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iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577



The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Assessing the Influence of Physical Education Teaching Styles in Fostering Student Engagement

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Received: 10 May 2024

Revised: 15 June 2024

Accepted: 18 June 2024

Available Online: 22 June 2024

Volume III (2024), Issue 2, P-ISSN – 2984-7567; E-ISSN - 2945-3577

Abstract

Aim: Physical Education instructors play a crucial role in shaping the college experience. Their influence extends beyond physical fitness, impacting students' overall well-being, academic performance, and social development. By examining the effects of various instructional styles on student engagement, this study aimed to empower educators with insights to optimize their teaching methods.

Methodology: A descriptive-correlational design was utilized to examine the relationship between teaching styles (lecture, coach, activity, group, and hybrid) and student engagement dimensions (affective, behavioral, and cognitive) among students officially enrolled in PE classes in an institution in Cagayan de Oro City during the academic year 2023-2024. Data were collected through the use of validated and pilot-tested questionnaires. The collected data were then analyzed using a variety of statistical techniques, including descriptive statistics, inferential statistics, and multiple regression.

Results: Results indicated that all examined teaching styles were highly rated but exhibited variable influence on different dimensions of student engagement. The regression analysis revealed significant associations between specific teaching styles and engagement dimensions: lecture, group, and hybrid styles significantly affected affective engagement: the lecture and group approaches mainly affected the affective engagement and the behavioral engagement was greatly influenced by the group and lecture approaches; the only and highly effective approach in the cognitive engagement only that was found to be the group style.

Conclusion: This study highlights the power of teaching style in shaping students' engagement. It underscores the multifaceted nature of teaching style effectiveness. While all styles have value, their influence on specific engagement dimensions varies, suggesting a need for tailored approaches to maximize student learning outcomes specifically in PE classes.

Keywords: Affective engagement, behavioral engagement, cognitive engagement, Physical Education teaching styles, student engagement

INTRODUCTION

Physical education (PE) is an indispensable constituent of holistic development for college students, which includes both their general well-being and physical health (Moya et al., 2021). However, the advent of the COVID-19 pandemic has ushered in a "new normal," necessitating a major shift in instructional methods within PE classes. These understandings deduce that the efficacy of varied pedagogical approaches, perceptible within this evolving landscape, is very important. This research accordingly emphasizes the positive relationship between students' physical health, activity level, and academic achievement, stressing the need to delve into the link between instructional approaches and student outcomes within physical education (Bertils et al., 2019).

The last couple of years have seen the physical education landscape change toward more inclusive, student-centered approaches than traditional methods (Murtagh et al., 2023). As the students get placed into the university, the impact of different teaching philosophies on their engagement now becomes one of the major focus points (Bation, et al., 2024; Cabiling-Ramos, et al., 2024; Carvajal & Sanchez, 2023; Salendab & Sanchez, 2023; Salendab, Ocariza-Salendab & Sanchez, 2023; Sanchez, 2020; Sanchez, 2023a). The shift in the methods of instruction therefore emanates from the impact they have on the well-being of the students, skill development, and their being



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able to actively participate (Dizon & Sanchez, 2020; Muñoz & Sanchez, 2023; Paraiso, et al., 2024; Sanchez, 2023b; Sanchez, et al., 2024a; Wang et al., 2023). However, due to online and hybrid learning in the new normal, innovative teaching philosophies are being adopted to overcome the challenges (Amihan & Sanchez, 2023; Amihan, Sanchez & Carvajal, 2023; Bation & Nambatac, 2024; Carvajal & Sanchez, 2024; Salendab, et al., 2024a; Sanchez, 2022; Sanchez & Sarmiento, 2020; Sanchez, Sanchez & Sanchez, 2023; Shen & Shao, 2022).

One such method gaining popularity in this "new normal" is the flipped classroom approach, wherein students use pre-recorded instructional materials to explore concepts before more personalized instruction during in-person sessions (Hinojo et al., 2019). The gamification aspect is also being enriched within physical education by incorporating aspects such as competitiveness, challenges, and rewards to increase students' engagement. This not only enhances students' engagement but also helps in developing critical skills such as decision-making, problem-solving, and collaboration (Osterlie et al., 2022).

Moreover, the use of technologies in physical education is also becoming progressively common across the school environment; virtual reality (VR) and augmented reality (AR) implementations are providing students with immersive and dynamic learning experiences within their students (Al-Ansi et al., 2023). Such tools permit students to practice skills, practice by exploring new environments, and receive feedback in real-time, which are evident improvements in learning performance. Teachers find bringing mindfulness and relaxation techniques into lectures a great way to cater to the heightened stress and anxiety levels experienced by students. These strategies are both supporting the students' overall well-being and provide them with tools for better emotional regulation. In addition, within the arena of pedagogical approaches used in physical education, a comprehensive analysis by the Committee on Physical Activity and Physical Education in the School Environment; Food and Nutrition Board; Institute of Medicine do a deep dive into the pedagogical approaches that physical education teachers use to improve the engagement levels and learning by students in varied educational setups (Arufe-Giráldez et al., 2023).

Indeed, the effects of physical education teaching methods go beyond the classroom and influence college students in relation to their wider lives. Research establishes that more regular physical exercise and quality physical education contribute significantly toward leading healthy lifestyles and achieving better academic results (Cox, 2022).

Research highlights the significant impact of teaching styles on student engagement across various educational settings (Carvajal, et al., 2024a; Carvajal, Sanchez & Amihan, 2023; Salendab, et al., 2024b; Sanchez, et al., 2024b; Sanchez, et al., 2022). Williams et al. (2022) emphasized the role of active learning, digital technologies, and collaborative environments in student engagement among higher education students, while Inayat and Ali (2020) found that a balanced approach by English teachers in secondary education significantly enhances engagement. Jiang et al. (2019) revealed that structured and autonomy-supportive styles in science classes boost engagement. However, there are gaps in research, particularly in comparative analyses across educational levels, discipline-specific impacts, longitudinal effects, the integration of digital tools, cultural contexts, and teacher training programs. Notably, the impact of Physical Education (PE) teachers' styles on student engagement, especially in affective, behavioral, and cognitive aspects, remains underexplored, necessitating further research to deepen our understanding and improve educational outcomes.

Thus, this investigation explored the influence of different teaching pedagogies on college students' engagement levels in physical education. The rationale behind this investigation is anchored in a recognition that student involvement plays a critical role in overall academic success and learning outcomes. The relevance of this study lies in its ability to help form pedagogical strategies by determining which teaching approaches impact students' engagement within the constantly changing landscape of physical education.

Theoretical and Conceptual Framework

This study assumed that different physical education teaching styles have varying levels of effectiveness in fostering student engagement. This assumption is supported by the Self-Determination Theory (SDT) developed by Sun and Chen (2010), which serves as a comprehensive theoretical framework for understanding human motivation and behavior.

According to this theory, students' engagement in the Physical Education (PE) environment can be impacted by the actions of their teachers. Students' psychological needs for competence, relatedness, and autonomy may have an impact on their level of engagement. Giving students options and chances to express themselves are examples of autonomy-supportive teaching practices that can increase their autonomy and intrinsic motivation and raise engagement levels (González-Peño et al., 2021).

Physical education teachers adopting an autonomy-supportive teaching style can positively impact student engagement. Autonomy support involves acknowledging students' perspectives, providing choices, and encouraging



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independent decision-making (Leisterer & Paschold, 2022) When students perceive their teachers as supportive of their autonomy, they are more likely to be intrinsically motivated, leading to increased engagement in physical activities during PE classes (Carriedo et al., 2023)

Moreover, fostering a sense of relatedness in the PE setting positively influences student engagement. SDT emphasizes the importance of social connections for motivation and well-being. Teachers who create a supportive and inclusive learning environment, promote teamwork, and facilitate positive social interactions contribute to students' sense of relatedness, thereby enhancing their engagement in PE

In summary, Self-Determination Theory offers a valuable lens for understanding the impact of physical education teachers' teaching styles on students' engagement. Autonomy-supportive and competence-supportive teaching practices align with the fundamental psychological needs outlined by SDT, fostering intrinsic motivation and positive engagement (Fin et. al, 2019). Conversely, controlling teaching styles may hinder student engagement by undermining autonomy. By considering the principles of SDT, physical education teachers can tailor their instructional approaches to create an environment that promotes autonomy, competence, and relatedness, ultimately enhancing students' engagement in physical activities (Fin et. al, 2019).

In this study, various aspects related to the teaching styles of Physical Education teachers and their impact on college student's engagement are explored. Gill (2020) proposed five teaching styles: lecture style, coach-style, activity style, group style, and hybrid style. The lecture or authority style involves the instructor mainly using spoken presentations to impart knowledge. Snoke (2023) posits that the authority model is centered on the teacher and often involves long lectures or one-way presentations. It is expected of students to take notes or learn the material.

A coaching approach or demonstrator style prioritizes one-on-one counseling and assistance. Burton (2022) mentions that similar to a lecturer, a demonstrator incorporates multimedia presentations, activities, and demonstrations into their lessons. An activity or facilitator style encourages active learning via practical application. Learners are directly engaged through exercises, practical tasks, and activities (Gonzales, 2022) while the delegator or group style promotes collaborative learning where students collaborate, share ideas, and gain knowledge from one another (Gill, 2020). A hybrid or blended approach blends aspects of different styles. A combination of lectures, group projects, coaching sessions, and internet resources could be used (Alsalmi et al., 2019).

Furthermore, for the Physical Education Students' Level of Engagement, three dimensions as proposed by Cabrejas and Mendoza (2023) are studied namely affective, behavioral, and cognitive engagement. Emotional responses connected to task investment are implied by affective/emotional engagement. Affective engagement increases with a student's level of interest, enjoyment, positive attitude, positive values held, curiosity, and sense of belonging (Schaber, 2020). According to Delfino (2019), behavioral engagement pertains to students' involvement and participation in extracurricular and school activities, as well as their positive attitudes during problem-solving while Cognitive engagement encompasses the following: investing cognitive energy in learning, metacognition, and self-regulated learning; exerting effort on tasks with purpose and strategy utilization (Hanaysha et al., 2023).

In a nutshell, this discussion highlighted the multifaceted nature of student engagement, encompassing emotional, behavioral, and cognitive dimensions. Emotional engagement is intricately linked to task investment and is influenced by a spectrum of factors, including interest, enjoyment, attitude, values, curiosity, and a sense of belonging. Behavioral engagement is characterized by visible participation in class and extracurricular activities, reflecting positive attitudes and active involvement in problem-solving while cognitive engagement involves the cognitive energy invested in learning, metacognition, and self-regulated learning, emphasizing purposeful effort and strategic utilization.

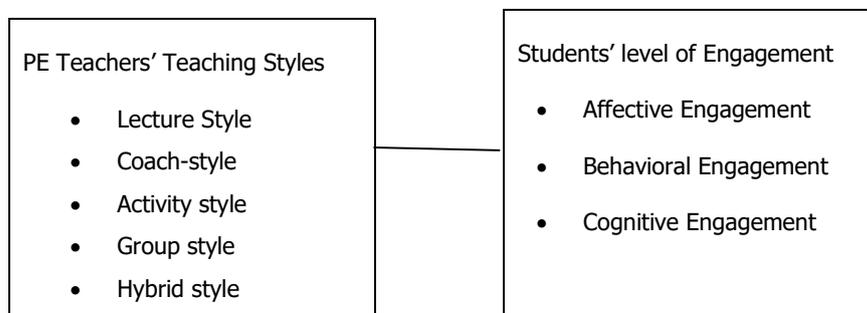


Figure 1. Schematic presentation of the variables in the study



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Objectives

This study intended to determine the effects of physical education teachers' teaching styles on student engagement.

Specifically, it sought to answer the following questions:

1. How do the PE students assess their teachers' teaching styles in terms of:
 - 1.1 lecture style;
 - 1.2 coach style;
 - 1.3 activity style;
 - 1.4 group style; and
 - 1.5 hybrid style?
2. What is the Physical Education Students' level of engagement in terms of:
 - 2.1 affective;
 - 2.2 behavioral; and
 - 2.3 cognitive?
3. Is there a significant relationship between the PE teachers' teaching styles and the students' engagement?

Hypothesis

Problems 1 and 2 are hypothesis-free. On the basis of problem 3, the following hypothesis was tested at a .05 level of significance.

Ho1: There is no significant association between PE teachers' teaching styles and the students' engagement.

METHODS

Research Design

The research utilized a quantitative correlational approach to examine how the instructional methods of Physical Education professors impact the participation levels of their college students. As Moreno-Murcia (2024) explains, this research design enables investigators to explore the magnitude and direction of the relationships between the key variables under study, namely teaching approaches and student involvement. Consequently, this design was considered appropriate for conducting the investigation.

Population and Sampling

The study involved 250 randomly selected Physical Education students from first- to fourth-year students from a private faith-based institution in Cagayan de Oro City who are officially enrolled in PE classes in the 2nd semester, the academic year 2023-2024. The sample size population of 250 out of 700 students was identified using the Cochran sample size formula.

Instrument

Two pilot-tested and validated questions were used in the study. The teaching styles of Physical Education instructors were assessed through a questionnaire developed by the researcher which garnered an alpha Cronbach score of .92 indicating a high reliability. The level of student engagement was gauged using a questionnaire from Cabrejas and Mendoza (2023).

Data Collection

To guarantee validity and reliability, two thoroughly vetted questionnaires were utilized for data collection. These questionnaires were administered to the students within the educational environments under examination. The data collection process was facilitated through Google Forms.

Treatment of Data

Descriptive statistics such as standard deviation, frequency, percentage, and mean distribution were used to determine the Physical Education instructors' teaching styles and the student level of engagement. Inferential statistics such as Multiple Regression were used to determine the significant relationship between the Physical Education instructors' teaching styles and students' engagement.



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Ethical Considerations

Before conducting the study and distributing the questionnaires via Google Form, the researchers received approval from the Research and Ethics Committee (REC) at the college where the research took place. The participants were clearly informed that their involvement was completely voluntary and that they had the right to decline participation at any time. In addition to emphasizing the voluntary nature of the study, the researchers also obtained informed consent from all participants before proceeding. The researchers assured participants that all collected data would be handled confidentially in compliance with the Data Privacy Act. Furthermore, the study was conducted in accordance with the ethical principles outlined in the Belmont Report and the Declaration of Helsinki.

RESULTS and DISCUSSION

This section presents the analyses and interpretation of data obtained from the study participants. The information is presented in tables with interpretations and implications. The presentation is organized based on the order of the problems in the Statement of the problem.

PE Teachers' Teaching Styles

Data in Table 1 indicates that physical education (PE) teachers generally tend to teach in a lecture-centric manner; this is supported by the grand mean of 4.42, which is within the "High" range. This means that the prevailing methodology heavily depends on conventional lecture techniques, which are defined by an emphasis on imparting knowledge instead of using interactive or participatory learning approaches.

Table 1
Descriptive Statistics of PE Teachers' Teaching Styles (Lecture Style)

My Physical Education instructor...	Mean	Description	SD
1. focuses on imparting knowledge to the students.	4.51	Very High	0.90
2. uses lectures for the entire class to convey knowledge and ideas.	4.51	Very High	0.95
3. engages students effectively during lecture-style sessions.	4.49	High	0.93
4. conveys information through lectures, with minimal opportunity for active engagement.	4.38	High	1.01
5. emphasizes the importance of memorizing facts and terms, rather than understanding concepts.	4.22	High	1.10
Grand Mean	4.42	High	0.88

A moderate degree of variability in the responses is indicated by the grand mean's standard deviation (SD), which stands at 0.88. This implies that although lecture-based instruction is generally in favor, different teachers or situations may emphasize this approach differently.

Upon closer examination of individual items, it can be seen that items 1 and 2 have the same highest mean scores (4.51), demonstrating a strong dependence on lectures as a means of knowledge transfer and the usage of lectures for the duration of the class. The fact that the means and descriptions of these items are similar highlights the widespread use of lecture techniques across the board. The idea of moderate variability in the application of this teaching style is reinforced by the standard deviations for these items, which are 0.90 and 0.95, respectively.

On the other hand, item 5, which had the lowest mean score (4.22) out of all the items examined, suggests that memorizing terms and facts by rote is prioritized over conceptual understanding. Additionally, this item has the highest standard deviation (1.10) of all the items, indicating a greater degree of variation in the degree to which teachers prioritize memorization over conceptual understanding.

The finding aligns with Khamees (2016), emphasizing the importance of understanding over memorization in the learning process. It highlights that learners who prioritize understanding often forget what they have memorized, indicating a potential limitation of pure memorization strategies. The study underscores the need for a balanced approach that values conceptual understanding alongside memorization to enhance learning outcomes (Carvajal, et al., 2024b; Sanchez, et al., 2024c).

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Table 2. Descriptive Statistics of PE Teachers' Coach Teaching Styles

My Physical Education instructor...	Mean	Description	SD
1. adopts a coaching approach to facilitate skill development.	4.31	High	1.02
2. provides constructive feedback and guidance in a coaching manner.	4.37	High	1.02
3. effectively uses coaching techniques to enhance learning outcomes.	4.39	High	1.02
4. provides individualized guidance and feedback.	4.35	High	1.00
5. fosters a supportive and positive learning environment, encouraging students to take risks and improve their skills.	4.45	High	1.00
Grand Mean	4.37	High	0.97

Table 2 shows the coaching perspective of Physical Education (PE) teachers' teaching styles; all items are rated "High" in terms of means. The grand mean of 4.37 indicates that, on the whole, PE teachers use a significant coaching approach to teaching, which is generally accepted to be advantageous in promoting learning outcomes and skill development.

With a standard deviation (SD) of 0.97 for the grand mean, the teachers surveyed appear to have applied these coaching styles fairly consistently. According to this consistency, the majority of PE teachers emphasize individualized and supportive teaching strategies while also participating in coaching to a similar degree.

Upon closer examination of the individual items, the item that has the highest mean (4.45) is item 5, which "fosters a supportive and positive learning environment, encouraging students to take risks and improve their skills." This suggests that teachers are especially skilled at fostering a caring environment, which is essential for motivating students to participate in their education and try out new abilities without worrying about making mistakes. The idea that classroom environments that are positive, emotional, and socially supportive greatly enhance effective learning is supported by research conducted Almulla (2020). This is especially true in physical education, where students frequently encounter emotional and physical difficulties.

With means of 4.39 and 4.37, respectively, items 3 and 2 also have scores that are higher than the grand mean. According to these items, educators can improve learning outcomes by using coaching techniques to give helpful criticism and direction. These elements are critical to the development of skills because feedback helps students comprehend and raise their level of performance (Ifelebuegu, 2023; Sanchez, et al., 2024d).

While the adoption of a coaching approach to facilitate skill development is prevalent, it is somewhat less emphasized than other coaching aspects like fostering a positive environment and providing feedback, as evidenced by item 1 (4.31), which has the lowest mean but is still high. This might be an indication of differences in the degree to which educators view or interact with their role as "coaches" as opposed to "instructors."

Table 3. Descriptive Statistics of PE Teachers' Activity Teaching Styles

My Physical Education instructors...	Mean	Description	SD
1. focus on engaging students in various activities and exercises.	4.48	High	0.97
2. incorporate various physical activities into the learning process.	4.46	High	0.94
3. use a wide range of teaching activities to cater to different learning styles and preferences.	4.32	High	1.02
4. design activities that are challenging, engaging, and relevant to students' interests and needs.	4.41	High	0.99
5. plan and implement activities relevant to the subject matter.	4.49	High	0.95
Grand Mean	4.43	High	0.92



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Table 3 presents the activity-based teaching approaches used by Physical Education (PE) instructors, highlighting the various and dynamic activities that these educators use to engage students. Given the standard deviation of 0.92 and the grand mean of 4.43 with a "High" descriptor, it is evident that there is a high level of overall engagement in activity-based teaching among educators.

The highest mean scores (4.49 for item 5 and 4.48 for item 1) indicate that teachers are especially good at organizing and carrying out subject-relevant activities and making sure that students participate in a variety of exercises and activities. This excellent performance in these domains emphasizes the importance of engagement and relevancy, which are essential for successful learning outcomes in physical education. Less variation in the application of these teaching styles is indicated by the lower standard deviation for these items (0.95 for item 5 and 0.97 for item 1), indicating that the majority of PE instructors regularly give priority to interesting and pertinent activities in their lessons.

With the lowest mean of 4.32, item 3 talks about using a variety of teaching techniques to accommodate students' varying learning preferences and styles. Despite being rated "High," the slightly lower score and higher standard deviation (1.02) in comparison to other items might point to greater variability and difficulties in effectively meeting a range of learning needs. According to Zens (2021), who stresses the significance of differentiated instruction in enhancing educational outcomes by meeting diverse student needs, this may be a reflection of the complexity and resource demands of developing differentiated instruction that appropriately addresses the spectrum of student preferences and learning styles.

Table 4 presents the group-based activities that Physical Education (PE) instructors use in their lessons. With a standard deviation (SD) of 0.96, the grand mean of 4.45, categorized as "High," shows that group and collaborative learning are highly valued in PE settings. Although some variation persists, this SD indicates that instructors apply group teaching techniques in a generally consistent manner.

Item 5 has the highest mean score of 4.49 out of all the specific items, indicating that PE teachers are especially skilled at fostering a relaxed and stimulating atmosphere for group-style learning. With a lower standard deviation of 0.95, this item suggests that instructors are using this teaching method more consistently. According to educational research, the emotional and social aspects of learning environments play a critical role in student participation and success, which emphasizes the importance of creating a welcoming and stimulating learning environment (Gimbert et al., 2021).

Table 4. Descriptive Statistics of PE Teachers' Group Teaching Styles

My Physical Education instructors...	Mean	Description	SD
1. encourage collaborative learning through group activities.	4.44	High	1.03
2. manage and guide group activities.	4.39	High	1.02
3. provide guidance and support to help students develop effective group work skills, such as communication, cooperation, and conflict resolution.	4.45	High	1.00
4. encourage students to contribute ideas and opinions to the group, and actively participate in group discussions and decision-making.	4.46	High	1.01
5. make sure that students feel comfortable and engaged in group-style learning settings.	4.49	High	0.95
Grand Mean	4.45	High	0.96

Moreover, item 4 has a high mean score of 4.46, demonstrating how well instructors have encouraged student participation in group discussions and decision-making. According to Brannen et al. (2021), this method not only improves learning but also develops important life skills like leadership and communication. These are essential in educational settings as well as beyond.

Despite being high at 4.39, item 2 has the lowest mean and deals with leading and organizing group activities. In comparison to other items, the SD (1.02) is comparatively higher, indicating a marginally higher degree of variability in the ways that various instructors oversee group activities. This fluctuation might result from the complexity of handling varied and dynamic group interactions, which calls for a variety of approaches and individual flexibility.

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Table 5. PE Teachers' Hybrid Teaching Styles

My Physical Education instructor...	Mean	Description	SD
1. integrates various teaching styles, creating a hybrid approach.	4.35	High	1.00
2. successfully balances traditional and modern teaching methods.	4.42	High	1.00
3. adapts styles to suit different situations and student needs.	4.37	High	1.01
4. effectively combines elements of different teaching styles to create a unique and personalized learning experience for students.	4.37	High	1.00
5. integrates various teaching methods and strategies, such as lectures, coaching, activities, and group work.	4.46	High	1.01
Grand Mean	4.39	High	0.96

Data on the hybrid teaching philosophies used by Physical Education (PE) instructors are displayed in Table 5, which combines a variety of instructional strategies. With a standard deviation (SD) of 0.96, the grand mean of 4.39, categorized as "High," shows a robust application of hybrid teaching methods. Although there is still some variation, the comparatively low SD indicates that different instructors are using these techniques in a consistent manner.

The item with the highest mean score, item 5, is 4.46, indicating that instructors are especially good at incorporating different teaching strategies and tactics, including activities, group projects, coaching, and lectures. Research demonstrates the advantages of utilizing a variety of techniques to meet students' different learning needs and preferences, which improves learning outcomes and lends credence to this holistic approach to teaching (Wakelet, 2018).

With the lowest mean of 4.35, item 1 retains a high degree of integration of different teaching philosophies but, in comparison to other aspects, suggests a slightly less consistent or effective approach to creating a truly hybrid one. This may point to difficulties in smoothly combining different teaching philosophies, which can call for a high degree of expertise and flexibility on the part of the teacher.

Table 6. Summary Table of the PE Teachers' Teaching Styles

Teaching Styles	Mean	Standard Deviation	Interpretation
Lecture	4.42	0.88	High
Coach	4.37	0.97	High
Activity	4.43	0.92	High
Group	4.45	0.96	High
Hybrid	4.39	0.96	High
Overall	4.41	0.83	High

*Legend: 4.51 - 5.00 - Very High
3.51 - 4.50 - High
2.51 - 3.50 - Moderate*

*1.51 - 2.50 - Low
1.00 - 1.50 - Very Low*

Table 6 summary data offers a perceptive look at the efficacy of different teaching philosophies employed by Physical Education (PE) instructors; all of these philosophies are rated within the "High" range on the established scale. Although there is some variability, the grand mean of 4.41 with a standard deviation of 0.83 shows a strong overall application of these various teaching methodologies and suggests that PE teachers generally perform well across a variety of instructional strategies.

With a mean score of 4.45, group instruction is the best-performing method. This shows that peer interaction and collaboration are enhanced by group-based activities, which are especially useful in the context of physical education. The nature of physical education, which frequently incorporates cooperative activities and



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teamwork to improve social skills and learning outcomes, is probably the reason for its effectiveness. Studies corroborate this conclusion, showing that group learning exercises can greatly raise student motivation and engagement (Tran, 2019).

With a mean score of 4.39, the hybrid teaching style is the lowest rated, despite still being highly regarded. In hybrid teaching, different teaching modalities are combined, possibly with elements of group work, coaching, hands-on activities, and lectures. The category's marginally lower score might be an indication of the difficulties instructors have integrated these various teaching philosophies into a coherent whole. Compared to simpler, single-method approaches, hybrid teaching can be more challenging to implement successfully due to the challenges of maintaining consistency and balance. However, the literature notes that effective hybrid teaching can help meet a variety of learners' needs and preferences, which can improve learning outcomes (Penrod, 2023).

In conclusion, even though PE teachers are highly skilled in a variety of teaching modalities, their remarkable group activity performance emphasizes the value of social and cooperative learning components in physical education. The marginal variation in hybrid teaching's efficacy indicates that, although it has promise, more resources or training might be required to fully realize its advantages. These revelations highlight how crucial it is for educators to engage in continuous professional development and strategic planning to maximize the effectiveness of multimodal teaching approaches.

Physical Education Students' Level of Engagement

Table 7. Physical Education Students' Level of Affective Engagement

Affective Engagement	Mean	Description	SD
1. I like what I am learning in school.	4.49	High	0.97
2. Liking for I enjoy learning new things in class.	4.46	High	0.97
3. Most mornings, I look forward to going to school.	3.99	High	1.06
4. I try hard to do well in school.	4.38	High	0.98
5. In class, I work as hard as I can.	4.35	High	1.00
6. I pay attention in class.	4.26	High	0.99
7. I persist in more challenging tasks.	4.11	High	1.06
8. I give appropriate effort to the task.	4.41	High	0.96
9. I am self-motivated to attend my class.	4.21	High	1.04
10. I get along with my classmates.	4.23	High	1.11
Grand Mean	4.29	High	0.91

Table 7 unveils the affective engagement levels of Physical Education (PE) students, offering valuable information on their emotional and behavioral involvement in classroom activities. The standard deviation of 0.91 suggests that there may be some variation among students in how they feel about their learning environment, but the grand mean of 4.29, categorized as "High," shows excellent overall affective involvement.

The data suggests that students are highly engaged in the Physical Education setting. They generally show positive emotions towards learning, put in strong effort, stay motivated, and interact well socially. However, some areas like eagerness for school and persistence in difficult tasks have more variation and could be focused on for further improvement. This information is valuable for educators looking to maintain or boost student engagement by addressing these more varied aspects.

Moreover, the highest scoring items indicate a high degree of intrinsic satisfaction and interest in the curriculum, particularly "I like what I am learning in school" (4.49) and "I enjoy learning new things in class" (4.46). According to research, there is a positive association between academic engagement and student satisfaction. This emphasizes the importance of curricular relevance and enjoyment in building affective engagement (Zhu et al., 2021). According to these results, students are more likely to interact with the subject matter profoundly when they find it interesting and relevant.

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 E - ISSN 2945-3577

The Exigency
 P - ISSN 2984-7842
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On the other hand, while still receiving a high rating, the item with the lowest mean, "Most mornings, I look forward to going to school" (3.99), shows a little less enthusiasm about going to school every day. This may be due to elements outside of the classroom, like early start times, challenging commutes, or private problems that could lower students' motivation on a daily basis. This result is consistent with Amerstorfer and Münster-Kistner (2021) explanation of the larger context influencing student engagement, which argues that engagement is influenced by the students' larger socioemotional context in addition to their experiences in the classroom.

Table 8. Physical Education Students' Level of Behavioral Engagement

Behavioral Engagement	Mean	Description	SD
1. I have good attendance.	4.53	Very High	0.96
2. I participate in class discussions and activities.	4.11	High	1.02
3. I take an active role in extracurricular activities at my school.	3.87	High	1.10
4. I am an active participant in school activities such as sports day and school picnics.	3.63	High	1.24
5. I care about grades.	4.57	Very High	0.99
6. I volunteer to help with school activities such as sports day and parent day.	3.71	High	1.24
7. I participate in group discussions and activities.	4.31	High	0.98
8. When I am in class, I participate in class activities.	4.29	High	1.04
9. I participate during class recitation	3.97	High	1.03
10. I actively participate in school competitions.	3.55	High	1.23
Grand Mean	4.05	High	0.90

Table 8 discloses a comprehensive summary of the behavioral engagement of Physical Education (PE) students, showing the extent to which they take part in extracurricular and curricular school activities. Although there is some variation in the degree of behavioral engagement across students, the grand mean of 4.05, which is categorized as "High," shows a strong level of behavioral involvement overall. The standard deviation is 0.90.

The data shows that while students are generally engaged in school behavior, there are areas where engagement levels are lower and more variable, like extracurricular activities and voluntary participation in school events. These areas might benefit from targeted strategies to increase involvement, such as making the activities more appealing or addressing barriers to participation. Overall, students demonstrate a strong commitment to their academic responsibilities and classroom participation, but there's room for improvement in the more social and voluntary aspects of school life.

The highest means, particularly for "I have good attendance" (4.53) and "I care about grades" (4.57), indicate that students give academic achievement and regular attendance a lot of weight. According to scholarly research, there is a clear correlation between improved educational achievements and these crucial markers of behavioral engagement (Delfino, 2019). Since they are frequently associated with higher academic accomplishment and more social integration in the classroom, high attendance rates are very important.

On the other hand, engagement in certain activities has the lowest results; "I actively participate in school competitions" receives the lowest score of 3.55. This decreased level of participation in competitions could be caused by a variety of things, such as perceived accessibility or significance of these activities, as well as individual interest and confidence. The item's comparatively high standard deviation (1.23) indicates that student competition engagement varies greatly, potentially due to individual differences in competitiveness or outside influences like parental support or opportunity.

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 P - ISSN 2984-7842
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Table 9. Descriptive Statistics of Physical Education Students' Level of Cognitive Engagement

Cognitive Engagement	Mean	Description	SD
1. If I have trouble understanding a problem, I go over it again until I understand it.	4.21	High	1.00
2. When I run into a difficult homework problem, I keep working at it until I think I have solved it.	4.18	High	1.02
3. When I study, I try to understand the material better by relating it to things I already know.	4.21	High	1.01
4. When I study, I figure out how the information might be useful in the real world.	4.20	High	1.00
5. When learning new information, I try to put the ideas in my own words.	4.21	High	0.97
6. When I study, I try to connect what I am learning with my own experiences.	4.22	High	0.98
7. I make up my own examples to help me understand the important concepts I learn from school.	4.22	High	1.00
8. When learning things for school, I often try to associate them with what I learned in other classes about the same or similar things.	4.18	High	0.96
9. I try to see the similarities and differences between things I am learning for school and things I know.	4.26	High	1.00
10. I try to match what I already know with things I am trying to learn for school.	4.21	High	0.99
Grand Mean	4.21	High	0.90

Data in Table 9 suggests that students in Physical Education (PE) classes demonstrate a strong level of cognitive involvement. This is supported by the average score of 4.21, which places them in the "High" category. Furthermore, the relatively low standard deviation of 0.90 suggests that the majority of PE students tend to have similar levels of cognitive engagement. The overall performance of students across various activities reflects their strong engagement in their educational pursuits. This suggests that students are not merely participating in learning activities, but are actively thinking about and processing the content they are learning in sophisticated ways. They demonstrate resilience in problem-solving, the ability to connect different pieces of information, and a tendency to reflect on how academic content can be applied in practical or real-world settings. This strong cognitive engagement is crucial for deeper understanding and long-term retention of knowledge. It indicates that the educational environment may be successfully encouraging students to think critically and independently. However, given the moderate variability in how students apply these strategies, educators might still find opportunities to further enhance these skills, ensuring that all students can benefit from such cognitive approaches to learning.

Looking at the specific items, several stand out as indicators of high cognitive engagement. Item 9, "I try to see the similarities and differences between things I am learning for school and things I know." has the highest mean score of 4.26, indicating a significant inclination towards comparative analysis in learning. The learner's approach of comparing new school concepts with known information suggests a beneficial relational understanding. This strategy enhances learning by facilitating the integration of new knowledge with pre-existing concepts.

Interestingly, items 6 and 7 both yielded a mean score of 4.22, indicating that students consistently use personal examples to explore complex concepts. This pattern of active engagement likely contributes to more effective learning and better retention of the material.

However, Item 2: "When I run into a difficult homework problem, I keep working at it until I think I have solved it," with a mean of 4.18, suggests that this cognitive strategy involves a bit more struggle compared to the others. Despite the relatively high mean, it indicates somewhat less confidence or ease in tackling challenging problems.

The data shows that Physical Education students are highly engaged in cognitively demanding tasks. They use strategies like perseverance, prior knowledge, personalized examples, and connections to improve learning. This engagement is likely to lead to better results. The study supports the idea that effective teaching in PE can boost student engagement, as found by Bertills et al. (2019). It emphasizes the value of whole group formats for skill



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E - ISSN 1908-3181

practice and active engagement. The findings suggest that both teaching methods and PE format influence student engagement.

Table 10. Summary Table on Descriptive Statistics of the Participants' Engagement

Engagement	Mean	Standard Deviation	Interpretation
Affective	4.21	0.91	High
Behavioral	4.05	0.90	High
Cognitive	4.21	0.90	High
Overall	4.0	0.90	High

Legend: 4.51 - 5.00 - Very High

3.51 - 4.50 - High

2.51 - 3.50 - Moderate

1.51 - 2.50 - Low

1.00 - 1.50 - Very Low

Table 10 provides a comprehensive view of the participants' engagement across three distinct dimensions—Affective, Behavioral, and Cognitive—with each showcasing high levels of engagement. The participants had a very high level of overall engagement with the experience, as indicated by the mean score of 4.00. However, there was some variation in how engaged individual participants were, with a standard deviation of 0.90.

Moreover, the results show that participants are highly engaged in both the emotional and intellectual aspects of the activities. They demonstrate strong enthusiasm and a deep desire to understand the material (cognitive engagement), indicating a positive emotional connection (affective engagement). This high level of engagement suggests that the content is resonating well with the participants and promoting effective learning.

This result resonates with the finding Wang et al. (2019) who found that students' performance in relational and reasoning tasks was directly linked to their acquisition of knowledge in PE. This suggests that high cognitive engagement, characterized by problem-solving and making connections, is crucial for learning in this subject. Significant Relationship between the PE Teachers' Teaching Styles and the Students' Engagement

The table below shows the multiple regression analysis of the impact of teaching style in the student's affective engagement. It shows that at least one of the teaching styles has a significant impact on the student's affective engagement, $F(5,144) = 143.424, p=.000$. It revealed that there is significant impact of lecture style ($p=.034$), group style ($p=.002$), and hybrid style ($p=.041$) in the student's affective engagement. It implies that there will be an increase of .170 in their affective engagement for every one-point increase in lecture style.

Table 11. Multiple Regression Analysis Between the PE Teachers' Teaching Styles and Affective Engagement

Model		Unstandardized Coefficients		Standardized	T	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	.235	.166		1.415	.159
	Lecture	.170	.079	.164	2.139	.034
	Coach	.028	.114	.030	.250	.803
	Activity	.130	.092	.132	1.406	.162
	Group	.343	.106	.362	3.220	.002
	Hybrid	.246	.119	.260	2.065	.041
R = .913		Adjusted R ² = .827		F(5,144) = 143.424		p = .000
Significant						

Also, there will be an increase of .343 in their affective engagement for every one-point increase in group style. Similarly, there will be an increase of .246 in their affective engagement for every one-point increase in hybrid style. There is a positive very strong relationship between the teaching style and the students' affective engagement ($R = 0.913$). Moreover, the adjusted R² is 0.827 indicating that 82.7% of the variation of students' affective engagement is influenced by the teaching style.

These findings suggest that teaching style plays a crucial role in shaping students' emotional response to learning. The analysis revealed that lecture, group, and hybrid styles all significantly influence affective engagement. As teaching styles become more engaging, students report higher levels of emotional connection to the material. This



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E - ISSN 2945-3577



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P - ISSN 2984-7842
E - ISSN 1908-3181

strong positive relationship between teaching methods and students' affective engagement underscores the importance of tailoring instructional approaches to foster students' emotional investment in the learning process.

Table 12. Multiple Regression Analysis between the PE Teachers' Teaching Styles and Behavioral Engagement

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.617	.258		2.388	.018
	Lecture	.283	.124	.276	2.293	.023
	Coach	-.066	.177	-.072	-.374	.709
	Activity	.143	.143	.147	.999	.320
	Group	.403	.165	.432	2.439	.016
	Hybrid	.010	.185	.011	.055	.956
R = .765		Adjusted R ² = .570		F(5,144) = 40.582		p = .000
Significant						

Table 12 above shows the regression analysis of the impact of teaching style in the students' behavioral engagement. It shows that at least one of the teaching styles has a significant impact on the student's behavioral engagement, $F(5,144) = 40.582, p = .000$. It revealed that there is significant impact of lecture style ($p = .023$) and group style ($p = .016$) in the student's behavioral engagement. It implies that there will be an increase of .283 in their behavioral engagement for every one-point increase in lecture style. Also, there will be an increase of .403 in their behavioral engagement for every one-point increase in group style. There is a positive strong relationship between the teaching style and the students' affective engagement ($R = 0.765$). Moreover, the adjusted R^2 is 0.570 indicating that 57% of the variation of students' behavioral engagement is influenced by the teaching style.

The study shows that teaching styles heavily influence student engagement. Both lectures and group work can be effective, but interactivity and collaboration can take them further. Instructors should reflect on their methods and seek student feedback to optimize engagement. Similarly, Huang and Marechal (2023) found that teaching styles play a significant role in influencing student engagement, with both lectures and group work being effective methods.

Table 13. Multiple Regression Analysis between the PE Teachers' Teaching Styles and Cognitive Engagement

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.891	.236		3.772	.000
	Lecture	-.167	.113	-.163	-1.480	.141
	Coach	.231	.162	.249	1.425	.156
	Activity	.158	.131	.162	1.208	.229
	Group	.402	.151	.430	2.659	.009
	Hybrid	.127	.169	.136	.751	.454
R = .809		Adjusted R ² = .643		F(5,144) = 54.730		p = .000
Significant						

Table 13 displays the regression analysis of the impact of teaching style in the students' cognitive engagement. It shows that at least one of the teaching styles has a significant impact on the student's cognitive engagement, $F(5,144) = 54.730, p = .000$. It revealed that there is significant impact of group style ($p = .009$) in the student's cognitive engagement. It implies that there will be an increase of .402 in their cognitive engagement for every one-point increase in group style. Also, there will be an increase of .402 in their cognitive engagement for every one-point increase in group style. There is a positive very strong relationship between the teaching style and the students' cognitive engagement ($R = 0.809$). Moreover, the adjusted R^2 is 0.643 indicating that 64.3% of the variation of students' cognitive engagement is influenced by the teaching style.



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E - ISSN 2945-3577



The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

The data in Table 13 clearly show that the type of teaching method significantly affects students' cognitive engagement. The overall F-statistic is significant, indicating that at least one teaching style impacts engagement levels. Group-based instruction stands out as a particularly influential factor. Every one-point increase in the group style score is linked to a rise in cognitive engagement, suggesting a moderate but consistent relationship. This finding is supported by the strong positive correlation between teaching style and cognitive engagement. Importantly, a significant portion of the variation in students' engagement levels can be attributed to the teaching style used. These results strongly suggest that methods focusing on collaboration and group work can substantially enhance students' cognitive engagement. This aligns with Li Jiang and Zhang's (2021) finding that a teaching style that promotes autonomy and collaboration leads to higher student engagement than a more controlling style.

In a nutshell, the research reveals the complex interplay between teaching styles and student engagement. All styles impact emotional engagement, but lectures and groups excel at behavioral engagement, while only groups enhance cognitive engagement. This highlights the importance of varied teaching approaches to support different aspects of learning.

Conclusion

The study provides valuable insights for physical education teachers. It confirmed that different teaching styles have a significant impact on student engagement, supporting the Self-Determination Theory (SDT) by Sun and Chen (2010). The findings suggest that while all methods have some benefits, the lecture, group, and hybrid approaches are particularly effective at promoting emotional engagement. Interestingly, the group method stood out for its ability to boost cognitive engagement, highlighting its potential for fostering a deeper understanding and intellectual curiosity in physical education.

Recommendations

Based on the findings, physical education teachers are advised to incorporate more group activities and collaborative problem-solving tasks to enhance cognitive engagement and adherence to the lesson plan. They may also differentiate their instruction to better suit the specific learning objectives and needs of their students. To foster positive relationships and a sense of community among students, teachers may use strategies that promote emotional connection, such as team-building activities, positive reinforcement, and creating a supportive learning environment. Lastly, teachers may stay updated with the latest research and best practices in physical education pedagogy to continuously improve their teaching effectiveness and student engagement.

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P - ISSN 2984-7842
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P - ISSN 2984-7842
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