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The curious mind in motion: Understanding the curiosity-engagement dynamic in tertiary physical education

La mente curiosa en movimiento: comprender la dinámica curiosidad-compromiso en la educación física universitaria

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Abstract

Understanding the psychological drivers of student engagement is essential in advancing educational outcomes, particularly in Physical Education in the higher education. This study explored the interconnection between curiosity and study engagement among students enrolled in PE and related disciplines across various Philippine universities. Adopting a quantitative research design, responses were gathered from 1,273 students using validated instruments that assessed two dimensions of curiosity (stretching and embracing) and three components of study engagement (vigor, dedication, and absorption). Statistical analysis using Spearman's rho revealed a significant and positive relationship between curiosity and engagement, indicating that students who exhibit greater curiosity also demonstrate higher levels of academic engagement. Notably, both dimensions of curiosity were strongly correlated with all facets of engagement. These findings highlight the reciprocal nature of curiosity and engagement, suggesting that when learners are encouraged to explore, question, and embrace new experiences, they become more energized, committed, and immersed in their academic tasks. This underscores the potential of curiosity as a catalyst for enhancing motivation and persistence in PE learning environments. The results emphasize the need for educators to create pedagogical approaches that nurture curiosity and support meaningful engagement. Additionally, the study contributes to the broader discourse on student-centered learning by positioning curiosity not merely as a trait but as a powerful enabler of sustained academic involvement. Future investigations may benefit from exploring these relationships over time or in varying educational contexts to further illuminate the mechanisms underlying student engagement in PE.

Keywords: curiosity, physical education, purposeful learning, study engagement, physical education

Resumen

Comprender los factores psicológicos que impulsan la participación estudiantil es esencial para mejorar los resultados educativos, especialmente en Educación Física en la educación superior. Este estudio exploró la interconexión entre la curiosidad y la participación en el estudio entre estudiantes de Educación Física y disciplinas afines en varias universidades filipinas. Mediante un diseño de investigación cuantitativo, se recopilaban las respuestas de 1273 estudiantes mediante instrumentos validados que evaluaban dos dimensiones de la curiosidad (expansión y aceptación) y tres componentes de la participación en el estudio (vigor, dedicación y absorción). El análisis estadístico mediante la rho de Spearman reveló una relación significativa y positiva entre la curiosidad y la participación, lo que indica que los estudiantes que muestran mayor curiosidad también muestran mayores niveles de participación académica. Cabe destacar que ambas dimensiones de la curiosidad se correlacionaron estrechamente con todas las facetas de la participación. Estos hallazgos resaltan la naturaleza recíproca de la curiosidad y la participación, lo que sugiere que cuando se anima a los estudiantes a explorar, cuestionar y aceptar nuevas experiencias, se vuelven más energizados, comprometidos y se involucran más en sus tareas académicas. Esto subraya el potencial de la curiosidad como catalizador para mejorar la motivación y la perseverancia en entornos de aprendizaje de Educación Física. Los resultados enfatizan la necesidad de que los educadores creen enfoques pedagógicos que fomenten la curiosidad y fomenten

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una participación significativa. Además, el estudio contribuye al discurso más amplio sobre el aprendizaje centrado en el estudiante al posicionar la curiosidad no solo como un rasgo, sino como un poderoso facilitador de la participación académica sostenida. Futuras investigaciones podrían beneficiarse de la exploración de estas relaciones a lo largo del tiempo o en diversos contextos educativos para comprender mejor los mecanismos que subyacen a la participación estudiantil en la educación física.

Palabras claves: curiosidad, educación física, aprendizaje con propósito, compromiso con el estudio, educación física

Introduction

A growing body of scholarly work has underscored the meaningful relationship between students' curiosity and their academic engagement, positioning curiosity as a critical psychological trait in driving academic success (Hulme et al., 2013; Karcher et al., 2022; Oliveira & Lathrop, 2022; von Stumm et al., 2011). Within the broader scope of positive psychology in education, curiosity is increasingly recognized by educational psychologists as a valuable construct that contributes to learners' motivation, sustained interest, and deeper learning (Bjerknes et al., 2024; Wilson, 2024). This attribute has consistently been associated with purposeful learning behaviors and elevated academic performance (Scott-Barrett et al., 2023). However, despite the abundance of empirical studies exploring the link between curiosity and study engagement, most have been situated in diverse international contexts (Bergdahl et al., 2024; Mahama et al., 2023), and typically examine these constructs in isolation or as unidirectional influences. Research investigating their reciprocal or bidirectional relationship remains limited. Notably, a critical review of the Philippine literature reveals a distinct gap in empirical studies that examine the dynamic interplay between curiosity and engagement—especially within the context of higher education and Physical Education, where psychological and social dimensions are often overlooked. In response to this gap, the present study explored the mutual relationship between curiosity and study engagement among students enrolled in Physical Education, Culture and the Arts Education, and sports-related degree programs in the Philippines, offering insights into how these constructs reinforce one another in the academic development of future educators.

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Review of related scholarly literature

Curiosity

‘Curiosity’ is widely regarded as a foundational driver of human motivation and development, drawing increasing attention from psychologists and educational researchers alike (Evans et al., 2023; Shah et al., 2023; Spitzer et al., 2023). Despite its prominence, the systematic study of curiosity has faced challenges due to inconsistent definitions, overlapping terminology, and varied measurement frameworks (Jirout & Klahr, 2012; Kidd & Hayden, 2015). These inconsistencies have hindered theoretical advancement, particularly in distinguishing curiosity from related constructs like intrinsic motivation. Intrinsic motivation, defined as the internal desire to pursue novelty, growth, and learning, shares conceptual overlap with curiosity and serves as a manifestation of humans’ innate desire to explore (Løvoll et al., 2017; Ryff, 1989).

This construct is often conflated with interest, openness to experience, and novelty-seeking (Aslan et al., 2021; Tang et al., 2022). However, at its core, curiosity reflects an individual’s confidence to confront uncertainty, embrace new experiences, and pursue knowledge despite ambiguity or unpredictability (Kashdan et al., 2009). Rather than avoiding the unknown, curious individuals actively engage with it, demonstrating psychological flexibility and resilience (Anderson et al., 2019). Curiosity supports various life domains, including learning, personal growth, relationship building, and skill acquisition (Ernst & Burcak, 2019). Those who engage with unfamiliar experiences tend to gain unique insights and competencies, reinforcing curiosity as a mechanism for expanding human potential (Poli et al., 2024; Vaisarova et al., 2024). Kashdan et al. (2009) highlighted two central dimensions of curiosity: *stretching*, or the drive to seek new knowledge, and *embracing*, or the tendency to welcome uncertainty. These interconnected facets reflect curiosity’s dual function, cognitive exploration and emotional openness, making it a vital trait in academic engagement and holistic development.

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Study engagement

The concept of ‘*study engagement*’ has emerged as a critical focus in educational research due to its strong predictive value for academic success (Liu et al., 2021). Engaged students typically exhibit enthusiasm, persistence, intellectual curiosity, and a proactive attitude toward learning. Their level of involvement is often fueled by intrinsic motivation, reflecting a deep personal commitment to acquiring knowledge and achieving academic goals (Charkhabi et al., 2019).

Study engagement is recognized as a multidimensional construct that encompasses cognitive, affective, and behavioral domains (da Fonseca et al., 2023; de Toro et al., 2023). Cognitively, it is marked by goal-directed learning, problem-solving skills, and a desire for mastery (da Fonseca et al., 2023; de Toro et al., 2023). Affectively, it reflects a sense of belonging, emotional connection to school, and a positive attitude toward academic tasks (da Fonseca et al., 2023; de Toro et al., 2023). Behaviorally, it is manifested through active participation and consistent effort in academic settings (da Fonseca et al., 2023; de Toro et al., 2023).

Jaya and Ariyanto (2021) outlined three core components of study engagement: vigor, dedication, and absorption. *Vigor* reflects high levels of energy, mental resilience, and a willingness to invest effort in academic work (Cortés-Denia et al., 2022; Demirbatır, 2020; Pulido-Martos et al., 2020). Despite the pressures of academic life, students often demonstrate perseverance and a positive approach to challenges. *Dedication* involves a strong sense of involvement, purpose, and emotional investment in academic pursuits (Listau et al., 2017; Teuber et al., 2021), often characterized by meaningful goal-setting and intrinsic valuing of education (Kassab et al., 2023). *Absorption*, as noted by Dacillo et al. (2022), refers to deep immersion in learning tasks, often resulting in a loss of self-consciousness and a strong sense of competence. While these components are distinct, they are closely interrelated and collectively represent the intensity and quality of students’ academic engagement (Archambault et al., 2022; Li, 2023).

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Curiosity-Driven Engagement as a Catalyst for Meaningful Learning in Physical Education

Extensive scholarly literature has explored the relationship between curiosity, exploratory behavior, and academic engagement. Research consistently indicates that learners who display a strong inclination toward acquiring new knowledge and adapting to novel circumstances tend to demonstrate greater engagement, often resulting in improved academic performance. In this context, curiosity emerges not merely as a personality trait, but as a critical driver of sustained educational involvement.

Mahama et al. (2023) investigated how students' intrinsic characteristics, specifically motivation, curiosity, and creativity, influence academic performance in science and mathematics. Their study, which involved 568 high school students, employed multivariate analysis and found that these traits collectively accounted for 15.5% of the variance in science scores and 33.1% in mathematics performance. These results underscore the role of intellectual curiosity and intrinsic motivation in fostering academic achievement.

In a related study, Mahama, (2022) examined 652 students and found significant correlations between curiosity, creative thinking, motivation, and performance in mathematics and science. The findings reinforce the idea that these interrelated constructs enhance student engagement and achievement across academic disciplines.

Further, a meta-analysis by Schutte and Malouff (2022), synthesizing 41 randomized controlled trials involving 4,496 participants, revealed that interventions aimed at cultivating curiosity significantly increased curiosity levels. Moreover, heightened curiosity was associated with improvements in life satisfaction, workplace engagement, and academic performance (Dubey et al., 2022; Singh & Manjaly, 2022; Whitecross & Smithson, 2023).

Despite this robust evidence base, research exploring these dynamics in the context of Philippine higher education, particularly within Physical Education, remains limited. This highlights the need for localized inquiries into how curiosity-driven engagement can enhance learning outcomes in PE.

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Aims and hypotheses formulation

This investigation was undertaken to address the evident gap in empirical literature concerning the relationship between curiosity and study engagement among students in Philippine higher education, particularly within the field of Physical Education. Recognizing the potential of these constructs to foster purposeful learning and improve academic performance, this study seeks to deepen understanding of their dynamic interaction.

The specific objectives of the study are as follows:

1. To examine the bidirectional relationship between curiosity and study engagement; and
2. To determine the interrelated associations between the two dimensions of curiosity and the three components of study engagement.

This study is informed by prior recommendations from Upadyaya and Salmela-Aro (2017) and Widlund et al. (2021), emphasizing the importance of analyzing study engagement through its multidimensional framework. Guided by these scholarly insights, the current research explored how curiosity relates to the constructs of vigor, dedication, and absorption in academic settings. By doing so, the study contributed meaningful insights into how psychological traits can shape and sustain engagement in the Physical Education context, ultimately enhancing student learning outcomes and achievement. Ergo, this investigation tested the following hypotheses:

H₁ There is an interchangeable relationship exists between curiosity and study engagement.

H₂ There is a positive correlation between stretching and vigour, and these two variables can be treated interchangeably.

H₃ There is a positive correlation between stretching and dedication, and these two variables can be treated interchangeably.

H₄ There is a positive correlation between stretching and absorption, and these two variables can be treated interchangeably.

H₅ There is a positive correlation between embracing and vigour, and these two variables can be treated interchangeably.

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H₆ There is a positive correlation between embracing and dedication, and these two variables can be treated interchangeably.

H₇ There is a positive correlation between embracing and absorption, and these two variables can be treated interchangeably.

Methods

Participants and Sampling Technique

The participants of this study consisted of undergraduate students enrolled in Teacher Education programs and various sports-related degree programs across multiple higher education institutions in the Philippines. These institutions included both State Universities and Colleges (SUCs) and Local Colleges and Universities (LCUs). The respondents represented diverse academic specializations within Physical Education, Culture and Arts Education, and Exercise and Sports Science.

To ensure relevance to the study's objectives, participants were selected using *purposive sampling*. This approach involves the intentional selection of individuals based on predefined criteria deemed essential for generating meaningful and contextually rich data (Bhardwaj, 2019). By focusing on students with academic exposure to Physical Education and related disciplines, the study aimed to capture informed perspectives on the constructs of curiosity and study engagement.

Additionally, this study also employed the *convenience sampling* technique. This method involves collecting data from individuals who are readily accessible and willing to participate, thereby allowing the researchers to efficiently gather relevant information from a practical subset of the population (Frey, 2018). Data collection was carried out between February and April 2022, during which participants were selected based on their availability and relevance to the research objectives. Specific inclusion criteria were established to ensure the collection of high-quality, accurate, and relevant data from the survey respondents:

1. A student currently taking any specialization in Physical Education, Culture and Arts Education, and Exercise and Sports Science.
2. Either male or female.
3. Ages 19 years old and above.

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A total of 1,273 students pursuing teacher education and other sports courses participated in the survey. Following the process of data cleaning, it was determined that 100% of the responses received were deemed suitable for inclusion in the subsequent data analysis. Table 1 depicts the demographic attributes of the participants. The overall sample (1273) exhibits a higher proportion of female respondents in comparison to male respondents [$N_{\text{FEMALE}} = 798(62.7\%)$, $N_{\text{MALE}} = 475(37.3\%)$]. Furthermore, a majority of the participants belong to the age bracket of 19-21 years, with the subsequent highest representation observed in the age groups of 22-24 and 25 years and above [$N_{19-21 \text{ YEARS OLD}} = 1049(82.4\%)$, $N_{22-24 \text{ YEARS OLD}} = 181(14.2\%)$, and $N_{25 \text{ YEARS OLD AND ABOVE}} = 43(3.4\%)$]. Four out of six participating Philippines' higher education institutions are from the State Universities and Colleges Sector (SUC) or 66.67%, followed by two institutions from Local Colleges and Universities Sector (LCU) or 33.33%. Furthermore, the majority of participants in the study are affiliated with Local College A, with the other respondents representing various other higher education institutions [$N_{\text{LOCAL COLLEGE A}} = 270(21.2\%)$, $N_{\text{STATE UNIVERSITY A}} = 249(19.6\%)$, $N_{\text{STATE UNIVERSITY C}} = 240(18.9\%)$, $N_{\text{STATE UNIVERSITY B}} = 217(17.0\%)$, $N_{\text{STATE UNIVERSITY D}} = 157(12.3\%)$, and $N_{\text{LOCAL COLLEGE B}} = 140(11.0\%)$].

Table 1. Demographic profile of the respondents

Variables	Items	n(%)
Sex	<i>Male</i>	475(37.3%)
	<i>Female</i>	798(62.7%)
Age group	<i>19-21 years old</i>	1049(82.4%)
	<i>22-24 years old</i>	181(14.2%)
	<i>25 years old and above</i>	43(3.4%)
Institution	<i>State University A</i>	249(19.6%)
	<i>State University B</i>	217(17.0%)
	<i>State University C</i>	240(18.9%)
	<i>State University D</i>	157(12.3%)
	<i>Local College A</i>	270(21.2%)
	<i>Local College B</i>	140(11.0%)

Instrument

There are three distinct questionnaires that were used for the study. The first part of the questionnaire obtained the respondents' demographic profiles such as gender, age group, and school. Second, the Curiosity and Exploration Inventory-II by (Kashdan et al.,

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2009) was also used. It is a 10-item self-report instrument which measures individual differences in the recognition, pursuit, and integration of novel and challenging experiences and information. The said questionnaire is subdivided into two constructs: *Stretching* (e.g., “I can actively seek as much information as I can in new situations.”) and *Embracing* (e.g., “I am the type of person who really enjoys the uncertainty of everyday life.”). Responses are encoded in a 5-point Likert Scale from 1- “very slightly or not at all” to 5- “extremely.” Lastly, the Utrecht Work Engagement Scale for Students (UWES-9S) by Carmona-Halty et al. (2019) was utilized. This particular scale is a nine-item self-report instrument that measures the overall engagement of students. Also, this particular instrument is subdivided into three unique features: *Vigor* (e.g., “I feel energetic and capable when I’m studying or going to class.”), *Dedication* (e.g., “I am proud of my studies.”), and *Absorption* (e.g., “I feel happy when I am studying immensely.”). The responses are documented in a 6-point Likert Scale from 0- “never” to 6- “always.”

Data analysis

Prior to the main analysis, tests of normality and reliability were conducted for all variables under study. The results of the normality assessment indicated that the majority of the variables did not fall within the acceptable skewness and kurtosis thresholds of -2 to +2, suggesting that the data were not normally distributed. Specifically, the following descriptive statistics and distribution values were obtained: Curiosity (M = 4.14, SD = 0.75; Skew = -1.814, Kurtosis = 3.959), Study Engagement (M = 4.10, SD = 0.75; Skew = -1.624, Kurtosis = -1.561), Stretching (M = 4.20, SD = 0.80; Skew = -1.890, Kurtosis = 3.913), Embracing (M = 4.07, SD = 0.75; Skew = -1.561, Kurtosis = 3.000), Vigor (M = 4.07, SD = 0.81; Skew = -1.315, Kurtosis = 2.006), Dedication (M = 4.32, SD = 0.80; Skew = -1.970, Kurtosis = 4.082), and Absorption (M = 3.90, SD = 0.77; Skew = -0.986, Kurtosis = 1.234).

In terms of internal consistency, Cronbach’s alpha values indicated high to excellent reliability across all scales: CUR ($\alpha = .95$), ENG ($\alpha = .95$), STR ($\alpha = .93$), EMB ($\alpha = .89$), VIG ($\alpha = .87$), DED ($\alpha = .89$), and ABS ($\alpha = .84$). Moreover, bivariate correlation analysis revealed statistically significant intercorrelations among all scales and subscales ($p < .05$), supporting their theoretical and empirical relatedness.

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Table 2. Descriptive Statistics, Normality Estimates, and Bivariate Correlation

Variables	1	2	3	4	5
CUR	(.95)				
ENG	.99**	(.95)			
STR	(.93)				
EMB	.91**	(.89)			
VIG	.91**	.97**	(.87)		
DED	.94**	.91**	.88**	(.89)	
ABS	.90**	.89**	.83**	.77**	(.84)
Mean ± SD	4.14 ± .75 4.20 ± .80	4.10 ± .75 4.07 ± .75	4.07 ± .81	4.32 ± .80	3.90 ± .77
Skewness	-1.814 -1.890	-1.624 -1.561	-1.315	-1.970	-.986
Kurtosis	3.959 3.913	3.271 3.000	2.006	4.082	1.234

Note: CUR-Curiosity (STR-Strength, EMB-Embrace); ENG-Study Engagement (VIG-Vigor, DED-Dedication, ABS-Absorption).

* Statistically significant at $p < .05$.

** Statistically significant at $p < .01$.

Lastly, the *Spearman Rho's* (r_s) was used to determine the interchangeable relationship between the variables being studied. This non-parametric method quantifies the correlation between two variables by employing rank-based calculations (Schober & Schwarte, 2018). In the present analysis, the initial phase will involve the computation of a composite score derived from both the curiosity and study engagement scales. Subsequently, the two constructs pertaining to curiosity will be examined in relation to the three components that constitute study engagement.

Ethical considerations

This study adhered to the ethical principles outlined in the Declaration of Helsinki (1975). Respondents provided informed consent by indicating their agreement on the Google Forms survey before participation. They were fully informed about the study's objectives, the research instruments used, and the specific variables under investigation. The survey also included details on minor risks that participants might encounter. Participation was entirely voluntary, and respondents retained the right to withdraw at any time or request a debriefing. As this study utilized a non-experimental survey design, no interventions or manipulations were involved.

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Results

Table 3 presents the results of the correlation analysis conducted to examine the relationship between overall curiosity and study engagement, as well as the associations between their respective sub-dimensions. The analysis revealed a strong and statistically significant positive correlation between overall curiosity and study engagement [$r(2728) = .996, p < .05$], indicating that an increase in students' curiosity is closely associated with a heightened level of engagement in their academic tasks. Conversely, lower levels of curiosity may correspond to diminished engagement.

Further analysis demonstrated strong positive relationships between the *stretching* dimension of curiosity and the three components of study engagement: vigor [$r(2728) = .809, p < .05$], dedication [$r(2728) = .859, p < .05$], and absorption [$r(2728) = .875, p < .05$]. These results suggest that as students actively seek intellectual challenges and new experiences, they tend to display greater enthusiasm, commitment, and deep involvement in their academic pursuits.

Similarly, the *embracing* dimension of curiosity was also strongly and positively correlated with vigor [$r(2728) = .951, p < .05$], dedication [$r(2728) = .816, p < .05$], and absorption [$r(2728) = .817, p < .05$]. These findings reinforce the notion that students who are more accepting of ambiguity and uncertainty also tend to be more engaged, energized, and immersed in their learning experiences.

Table 3. Curiosity vis-à-vis Study Engagement

		Study Engagement			
Spearman Rho's	Curiosity	Correlation Coefficient	.996**		
		Sig. (2-tailed)	.000		
	Stretching	Correlation Coefficient	.809**	.859**	.875**
		Sig. (2-tailed)	.000	.000	.000
	Embracing	Correlation Coefficient	.951**	.816**	.817**
		Sig. (2-tailed)	.000	.000	.000

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

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Discussion

Upon conducting data analysis, the results revealed a strong, positive, and statistically significant association between curiosity and study engagement, confirming a reciprocal relationship. This suggests that as students' curiosity increases, their level of engagement in academic activities also rises, and vice versa. This bidirectional influence implies that fostering curiosity in students can lead to higher levels of academic commitment, while increased engagement in learning experiences may, in turn, stimulate greater curiosity. These findings align with previous research highlighting the interconnected nature of curiosity and engagement across various educational contexts (Mahama, 2022; Mahama et al., 2023; Schutte & Malouff, 2022).

Further analysis demonstrated significant positive relationships between the two facets of curiosity and the three dimensions of study engagement. Specifically, stretching involves actively seeking new knowledge and experiences, was found to be positively correlated with students' enthusiasm, persistence, and immersion in their academic work (Fry et al., 2023). Similarly, embracing reflects an openness to uncertainty and adaptability to new challenges, was strongly associated with higher levels of academic resilience and deep learning (Devereux, 2022). These findings indicate that students who actively engage in exploratory learning and who are comfortable with ambiguity tend to display higher levels of motivation and persistence in their studies.

Empirical studies have consistently emphasized the role of curiosity in enhancing academic engagement and achievement (Amerstorfer & Freiin von Münster-Kistner, 2021; Arnone et al., 2011; Hulme et al., 2013). Students with a high degree of curiosity demonstrate sustained interest in learning, a greater capacity for problem-solving, and increased persistence in educational tasks. This aligns with the broader literature suggesting that curiosity-driven learning environments foster deeper cognitive engagement and higher academic performance (Dubey et al., 2022; Singh & Manjaly, 2022; Whitecross & Smithson, 2023).

Recent findings by Lobo (2024) further support these conclusions. Lobo (2024) revealed a significant positive correlation between overall curiosity and study engagement. Additionally, the study identified strong relationships between the constructs of curiosity and all three components of study engagement (vigor, dedication, and

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absorption). This reinforces the argument that fostering students' natural curiosity through well-designed learning experiences can enhance their engagement and academic performance in Physical Education.

Building upon the conceptual framework of Upadyaya and Salmela-Aro (2017) and Widlund et al. (2021), this study confirms that study engagement is a multidimensional construct applicable across different educational levels. While engagement has been extensively studied in primary and secondary education, this research highlights its distinct manifestations in higher education, particularly among young adult learners in Physical Education programs. College students, unlike younger learners, are more likely to differentiate between the cognitive, emotional, and behavioral dimensions of engagement, making curiosity a key factor in sustained academic motivation and lifelong learning in PE.

Given these findings, it is recommended that educators and curriculum designers incorporate strategies that actively stimulate curiosity in PE instruction, such as problem-based learning, experiential activities, and inquiry-driven teaching approaches. Future research should explore the longitudinal effects of curiosity on student engagement and academic performance across diverse educational settings and demographic groups. Additionally, cross-cultural studies could further validate the universality of the curiosity-engagement relationship in Physical Education and other disciplines.

Conclusion

Finally, students who possess a curious nature often allocate a substantial portion of their time to actively participate in the process of reading and acquiring knowledge in the field of Physical Education. This behaviour stems from their acknowledgment of a discrepancy between their current level of knowledge and the knowledge they aspire to possess, rather than being just motivated by the desire to achieve high grades. Undoubtedly, when students experience a profound sense of curiosity, they often become oblivious to their immediate goals, as their attention becomes wholly engrossed in the quest for information. This study suggests that fostering curiosity in students through instructional activities, in a manner that is evaluated positively, can contribute to the cultivation of a lifelong tolerance for uncertainties. As a result, this can potentially yield

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positive effects on the sustained development of students' inquisitiveness in knowing more in the field of Physical Education will may also help them towards their academic journey.

On the other hand, the findings suggest an overwhelming need for administrators to offer adequate training to Physical Educations instructors regarding the facilitation of the growth of curiosity within the context of schooling. The recommendation is based on the fact that the results pertain to career development. Furthermore, it is vital for both policymakers and practitioners to embark on interventions aimed at strengthening the competence of Physical Education instructors. This is because this can greatly contribute to an instructor's capacity to successfully resolve complex school-related issues all throughout their professional careers.

It is imperative to recognize the substantial constraints inherent in this research. The study's participants consist only of students enrolled in various higher education institutions in the Philippines. The generalizability of the study's findings to the wider student population in other Higher Education Institutions (HEIs) in the Philippines, as well as globally, is limited. In order to determine the validity of the findings in this study, it may be of interest to future researchers to conduct a comparable inquiry utilizing data collected from various private and public institutions of higher education. Moreover, this study suggests the incorporation and analysis of supplementary factors, such as sociodemographic features, that have not been considered in the current investigation. In essence, this primary investigation has provided a significant contribution to the current corpus of knowledge by presenting the interchangeable relationship between curiosity and study engagement. The present inquiry has demonstrated a noteworthy influence on the level of curiosity and study engagement, and vice-versa, so filling a need in the existing body of literature where insufficient investigation has been conducted on this specific topic.

References

- Amerstorfer, C. M., & Freiin von Münster-Kistner, C. (2021). Student perceptions of academic engagement and student-teacher relationships in problem-based learning. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.713057>

Original article. The curious mind in motion: Understanding the curiosity-engagement dynamic in tertiary physical education. Vol. 12, n.º 1; p. 1-21, enero 2026. <https://doi.org/10.17979/sportis.2026.12.1.11620>

Anderson, E. C., Carleton, R. N., Diefenbach, M., & Han, P. K. J. (2019). The Relationship Between Uncertainty and Affect. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.02504>

Archambault, I., Pascal, S., Olivier, E., Dupéré, V., Janosz, M., Parent, S., & Pagani, L. S. (2022). Examining the contribution of student anxiety and opposition-defiance to the internal dynamics of affective, Cognitive and Behavioural Engagement in Math. *Learning and Instruction*, 79, 101593. <https://doi.org/10.1016/j.learninstruc.2022.101593>

Arnone, M. P., Small, R. V., Chauncey, S. A., & McKenna, H. P. (2011). Curiosity, interest and engagement in technology-pervasive learning environments: a new research agenda. *Educational Technology Research and Development*, 59(2), 181–198. <https://doi.org/10.1007/s11423-011-9190-9>

Aslan, S., Fastrich, G., Donnellan, E., Jones, D. J. W., & Murayama, K. (2021). People's naïve belief about curiosity and interest: A qualitative study. *PLOS ONE*, 16(9), e0256632. <https://doi.org/10.1371/journal.pone.0256632>

Bergdahl, N., Bond, M., Sjöberg, J., Dougherty, M., & Oxley, E. (2024). Unpacking student engagement in higher education learning analytics: a systematic review. *International Journal of Educational Technology in Higher Education*, 21(1), 63. <https://doi.org/10.1186/s41239-024-00493-y>

Bhardwaj, P. (2019). Types of sampling in research. *Journal of the Practice of Cardiovascular Sciences*, 5(3), 157. https://doi.org/10.4103/jpcs.jpcs_62_19

Bjerknes, A.-L., Wilhelmsen, T., & Foyn-Bruun, E. (2024). A Systematic Review of Curiosity and Wonder in Natural Science and Early Childhood Education Research. *Journal of Research in Childhood Education*, 38(1), 50–65. <https://doi.org/10.1080/02568543.2023.2192249>

Carmona-Halty, M. A., Schaufeli, W. B., & Salanova, M. (2019). The Utrecht Work Engagement Scale for Students (UWES–9S): Factorial Validity, Reliability, and Measurement Invariance in a Chilean Sample of Undergraduate University Students. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.01017>

Charkhabi, M., Khalezov, E., Kotova, T., S Baker, J., Dutheil, F., & Arsalidou, M. (2019). School engagement of children in early grades: Psychometric, and gender

Original article. The curious mind in motion: Understanding the curiosity-engagement dynamic in tertiary physical education. Vol. 12, n. ° 1; p. 1-21, enero 2026. <https://doi.org/10.17979/sportis.2026.12.1.11620>

comparisons. *PLOS ONE*, 14(11), e0225542.

<https://doi.org/10.1371/journal.pone.0225542>

Cortés-Denia, D., Isoard-Gautheur, S., Lopez-Zafra, E., & Pulido-Martos, M. (2022).

Effects of vigor at work and weekly physical activity on job stress and mental health. *Scientific Reports*, 12(1), 16025. <https://doi.org/10.1038/s41598-022-19966-z>

da Fonseca, I. B., Santos, G., & Santos, M. A. (2023). School engagement, school climate and youth externalizing behaviors: direct and indirect effects of parenting practices.

Current Psychology. <https://doi.org/10.1007/s12144-023-04567-4>

Dacillo, M. J. F., Dizon, J. K. M., Ong, E. J. T., Pingol, A. M. L., & Cleofas, J. V. (2022).

Videoconferencing fatigue and online student engagement among Filipino senior high school students: A mixed methods study. *Frontiers in Education*, 7. <https://doi.org/10.3389/feduc.2022.973049>

de Toro, X., Saracostti, M., Lara, L., Miranda, H., & Miranda-Zapata, E. (2023). School engagement profiles in Chilean secondary students. *Frontiers in Psychology*, 13.

<https://doi.org/10.3389/fpsyg.2022.1088089>

Demirbatır, R. E. (2020). Comparison of burnout, vigor and education satisfaction of music and art majors in department of fine arts education. *International Journal of Evaluation and Research in Education*, 9(3), 478.

<https://doi.org/10.11591/ijere.v9i3.20548>

Dubey, R., Griffiths, T. L., & Lombrozo, T. (2022). If it's important, then I'm curious: Increasing perceived usefulness stimulates curiosity. *Cognition*, 226, 105193.

<https://doi.org/10.1016/j.cognition.2022.105193>

Ernst, J., & Burcak, F. (2019). Young Children's Contributions to Sustainability: The Influence of Nature Play on Curiosity, Executive Function Skills, Creative Thinking, and Resilience. *Sustainability*, 11(15), 4212.

<https://doi.org/10.3390/su11154212>

Evans, N. S., Burke, R., Vitiello, V., Zumbunn, S., & Jirout, J. J. (2023). Curiosity in classrooms: An examination of curiosity promotion and suppression in preschool math and science classrooms. *Thinking Skills and Creativity*, 49, 101333.

<https://doi.org/10.1016/j.tsc.2023.101333>

Original article. The curious mind in motion: Understanding the curiosity-engagement dynamic in tertiary physical education. Vol. 12, n. ° 1; p. 1-21, enero 2026. <https://doi.org/10.17979/sportis.2026.12.1.11620>

- Frey, B. B. (2018). Convenience Sampling. In *The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*. SAGE Publications, Inc. <https://doi.org/10.4135/9781506326139.n155>
- Hulme, E., Green, D. T., & Ladd, K. S. (2013). Fostering Student Engagement by Cultivating Curiosity. *New Directions for Student Services*, 2013(143), 53–64. <https://doi.org/10.1002/ss.20060>
- Jaya, L. H. S., & Ariyanto, E. (2021). The Effect of Vigor, Dedication and Absorption on the Employee Performance of PT Garuda Indonesia Cargo. *European Journal of Business and Management Research*, 6(4), 311–316. <https://doi.org/10.24018/ejbmr.2021.6.4.1006>
- Jirout, J., & Klahr, D. (2012). Children’s scientific curiosity: In search of an operational definition of an elusive concept. *Developmental Review*, 32(2), 125–160. <https://doi.org/10.1016/j.dr.2012.04.002>
- Karcher, E. L., Koltes, D., Wenner, B., & Wells, J. (2022). Sparking curiosity and engagement through online curriculum. *Poultry Science*, 101(2), 101577. <https://doi.org/10.1016/j.psj.2021.101577>
- Kashdan, T. B., Gallagher, M. W., Silvia, P. J., Winterstein, B. P., Breen, W. E., Terhar, D., & Steger, M. F. (2009). The curiosity and exploration inventory-II: Development, factor structure, and psychometrics. *Journal of Research in Personality*, 43(6), 987–998. <https://doi.org/10.1016/j.jrp.2009.04.011>
- Kassab, S. E., Al-Eraky, M., El-Sayed, W., Hamdy, H., & Schmidt, H. (2023). Measurement of student engagement in health professions education: a review of literature. *BMC Medical Education*, 23(1), 354. <https://doi.org/10.1186/s12909-023-04344-8>
- Kidd, C., & Hayden, B. Y. (2015). The Psychology and Neuroscience of Curiosity. *Neuron*, 88(3), 449–460. <https://doi.org/10.1016/j.neuron.2015.09.010>
- Li, H. (2023). Perceived teacher-student relationship and growth mindset as predictors of student engagement in foreign student engagement in foreign language learning: the mediating role of foreign language enjoyment. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1177223>

Original article. The curious mind in motion: Understanding the curiosity-engagement dynamic in tertiary physical education. Vol. 12, n. ° 1; p. 1-21, enero 2026. <https://doi.org/10.17979/sportis.2026.12.1.11620>

- Listau, K., Christensen, M., & Innstrand, S. T. (2017). Work Engagement: A Double-Edged Sword? A Study of the Relationship between Work Engagement and the Work-Home Interaction Using the ARK Research Platform. *Scandinavian Journal of Work and Organizational Psychology*, 2(1), 1–13. <https://doi.org/10.16993/sjwop.20>
- Liu, F., Gai, X., Xu, L., Wu, X., & Wang, H. (2021). School Engagement and Context: A Multilevel Analysis of Adolescents in 31 Provincial-Level Regions in China. *Frontiers in Psychology*, 12(October). <https://doi.org/10.3389/fpsyg.2021.724819>
- Lobo, J. (2024). The role of Curiosity to Study Engagement of Students in Gymnastics: Extrapolating Reciprocity. *Science of Gymnastics Journal*, 16(1), 77–91. <https://doi.org/10.52165/sjg.16.1.77-91>
- Løvoll, H. S., Røysamb, E., & Vittersø, J. (2017). Experiences matter: Positive emotions facilitate intrinsic motivation. *Cogent Psychology*, 4(1), 1340083. <https://doi.org/10.1080/23311908.2017.1340083>
- Mahama, I. (2022). Combined effect of curiosity, creativity, and motivation on academic performance of senior high school students. *Journal of Gifted Education and Creativity*, 9(3), 261–272.
- Mahama, I., Yusuf Dramanu, B., & Asamoah-Gyimah, K. (2023). Predictive Abilities of Curiosity, Creativity, and Motivation on Academic Performance of High School Students in Ghana. *Education Research International*, 2023, 1–10. <https://doi.org/10.1155/2023/4626945>
- Oliveira, A. W., & Lathrop, R. (2022). Toward a Curiosity Mindset: Reframing the Problem of Student Disengagement from Classroom Instruction. *The European Educational Researcher*, 313–317. <https://doi.org/10.31757/euer.535>
- Poli, F., O'Reilly, J. X., Mars, R. B., & Hunnius, S. (2024). Curiosity and the dynamics of optimal exploration. *Trends in Cognitive Sciences*, 28(5), 441–453. <https://doi.org/10.1016/j.tics.2024.02.001>
- Pulido-Martos, M., Cortés-Denia, D., de la Rosa-Blanca, J. J., & Lopez-Zafra, E. (2020). The Shirom-Melamed Vigor Measure for Students: Factorial Analysis and Construct Validity in Spanish Undergraduate University Students. *International*

Original article. The curious mind in motion: Understanding the curiosity-engagement dynamic in tertiary physical education. Vol. 12, n. ° 1; p. 1-21, enero 2026. <https://doi.org/10.17979/sportis.2026.12.1.11620>

Journal of Environmental Research and Public Health, 17(24), 9590.
<https://doi.org/10.3390/ijerph17249590>

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069–1081. <https://doi.org/10.1037/0022-3514.57.6.1069>

Schober, P., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia and Analgesia*, 126(5), 1763–1768.
<https://doi.org/10.1213/ANE.0000000000002864>

Schutte, N. S., & Malouff, J. M. (2022). A meta-analytic investigation of the impact of curiosity-enhancing interventions. *Current Psychology*.
<https://doi.org/10.1007/s12144-022-03107-w>

Scott-Barrett, J., Johnston, S.-K., Denton-Calabrese, T., McGrane, J. A., & Hopfenbeck, T. N. (2023). Nurturing curiosity and creativity in primary school classrooms. *Teaching and Teacher Education*, 135, 104356.
<https://doi.org/10.1016/j.tate.2023.104356>

Shah, P. E., Hirsh-Pasek, K., Spinelli, M., Ozor, J., Weeks, H. M., McCaffery, H., & Kaciroti, N. (2023). Ecological contexts associated with early childhood curiosity: Neighborhood safety, home and parenting quality, and socioeconomic status. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.986221>

Singh, A., & Manjaly, J. A. (2022). Using Curiosity to Improve Learning Outcomes in Schools. *SAGE Open*, 12(1). <https://doi.org/10.1177/21582440211069392>

Spitzer, M. W. H., Janz, J., Nie, M., & Kiesel, A. (2023). On the interplay of curiosity, confidence, and importance in knowing information. *Psychological Research*.
<https://doi.org/10.1007/s00426-023-01841-9>

Tang, X., Renninger, K. A., Hidi, S. E., Murayama, K., Lavonen, J., & Salmela-Aro, K. (2022). The differences and similarities between curiosity and interest: Meta-analysis and network analyses. *Learning and Instruction*, 80, 101628.
<https://doi.org/10.1016/j.learninstruc.2022.101628>

Teuber, Z., Nussbeck, F. W., & Wild, E. (2021). The Bright Side of Grit in Burnout-Prevention: Exploring Grit in the Context of Demands-Resources Model among

Original article. The curious mind in motion: Understanding the curiosity-engagement dynamic in tertiary physical education. Vol. 12, n. ° 1; p. 1-21, enero 2026. <https://doi.org/10.17979/sportis.2026.12.1.11620>

Chinese High School Students. *Child Psychiatry & Human Development*, 52(3), 464–476. <https://doi.org/10.1007/s10578-020-01031-3>

Upadyaya, K., & Salmela-Aro, K. (2017). Developmental dynamics between young adults' life satisfaction and engagement with studies and work. *Longitudinal and Life Course Studies*, 8(1), 20–34. <https://doi.org/10.14301/llcs.v8i1.398>

Vaisarova, J., Saguid, L., Kupfer, A. S., Goldbaum, H. S., & Lucca, K. (2024). Exploring the creativity-curiosity link in early childhood. *Journal of Creativity*, 34(3), 100090. <https://doi.org/10.1016/j.yjoc.2024.100090>

von Stumm, S., Hell, B., & Chamorro-Premuzic, T. (2011). The Hungry Mind. *Perspectives on Psychological Science*, 6(6), 574–588. <https://doi.org/10.1177/1745691611421204>

Whitecross, W. M., & Smithson, M. (2023). Curiously different: Interest-curiosity and deprivation-curiosity may have distinct benefits and drawbacks. *Personality and Individual Differences*, 213, 112310. <https://doi.org/10.1016/j.paid.2023.112310>

Widlund, A., Tuominen, H., & Korhonen, J. (2021). Development of school engagement and burnout across lower and upper secondary education: Trajectory profiles and educational outcomes. *Contemporary Educational Psychology*, 66(July), 101997. <https://doi.org/10.1016/j.cedpsych.2021.101997>

Wilson, T. D. (2024). Curiosity and information-seeking behaviour: a review of psychological research and a comparison with the information science literature. *Journal of Documentation*, 80(7), 43–59. <https://doi.org/10.1108/JD-09-2023-0173>