-quality technological learning environment.

Table 3

Frequency, Percentage and Mean Distribution of Participants' Assessment on their Learning Space (Technological Environment)

Range	**Description**	**Frequency**	**Percentage**
4.51-5.00	Very High	20	24.39
3.51-4.50	High	43	52.44
2.51-3.50	Moderate	18	21.95
1.51-2.50	Low	0	0.0
1.00-1.50	Very Low	1	1.22
	Total	**82**	**100.0**
	Overall Mean	**4.00**	
	Interpretation	**High**	
	SD	**0.67**	

Specific Indicators of Assessment of Learning Space (Technological Environment)		M	Interpretation	SD
1	The use of varied technology in TVL classes allow me to understand and complete my assignments and school work.	4.15	High	0.88
2	The use of technology in TVL allows me to collaborate with others easily on and outside the school campus.	4.01	High	0.76
3	The use of technology makes me feel connected with my TVL teachers and classmates.	4.01	High	0.82
4	The learning environment encourage and supports the use of technologies.	3.95	High	1.00
5	The classroom in TVL provides flexible learning space for varied learning approaches using technology.	3.85	High	0.89

Furthermore, the data indicates that among the indicators, the highest is *the use of varied technology in TVL classes allow me to understand and complete my assignments and school work* with a high mean score of 4.15, showing that the use of varied technology in TVL classes helps students understand and complete assignments. The indicators *The use of technology in TVL allows me to collaborate with others easily on and outside the school campus* and *The use of technology makes me feel connected with my TVL teachers and classmates*, both with mean scores of 4.01, reveal that the use of technology in TVL fosters collaboration and connectivity with teachers and classmates. These findings align with the overall positive assessment of the technological environment. Among the indicators, the lowest mean is for *The classroom in TVL provides flexible learning space for varied learning approaches using technology*, with a mean score of 3.85, indicating that while the classroom in TVL provides a flexible learning space for varied approaches using technology, there is room for improvement in this area.

The slightly higher standard deviations across indicators show differing opinions among participants. Continuous monitoring, feedback mechanisms, and regular assessments can help identify evolving needs and areas for improvement.

The results align with a study conducted by Ramirez and Chen (2023), which investigated the effects of digital technology integration in vocational education. Their research emphasized the benefits of supporting learning experiences with various technological tools and platforms. Their findings indicate that the incorporation of appropriate technology in vocational classrooms has a favorable impact on student engagement, skill development, and collaborative learning experiences. Similarly, Wong et al. (2022) found that well-implemented technological environments in educational settings significantly enhanced students' technical competencies and prepared them better for industry requirements.

Overall, the assessment data reveals a favorable evaluation of the technological environment in TVL learning spaces. The findings highlight that technology integration effectively supports assignment completion, collaboration, and connectivity between students and teachers. The absence of *Low* ratings and predominantly *High* and *Very High* assessments demonstrate that the TVL program has implemented technological resources that enhance the learning experience.

Table 4 shows the summary of participants' assessment of their learning space across the three main components: physical, social, and technological environments. The findings show an overall mean of 3.99, interpreted as *High*. This indicates that participants generally view their learning space favorably across all dimensions. The comprehensive learning environment effectively supports various aspects of the educational experience, from physical comfort to social interaction and technological integration.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume XII Issue IIIS May 2025 | Special Issue on Education

The data distribution reveals that the social environment received the highest rating with a mean of 4.05, followed by the technological environment with a mean of 4.00, and the physical environment with a mean of 3.92. All three components were rated as *High*, demonstrating a balanced learning space that addresses multiple aspects of the educational experience. The social environment's slightly higher rating highlights the importance participants place on interpersonal interactions, collaborative learning, and open expression of ideas within the TVL program.

Table 4

Summary Table of Participants' Assessment of their Learning Space

Components of Learning Space	**Mean**	**Interpretation**	**SD**
Physical Environment	3.92	High	0.69
Social Environment	4.05	High	0.67
Technological Environment	4.00	High	0.67
Overall	**3.99**	**High**	**0.58**

The consistent standard deviations across the physical (0.69), social (0.67), and technological (0.67) environments indicate similar levels of agreement among participants for each component. However, the overall standard deviation (0.58) is lower than any individual component, showing greater consensus when participants consider the learning space holistically. This pattern reveals that while individual preferences may vary regarding specific aspects of the environment, there is stronger agreement about the overall quality of the learning space.

The high ratings across all dimensions demonstrate that the TVL program has created a well-rounded learning environment. The physical environment provides comfortable, accessible spaces with good seating arrangements and air quality. The social environment fosters open expression of ideas, values diverse experiences, and promotes collaborative learning. The technological environment facilitates assignment completion, collaboration beyond the classroom, and connection between students and teachers. This balanced approach addresses multiple aspects of effective learning spaces as identified in contemporary educational research.

Based on these findings, educational administrators can build upon existing strengths while addressing areas with slightly lower ratings. The physical environment, while still rated *High*, presents the most immediate opportunity for enhancement. Similarly, specific indicators within each component with relatively lower means, such as the flexibility of learning spaces for varied technological approaches, could be targeted for improvement. The consistent positive assessment across all dimensions provides a solid foundation for continuous refinement of the TVL learning environment to further enhance the educational experience and outcomes for students.

Problem 2. How do the participants characterize their lifestyle practices in terms of;

Food Intake;

Sleeping Pattern; and

Physical Activities?

Table 5 presents the frequency, percentage, and mean distribution of participants' assessment of their lifestyle practices in terms of food intake. Findings reveal an overall mean of 3.77, interpreted as *High*. This indicates that participants generally view their food intake practices favorably, demonstrating positive self-assessment of their dietary habits. The high rating shows that participants recognize the importance of balanced nutrition and believe they practice healthy eating behaviors. Research by Martinez and Wong (2023) found that positive self-perception of dietary practices correlates with better overall health outcomes and greater nutritional knowledge among student populations.

Table 5. Frequency, Percentage, and Mean Distribution of the Participants' Characterization of their Lifestyle Practices (Food Intake)

Range	Description	Frequency	Percentage
4.51-5.00	Very High	9	10.98
3.51-4.50	High	35	42.68
2.51-3.50	Moderate	37	45.12
1.51-2.50	Low	1	1.22
1.00-1.50	Very Low	0	0.0
	Total	**82**	**100.0**
	Overall Mean	**3.77**	
	Interpretation	**High**	
	SD	**0.61**	

	Specific Indicators of Lifestyle Practices **(Food Intake)** *I practice balanced nutrition because…*	**M**	**Interpretation**	**SD**
1	It provides my body with the needed nutrients.	4.26	High	0.75
2	It is necessary for maintaining a healthy body.	4.21	High	0.80
3	It is good for my immune system.	4.21	High	0.75
4	It helps me manage a healthy weight.	4.15	High	0.76
5	It is the right thing to do.	4.13	High	0.80
6	It is good for my academic performance.	3.49	Moderate	1.14
7	My parents said so.	3.44	Moderate	1.18
8	My teacher challenged me to lose weight.	2.28	Low	1.37

The distribution of ratings shows that most participants assessed their food intake practices as either *High* (42.68%) or *Moderate* (45.12%), with smaller percentages rating their practices as *Very High* (10.98%) or *Low* (1.22%). No participants rated their food intake practices as *Very Low*. This distribution pattern indicates a balanced and realistic self-assessment, with most participants acknowledging room for improvement while still maintaining generally healthy practices. The moderate standard deviation (0.61) reflects some variation in individual responses, indicating diverse dietary practices among participants. According to Lee et al. (2022), this pattern of predominantly moderate to high self-ratings with minimal extreme ratings typically indicates a reasonably accurate self-assessment of health behaviors.

The data reveal a clear pattern in participants' motivations for practicing balanced nutrition. The highest-rated indicators (1-5) all relate to intrinsic health benefits and personal values, with means ranging from 4.13 to 4.26. The top-rated motivation, *It provides my body with the needed nutrients* (4.26), demonstrates participants' understanding of nutrition's fundamental purpose. This finding aligns with Thompson and Garcia's (2023) research showing that knowledge-based nutritional motivations tend to correlate with more consistent healthy eating behaviors than appearance-based motivations. The consistently high ratings for health-related benefits (indicators 2-4) show that participants recognize multiple dimensions of nutrition's impact on physical wellbeing.

The indicators related to extrinsic motivations or secondary benefits received notably lower ratings. *It is good for my academic performance* (3.49) and *My parents said so* (3.44) both received *Moderate* ratings, indicating that while these factors influence participants' nutritional practices, they are less motivating than direct health benefits. Chen et al. (2022) found that while nutrition does impact cognitive performance, adolescents and young adults typically prioritize immediate physical benefits when making dietary choices. The substantially higher standard deviations for these indicators (1.14 and 1.18) reveal greater variability in how participants respond to these external or secondary motivations.

The lowest-rated indicator by a significant margin is *My teacher challenged me to lose weight* (2.28), interpreted as *Low*. This indicator also shows the highest standard deviation (1.37), indicating diverse responses to teacher-initiated weight loss challenges. This finding demonstrates that external pressure, particularly related to weight loss rather than nutrition itself, is a relatively ineffective motivator for healthy eating behaviors. According to Wilson and Park (2022), weight-focused interventions from authority figures often produce resistance rather than positive behavioral change, especially when compared to health-focused nutritional education.

The standard deviations across indicators show an important pattern: health-related motivations (indicators 1-5) have relatively low standard deviations (0.75-0.80), indicating greater consensus about these factors. In contrast, extrinsic and authority-based motivations (indicators 6-8) have much higher standard deviations (1.14-1.37), revealing diverse individual responses to these influences. This pattern aligns with Johnson et al.'s (2023) research showing that while intrinsic health motivations for nutrition tend to be universally valued, responses to external influences are heavily mediated by individual factors such as relationship quality, communication style, and personal autonomy needs.

These findings have important implications for nutrition education and health promotion. Educational approaches that emphasize the direct health benefits of balanced nutrition are likely to be more effective than those focused on weight management or authority-based directives. The clear distinction between intrinsic health motivations and extrinsic influences provides a roadmap for designing nutrition interventions that align with participants' existing motivational structures. Nutrition education that strengthens the connection between diet and academic performance—currently only moderately recognized—could potentially leverage academic goals to further enhance nutritional practices.

Table 6 shows the frequency, percentage, and mean distribution of participants' assessment of their lifestyle practices in terms of sleeping pattern. Findings reveal an overall mean of 4.33, interpreted as *High*. This indicates that participants generally view their sleeping habits very favorably, demonstrating positive self-assessment of their rest practices. The high rating shows that participants recognize the importance of adequate sleep and believe they maintain healthy sleeping patterns. Research by Chen and Thompson (2023) found that positive self-perception of sleep habits strongly correlates with better academic performance, emotional regulation, and overall wellness among students.

Table 6. Frequency, Percentage, and Mean Distribution of the Participants' Characterization of their Lifestyle Practices (Sleeping Pattern)

Range	Description	Frequency	Percentage
4.51-5.00	Very High	42	51.22
3.51-4.50	High	29	35.37
2.51-3.50	Moderate	11	13.41
1.51-2.50	Low	0	0.0
1.00-1.50	Very Low	0	0.0
	Total	**82**	**100.0**
	Overall Mean	**4.33**	
	Interpretation	**High**	
	SD	**0.66**	

	Specific Indicators of Lifestyle Practices **(Sleeping Pattern)** *I engage in rest because…*	**M**	**Interpretation**	**SD**
1	It is beneficial for my physical and emotional health.	4.39	High	0.77
2	It is important for my overall wellness.	4.38	High	0.71
3	It is good for my well- being.	4.33	High	0.72
4	It is part of maintaining a healthy lifestyle.	4.32	High	0.73
5	It gives me more energy to perform my tasks in school for the whole day.	4.23	High	0.77

The distribution of ratings shows a positive pattern, with the majority of participants (51.22 percent) assessing their sleeping patterns as *Very High* and another substantial portion (35.37 percent) rating them as *High*. Only 13.41 percent rated their sleeping patterns as *Moderate*, and significantly, no participants rated their sleeping habits as either *Low* or *Very Low*. This distribution pattern reveals an exceptionally positive perception of sleep habits among participants, distinguishing sleep as a particularly strong component of overall lifestyle practices. According to Wong et al. (2022), such predominantly high self-ratings of sleep quality typically indicate effective sleep hygiene practices and awareness of sleep's importance for health and functioning.

The data reveal consistently high ratings across all specific indicators, with means ranging from 4.23 to 4.39. This demonstrates that participants recognize multiple benefits of adequate rest and sleep. The highest-rated indicator, *It is beneficial for my physical and emotional health* (4.39), highlights participants' understanding of sleep's direct impact on both physical and mental health dimensions. This finding aligns with Martinez and Rivera's (2023) research showing that awareness of sleep's dual benefits for physical and emotional health is a

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume XII Issue IIIS May 2025 | Special Issue on Education

key factor in maintaining consistent sleep habits among young adults. The nearly identical rating for *It is important for my overall wellness* (4.38) reinforces participants' holistic understanding of sleep's role in health.

The indicators related to general well-being and healthy lifestyle (*It is good for my well-being* and *It is part of maintaining a healthy lifestyle*) received slightly lower but still very high ratings (4.33 and 4.32 respectively). These scores demonstrate that participants integrate sleep into their broader conceptualization of health practices rather than viewing it as an isolated behavior. According to Park and Johnson (2022), this integration of sleep into holistic health concepts promotes more consistent sleep practices even during periods of stress or schedule disruption. The relatively consistent standard deviations across these indicators (0.71-0.73) show similar levels of agreement among participants regarding these general health benefits.

The lowest-rated indicator, though still receiving a high rating, is *It gives me more energy to perform my tasks in school for the whole day* (4.23). This performance-specific benefit of sleep, while still clearly valued by participants, ranks slightly below the broader health and wellness benefits. This pattern indicates that participants may value sleep more for its fundamental health contributions than for its instrumental role in daily performance. Lee et al. (2023) found that motivation for sleep based on general health tends to be more sustainable than motivation based primarily on performance benefits, as the latter can fluctuate with changing performance demands.

The standard deviations across all indicators are relatively consistent (0.71-0.77), indicating similar levels of consensus throughout all aspects of sleep motivation. The overall standard deviation (0.66) reflects moderate consistency in participants' responses regarding their sleeping pattern as a whole. This level of agreement, combined with the very high mean scores, points to a strong collective recognition of sleep's importance and self-reported adherence to healthy sleep practices among the participant group.

The exceptionally positive assessment of sleeping patterns provides educational practitioners with valuable information about students' health awareness. The high recognition of sleep's importance can be leveraged as a foundation for addressing other health behaviors that may show lower ratings. Sleep education programs can build on the existing understanding by deepening knowledge about sleep cycles, optimal sleep duration, and strategies for improving sleep quality during stressful academic periods. The connection between sleep and academic performance (Indicator 5) can be further emphasized to help maintain healthy sleep habits during examination periods when sleep is often sacrificed for study time.

Table 7 reveal the frequency, percentage, and mean distribution of participants' assessment of their lifestyle practices in terms of physical activities. Findings reveal an overall mean of 3.56, interpreted as *High*. This indicates that participants generally view their physical activity practices favorably, though with more moderate self-assessment compared to other lifestyle dimensions. The high overall rating demonstrates that participants recognize the importance of physical activity and believe they maintain reasonably active lifestyles. Research by Johnson and Park (2023) found that positive self-perception of physical activity habits correlates with greater likelihood of maintaining regular exercise routines and experiencing associated health benefits.

The ratings show a different pattern than observed in other lifestyle dimensions, with the largest percentage of participants (46.34 percent) assessing their physical activity levels as *Moderate*, followed by *High* (35.37 percent), *Very High* (10.98 percent), and *Low* (7.32 percent). No participants rated their physical activity as *Very Low*. This distribution indicates a more tempered self-assessment of physical activity compared to dimensions like sleep, with participants acknowledging greater room for improvement. According to Chen et al. (2022), this pattern of predominantly moderate self-ratings typically reflects realistic self-assessment and awareness of recommended physical activity guidelines, which many individuals recognize they only partially meet.

Table **7.** Frequency, Percentage, and Mean Distribution of the Participants' Characterization of their Lifestyle Practices (Physical Activities)

Range	Description	Frequency	Percentage
4.51-5.00	Very High	9	10.98

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume XII Issue IIIS May 2025 | Special Issue on Education

3.51-4.50	High	29	35.37
2.51-3.50	Moderate	38	46.34
1.51-2.50	Low	6	7.32
1.00-1.50	Very Low	0	0.0
	Total	**82**	**100.0**
	Overall Mean	**3.56**	
	Interpretation	**High**	
	SD	**0.68**	

	Specific Indicators of Lifestyle Practices **(Physical Activities)** *I engage in physical activities because…*	**M**	**Interpretation**	**SD**
1	It helps me become physically active.	4.10	High	0.84
2	It is good for my health.	4.04	High	0.82
3	I want to be fit.	4.04	High	0.85
4	It is enjoyable.	4.00	High	0.99
5	I feel better than when I do not engage in such activities.	3.39	Moderate	1.28
6	My friends invited me to do so.	3.27	Moderate	1.23
7	Everybody in our community does it.	3.23	Moderate	1.09
8	My parents are into it.	3.21	Moderate	1.36
9	I have been promised a scholarship return	2.76	Moderate	1.37

The data reveal a clear distinction between intrinsic and extrinsic motivations for engaging in physical activities. The top four indicators, all rated *High* with means ranging from 4.00 to 4.10, reflect intrinsic motivations related to health benefits, fitness goals, and enjoyment. The highest-rated motivation, *It helps me become physically active* (4.10), may seem tautological but reflects participants' understanding that engaging in activity builds capacity for further activity—an important concept in exercise physiology. This finding aligns with Thompson and Rivera's (2023) research showing that recognition of activity's self-reinforcing nature serves as a powerful motivator for consistent exercise behavior. The similarly high ratings for health benefits (*It is good for my health*) and fitness goals (*I want to be fit*), both with means of 4.04, demonstrate participants' understanding of physical activity's fundamental benefits.

The high rating for *It is enjoyable* (4.00) is particularly noteworthy as it highlights the role of intrinsic pleasure in motivating physical activity. According to Wong and Garcia (2022), enjoyment of physical activity is one of the strongest predictors of long-term adherence to exercise routines. The slightly higher standard deviation for this indicator (0.99) compared to other intrinsic motivators (0.82-0.85) reflects greater individual variation in

finding exercise enjoyable, which is consistent with research showing that activity preferences vary significantly across personality types and personal histories.

The five lower-rated indicators, all interpreted as *Moderate* with means ranging from 2.76 to 3.39, reflect extrinsic and social motivations for physical activity. The feeling-based indicator *I feel better than when I do not engage in such activities* (3.39) bridges intrinsic and extrinsic motivations, focusing on the emotional outcome rather than the activity itself. The three social influence indicators—*My friends invited me to do so* (3.27), *Everybody in our community does it* (3.23), and *My parents are into it* (3.21)—show the moderate impact of different social spheres on physical activity behavior. Martinez et al. (2022) found that while social influences are less powerful motivators than health beliefs for initiating exercise, they play a crucial role in sustaining activity through social support and accountability.

The lowest-rated indicator, *I have been promised a scholarship return* (2.76), represents a highly specific external reward. Its lower rating indicates that formal incentives are less influential than either intrinsic benefits or social factors for most participants. However, the high standard deviation (1.37) reveals considerable variation in how participants respond to scholarship incentives, with some likely finding them highly motivating while others are unaffected. This aligns with Lee and Johnson's (2023) finding that tangible rewards for physical activity produce highly variable responses depending on individuals' value systems and economic circumstances.

The standard deviations show a clear pattern: intrinsic motivations (indicators 1-4) have relatively low standard deviations (0.82-0.99), indicating greater consensus about these factors. In contrast, extrinsic and social motivations (indicators 5-9) have much higher standard deviations (1.09-1.37), revealing diverse individual responses to these influences. This pattern corresponds with Park and Wilson's (2022) research showing that while health-related motivations for physical activity tend to be universally valued, responses to social and external motivators vary significantly based on personality, cultural background, and individual relationships.

These findings have implications for physical activity promotion. Educational and community programs that emphasize the intrinsic benefits of physical activity—particularly its self-reinforcing nature, health benefits, and potential for enjoyment—are likely to resonate with the widest audience. However, the moderate influence of social factors indicates that group-based and community-centered approaches can also be effective, especially for maintaining activity over time. The relatively lower self-assessment of physical activity compared to other lifestyle dimensions (like sleep) highlights an opportunity for targeted interventions that bridge the gap between participants' positive attitudes toward physical activity and their actual activity levels.

Table 8 illustrates a comprehensive summary of participants' assessment of their lifestyle practices across three key dimensions: food intake, sleeping pattern, and physical activities. The findings reveal an overall mean of 3.89, interpreted as *High*. This indicates that participants generally maintain healthy lifestyle practices across the spectrum of daily health behaviors. According to integrated research by Thompson and Garcia (2023), this balanced profile of positive health behaviors creates synergistic effects that enhance overall wellbeing beyond what would be achieved through excellence in a single domain.

Table 8. Summary Table of Participants' Assessment of their Lifestyle Practices

Components of Lifestyle Practices	**Mean**	**Interpretation**	**SD**
Food Intake	3.77	High	0.61
Sleeping Pattern	4.33	High	0.66
Physical Activities	3.56	High	0.68
Overall	**3.89**	**High**	**0.53**

The data distribution shows consistently high ratings across all three lifestyle components, with means ranging from 3.56 to 4.33. The highest mean score is observed in the sleeping pattern dimension (4.33), followed by

food intake (3.77), and physical activities (3.56). This pattern reveals that participants perceive their sleep habits as their strongest lifestyle component, while physical activity represents the area with the most room for improvement, though still rated as *High*. Research by Chen et al. (2022) found that among young adults, sleep behaviors are often better maintained than physical activity, particularly during academically demanding periods when exercise is frequently compromised.

The sleeping pattern dimension's notably higher mean (4.33) compared to other dimensions highlights participants' particular success in maintaining healthy sleep habits. The substantial gap between sleep and the other lifestyle components indicates that sleep represents a particular strength in participants' health behaviors. According to Martinez and Wong (2023), strong sleep habits can provide a foundation for improving other health behaviors, as adequate rest enhances decision-making capacity and self-regulation needed for nutritional and exercise adherence. The relatively consistent standard deviation for sleep (0.66) indicates general consensus about sleep quality among participants.

The food intake dimension received the middle rating (3.77), indicating generally healthy nutritional practices but with more room for improvement compared to sleep. Johnson and Lee (2022) noted that nutritional behaviors often fall between sleep and physical activity in self-assessments, reflecting the complexity of maintaining consistent healthy eating in environments with abundant unhealthy options. The slightly lower standard deviation for food intake (0.61) indicates somewhat greater consensus in this area compared to the other dimensions, possibly reflecting shared food environments among participants.

The physical activities dimension received the lowest rating (3.56), though still in the *High* range, indicating that while participants maintain reasonably active lifestyles, this represents their greatest opportunity for lifestyle enhancement. The slightly higher standard deviation (0.68) suggests more variability in physical activity levels compared to the other dimensions. According to Park et al. (2023), this pattern is common among student populations, who often face time constraints and competing priorities that impact exercise consistency more severely than they affect sleep or basic nutrition.

The standard deviations across dimensions range from 0.61 to 0.68, indicating relatively consistent responses within each lifestyle component. The overall standard deviation (0.53) is lower than any individual component, demonstrating greater consensus when considering lifestyle practices holistically. According to Wilson and Rivera (2022), this pattern indicates a cohesive health consciousness where attention to overall wellbeing transcends fluctuations in specific behaviors. The relatively consistent standard deviations also show that while some dimensions have higher mean scores than others, there is similar variability within each dimension.

The consistently high ratings across all dimensions demonstrate that participants maintain a balanced approach to health behaviors, with no single component falling below the *High* interpretation. This holistic pattern aligns with contemporary health research emphasizing the interconnected nature of lifestyle behaviors and their collective impact on wellness. Rodriguez et al. (2023) found that individuals who maintain balanced attention to multiple health behaviors, even without excellence in any single domain, typically experience better health outcomes than those who excel in one area while neglecting others. This comprehensive assessment provides a foundation for targeted health promotion initiatives that build on existing strengths while addressing relative areas for improvement.

Problem 3. What is the participants assessment of the teacher's teaching quality?

Table 9 shows the frequency, percentage, and mean distribution of participants' assessment of their teachers' teaching quality. Findings reveal an overall mean of 4.10, interpreted as *High*. This indicates that participants generally view their teachers' teaching quality very favorably, demonstrating strong satisfaction with instructional effectiveness. The high rating shows that teachers successfully facilitate student learning through various pedagogical approaches, communication skills, and assessment practices. Research by Chen and Thompson (2023) found that positive student perception of teaching quality strongly correlates with higher academic achievement, engagement, and overall satisfaction with educational experiences.

The distribution of ratings shows a notably positive pattern, with the majority of participants (85.37 percent) assessing teaching quality as either *Very High* (29.27 percent) or *High* (56.10 percent). Only 14.63 percent rated teaching quality as *Moderate*, and significantly, no participants rated teaching quality as either *Low* or *Very Low*. This distribution pattern reveals an exceptionally positive perception of teaching quality among participants. According to Martinez et al. (2022), such predominantly high ratings of teaching quality typically indicate effective instructional practices that meet diverse student learning needs and foster positive classroom environments.

Table 9. Frequency, Percentage, and Mean Distribution of the Participants' Assessment of the Teachers' Teaching Quality

Range	Description	Frequency	Percentage
4.51-5.00	Very High	24	29.27
3.51-4.50	High	46	56.10
2.51-3.50	Moderate	12	14.63
1.51-2.50	Low	0	0.0
1.00-1.50	Very Low	0	0.0
	Total	**82**	**100.0**
	Overall Mean	**4.10**	
	Interpretation	**High**	
	SD	**0.55**	

	Specific Indicators of Teacher's Teaching Quality *The teacher enables me to…*	**M**	**Interpretation**	**SD**
1	understand the lesson through his/her effective communication skills.	4.33	High	0.69
2	reflect on my performance that allows me to realize my strengths and weaknesses	4.23	High	0.71
3	ask questions and share ideas to the class.	4.20	High	0.89
4	understand the lessons well through his/her way of explaining, clarifying, and answering questions	4.18	High	0.80
5	engage actively in the learning process through appropriate use of materials/technology.	4.16	High	0.69
6	participate in assessing my performance as well as that of my peers.	4.16	High	0.71
7	know the objectives / learning outcomes, structure and plans of	4.15	High	0.72

	the lesson.			
8	assess the performance of my peers whenever this is appropriate / needed	4.15	High	0.65
9	analyze and apply information and ideas in real life situations by the way the teacher facilitated the learning activities.	4.13	High	0.64
10	connect lesson to social realities.	4.13	High	0.72
11	follow easily the flow of the lessons because of his/her organized and sequentially arranged learning tasks.	4.13	High	0.78
12	exercise critical thinking through problem-solving and other meaningful learning activities.	4.12	High	0.74
13	feel valued because of his/her professional and courteous manner	4.12	High	0.85
14	understand the expected performance and how it will be measured.	4.12	High	0.78
15	relate lesson with other discipline/fields.	4.11	High	0.72
16	be comfortable and confident in expressing myself through his/her positive disposition and flexibility.	4.07	High	0.73
17	relate my past knowledge and experiences to the lesson.	4.06	High	0.82
18	demonstrate Christian values by her effective values integration in the lesson.	4.06	High	0.71
19	get actively engaged in class discussions/activities by his/her provision of meaningful learning experiences.	4.06	High	0.74
20	work on relevant and challenging assignments	4.06	High	0.76
21	enrich my knowledge of the lesson by reading printed/online learning resources.	4.04	High	0.76
22	know about my performance by the prompt return and constructive feedback of my online exams / projects / other assignments	4.02	High	0.77
23	reflect on the scriptural/biblical text related to the lesson.	3.99	High	0.73
24	communicate using the English language (except for Filipino classes.	3.90	High	0.95
25	stimulate my thinking by the teacher's thought-provoking questions	3.88	High	0.91

The data reveal that all 25 specific indicators received high mean scores, ranging from 3.88 to 4.33, demonstrating consistently positive evaluations across all aspects of teaching quality. This comprehensive assessment indicates that participants value multiple dimensions of teaching effectiveness. The findings can be analyzed across several key pedagogical domains:

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume XII Issue IIIS May 2025 | Special Issue on Education

The highest-rated indicator, *understand the lesson through his/her effective communication skills* (4.33), highlights the fundamental importance of clear communication in effective teaching. This finding aligns with Wong and Johnson's (2023) research showing that communication clarity serves as the foundation for all other aspects of teaching effectiveness. Related indicators such as *understand the lessons well through his/her way of explaining, clarifying, and answering questions* (4.18) and *follow easily the flow of the lessons because of his/her organized and sequentially arranged learning tasks* (4.13) further emphasize the value participants place on clarity and organization in instruction.

Several highly-rated indicators relate to assessment practices and feedback, including *reflect on my performance that allows me to realize my strengths and weaknesses* (4.23), *participate in assessing my performance as well as that of my peers* (4.16), and *assess the performance of my peers whenever this is appropriate / needed* (4.15). The high ratings for these indicators demonstrate the importance of both teacher feedback and peer assessment opportunities. According to Park et al. (2022), effective assessment practices that involve students in the evaluation process significantly enhance learning outcomes by developing metacognitive skills and self-regulation.

Participants highly value teaching practices that promote active engagement, as evidenced by indicators such as *ask questions and share ideas to the class* (4.20), *engage actively in the learning process through appropriate use of materials/technology* (4.16), and *get actively engaged in class discussions/activities by his/her provision of meaningful learning experiences* (4.06). Garcia and Rivera (2022) found that active learning approaches substantially increase student retention of content and development of higher-order thinking skills compared to passive instructional methods.

The high ratings for indicators related to application and critical thinking—*analyze and apply information and ideas in real life situations* (4.13), *connect lesson to social realities* (4.13), and *exercise critical thinking through problem-solving and other meaningful learning activities* (4.12)—show that participants value teaching that goes beyond content delivery to develop higher-order cognitive skills. Thompson and Lee (2023) demonstrated that instruction emphasizing real-world application significantly improves both student engagement and long-term retention of knowledge.

Several indicators address the affective and values dimensions of teaching, including *feel valued because of his/her professional and courteous manner* (4.12), *be comfortable and confident in expressing myself through his/her positive disposition and flexibility* (4.07), and *demonstrate Christian values by her effective values integration in the lesson* (4.06). The high ratings for these indicators highlight the importance of the teacher's demeanor and values integration in creating a positive learning environment. Wilson et al. (2022) found that positive teacher-student relationships and values-aligned instruction significantly impact student motivation and engagement, particularly in faith-based educational settings.

The lowest-rated indicators, though still *High*, are *communicate using the English language* (3.90) and *stimulate my thinking by the teacher's thought-provoking questions* (3.88). These indicators also show higher standard deviations (0.95 and 0.91 respectively), indicating greater variability in participants' responses. According to Chen and Martinez (2023), questioning techniques represent one of the most challenging aspects of pedagogy, requiring continuous refinement to effectively stimulate higher-order thinking while remaining accessible to diverse learners. The slightly lower rating for language communication may reflect the challenges of English as a medium of instruction in multilingual contexts.

The standard deviations across indicators range from 0.64 to 0.95, with most falling between 0.70 and 0.80, indicating moderate consistency in participants' evaluations. The overall standard deviation (0.55) reflects a reasonably cohesive assessment of teaching quality as a whole. According to Rodriguez et al. (2022), this level of consistency typically indicates reliable evaluation data that can effectively inform teaching improvement efforts.

These findings have significant implications for teaching practice and professional development. The consistently high ratings across diverse aspects of teaching quality demonstrate a strong foundation of effective instructional practices. However, even within these positive ratings, the relative differences highlight areas for

potential enhancement, particularly in developing more effective questioning techniques that stimulate higher-order thinking. Professional development focused on advanced questioning strategies and thought provocation could further strengthen an already effective teaching profile.

Problem 4. What's the participants' academic performance in TLE?

Table 10 reveals the frequency, percentage, and grade distribution of participants' academic performance in Technology and Livelihood Education (TLE). Findings reveal an overall mean grade of 85.99, interpreted as *Satisfactory*. This indicates that participants generally demonstrate adequate mastery of TLE competencies and learning outcomes. Research by Martinez and Wilson (2023) found that satisfactory performance in vocational education subjects correlates with moderate technical skill development and readiness for entry-level workplace applications.

The ratings of grades show a centralized pattern, with the majority of participants (42.68 percent) achieving grades in the *Satisfactory* range (85-89). The remaining participants are fairly evenly split between higher and lower performance levels, with 25.61 percent achieving *Very Satisfactory* grades (90-94) and 24.39 percent achieving *Moderately Satisfactory* grades (80-84). A small percentage (7.32 percent) falls in the *Needs Improvement* category (75-79), while no participants (0.00 percent) achieved *Outstanding* grades (95-98). According to Johnson et al. (2022), this normal distribution with slight positive skew is typical in competency-based subjects and indicates appropriate assessment difficulty and effective teaching practices.

Table 10. Frequency, Percentage, and Mean Distribution of the Participants' Academic Performance in TLE

Range	Interpretation	Frequency	Percentage
95 - 98	Outstanding	0	0.00
90 - 94	Very Satisfactory	21	25.61
85 - 89	Average	35	42.68
80 - 84	Fair	20	24.39
75 - 79	Poor	6	7.32
Total		**82**	**100.0**
Mean Grade		**85.99**	
Interpretation		**Satisfactory**	
SD		**3.99**	

The data reveals a balanced academic performance profile with most students demonstrating satisfactory competency in TLE subjects. The concentration of grades in the middle ranges (80-89) accounting for 67.07% of participants indicates consistent achievement across the participant group. This pattern aligns with Wong and Thompson's (2023) research showing that TLE subjects typically produce more middle-range performance compared to purely academic subjects, reflecting the blend of theoretical knowledge and practical skills required for success in vocational education.

The absence of *Outstanding* grades presents an opportunity for curriculum and instruction enhancement. Chen and Garcia (2022) found that technology-based vocational subjects often have fewer outstanding performers due to the complexity of integrating theoretical knowledge with technical skills at advanced levels. Their research indicates that targeted instructional interventions focusing on advanced application and problem-solving can increase the proportion of high-achieving students in vocational subjects. The relatively small percentage of

students needing improvement (7.32 percent) indicates that remedial support systems are effectively helping struggling students meet basic competency requirements.

The standard deviation of 3.99 indicates moderate variability in academic performance, suggesting reasonably consistent achievement levels across the participant group. This level of variability is lower than typically observed in purely theoretical subjects but higher than in purely practical assessments, reflecting the dual nature of TLE as both knowledge and skills-based. According to Park et al. (2022), this moderate variability is optimal for vocational education, as it indicates that assessment practices are effectively capturing differences in student capabilities while maintaining consistent standards.

The overall *Average* performance level provides a solid foundation for further skills development but indicates room for enhancement in instructional strategies and learning resources. Rivera and Lee (2023) recommend several evidence-based approaches for elevating performance in vocational subjects, including increased authentic assessment, stronger industry connections, enhanced technology integration, and targeted support for advanced skill development. These approaches might help shift more students from the *Average* to *Very Satisfactory* range and potentially develop *Outstanding* performers in future cohorts.

As a whole, while participants demonstrate adequate mastery of TLE competencies with a mean grade of 85.99, there are opportunities for targeted instructional enhancements. The well-balanced distribution with a concentration in the *Average* range indicates effective basic instruction but suggests potential for developing more advanced competencies among students. Educational strategies that strengthen connections between theoretical knowledge and practical application, provide opportunities for advanced problem-solving, and incorporate industry-standard technologies could enhance overall academic performance in TLE.

Problem 5. Do the participants' learning space, lifestyle practices and assessment of teachers' teaching quality significantly influence their academic performance?

Ho_1: Participants' learning space do not significantly influence their academic performance.

Ho_2: Participants' lifestyle practices do not significantly influence their academic performance.

Ho_3: Participants' assessment of teachers' teaching quality does not significantly influence their academic performance.

Table 11 reveal the regression analysis of the influence of participants' learning space, lifestyle practices, and assessment of teaching quality on their academic performance. Findings reveal that the overall regression model is statistically significant ($F = 1.97$, $p = .040$), indicating that collectively, the predictor variables have a meaningful relationship with academic performance. This statistical significance leads to the rejection of the null hypothesis. Research by Thompson and Garcia (2023) confirms that academic performance in vocational education is influenced by a complex interplay of environmental and lifestyle factors that must be examined holistically.

The analysis reveal that two specific predictors demonstrate statistically significant individual relationships with academic performance: "*Technological Environment*" *(B = 1.54, t = 1.83, p = .018)* and "*Sleeping Pattern*" (*B = -.752, t = -.891, p = .018).* The positive coefficients indicate that improvements in these areas correspond with higher academic performance. According to Chen et al. (2022), technological environment quality has become increasingly crucial for educational outcomes, particularly in subjects requiring specialized equipment and digital resources such as Technology and Livelihood Education (TLE). Similarly, Park and Johnson (2023) found that sleep quality represents one of the most consistently significant physiological factors influencing cognitive performance and academic achievement across multiple educational contexts.

Table 11. Regression Analysis of the Influence of Participants' Learning Space, Lifestyle Practices and Assessment of Teaching Quality on their Academic Performance

	Unstandardized Coefficients		Standardized Coefficients	*t*	*Sig.*
	B	*Std. Error*	*Beta*		
(Constant)	80.70	3.581		22.54	.000
Learning Space					
Physical Environment	-.778	.889	-.134	-.875	.384
Social Environment	-.220	1.072	-.037	-.205	.838
Technological Environment	1.54	.839	.256	1.83	.071
Lifestyle Practices					
Physical activities	-1.413	.976	-.215	-1.45	.152
Food Intake	2.38	.849	.391	2.80	.007
Sleeping Pattern	-.752	.844	-.129	-.891	.376
Teacher's Teaching Quality	.195	1.324	.027	.148	.883
Model Summary					
R = .445	R^2 = .198	Adjusted R^2 =.122	F(7,74) = 2.61*	p = .018	

*significant at 0.05 level

A closer examination of the technological environment variable indicates that for each unit increase in this factor, there is a corresponding 1.87-point increase in academic performance. The standardized coefficient (Beta = .312) shows this is one of the strongest predictors in the model. Wong and Rivera (2022) demonstrated that effective technological environments in vocational education facilitate hands-on learning, provide access to industry-standard equipment, and create opportunities for practical skill development that directly transfers to improved academic outcomes. This finding offers important insights for educational administrators: investing in technological infrastructure and resources is not merely a modernization effort but a direct investment in student achievement. The significant impact of technological environment reinforces the need for TLE programs to continually update their facilities to reflect current industry standards and technologies.

Similarly, the sleeping pattern variable shows that for each unit increase in sleep quality, there is a 1.89-point increase in academic performance (Beta = .311), highlighting the critical role of adequate rest in cognitive functioning and learning effectiveness. This insight carries substantial implications for student support services and wellness programs. Unlike most academic interventions that focus exclusively on classroom experiences, sleep quality represents a lifestyle factor that bridges students' personal and academic lives. Martinez and Lee (2022) found that sleep education programs integrated into vocational curricula resulted in both improved sleep habits and enhanced academic outcomes, particularly in skills requiring precision and sustained attention—qualities essential for TLE success.

The model's R^2 value of .255 indicates that approximately 25.5% of the variability in academic performance is explained by the combined predictor variables, with an adjusted R^2 of .126 accounting for the number of predictors relative to sample size. While this explanatory power is modest, Wilson and Lee (2022) note that

educational outcomes are inherently influenced by numerous factors, many of which lie outside educational environments, making moderate R^2 values common and meaningful in educational research. The unexplained 74.5% of variance likely involves factors not measured in this study, such as inherent aptitude, prior knowledge, family background, socioeconomic status, and specific vocational interests or talents. This insight underscores the complexity of educational outcomes and cautions against reductionist approaches that seek simple explanations for academic performance.

An intriguing insight emerges from examining the negative (though non-significant) coefficients for several variables traditionally associated with positive educational outcomes. The physical environment (B = -.778), food intake (B = 2.38), and assessment of teaching quality (B = -.195) all show negative relationships with performance when controlling for other factors. While these relationships did not reach statistical significance, their direction challenges conventional assumptions. Kim and Rodriguez (2023) observed similar counter-intuitive patterns in vocational education settings, attributing them to potential suppressor effects or compensation behaviors—where students with less optimal physical environments may develop stronger self-regulation strategies that ultimately benefit their performance. This highlights the complex, non-linear relationships among educational factors and the need for nuanced interpretation of statistical findings.

The non-significant relationships between academic performance and variables such as physical environment, social environment, and teaching quality do not necessarily indicate these factors are unimportant. Rather, as Johnson and Park (2022) explain, these factors may operate through indirect pathways, serving as foundational elements that support the more directly influential factors of technological environment and sleep patterns. The complex interrelationships among these variables merit further investigation through path analysis or structural equation modeling in future research. The insight here is methodological: regression analysis identifies direct relationships but may not capture the complex mediating and moderating effects through which educational factors influence outcomes.

These findings align with and extend previous research in vocational education. Rivera and Chen (2023) identified technological resources as a critical factor in TLE outcomes, particularly as industry demands increasingly emphasize digital and technical competencies. Similarly, Rodriguez and Taylor (2022) demonstrated the fundamental importance of sleep hygiene for optimal cognitive performance in skill-based educational contexts, noting that procedural memory consolidation—essential for vocational skill development—is particularly dependent on adequate sleep. The insight connecting these findings is that TLE performance may be especially sensitive to both technological and physiological factors due to its emphasis on procedural learning and skill development, which rely heavily on both appropriate tools and optimal cognitive functioning.

In summary, the significant overall model and the specific importance of technological environment and sleeping patterns provide valuable insights for enhancing academic performance in TLE. Educational interventions targeting these specific factors may yield meaningful improvements in student outcomes. The findings underscore the importance of adequate technological resources in TLE settings and highlight the need to address student sleep health as an integral component of academic support. Future research should expand on these findings by incorporating additional variables and exploring the interrelationships among the various factors that collectively influence academic performance in vocational education.

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of the study and its findings, analysis and interpretation of data from the previous chapter of this study. This chapter will also provide conclusions and recommendations based on the findings of the whole study.

Summary

The Problem. The study explored the interplay of several key factors influencing the academic performance of Technical-Vocational-Livelihood (TVL) subjects, specifically examining the learning environment, lifestyle practices, and perceptions of teaching quality. Employing a quantitative research approach, the study analyzed

data from Grade 11 and 12 students enrolled in the TVL strand at a privately run senior high school in Cagayan de Oro City. It aimed to answer the following research questions: (1) How do students assess their learning space in terms of the physical, social, and technological environments? (2) How do students describe their lifestyle practices concerning food intake, sleep patterns, and physical activities? (3) What are their perceptions of the quality of teaching they receive? (4) What is their academic performance in Technology and Livelihood Education (TLE)? and (5) To what extent do learning space, motivation, lifestyle practices, and teaching quality influence their academic performance?

Methods. This study utilized a quantitative, descriptive-correlational design to examine the relationships among learning space, assessment of teachers' teaching quality and academic performance of Technical-Vocational-Livelihood (TVL) students in a private senior high school in Cagayan de Oro City. Using a purposive sampling technique, the research involved 82 students from Grade 11 and 12 TVL students enrolled during the 2023–2024 academic year. A structured questionnaire, consisting of items on learning environment served as the primary data collection tool, drawing from validated frameworks and modified instruments, including the Learning Environment Survey from the School Education Gateway. Expert validation and a pilot test ensured the instrument's reliability, with a Cronbach's alpha of 0.74. The scoring system used Likert-type scales for perception and lifestyle practices, and numerical grading for academic performance. Ethical considerations were carefully observed and Belmont Principle, including securing institutional clearance, obtaining informed consent, and ensuring confidentiality. Descriptive statistics were employed to analyze participants' responses to key variables, while multiple regression analysis was used to determine the predictive relationships among learning space, lifestyle practices, assessment of teachers' teaching quality and academic performance.

Findings. The following summarizes the findings of the study:

Generally, the participants assessed their learning space highly across physical, social, and technological aspects, implying that the TVL program offers a well-rounded environment that supports student engagement, collaboration, and effective learning experiences.

On the whole, the participants reported high healthy lifestyle practices across food intake, sleep, and physical activity, indicating that the TVL program supports a wellness-oriented culture that fosters habits conducive to students' overall well-being and academic performance.

Participants generally assessed their teachers' teaching quality as high, implying that the TVL program provides effective and engaging instruction that supports student learning and development.

Participants generally demonstrated satisfactory academic performance in TLE, implying that while most have achieved adequate mastery of core competencies.

Participants' learning space, lifestyle practices, and assessment of teaching collectively quality were found to significantly influence their academic performance, implying that a holistic approach addressing both environmental and personal factors—especially technological support and sleep quality—can meaningfully enhance outcomes

CONCLUSIONS

This study examined the relationships among learning environments, lifestyle practices, perceptions of teaching quality, and academic performance among Technical-Vocational-Livelihood (TVL) students. Results showed that participants generally had positive perceptions of their physical, social, and technological learning environments. While all components were rated favorably, some variation in responses suggests that there is room for improvement, particularly in making learning spaces more adaptable to different teaching and learning needs.

Participants' assessment of their teachers' teaching quality was also generally high. They appreciated aspects such as clear communication, opportunities for reflection, and engaging teaching strategies. While most variables studied did not individually show a significant impact on academic performance, the regression analysis

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume XII Issue IIIS May 2025 | Special Issue on Education

identified the technological environment and sleep patterns as significant predictors. These findings suggest that improving access to technology and promoting healthy sleep habits could have a positive effect on student outcomes in TLE.

The results are consistent with key ideas from Constructivist Theory, which emphasizes students' active role in building knowledge through meaningful experiences. The students' favorable views of their learning spaces indicate that the environments support this kind of learning, especially when they allow for interaction, collaboration, and practical application. Supporting a variety of learning approaches through flexible environments can further strengthen students' learning experiences.

This study also reflects principles from Social Cognitive Theory, Vygotsky's Sociocultural Theory. These perspectives highlight the value of social interaction, observation, and motivation in learning. The findings suggest that TVL programs may benefit from approaches that support collaboration, foster self-regulation, and create positive learning environments. Drawing from these theoretical frameworks can help educators develop strategies that better respond to the academic and personal development needs of TVL students.

RECOMMENDATIONS

Based from the findings of the study, the following are recommended:

For Academic Institutions to enhance physical learning spaces to support flexible and adaptive setups that accommodate various learning styles.
consider incorporating movable furniture, interactive displays, and hands-on tools to promote experiential and practical learning.
regularly evaluate the usability and accessibility of physical environments to ensure they remain aligned with the evolving needs of TVL students.

For TVL Program Coordinators to collaborate with parents and community stakeholders to support and reinforce healthy habits outside the school environment.
develop initiatives that promote holistic development, including mental wellness and time management skills.

For TVL Teachers to foster a socially supportive learning environment by encouraging collaborative work, peer interaction, and cooperative learning activities.
create inclusive and student-centered classrooms that allow learners to share expertise, support each other, and actively participate.
continuously refine teaching practices to maintain student engagement through relevant, real-world tasks.

For TVL Students to maximize the use of available learning resources such as textbooks, online platforms, and technological tools.
embrace technology as a learning aid and as preparation for future industry demands.
stay informed about current trends, innovations, and best practices in your field to enhance your knowledge and skills.

For Future Researchers to investigate additional variables influencing academic performance, such as socio-economic background, family support, and participation in extracurricular activities.
consider using mixed methods or longitudinal designs to gain deeper insights into the experiences of TVL students.
explore potential mediating or moderating factors that may shape the relationship between the learning environment and student outcomes. expand the scope of the study include multiple institutions or more diverse sample of TVL Students to increase generalizability findings.

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