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Association between teacher emotional support and deep learning among undergraduate students in physical education courses in Philippine higher education

Asociación entre el apoyo emocional docente y el aprendizaje profundo entre estudiantes universitarios de educación física en la educación superior filipina

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Abstract
This study employed a cross-sectional design involving 344 undergraduate students enrolled in PATH-Fit courses at a public higher education institution in the Philippines. Data were collected during the second semester of Academic Year 2024-2025 using adapted versions of the Teacher's Emotional Support Scale and the Revised Study Process Questionnaire (R-SPQ-2F). The constructs were validated through Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4, and hypothesis testing was conducted using multiple regression analysis in SPSS. Grounded in Self-Determination Theory (SDT), the study investigated the association between perceived instructor emotional support and students' engagement in deep learning within physical education courses. Results revealed no statistically significant associations between overall emotional support, or its subdimensions, and students' deep learning outcomes. These findings suggest that emotional support alone may not directly predict meaningful cognitive engagement in physical education, and its role may be more indirect or mediated by other contextual or psychological variables. The study offers implications for higher education pedagogy, advocating for more holistic approaches that integrate emotional, motivational and cognitive supports. Furthermore, it contributes to global educational discourse by offering culturally grounded insights from the Philippine context, challenging assumptions of universal applicability in emotionally supportive teaching and learning.
Keywords: deep learning; instructor emotional support; physical education; Philippine higher education; Self-Determination Theory; student engagement

Resumen
Este estudio empleó un diseño transversal que involucró a 344 estudiantes de pregrado matriculados en cursos PATH-Fit en una institución pública de educación superior en Filipinas. Los datos se recopilaron durante el segundo semestre del año académico 2024-2025 utilizando versiones adaptadas de la Escala de Apoyo Emocional del Profesorado y el Cuestionario Revisado del Proceso de Estudio (R-SPQ-2F). Los constructos se validaron mediante el Modelo de Ecuaciones Estructurales de Mínimos Cuadrados Parciales (PLS-SEM) en SmartPLS 4, y se realizaron pruebas de hipótesis mediante análisis de regresión múltiple en SPSS. Basado en la Teoría de la Autodeterminación (SDT), el estudio investigó la asociación entre el apoyo emocional percibido del instructor y la participación de los estudiantes en el aprendizaje profundo dentro de los cursos de educación física. Los resultados no revelaron asociaciones estadísticamente significativas entre el apoyo emocional general, o sus subdimensiones, y los resultados de aprendizaje profundo de los estudiantes. Estos hallazgos sugieren que el apoyo emocional por sí solo puede no predecir directamente la participación cognitiva significativa en la educación física, y su papel puede ser más indirecto o mediado por otras variables contextuales o psicológicas. El estudio ofrece implicaciones para la pedagogía de la educación superior, abogando por enfoques más holísticos que integren apoyos emocionales, motivacionales y cognitivos. Además, contribuye al discurso educativo global al ofrecer perspectivas con base cultural del contexto filipino, cuestionando las premisas de aplicabilidad universal en la enseñanza y el aprendizaje con apoyo emocional.

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Palabras clave: aprendizaje profundo; apoyo emocional del instructor; educación física; educación superior filipina; participación estudiantil

Introduction

In the evolving landscape of higher education, deep learning has emerged as a crucial pedagogical objective. It emphasizes the ability of students to critically analyze, synthesize and apply knowledge across contexts, extending beyond surface-level memorization. In physical education (PE), however, fostering such cognitive engagement is particularly challenging due to the traditional prioritization of skill execution and performance outcomes over reflective learning (Zhang & Yu, 2024). For this study, the notion of *performance* is understood not only in its physical dimension but also as academic performance and cognitive engagement that drive more sustainable educational outcomes (Çali et al., 2024).

Research has shown that emotionally supportive environments contribute to higher levels of student motivation, resilience, and meaningful learning (Guo et al., 2025; J. Li & Xue, 2023). *Teacher emotional support* is broadly defined as the ability to establish a warm, responsive, and encouraging climate that nurtures students' autonomy, competence, and relatedness (Beard et al., 2021; Gasser et al., 2018; Lobo, 2023b, 2024). These qualities align with Self-Determination Theory (Deci & Ryan, 1985), which posits that fulfilling students' psychological needs enhances their intrinsic motivation and cognitive investment. In the PE setting, this support allows students to explore challenges, manage setbacks, and engage more deeply with both theory and practice (Granero-Gallegos et al., 2023).

At the same time, it is important to acknowledge that students often encounter *vulnerabilities* that can affect their engagement in deep learning. Vulnerability may arise from academic pressures, limited confidence, or heightened exposure during performative tasks in PE (Cortina et al., 2017). Studies emphasize that such conditions, if unsupported, can hinder students' persistence and willingness to engage in critical reflection (He et al., 2024). Conversely, emotionally supportive instruction may act as a protective factor, enabling students to overcome these vulnerabilities and transform them into opportunities for growth (Dias et al., 2024).

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Despite evidence from international contexts, the relationship between teacher emotional support and deep learning in higher education PE remains underexplored in the Philippines. While previous local studies have examined related constructs such as resilience and engagement (Lobo, 2024; Longakit et al., 2025), empirical evidence specifically addressing *deep learning* within Philippine PE courses is scarce. This presents a critical knowledge gap, as cultural and educational contexts strongly influence how students perceive and respond to emotional support. Addressing this gap is especially important given that Filipino students often face both academic and economic challenges that may affect their capacity for meaningful learning.

Therefore, this study seeks to investigate the association between perceived teacher emotional support and deep learning among undergraduate students enrolled in PE courses in a Philippine higher education institution. By focusing on a population where performance, vulnerability and emotional support intersect, the study aims to contribute to a deeper understanding of how supportive pedagogy can enhance not only academic but also physical performance through meaningful cognitive engagement. Specifically, the objective of this research is to determine whether teacher emotional support and its subdimensions, positive climate (PC), teacher's sensitivity (IS) and regard for adult perspective (RAP), predict deep learning responses in Philippine PE classrooms.

Methods

Participants and Research Design

This study employed a quantitative, cross-sectional research design to examine the association between teacher emotional support and deep learning among undergraduate students. The participants were 344 students enrolled in PATH-Fit courses at a public higher education institution in Region IV-A (CALABARZON), Philippines. Purposive sampling was used to ensure that all respondents were taking the same general education PE course under comparable instructional conditions. This selection criterion was intended to control for curricular variation and provide a homogeneous context in which perceptions of emotional support and approaches to deep learning could be examined. Prior to their involvement, informed consent was obtained, and all ethical protocols were strictly followed to ensure voluntary participation, anonymity, and data confidentiality.

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The respondents represented a diverse range of gender identities, with the majority identifying as either heterosexual men or women. A smaller proportion identified as members of the LGBTQ+ community, while a few preferred not to disclose their gender identity.

Table 1. Respondents' distribution (n = 344)

Demographic attribute	Items	*n*(%)
Sex/Gender identity	Heterosexual men	131(38.1%)
	Heterosexual women	185(53.8%)
	LGBTQ+	20(5.8%)
	Prefer not to say	8(2.3%)

Instrument

The instrument used in this study was composed of three parts. The first part collected demographic information, specifically the respondents' sex/gender identity, to provide a general profile of the participants. The second part measured perceived instructor emotional support using the English version of the *Teacher's Emotional Support Scale* developed by Romano et al. (2020), which was contextually adapted by replacing the term "teacher" with "instructor" and "adolescent" with "adult" to suit the higher education setting. This 15-item scale employed a 5-point Likert format ranging from 1 = *strongly disagree* to 5 = *strongly agree*, and assessed three subdimensions: Positive Climate (e.g., "Our instructors want students in this class to respect each other's ideas"), Instructor Sensitivity (e.g., "We can count on our instructors for help when we need it"), and Regard for Adult Perspective (e.g., "Our instructors allow us to discuss our work with classmates"). The third part of the instrument focused on deep learning and utilized selected items from the *Revised Study Process Questionnaire (R-SPQ2F)* by Biggs et al. (2001). Only items under the deep learning subscale were included, measuring students' tendency to engage meaningfully with course content. These were likewise rated on a 5-point Likert scale ranging from 1 = *this item is never or only rarely true of me* to 5 = *this item is always or almost always true of me*.

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Reliability and validity of instruments

Using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4, the measurement model was evaluated for its reliability and validity (Hair et al., 2021). Internal consistency reliability was established, as all constructs reported Cronbach's alpha (CA) and composite reliability (CR) values well above the recommended threshold of 0.70, indicating acceptable levels of internal consistency. Convergent validity was also supported, as reflected by average variance extracted (AVE) values exceeding ≥ 0.50 for all latent variables (Hair et al., 2021). In addition, all item loadings surpassed the ≥ 0.70 benchmark, signifying strong indicator reliability and appropriate representation of the constructs by their respective items (Hair et al., 2021). Multicollinearity was examined using the Variance Inflation Factor (VIF) (Hair et al., 2021), and all item-level VIFs remained well below the cut-off value of < 5. This indicates that multicollinearity among indicators was not a threat to the model's estimations.

Table 2. Indicator loadings, reliability, convergent validity, and multicollinearity of the constructs

Construct	Item	Item loadings	CA	CR	AVE	VIF
PTES-PC	PC2	0.828	0.841	0.883	0.658	2.475
	PC3	0.849				3.459
	PC4	0.775				1.235
	PC5	0.791				2.842
PTES-TS	TS1	0.935	0.915	0.946	0.853	3.175
	TS2	0.907				2.899
	TS3	0.928				3.833
PTES-RAP	RAP1	0.883	0.908	0.931	0.783	3.001
	RAP2	0.876				2.652
	RAP3	0.860				2.402
	RAP4	0.920				3.161
RSPQ	RSPQ2	0.740	0.864	0.928	0.638	1.668
	RSPQ5	0.724				1.819
	RSPQ9	0.865				2.073
	RSPQ10	0.842				2.537
	RSPQ13	0.814				1.854

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Meanwhile, discriminant validity was assessed through both the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio (HTMT) (Hair et al., 2021). The square roots of the AVEs for each construct were higher than their inter-construct correlations, satisfying the Fornell-Larcker criterion (Fornell & Larcker, 1981). Similarly, HTMT values remained below the conservative threshold of < 0.90 (liberal approach), confirming discriminant validity across the model (Henseler et al., 2015).

Table 3. Discriminant validity using Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT)

	PC	RAP	RSPQ	TS
	Fornell-Larcker Criterion			
PC	0.811			
RAP	0.720	0.885		
RSPQ	-0.091	-0.081	0.799	
TS	0.705	0.801	-0.039	0.924
	Heterotrait-Monotrait Ratio (HTMT)			
PC				
RAP	0.856			
RSPQ	0.085	0.078		
TS	0.842	0.881	0.037	

Data analysis

Following the validation of the measurement model using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4, hypothesis testing was conducted using multiple regression analysis. Descriptive statistics were first computed to summarize the demographic characteristics and core study variables. The main analysis employed multiple regression using IBM SPSS Statistics version 29 for macOS. The three components of Perceived Teaching Emotional Support (PTES were entered as independent variables. The Revised Study Process Questionnaire (RSPQ), representing students' deep learning approach, served as the dependent variable. Standardized beta coefficients, significance values, and confidence intervals were reported to examine the predictive strength and direction of associations.

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Ethical statement

This study was conducted in accordance with ethical standards for research involving human participants. Prior to data collection, the research protocol was reviewed and deemed exempted from full ethical review, as it posed minimal risk and involved no vulnerable populations or sensitive personal data. Participation was entirely voluntary, and all respondents provided informed consent. Anonymity and confidentiality were maintained throughout the study, and no identifiable information was collected.

Results

The results of the regression analysis revealed that perceived teacher emotional support (PTES) was not significantly associated with students' responses to the RSPQ (deep learning outcomes), yielding a very low coefficient of determination ($R^2 = .010$) and a non-significant overall model fit [$F(3, 340) = 1.118$, $p = .342$). This suggests that, within the context of this study, teacher emotional support explained only 1% of the variance in students' deep learning responses, an effect size too small to suggest a meaningful predictive relationship.

When examined individually, positive climate, teacher sensitivity, and regard for adolescent perspective also failed to reach statistical significance. PC had a negative beta coefficient ($\beta = –.102$, $p = .312$), suggesting a slight, though non-significant, inverse association with deep learning. Conversely, TS showed a positive but weak and non-significant relationship ($\beta = .102$, $p = .268$). Lastly, RAP also showed a negative, non-significant association ($\beta = –.096$, $p = .340$). These findings indicate that none of the specific dimensions of teacher emotional support made a statistically significant contribution to predicting students' engagement in deep learning within physical education.

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Table 4. Regression results

Hypothesis	Regression weights	Beta Coefficient	R^2	*F*	*t*	*p*	Decision
H_1	PTES → RSPQ	-	.010	1.118	-	.342	Accepted
H_{1a}	PC → RSPQ	-.102	-	-	-1.012	.312	Accepted
H_{1b}	TS → RSPQ	.102	-	-	1.109	.268	Accepted
H_{1c}	RAP → RSPQ	-.096	-	-	-.956	.340	Accepted

Note: Significance value $p < .05$.
Legend: PTES- Perceived teacher emotional support, PC- Positive climate, TS- Teacher's sensitivity, RAP- Regard to adult perspective.

Discussion

This study examined the association between perceived teacher emotional support and students' engagement in deep learning within physical education courses in a selected Philippine higher education institution. Contrary to theoretical expectations and existing literature that underscores the importance of emotionally supportive classroom environments, the findings revealed no statistically significant relationship between PTES and students' deep learning responses, as measured by the RSPQ. The overall regression model accounted for only 1% of the variance, suggesting a negligible predictive power. Additionally, the three subcomponents of teacher emotional support did not individually predict deep learning outcomes, with all p-values exceeding the .05 threshold.

These results stand in contrast to prior studies that have consistently found emotional support to be a key predictor of student engagement, motivation, and learning outcomes. For instance, Kassab et al. (2024) and Cents-Boonstra et al. (2021) highlighted how emotionally responsive classroom environments can foster student cognitive engagement and persistence. In the context of physical education, recent research emphasized the importance of teacher sensitivity and emotional climate in shaping student motivation and reflective participation (Prananto et al., 2025; Su & Liu, 2025). Furthermore, Self-Determination Theory (Deci & Ryan, 1985) posits that relatedness, fulfilled through teacher emotional support, plays a crucial role in fostering intrinsic motivation and deeper cognitive investment (Yang et al., 2025). Given these theoretical and empirical foundations, the absence of a significant association in the current study invites further scrutiny.

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One possible explanation for this finding lies in the nature of deep learning itself, which may be influenced by a wider array of variables not captured within the scope of this study. While emotional support contributes to students' sense of belonging and emotional safety (Dias et al., 2024), deep learning also requires intellectual challenge, content relevance, and internalized motivation (Chowdhry & Osowska, 2017). It is likely that in the higher education PE context, instructional design (Shen & Zhao, 2022), clarity of learning goals (W. Li et al., 2025), assessment practices (Adnan et al., 2020), and the perceived academic value of PE (Simón-Chico et al., 2023) may have a stronger impact on students' willingness to engage in deep learning. Moreover, cultural factors such as power distance or student passivity may reduce students' responsiveness to emotional cues (Cortina et al., 2017; Schnitzler et al., 2021), particularly in structured or performative subjects like PE.

Another interpretation centers on the potential role of mediating or moderating variables. Emotional support may not exert a direct influence on deep learning but could influence intermediary factors such as academic self-efficacy, interest, or classroom engagement (An et al., 2022; Zhao & Qin, 2021). For instance, students who feel supported may experience improved self-confidence and reduced anxiety (Rožman et al., 2025), which in turn may facilitate deeper learning. However, without measuring these mediating constructs, the present analysis could not fully capture the complexity of the relationship. Similarly, differences in individual traits (e.g., gender, personality) (Dang et al., 2025), class format (lecture-based vs. activity-based) (Colquitt et al., 2017), or teacher pedagogical style (Xiong, 2025) may act as moderators that shape how emotional support translates into cognitive outcomes.

Despite the absence of statistically significant results, the study contributes valuable insights by challenging assumptions of linearity and highlighting the need for context-sensitive models in PE pedagogy. The findings suggest that emotional support, while important for relational and affective development, may need to be integrated with autonomy-supportive instruction, intellectually stimulating tasks, and explicit reflective opportunities to produce measurable gains in deep learning. In the context of Philippine higher education, where PE is often perceived as a peripheral subject, this reinforces the

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call for a more holistic approach that aligns emotional, cognitive, and physical dimensions of learning.

Future research should consider using mixed-methods or structural equation modeling to explore indirect pathways and include variables such as instructional clarity, perceived task value, or engagement mediators. Longitudinal studies could also reveal how the effects of emotional support accumulate or shift across time and different PE contexts. Importantly, professional development for PE teachers should emphasize not only relational competence but also instructional strategies that foster critical thinking, autonomy, and reflection.

Conclusion

This study explored the relationship between perceived instructor emotional support and deep learning among college students enrolled in physical education courses within a Philippine higher education institution. While existing literature and theoretical frameworks such as Self-Determination Theory posit a positive link between emotional support and cognitive engagement, the current findings revealed no statistically significant association between emotional support and students' deep learning responses. These results suggest that while emotional support fosters a conducive socio-emotional classroom climate, it may not directly influence deep learning outcomes in performance-based courses like physical education at the tertiary level.

Implications

The findings carry meaningful implications for physical education pedagogy in higher education. First, it highlights the need to move beyond emotionally supportive environments toward pedagogical strategies that explicitly promote critical thinking, self-reflection, and conceptual integration. Instructor emotional support remains essential, but it may serve more as a facilitator of student well-being and relational trust rather than a direct cognitive catalyst. Educators and curriculum developers are therefore encouraged to adopt a more holistic approach that combines emotional, motivational, and instructional supports to enhance the depth and quality of learning in PE.

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Limitations

Several limitations must be acknowledged. First, the cross-sectional design restricts the ability to infer causal relationships between teacher emotional support and deep learning; future longitudinal research is recommended to trace changes over time. Second, the reliance on self-reported instruments may introduce social desirability and response biases, despite assurances of anonymity and confidentiality. Third, the study was conducted in a single public higher education institution, which limits the generalizability of findings to other types of institutions, regions or cultural settings within the Philippines. Fourth, the sample was relatively homogeneous, as all respondents were enrolled in the same general education course (PATH-Fit) and fell within a similar age range, which may have reduced variability in perceptions and outcomes. Fifth, while gender identity was recorded, the study did not examine how gender-related differences may interact with perceptions of emotional support and deep learning. Finally, other relevant contextual and psychological variables such as academic self-efficacy, prior academic performance, instructional design and class format were not included, which may have influenced the observed results.

Future Research Directions

Future studies should consider incorporating mediation and moderation analyses to explore indirect pathways between emotional support and learning outcomes. Expanding the model to include variables such as motivation, instructional clarity, or learning climate may reveal more nuanced effects. Longitudinal and mixed-methods designs are also recommended to capture dynamic interactions over time and enrich quantitative results with qualitative insights. Moreover, comparisons across different PE content areas (e.g., dance, sports, fitness) and learning formats (e.g., online vs. face-to-face) may illuminate contextual boundaries and variations in how emotional support functions.

Contribution of Philippine Studies to Global Discourse

This study adds a critical voice from the Philippine higher education context to the growing global discourse on emotional support and deep learning. While much of the

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literature is situated in Western or East Asian contexts, this research offers culturally situated evidence from a collectivist society where relational dynamics and socio-emotional support are deeply embedded in educational experiences. By highlighting the limits and contextual nuances of emotional support in a non-Western PE setting, this study challenges universal assumptions and calls for localized theorizing and pedagogical adaptation. As such, it contributes to a more plural and inclusive understanding of what drives meaningful learning in physical education worldwide.

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