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From literacy to motivation: how physical literacy drives students' engagement in physical activity

De la alfabetización a la motivación: cómo la alfabetización física impulsa la participación de los estudiantes en la actividad física

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Abstract

This study investigated how physical literacy influences students' engagement in physical activity, focusing on the combined roles of competence, motivation, confidence, knowledge, and lifelong engagement in shaping movement behaviors. Recognizing the decline in student physical activity and the need for effective strategies to promote active lifestyles, the research aimed to determine whether higher levels of physical literacy predict stronger motivation and participation. A quantitative, descriptive–correlational design was employed, with 721 students selected through simple random sampling to ensure representativeness. Data were collected using the validated Physical Literacy Assessment Questionnaire and the International Physical Activity Questionnaire (IPAQ), with descriptive statistics summarizing literacy and activity levels, and Pearson correlation assessing the strength and direction of their association. Results indicated that students exhibited high physical literacy across all domains, particularly in motivation, confidence, and knowledge, reflecting readiness to engage meaningfully in physical activities. Similarly, most participants demonstrated moderate to high levels of physical activity engagement, suggesting consistent involvement in behaviors supporting health and well-being. Statistical analysis revealed a significant positive correlation ($r = 0.488$, $p = 0.001$) between physical literacy and activity engagement, confirming that students with stronger literacy are more likely to participate actively in physical activity. These findings underscore the theoretical importance of integrating cognitive, affective, and behavioral dimensions of literacy in understanding student motivation and movement behaviors. Practically, the results highlight the need for educational programs that cultivate all aspects of physical literacy, fostering confidence, competence, knowledge, and sustained engagement. By demonstrating the foundational role of physical literacy in driving active participation, the study provides empirical support for literacy-based approaches in physical education, offering insights for educators and policymakers seeking to promote lifelong physical activity and holistic student well-being.

Keywords: physical literacy; motor skills competence; Physical Education; student motivation; health and well-being

Resumen

Este estudio investigó cómo la alfabetización física influye en la participación de los estudiantes en la actividad física, centrándose en el papel combinado de la competencia, la motivación, la confianza, el conocimiento y el compromiso a lo largo de la vida en la configuración de los comportamientos de movimiento. Reconociendo el descenso en la actividad física estudiantil y la necesidad de estrategias efectivas para promover estilos de vida activos, la investigación tuvo como objetivo determinar si niveles más altos de alfabetización física predicen una mayor motivación y participación. Se empleó un diseño cuantitativo descriptivo–correlacional, seleccionando 721 estudiantes mediante muestreo aleatorio simple para garantizar la representatividad. Los datos se recopilaron utilizando el Cuestionario de Evaluación de la Alfabetización Física y el Cuestionario Internacional de Actividad Física (IPAQ), aplicando estadísticas descriptivas para resumir los niveles de alfabetización y actividad, y la correlación de Pearson para evaluar la fuerza y dirección de la relación entre ambas variables. Los resultados indicaron que los estudiantes presentaron altos niveles de alfabetización física en todos los dominios,



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especialmente en motivación, confianza y conocimiento, lo que refleja su disposición para participar de manera significativa en actividades físicas. De manera similar, la mayoría de los participantes mostró niveles moderados a altos de compromiso con la actividad física, sugiriendo una participación constante en comportamientos que favorecen la salud y el bienestar. El análisis estadístico reveló una correlación positiva significativa ($r = 0,488$, $p = 0,001$) entre la alfabetización física y la participación en actividad física, confirmando que los estudiantes con mayor alfabetización son más propensos a participar activamente. Estos hallazgos resaltan la importancia teórica de integrar dimensiones cognitivas, afectivas y conductuales de la alfabetización para comprender la motivación estudiantil y los comportamientos de movimiento. En términos prácticos, los resultados enfatizan la necesidad de programas educativos que desarrollen todos los aspectos de la alfabetización física, fomentando confianza, competencia, conocimiento y compromiso sostenido. Al demostrar el papel fundamental de la alfabetización física en la participación activa, el estudio brinda evidencia empírica que respalda enfoques basados en la alfabetización en educación física, ofreciendo orientación para educadores y formuladores de políticas que buscan promover la actividad física a lo largo de la vida y el bienestar integral de los estudiantes.

Palabras clave: alfabetización física; competencia en habilidades motrices; Educación Física; motivación estudiantil; salud y bienestar



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Introduction

Physical activity engagement refers to the consistent participation of individuals in movements that promote health, physical functioning, and overall well-being (Marquez et al., 2020). It encompasses not only the frequency and intensity of activities performed but also the psychological commitment and motivation that sustain active behaviors over time (Çar et al., 2024). Among students, physical activity engagement plays a crucial role in shaping healthy habits, enhancing cognitive performance, and preventing long-term health risks associated with sedentary lifestyles (Tafuri et al., 2024). As schools serve as key environments for forming lifelong physical activity patterns, understanding the factors that influence student engagement has become increasingly important (Poblador & Tagare, 2023).

Physical literacy, particularly among students, is viewed as a multidimensional construct that integrates motivation, confidence, physical competence, and knowledge to support meaningful participation in physical activity (Camariñas & Tagare, 2022). It empowers learners to value and take responsibility for pursuing active lifestyles, making it an essential foundation for long-term engagement in movement and exercise (Ali & Saxena, 2024). As students develop physical literacy, they gain the capability to interpret movement challenges, apply skills effectively, and sustain interest in varied physical activities (Esponja et al., 2025). Because it supports both skill development and positive attitudes toward physical activity, physical literacy is increasingly recognized as a vital component of quality physical education programs (Hernani et al., 2025).

Despite widespread recognition of its benefits, students' physical activity engagement continues to decline due to academic pressures, digital distractions, and reduced opportunities for structured movement in schools (Esto et al., 2025). Low engagement contributes to alarming increases in obesity, reduced cardiovascular fitness, and weakened musculoskeletal development among young people (Faenza et al., 2023). These patterns also negatively impact students' mental health, leading to heightened stress, poor emotional regulation, and diminished self-esteem (Dalipe et al., 2025). The decline in physical activity further compromises overall quality of life, affecting social well-being, productivity, and students' ability to function effectively in daily routines



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(Zayed et al., 2024). Without targeted interventions, these challenges may continue to deepen and affect students well into adulthood (Mancera et al., 2025).

Existing studies on physical activity engagement consistently demonstrate that students who participate regularly in physical activity exhibit improved academic performance, stronger social skills, and better emotional balance (Gothe et al., 2020). Research also indicates that supportive school environments and accessible physical activity programs significantly influence students' willingness to remain active (Marsigliante et al., 2023). Moreover, studies highlight that intrinsic motivation plays a central role in determining whether students sustain their engagement over time (Merdiaty & Sulistiasih, 2024). Collectively, these findings show that physical activity engagement is shaped by a combination of environmental, behavioral, and psychological factors (Wilson et al., 2021).

Scholarly work on physical literacy highlights its strong association with students' confidence, skill acquisition, and long-term participation in physical activity (Rudd, Pesce, et al., 2020). Researchers emphasize that students with higher levels of physical literacy tend to display stronger self-efficacy and a greater likelihood of maintaining active lifestyles beyond school settings (Zheng et al., 2022). Evidence also suggests that well-designed physical education programs significantly enhance physical literacy by integrating skills instruction, motivational strategies, and movement exploration (Rudd, Crotti, et al., 2020). These studies underscore the foundational role of physical literacy in shaping positive attitudes and behaviors toward physical activity (Yan et al., 2022).

Despite the growing attention to physical activity engagement and physical literacy, limited evidence directly examines how physical literacy influences students' motivation to participate in physical activity. While prior studies describe each variable independently, there is insufficient data clarifying their dynamic relationship within the school context. To address this gap, the present study seeks to answer the general research question: How does physical literacy drive students' engagement in physical activity? The primary purpose of this research is to determine whether higher levels of physical literacy predict stronger motivation and participation among students. By exploring this relationship, the study aims to contribute a deeper understanding of how physical literacy functions as a catalyst for sustained physical activity.



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This study is important because it offers insights that can help educators design physical education programs that effectively foster active and motivated learners. By understanding how physical literacy influences engagement, teachers and schools can implement more targeted strategies to nurture students' confidence, competence, and willingness to participate in physical activities. The findings will also enrich existing scholarship by providing empirical evidence that connects two critical constructs in physical education. Ultimately, this research will contribute to academic discussions on student well-being and inform policies promoting active, healthy lifestyles. Its implications extend beyond the classroom, emphasizing the importance of physical literacy in shaping healthier, more resilient communities.

Methods

Research Design

This study employed a quantitative research design, specifically a descriptive–correlational approach. Quantitative research focuses on numerical data to explain trends, relationships, and patterns among variables in an objective and systematic manner (Thomas & Zubkov, 2023). Descriptive–correlational design, on the other hand, is used to determine the nature and strength of the association between two or more variables without manipulating them. Through this approach, the study aimed to examine the extent to which physical literacy relates to students' engagement in physical activity.

The use of a quantitative descriptive–correlational design is most appropriate for this research because the study sought to explore existing conditions and measure the relationship between physical literacy and physical activity engagement as they naturally occur among students. This approach allowed the researcher to gather data from a large group efficiently and analyze patterns objectively. It also made it possible to determine whether increases in one variable were associated with increases or decreases in the other. By utilizing this design, the study could identify meaningful associations that contribute to a deeper understanding of the phenomena under investigation.

Respondents and Sampling

A total of 721 students participated in the study, selected through a simple random sampling procedure. Initially, a complete list of students from the target population was obtained to serve as the sampling frame. Using a randomization process, each student was



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assigned a unique number, and selection was performed using a random number generator to ensure that every individual had an equal probability of being chosen. This probability sampling method was deemed most appropriate because it minimizes selection bias, increases the representativeness of the sample, and enhances the generalizability of the findings to the broader student population.

Participation was voluntary, and all selected students were provided with clear information regarding the study's objectives, procedures, and ethical considerations. To maintain consistency, data collection was conducted under standardized conditions, ensuring that all respondents received identical instructions and guidance while completing the questionnaires. This systematic approach ensured fairness, transparency, and methodological rigor, allowing the study to accurately reflect the relationship between physical literacy and engagement in physical activity across a diverse student cohort.

Research Instrument

This study adopted two standardized questionnaires to gather data on the main variables. Physical literacy was measured using the Physical Literacy Assessment Questionnaire, developed by Valle-Muñoz et al. (2025), which has reported Cronbach's alpha values ranging from 0.80 to 0.89, indicating high internal consistency. Physical activity engagement was assessed using the International Physical Activity Questionnaire (IPAQ) developed by Craig et al. (2003), which has demonstrated reliability coefficients between 0.66 and 0.88 across various populations. Both instruments are widely used, validated, and appropriate for assessing students' movement behaviors and literacy. The use of these tools ensured accurate, consistent, and comparable measurement of the constructs examined in the study.

Statistical Analysis

The study utilized descriptive and inferential statistical procedures to analyze the data. Descriptive statistics such as mean and composite mean were used to summarize the levels of physical literacy and physical activity engagement among students. For inferential analysis, Pearson's correlation coefficient was employed to determine the strength and direction of the relationship between the two variables. Pearson correlation was the most appropriate test because the study variables were continuous and measured



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on interval scales, and the analysis aimed to identify linear associations. This allowed the researcher to examine whether higher levels of physical literacy were linked to increased engagement in physical activity.

Results

Table 1 presents the respondents' levels of physical literacy based on the composite mean scores obtained from the standardized instrument. The results summarize their motivation, confidence, physical competence, knowledge, and understanding related to movement and physical activity. This table provides an overview of how well the students demonstrate the essential components of physical literacy.

Table 1. Physical Literacy among the Respondents

Indicators	Composite Mean	Qualitative Description
Physical Competence	2.92	High Physical Literacy
Motivation and Confidence	3.19	High Physical Literacy
Knowledge and understanding	3.29	High Physical Literacy
Engagement in Physical Activity for Life	2.94	High Physical Literacy
Overall Physical Literacy	3.09	High Physical Literacy

Legend:

4.00 – 3.50	Very High Physical Literacy
3.49 – 2.50	High Physical Literacy
2.49 – 1.50	Moderate Physical Literacy
1.49 – 1.00	Low Physical Literacy

Table 2 summarizes the respondents' levels of physical activity engagement as measured by their reported participation in various forms of movement and exercise. The results reflect the extent to which students consistently engage in activities that promote health and physical well-being. This table provides a clear overview of their overall activity patterns and involvement in physical pursuits.

Table 2. Respondents' Physical Activity Engagement

Physical Activity Level	Frequency	Percentage
Low Activity	70	12.52
Moderate Activity	214	38.28
High Activity	275	49.19

Table 3 presents the results of the statistical analysis examining the relationship between the respondents' physical literacy and their physical activity engagement. The correlation values indicate the strength and direction of the association between the two



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variables. This table provides evidence on whether higher physical literacy is linked to greater participation in physical activity among students.

Table 3. Test of Relationship between the Respondents' Physical Literacy and Activity Engagement

Variables	Pearson Correlation Coefficient	p-value	Interpretation $\alpha=0.05$
Physical Literacy and Activity Engagement	.488**	.001	Statistically Significant

** . Correlation is significant at the 0.01 level (2-tailed).

Discussion

Physical Literacy among the Respondents

The respondents obtained a composite mean of 2.92 in the domain of **Physical Competence**, which corresponds to “High Physical Literacy.” This suggests that students generally perceive themselves as capable of performing a range of movement skills and physical tasks needed in both structured and unstructured activities. It also indicates that they possess adequate control, coordination, and physical readiness that help them participate effectively in physical activities. This implies that their level of physical competence supports their ability to function confidently in diverse movement situations and engage actively in physical learning experiences.

The finding of strong physical competence aligns with previous studies underscoring the importance of motor skill proficiency in enhancing students' participation in physical activity. Research shows that students who feel competent are more likely to attempt new movement challenges and remain engaged in physical tasks (Azarhazin et al., 2024). Other scholars noted that physical competence contributes to positive attitudes toward exercise and reduces feelings of anxiety in movement environments (Haible et al., 2020). A separate study highlights that higher competence levels foster better adaptability and persistence during physical activities, contributing to greater enjoyment and sustained participation (Guan et al., 2023).

The respondents recorded a composite mean of 3.19 in the domain of Motivation and Confidence, which corresponds to “High Physical Literacy.” This indicates that students generally feel motivated to participate in physical activities and possess the confidence needed to perform movement tasks successfully. It also suggests that they experience a level of self-assurance that encourages them to explore new activities, overcome challenges, and commit to active participation. This implies that their

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motivation and confidence significantly support their willingness to engage in meaningful physical activity experiences.

The strong level of motivation and confidence aligns with earlier studies indicating that self-belief and intrinsic drive are crucial contributors to sustained physical activity participation. Previous findings reveal that motivated students are more likely to develop consistent activity habits and display long-term commitment to active lifestyle (Couture-Wilhelmy et al., 2021). Research likewise affirms that confidence enables learners to face movement challenges without fear of failure, increasing their enjoyment and persistence (Choi et al., 2022). Another scholar stresses that high confidence can positively influence emotional well-being during physical activity, enabling students to experience greater satisfaction and reduced performance anxiety (Li et al., 2025).

The respondents obtained a composite mean of 3.29 in the domain of Knowledge and Understanding, which corresponds to “High Physical Literacy.” This indicates that students possess adequate awareness of the concepts, strategies, and benefits related to physical activity participation. It also suggests that they understand how movement contributes to health, fitness, and well-being, enabling them to make informed decisions about staying active. This implies that their level of knowledge supports responsible engagement in physical activities and fosters meaningful participation.

The strong performance in knowledge and understanding aligns with previous research emphasizing the value of cognitive awareness in promoting healthy activity habits. Studies show that when students understand the purpose and benefits of physical activity, they are more likely to remain committed and disciplined in maintaining active routines (Zavalishina et al., 2021). Additional research suggests that knowledge enhances self-regulation, allowing students to set appropriate goals and monitor their activity choices effectively (McDaniel & Einstein, 2020). Another study highlights that students who possess strong conceptual understanding exhibit better decision-making skills related to exercise and movement safety (Hanifah et al., 2023).

The respondents recorded a composite mean of 2.94 in the domain of Engagement in Physical Activity for Life, which corresponds to “High Physical Literacy.” This means that students show a consistent willingness to participate in physical activities and recognize the importance of maintaining active habits throughout life. It also suggests

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that they demonstrate readiness to incorporate movement into their routines in ways that extend beyond school-based physical education. This implies that students are developing a mindset supportive of lifelong physical activity and health-oriented behaviors.

The strong level of engagement aligns with existing research establishing the connection between positive activity experiences and long-term participation. Earlier studies reveal that students who experience enjoyable and meaningful activity opportunities in youth are more likely to continue engaging in physical activity during adulthood (Mahindru et al., 2023). Others emphasize that supportive environments and skill mastery contribute to the development of lifelong physical activity patterns (Chen et al., 2020). Another study highlights that early engagement fosters not only physical health but also psychological resilience and social well-being (Baillot et al., 2021).

The respondents reported an overall mean of 3.09, corresponding to “High Physical Literacy.” This indicates that students demonstrate strong capabilities across the domains of competence, motivation, knowledge, and lifelong engagement. It also suggests that they possess the foundational skills and attitudes required to participate confidently and responsibly in physical activities. This implies that the respondents collectively exhibit a well-rounded physical literacy profile that supports active and health-promoting behaviors.

The finding of high overall physical literacy aligns with prior research asserting that physically literate individuals display a combination of skillfulness, confidence, and understanding that encourages sustained physical activity. Studies show that students with strong overall physical literacy tend to be more active, healthier, and more resilient in managing physical challenges (Kim et al., 2021). Other researchers highlight that physical literacy predicts long-term engagement in physical activities due to the combined influence of motivation, competence, and knowledge (Di Maio et al., 2021). A related study stresses that overall physical literacy enhances students' well-being by promoting both physical and psychological readiness for lifelong activity participation (Meng et al., 2023).

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Respondents' Physical Activity Engagement

The results show that 49.19% of the respondents fall under the High Activity category, while 38.28% engage in Moderate Activity, and 12.52% demonstrate Low Activity. This distribution indicates that a substantial proportion of students participate regularly in physical activities that meet or exceed recommended health guidelines. It also suggests that many of them are active enough to experience benefits such as improved fitness, stronger physical competence, and better overall functioning. This implies that the respondents generally value physical activity and can sustain levels of movement that support their health and daily performance.

The finding of relatively high levels of physical activity engagement aligns with earlier studies highlighting the positive influence of motivation, school environment, and physical literacy on students' activity patterns. Previous research demonstrates that when learners perceive activity as enjoyable and meaningful, they are more likely to maintain moderate to vigorous activity levels (Peromingan et al., 2025). Additionally, studies indicate that supportive programs and accessible movement opportunities contribute significantly to higher youth activity participation (Reed et al., 2020). Another scholar emphasizes that students who develop confidence and competence in movement tend to engage more consistently in physical tasks, reducing the likelihood of falling into low activity categories (Kliziene et al., 2021). Findings collectively reinforce the present results by confirming that a combination of behavioral, psychological, and environmental factors contributes to students' physical activity levels.

Respondents' Physical Literacy and Activity Engagement

The results of the correlation analysis revealed a Pearson correlation coefficient of .488 with a p-value of .001, indicating a statistically significant relationship between physical literacy and activity engagement at the 0.05 level. This correlation suggests a moderate positive association, meaning that higher levels of physical literacy tend to correspond with higher levels of physical activity engagement among the respondents. The statistical significance further confirms that the observed relationship is unlikely to be due to chance. This finding demonstrates that the students' knowledge, motivation, competence, and readiness for lifelong activity play important roles in shaping their actual participation.



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This means that students who possess stronger physical literacy are more likely to engage meaningfully and consistently in physical activities. This also implies that their understanding of movement, confidence in performing physical tasks, and motivation to stay active contribute to their willingness to participate in various forms of activity. It indicates that physical literacy functions not only as a set of skills and attitudes but also as a driver of behavior related to movement and exercise. This suggests that students' day-to-day participation in physical activities is closely connected to how capable and confident they feel in movement settings.

The significant relationship found in this study is supported by existing research highlighting the positive influence of physical literacy on students' activity behavior. Earlier studies affirm that individuals with higher movement competence and confidence are more likely to sustain active lifestyles and participate in regular physical activities (Mkrtichian, 2025). Other scholars note that motivation and understanding of physical activity benefits strongly predict students' engagement in movement pursuits (Abdoli et al., 2025). Another study similarly reports that when learners possess a strong foundation of physical literacy, they demonstrate greater consistency and enthusiasm in engaging in physical tasks (Briguglio et al., 2020). These studies reinforce the present findings by confirming the crucial role of physical literacy in shaping physical activity engagement.

The significant relationship between physical literacy and activity engagement carries meaningful implications for theory, particularly those frameworks emphasizing the interconnectedness of competence, motivation, and behavior. The finding supports theoretical perspectives such as the Physical Literacy Framework, which posits that students' movement skills, confidence, and understanding collectively shape their participation in physical activity (Gleddie & Morgan, 2021). It also reinforces self-determination perspectives, which suggest that students who feel competent and autonomous are more likely to engage actively in movement-related behaviors (Messerschmidt & Schott, 2025). These results contribute to strengthening existing models by providing empirical evidence that physical literacy is not merely a concept but a functional determinant of physical activity behavior. This implies that theoretical models of physical literacy should continue integrating cognitive, affective, and behavioral components as mutually reinforcing determinants of engagement.

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In terms of practice, the findings underscore the importance of cultivating students' motivation, confidence, competence, and understanding to encourage higher levels of activity participation. Practical applications of this insight emphasize that meaningful movement experiences play a crucial role in shaping students' engagement patterns (Cereda, 2024). The results highlight that environments supporting exploration, enjoyment, and skill development can encourage students to stay engaged and feel more capable during physical activity. This also suggests that when learners recognize the value of movement and feel confident performing various tasks, they are more inclined to sustain active behaviors across settings (Sirojova, 2024). Altogether, the implications point to the value of practice frameworks that prioritize holistic development rather than focusing solely on performance outcomes.

Conclusion

The study concludes that students demonstrate strong physical literacy across all domains, reflecting a well-balanced integration of competence, motivation, confidence, knowledge, and engagement. This indicates that students are not only capable of performing physical tasks but also possess the awareness and attitudes necessary to participate meaningfully in diverse movement activities.

Their literacy profile suggests a holistic readiness for physical activity, highlighting the value of fostering all components of physical literacy to develop active and competent learners. In terms of physical activity engagement, the findings reveal generally high levels of participation, indicating that students consistently incorporate movement into their routines and understand its benefits for health and well-being.

Importantly, the significant positive relationship between physical literacy and activity engagement underscores literacy's role as a foundational driver of sustained participation, with competence, confidence, motivation, and knowledge collectively shaping students' willingness and ability to engage. The study contributes specifically to the field by providing empirical evidence linking multidimensional physical literacy to actual activity behavior, reinforcing theoretical models and informing practical interventions.



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These insights highlight the necessity of designing educational programs that cultivate all aspects of literacy, ultimately supporting the development of health-conscious, motivated, and resilient individuals capable of maintaining active lifestyles throughout life.

Limitations

Despite the valuable insights gained, this study has several limitations that should be acknowledged. The use of self-reported questionnaires may have introduced response biases, affecting the accuracy of the data on physical literacy and activity engagement. Additionally, the cross-sectional design limits the ability to establish causal relationships between the variables. The study was also conducted within a specific student population, which may affect the generalizability of the findings to other contexts or age groups. Finally, external factors such as environmental constraints or extracurricular commitments were not controlled, which could have influenced students' reported engagement levels.

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