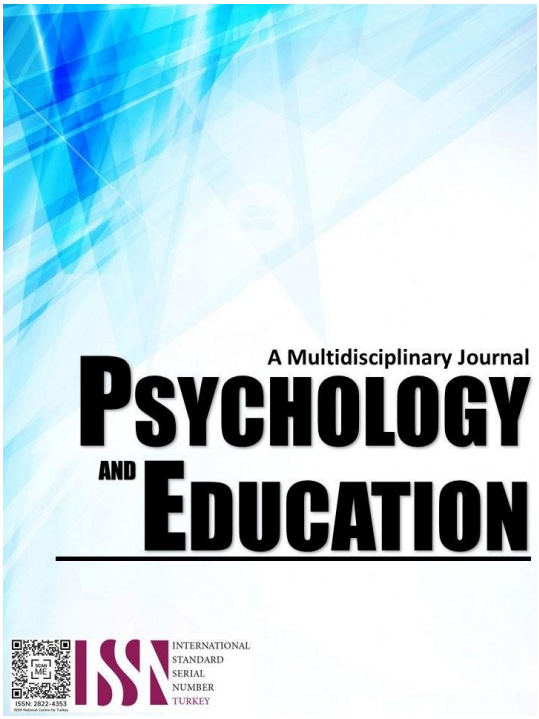
APPLICATION OF TEACHING PRACTICES AND INTERACTION STRATEGIES OF PATHFIT INSTRUCTORS AND STUDENT ENGAGEMENT



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Research Article

Application of Teaching Practices and Interaction Strategies of PATHFIT Instructors and Student Engagement

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Abstract

This study employed a descriptive–correlational research design to examine the influence of teaching practices and interaction strategies of Physical Activities Towards Health and Fitness (PATHFIT) instructors on student engagement at Calabanga Community College during the School Year 2025–2026. The study focused on students' perspectives regarding the level of application of teaching practices and interaction strategies in PATHFIT courses and their relationship with student engagement. A total of 95 students enrolled in PATHFIT 1 and PATHFIT 3 were selected through purposive sampling. Data were analyzed using Weighted Mean, Pearson Product–Moment Correlation Coefficient, and Coefficient of Determination, while a Modified ADDIE Model guided the development of a proposed five-day training program. Findings revealed that teaching practices were perceived as highly effective, with experiential learning and assessment-based instruction demonstrating the strongest positive association with student engagement. In contrast, instructional delivery and technology integration showed comparatively weaker influence when implemented independently. Interaction strategies that emphasized student-led routines, fitness journals, and collaborative group activities produced greater engagement outcomes than passive strategies such as music and rhythm integration. Overall, students demonstrated high levels of engagement, particularly in participation and motivation. Although attentiveness and performance were also rated positively, results suggest the need for structured guidance to ensure consistent mastery of skills. Correlation analysis confirmed that both teaching practices and interaction strategies were significantly related to student engagement, with experiential and learner-centered approaches exhibiting moderate to strong influence across engagement dimensions. The findings underscore the importance of designing active, reflective, and collaborative learning experiences in PATHFIT courses to sustain meaningful student engagement.

Keywords: *teaching practices, interaction strategies, PATHFIT, student engagement, experiential learning*

Introduction

Physical activity is widely recognized as a cornerstone of holistic education, fostering not only physical fitness but also mental resilience, emotional balance, and social development. In higher education, the Physical Activities Towards Health and Fitness (PATHFIT) program institutionalizes this objective by promoting lifelong wellness and active lifestyles among students. Beyond structured exercise routines, PATHFIT aims to cultivate discipline, teamwork, and sustained health consciousness. However, the effectiveness of PATHFIT largely depends on how instructors apply teaching practices and interaction strategies within instructional settings. Effective demonstrations, collaborative drills, structured modules, and appropriate technology integration can enhance skill acquisition and participation. Similarly, interaction strategies such as constructive feedback, motivational reinforcement, and supportive communication contribute to sustained student involvement. Despite these intended outcomes, variations in instructional delivery and engagement levels remain evident across institutions, indicating an unresolved gap between policy intent and classroom practice.

Globally, the implementation of student-centered teaching practices in physical education aligns with the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Sustainable Development Goal 4, which promotes inclusive and equitable quality education (UNESCO, 2023). Research demonstrates that experiential learning, cooperative tasks, and autonomy-supportive strategies enhance motivation and participation in physical activity contexts (González-Peño et al., 2021; Reeve et al., 2025). Moreover, supportive instructor–student interactions contribute to sustained engagement and well-being, reinforcing SDG 3 on good health. However, while international studies affirm the value of learner-centered pedagogies, limited empirical work specifically examines how these practices operate within structured tertiary programs such as PATHFIT.

In the Philippine context, the Commission on Higher Education (CHED) institutionalized PATHFIT through CHED Memorandum Order No. 39, Series of 2021, positioning it as a core curriculum component to promote health literacy and lifelong fitness. This mandate emphasizes inclusive instruction, active participation, and meaningful learning experiences. Republic Act No. 10533 further reinforces holistic educational development through physical activity integration. Nonetheless, existing policies provide broad directives but offer limited empirical evidence regarding how instructors' teaching practices and interaction strategies directly influence student engagement outcomes.

At Calabanga Community College, preliminary observations indicate inconsistencies in instructional approaches, feedback mechanisms, and student participation levels. While some instructors implement dynamic and collaborative strategies, others rely on more traditional methods, resulting in uneven engagement experiences. Resource limitations and contextual constraints further

complicate program delivery. These localized concerns highlight the need to empirically examine the level of application of teaching practices and interaction strategies in PATHFIT and determine their relationship with student engagement.

Student engagement, encompassing behavioral, emotional, and cognitive dimensions, is widely recognized as a predictor of academic persistence and skill mastery. Studies confirm that autonomy-supportive instruction, collaborative learning, and structured feedback significantly enhance engagement in physical education settings (González-Peño et al., 2021; Reeve et al., 2025). However, there remains limited localized evidence establishing the strength and nature of this relationship within the PATHFIT framework.

Therefore, this study addresses a critical research gap by investigating the level of application of teaching practices and interaction strategies of PATHFIT instructors and examining their relationship with student engagement at Calabanga Community College. By grounding the inquiry in empirical analysis rather than policy description, the study seeks to contribute context-specific evidence that may inform instructional enhancement, program development, and institutional decision-making.

Research Objectives

The study determined the influence of the Application of Teaching Practices and Interaction Strategies of PATHFIT Instructors' based on the student perspective on the level of students' engagement at Calabanga Community College, Calabanga, Camarines Sur. Specifically, this attained the following objectives.

1. To assess the student's perspective on the level of application of teaching practices of PATHFIT Instructors along:
    1.1. instructional delivery;
    1.2. learner-centered approaches;
    1.3. experiential learning;
    1.4. integration of technology; and
    1.5. assessment-based instruction.
2. To assess the student's perspective on the level of interaction strategies of PATHFIT Instructors along:
    2.1 group-based physical activities;
    2.2 gamified fitness challenges;
    2.3 student-led warm-ups or routines;
    2.4 fitness journals or logs; and
    2.5 integration of music and rhythm.
3. To evaluate the level of student engagement in PATHFIT courses along:
    3.1 participation;
    3.2 motivation;
    3.3 attentiveness; and
    3.4 performance.
4. To investigate the significant relationship between the application of teaching practices and student engagement, and the relationship between the application of interaction strategies and student engagement
5. To analyze the extent to which the application of teaching practices and interaction strategies influences student engagement.
6. To develop a five-day training program to enhance the teaching practices and Interaction Strategies of PATHFIT instructors and improve student engagement in PATHFIT courses.

Literature Review

Teaching practices of PATHFIT instructors encompass the instructional strategies and methodologies employed to facilitate learning, engagement, and skill development (Merriam & Baumgartner, 2020). In this study, these practices include instructional delivery, learner-centered approaches, experiential learning, integration of technology, and assessment-based instruction. Instructional delivery involves lectures, demonstrations, explanations, and multimedia tools to communicate course content effectively (Joyce, Weil, & Calhoun, 2015). Observations and studies consistently show that structured and clear instruction enhances comprehension and engagement; for example, Gustian et al. (2024) emphasized that well-organized lessons improve student involvement, while Crotti et al. (2022) highlighted that integrating technology in instructional delivery further increases participation. Comparing these findings suggests that combining clarity in teaching methods with digital supports produces stronger engagement outcomes than traditional methods alone. Learner-centered approaches, which prioritize active student involvement, collaboration, autonomy, reflective thinking, and critical inquiry (El Hammoumi, 2020), have also been shown to enhance engagement in physical education. Chen et al. (2019) reported that cooperative learning and problem-solving activities improve both participation and motivation, whereas Kim and Park (2018) found that project-based, experiential tasks strengthen attentiveness and performance. This comparison illustrates that approaches emphasizing active student involvement consistently foster multiple dimensions of engagement. Experiential learning, characterized by hands-on exercises, drills, simulations, and reflective activities, allows learners to connect theory with practice (Kolb & Kolb, 2017). Studies indicate that combining experiential and reflective components maximizes skill mastery, critical thinking, and long-term retention, as evidenced by Kim and Park (2018). Integration of technology, such as multimedia presentations, learning management systems, mobile apps, and online platforms, offers interactive and flexible learning experiences (Kirkwood & Price, 2016). While Kim and Park (2024) reported that technology enhances self-directed learning, Wang et al. (2017) observed that technology

alone may not sustain engagement without autonomy-supportive strategies. This suggests that the effectiveness of digital tools depends on how they are incorporated within broader learner-centered and experiential approaches. Assessment-based instruction, through formative and summative assessments, provides feedback and monitors progress to inform teaching (Brookhart, 2017). Studies highlight that timely and targeted feedback strengthens competence, accountability, and engagement (Wang et al., 2017). Overall, comparing these studies indicates that teaching practices that integrate experiential, learner-centered, and technology-supported strategies yield the most comprehensive engagement outcomes, aligning with Self-Determination Theory (Deci & Ryan, 2000, as cited in Yang, 2025) by supporting students' needs for autonomy, competence, and relatedness.

Interaction strategies in PATHFIT courses involve planned methods that foster communication, connection, and collaboration with students (Hamre et al., 2021). These strategies include group-based physical activities, gamified fitness challenges, student-led warm-ups, fitness journals, and music integration, which were analyzed comparatively for effectiveness. Group-based activities require teamwork, cooperation, and peer interaction, promoting social learning and mutual support (Casey & Dyson, 2016). Chen et al. (2018) observed that collaborative strategies increase participation and motivation, emphasizing the importance of social engagement in SDT's relatedness component. Gamified fitness challenges, which incorporate points, badges, and leaderboards, motivate students through enjoyable competition and collaboration (Ferriz-Valero et al., 2023). Wang and Liu (2017) confirmed that gamification fosters engagement by combining challenge, enjoyment, and peer interaction, whereas Kim and Park (2019) highlighted that reflective journaling enhances self-regulation and performance. These studies collectively suggest that gamified strategies are most effective when paired with reflective practices or feedback mechanisms. Student-led warm-ups promote autonomy, leadership, and active participation (Ünlü et al., 2023; Martinez & Castillo, 2016), and comparisons with teacher-led routines indicate that offering students leadership opportunities increases intrinsic motivation, responsibility, and confidence. Fitness journals, whether paper-based or digital, encourage metacognition, accountability, and meaningful instructor feedback (Gil-Espinosa et al., 2022; Kim & Park, 2019). Integrating journaling with interactive strategies such as gamification or peer collaboration strengthens engagement across cognitive, emotional, and behavioral dimensions. Music and rhythmic cues enhance motivation, coordination, and group dynamics (Barney & Prusak, 2022), but studies suggest that music alone is insufficient for sustained engagement unless combined with autonomy-supportive and structured activities. Synthesizing these findings highlights that interaction strategies are most effective when they simultaneously support social participation, reflection, and intrinsic motivation, consistent with Self-Determination Theory.

Student engagement, encompassing behavioral, emotional, and cognitive participation (Bond et al., 2020), was assessed in PATHFIT courses through participation, motivation, attentiveness, and performance. Participation involves active involvement in class activities, discussions, and hands-on learning experiences (Trowler, 2020). Motivation refers to the internal and external drives that influence willingness to engage in academic and physical tasks (Ryan & Deci, 2020). Attentiveness reflects the ability to maintain focus and process information during learning activities (Pekrun & Linnenbrink-Garcia, 2019), while performance represents the demonstration of skills and competencies in both academic and physical education contexts (Biggs & Tang, 2018). Comparing findings across studies, Chen et al. (2019) and Kim and Park (2018) show that learner-centered and experiential teaching practices improve both motivation and attentiveness, while Wang et al. (2017) demonstrate that feedback-based approaches enhance accountability and performance. Similarly, interaction strategies such as gamification, student-led routines, and reflective journaling contribute to higher participation, motivation, and confidence (Chen et al., 2018; Kim & Park, 2019; Wang & Liu, 2017; Martinez & Castillo, 2016). Collectively, these studies indicate that student engagement is maximized when teaching practices and interaction strategies are integrated, supporting autonomy, competence, and relatedness, as emphasized in Self-Determination Theory (Deci & Ryan, 2000, as cited in Yang, 2025).

The conceptual framework derived from these findings illustrates that teaching practices and interaction strategies jointly influence student engagement across behavioral, cognitive, and emotional dimensions. Teaching practices provide structured, experiential, and learner-centered learning, while interaction strategies foster social participation, intrinsic motivation, and reflective engagement. Together, these approaches enhance participation, attentiveness, motivation, and performance, forming a holistic engagement model aligned with Self-Determination Theory.

Methodology

Research Design

This study employed a descriptive-correlational research design. According to Barooah (2025), this design is used to identify relationships between variables without manipulating them. Fraenkel, Wallen, and Hyun (2019) also emphasized that this type of research is appropriate when the goal is to describe existing conditions and determine associations among educational factors without experimental control. Studies such as Pettit, Kinney, and McCoy (2017) and Putri, Mulyadi, and Damayanti (2017) successfully employed a descriptive-correlational design to examine the relationship between teaching practices, interaction strategies, and student engagement in PATHFIT courses.

The descriptive method was used to determine the level of teaching practices of PATHFIT instructors in terms of instructional delivery, learner-centered approaches, experiential learning, integration of technology, and assessment-based instruction. It was also utilized to examine the application of interaction strategies, including group-based physical activities, gamified fitness challenges, student-led routines, fitness journals, and the integration of music and rhythm. Furthermore, the descriptive method was employed to describe student engagement in PATHFIT courses in terms of participation, motivation, attentiveness, and performance.

The correlational method, on the other hand, was applied to assess the relationships between teaching practices, interaction strategies, and student engagement. It also examined the extent to which these factors influenced learners' motivation, participation, and performance in PATHFIT courses. As Cohen, Manion, and Morrison (2018) stated, correlational studies are essential for identifying the degree and direction of relationships among educational variables.

Respondents

The study involved PATHFIT 1 and 3 students at Calabanga Community College, Calabanga, Camarines Sur, during the first semester of the academic year 2025–2026. Stratified random sampling was employed to ensure a representative sample across different year levels and course enrollments, with the number of respondents proportionally determined based on the total population of PATHFIT students. This approach ensured that each student within the defined strata had an equal chance of selection, enhancing the validity and generalizability of the findings.

Instrument

The survey questionnaire was the major research instrument developed to determine the level of application of teaching practices and interaction strategies used by PATHFIT instructors. Part I focused on teaching practices, which included instructional delivery, learner-centered approaches, experiential learning, integration of technology, and assessment-based instruction. Part II assessed interaction strategies, such as group-based physical activities, gamified fitness challenges, student-led warm-ups or routines, fitness journals or logs, and the integration of music and rhythm. Part III focused on student engagement, concentrating on participation, motivation, attentiveness, and performance. Each item was rated using a 5-point Likert scale.

To ensure validity, the questionnaire underwent expert validation by a panel of experienced physical education instructors and research advisers, who reviewed the content for clarity, relevance, and alignment with the study objectives. Their feedback helped refine the items to ensure that all aspects of teaching practices, interaction strategies, and student engagement were accurately captured. Reliability was established through a pilot test conducted with a small group of PATHFIT students not included in the main study. The responses were analyzed using Cronbach's Alpha, which yielded a value of 0.91, demonstrating a high level of internal consistency for all parts of the questionnaire.

The responses were interpreted using clear scales for each section. For teaching practices, scores ranged from Very Highly Practiced (VHP) to Never Practiced (NP); for interaction strategies, from Strongly Agree (SA) to Strongly Disagree (SD); and for student engagement, from Strongly Engaged (SE) to Not Engaged (NE). This instrument provided a comprehensive measure of how teaching practices, interaction strategies, and student engagement were implemented and experienced in PATHFIT courses, allowing for systematic analysis and meaningful interpretation of the collected data.

Procedure

To ensure the reliability and validity of the data collected, the study followed a systematic procedure. The researcher first developed a structured survey questionnaire composed of three parts: Part I – Teaching Practices, Part II – Interaction Strategies, and Part III – Student Engagement. The instrument underwent content validation by experts in physical education and educational research to assess clarity, relevance, and alignment with study objectives. A pilot test with a small group of students not included in the main study allowed for item refinement, while reliability analysis confirmed excellent internal consistency (Cronbach's alpha = 0.927). The finalized questionnaire was personally administered to the selected student respondents at Calabanga Community College under controlled conditions. Questionnaires were collected on the same day to ensure data integrity. Responses were carefully tallied, tabulated, and organized for statistical analysis, enabling identification of patterns, relationships, and the extent of influence of teaching practices and interaction strategies on student engagement.

Data Analysis

The study employed the following statistical tools to analyze the data:

Weighted Mean. Determined the average level of students' responses on teaching practices, interaction strategies, and engagement, accounting for the relative frequency of Likert-scale responses (Leedy & Ormrod, 2019; León-Mantero et al., 2020).

Pearson Product-Moment Correlation Coefficient. Assessed the strength and direction of the relationships between teaching practices, interaction strategies, and student engagement, without implying causation (Fraenkel, Wallen, & Hyun, 2019; Dadzie, 2024). Assumptions for Pearson correlation linearity, normality, and absence of significant outliers were verified to ensure a valid interpretation of the relationships.

Coefficient of Determination (R^2). Quantified the proportion of variance in engagement explained by teaching practices and interaction strategies, indicating the predictive strength of these factors (Turney, 2022).

Modified ADDIE Model. Guided the development of the "FIT-ENGAGE" training program. The Analysis phase identified gaps in teaching practices and interaction strategies; Design established objectives and structured activities; Development produced instructional materials, modules, and guides for group-based, gamified, and student-led activities with music integration, ensuring a

practical, evidence-based program to enhance student engagement.

Ethical Considerations

The researcher strictly adhered to ethical guidelines, ensuring the privacy, dignity, and rights of all respondents in compliance with Republic Act No. 10173 (Data Privacy Act of 2012). Mature students were provided with an informed consent form explaining the study's purpose, voluntary participation, and the right to withdraw at any time without consequences. All collected data were treated confidentially, stored securely, and used solely for academic purposes. Measures were taken to maintain anonymity, and no personally identifiable information was recorded or disclosed. The research was conducted with cultural sensitivity, ensuring that instruments and procedures were inclusive, appropriate, and non-offensive.

To maintain transparency, the researcher acknowledges the use of AI tools—Research Rabbit, Perplexity, Sci-Hub, and ChatGPT for drafting, refining, and organizing content. All interpretations, analyses, and conclusions are the researcher's sole responsibility, and ethical standards were upheld throughout the study.

Results and Discussion

Level of Application of Teaching Practices of PATHFIT Instructors as Perceived by Students

This section presents the students' perceptions of PATHFIT instructors' teaching practices, analyzed across five areas. Table 1 shows Instructional Delivery, Learner-Centered Approaches, Experiential Learning, Integration of Technology, and Assessment-Based Instruction. These tables provide an overview of how instructors implement strategies that enhance clarity, engagement, and active participation in PATHFIT courses.

Table 1. *Level of Application of Teaching Practices of PATHFIT Instructors as Perceived by Students*

Aspects	*AWM*	*Int.*
Integration of Technology	4.73	VHP
Instructional Delivery	4.65	VHP
Assessment-Based Instruction	4.62	VHP
Learner-Centered Approaches	4.55	VHP
Experiential Learning	4.51	VHP
Overall AWM	4.61	VHP

Note. The range for interpretation is as follows: 4.21–5.00 = Very Highly Practiced (VHP), 3.41–4.20 = Highly Practiced (HP), 2.61–3.40 = Moderately Practiced (MP), 1.81–2.60 = Slightly Practiced (SP), and 1.00–1.81 = Never Practiced (NP).

Table 1 presents a summary of students' perceptions of the teaching practices of PATHFIT instructors. The results reveal an overall average weighted mean of 4.61, interpreted as Very Highly Practiced (VHP) across all instructional aspects. The highest-rated aspect was Integration of Technology with an AWM of 4.73, followed by Instructional Delivery (AWM = 4.65) and Assessment-Based Instruction (AWM = 4.62). In contrast, Experiential Learning obtained the lowest rating (AWM = 4.51), though it remained within the VHP range. These results indicate consistently strong teaching practices, with variation in emphasis across instructional dimensions.

Level of Interaction Strategies of PATHFIT Instructors as Perceived by Students

This section presents the findings on the level of interaction strategies employed by PATHFIT instructors as perceived by the students. Table 2 presents the application of group-based physical activities, gamified fitness challenges, student-led warm-ups and routines, fitness journals or logs, and music integration. The data gathered were analyzed to determine how effectively these interaction strategies were implemented during PATHFIT classes to promote active engagement, collaboration, skill mastery, and understanding of lessons.

Table 2. *Level of Interaction Strategies of PATHFIT Instructors as Perceived by Students*

Aspects	*AWM*	*Int.*
Group-Based Physical Activities	4.7	SA
Student-Led Warm-Ups or Routines	4.6	SA
Gamified Fitness Challenges	4.55	SA
Integration of Music and Rhythm	4.51	SA
Fitness Journals or Logs	4.01	A
Overall AWM	4.47	SA

Note. The range for interpretation is as follows: 4.21–5.00 = Very Highly Practiced (VHP), 3.41–4.20 = Highly Practiced (HP), 2.61–3.40 = Moderately Practiced (MP), 1.81–2.60 = Slightly Practiced (SP), and 1.00–1.81 = Never Practiced (NP).

Table 2 shows the overall level of interaction strategies employed by PATHFIT instructors as perceived by students. The overall Average Weighted Mean (AWM) is 4.47, interpreted as Strongly Agree (SA), indicating that students consistently recognize the instructors' use of interactive and participatory strategies that enhance engagement and motivation. Among the strategies, Group-Based Physical Activities received the highest rating (AWM = 4.70), while Fitness Journals or Logs had the lowest rating (AWM = 4.01). Other strategies include Student-Led Warm-Ups or Routines (AWM = 4.60), Gamified Fitness Challenges (AWM = 4.55), and Integration of Music and Rhythm (AWM = 4.51).

The high rating for Group-Based Physical Activities indicates that students highly value collaboration, teamwork, and cooperative tasks. Activities such as partner drills, synchronized routines, and cooperative games encourage peer learning, accountability, and social cohesion. Students benefit from both intrinsic and extrinsic motivation, as group success depends on individual effort and collective performance. The second-highest rating, Student-Led Warm-Ups or Routines, reflects the importance of student autonomy and leadership, allowing learners to exercise decision-making and responsibility, which fosters self-efficacy and engagement. Gamified Fitness Challenges highlight the role of structured competition and fun in motivating students, transforming routine exercises into stimulating, goal-oriented experiences that encourage persistence and teamwork. Similarly, Integration of Music and rhythm demonstrates that multisensory strategies enhance coordination, enjoyment, and emotional engagement. Students perceive music as a motivating, culturally relevant, and participatory element that enriches physical learning. Conversely, Fitness Journals or Logs received the lowest rating, suggesting that reflective documentation is less emphasized or perceived as less engaging. While journaling supports self-monitoring, goal-setting, and accountability, students may find it less appealing compared to movement-based or collaborative activities. Additionally, limited instructor feedback on journal entries may reduce students' perception of its value.

Level of Student Engagement in PATHFIT Courses

This section presents the findings on the level of student engagement in PATHFIT courses. The data gathered were analyzed to determine the extent to which students are involved, attentive, and motivated during PATHFIT classes. Table 4 presents participation, motivation, attentiveness, and performance-based students' perceptions across various indicators of engagement. The data gathered were analyzed to determine how students participated effectively during the PATHFIT class.

Table 3. *Student Engagement in PATHFIT Courses*

Aspects	*AWM*	*Int.*
Participation	4.71	SE
Motivation	4.66	SE
Attentiveness	4.62	SE
Performance	4.59	SE
Overall AWM	4.65	SE
Participation	4.71	SE

Note. The range for interpretation is as follows: 4.21–5.00 = Very Highly Practiced (VHP), 3.41–4.20 = Highly Practiced (HP), 2.61–3.40 = Moderately Practiced (MP), 1.81–2.60 = Slightly Practiced (SP), and 1.00–1.81 = Never Practiced (NP).

Table 3 summarizes the overall level of student engagement in PATHFIT courses across four dimensions: Participation, Motivation, Attentiveness, and Performance. The highest-rated aspect is Participation (AWM = 4.71), indicating students' active involvement in class activities and discussions. The lowest-rated dimension is Performance (AWM = 4.59), reflecting that while students apply learned skills, achieving consistent mastery or meeting all performance standards remains slightly challenging. Motivation (AWM = 4.66) and Attentiveness (AWM = 4.62) fall between these extremes. The overall Average Weighted Mean is 4.65, interpreted as Strongly Engaged (SE), showing that students are highly engaged across behavioral, cognitive, and affective dimensions of learning.

In summary, PATHFIT students are strongly engaged across all dimensions, with the highest engagement in participation and motivation. Engagement is slightly lower in performance, highlighting opportunities to strengthen skill application and mastery. These results confirm that PATHFIT instruction effectively promotes holistic student engagement, integrating behavioral, cognitive, and affective dimensions. By combining participatory learning, intrinsic motivation, and structured feedback, instructors can foster a supportive environment that enhances both student enjoyment and skill development, consistent with constructivist and self-determination frameworks.

Relationship between the Teaching Practices of PATHFIT Instructors as Perceived by Students and Their Engagement

This section presents the findings of the relationship between the teaching practices as perceived by students and their engagement in PATHFIT courses across all dimensions. The data gathered were analyzed to determine how instructors and students significantly influence engagement across dimensions in PATHFIT courses. These insights have practical implications for designing PATHFIT curricula and teacher professional development to optimize engagement across all dimensions.

As shown in Table 4, all teaching practice dimensions demonstrated statistically significant positive correlations with all dimensions of student engagement ($p < .001$). These findings indicate that higher levels of perceived instructional quality are consistently associated with higher levels of student engagement in PATHFIT courses. Among the teaching practices, Experiential Learning exhibited the strongest and most consistent relationships, with correlation coefficients ranging from $r = .699$ to $r = .789$ (High Correlation). The strongest association was observed between Experiential Learning and Performance ($r = .789$, $p < .001$), followed by Motivation ($r = .766$), Participation ($r = .725$), and Attentiveness ($r = .699$). These results suggest that hands-on, activity-based, and authentic learning experiences are the most powerful instructional drivers of engagement outcomes in PATHFIT settings. Assessment-Based Instruction also showed consistently strong correlations across engagement dimensions, particularly with Attentiveness ($r = .734$, $p < .001$) and Performance ($r = .706$, $p < .001$). This indicates that structured feedback, performance monitoring, and goal-oriented assessment mechanisms contribute meaningfully to sustained focus and skill mastery. Learner-Centered Approaches demonstrated high correlations with Participation ($r = .682$) and Motivation ($r = .643$).

Table 4. *Test on the relationship between the Teaching Practices as perceived by Students and their Engagement in PATHFIT Courses*

Teaching Practices	*Student Engagement*	*r-value*	*Int.*	*p-value*	*Int.*
Instructional Delivery	Participation Motivation	0.636	HC	0.000	HS
	Attentiveness	0.575	MC	0.000	HS
	Performance	0.616	HC	0.000	HS
		0.581	HC	0.000	HS
Learner-Centered Approaches	Participation Motivation	0.682	HC	0.000	HS
	Attentiveness	0.643	HC	0.000	HS
	Performance	0.598	MC	0.000	HS
		0.612	HC	0.000	HS
Experiential Learning	Participation Motivation	0.725	HC	0.000	HS
	Attentiveness	0.766	HC	0.000	HS
	Performance	0.699	HC	0.000	HS
		0.789	HC	0.000	HS
Integration of Technology	Participation Motivation	0.510	MC	0.000	HS
	Attentiveness	0.563	MC	0.000	HS
	Performance	0.618	HC	0.000	HS
		0.612	HC	0.000	HS
Assessment-Based Instruction	Participation Motivation	0.676	HC	0.000	HS
		0.730	HC	0.000	HS
	Attentiveness	0.734	HC	0.000	HS
	Performance	0.706	HC	0.000	HS

Note. p>0.05=NS ;p-value<0.05=Significant (S) p-value<0.01=Highly Significant (HS); Int. =Interpretation ; r-value = correlation coefficient. 0.00–0.19 = Very Low Correlation (VLC); 0.20–0.39 = Low Correlation (LC); 0.40–0.59 = Moderate Correlation (MC); 0.60–0.79 = High Correlation (HC); 0.80–1.00 = Very High Correlation (VHC). Higher r-values indicate stronger relationships between variables.

These findings highlight the importance of autonomy-supportive strategies, student voice, and collaborative learning in strengthening behavioral and affective engagement. Instructional Delivery showed moderate to high correlations (r = .575 to .636), indicating that clear organization and structured instruction remain foundational but may not independently generate the strongest engagement outcomes without active learning integration. Integration of Technology demonstrated moderate to high correlations, with the weakest relationship observed with Participation (r = .510, p < .001). This suggests that while technology enhances instructional support, its motivational and engagement impact depends on purposeful pedagogical alignment rather than mere usage frequency. Overall, the consistent pattern of significant moderate-to-high correlations provides strong empirical support for rejecting the null hypothesis. The findings confirm that teaching practices, particularly experiential and assessment-driven strategies, are significantly associated with multidimensional student engagement in PATHFIT courses.

Relationship between the Interaction Strategies of PATHFIT Instructors as Perceived by Students and their Engagement

This section presents the results of the Pearson Product–Moment Correlation analysis examining the relationship between students' perceptions of PATHFIT instructors' interaction strategies and their level of engagement across four dimensions (Participation, Motivation, Attentiveness, and Performance). The analysis determined the strength and statistical significance of these associations to identify which interaction strategies most strongly relate to engagement outcomes in PATHFIT courses. The findings provide empirical evidence on how autonomy supportive, collaborative, and reflective interaction strategies contribute to multidimensional student engagement.

As shown in Table 5, all interaction strategies demonstrated statistically significant positive correlations with all dimensions of student engagement (p < .001). This indicates that higher levels of perceived implementation of interactive strategies are consistently associated with higher levels of engagement in PATHFIT courses. Among the strategies, Student-Led Warm-Ups or Routines exhibited one of the strongest associations, particularly with Motivation (r = .768, p < .001), followed by strong correlations with Participation (r = .669), Attentiveness (r = .613), and Performance (r = .696). These findings suggest that granting students leadership roles strengthens intrinsic motivation, autonomy, and ownership of learning, thereby enhancing both affective and behavioral engagement. Similarly, Fitness Journals or Logs showed strong relationships across all engagement dimensions, with the highest observed correlation in Performance (r = .761, p < .001). This indicates that reflective practices, self-monitoring, and goal-setting mechanisms significantly contribute to skill mastery and cognitive engagement. Group-Based Physical Activities and Gamified Fitness Challenges also demonstrated consistently high correlations (r = .600 to .745). These results highlight the importance of collaboration, social interaction, and structured competition in fostering relatedness and competence, key drivers of sustained engagement in physical education contexts.

In contrast, Interaction of Music and Rhythm showed moderate but statistically significant correlations (r = .480 to .543, p < .001). While music enhances enjoyment and classroom atmosphere, its comparatively lower coefficients suggest that enjoyment-based strategies alone may not generate deep or sustained engagement unless integrated with autonomy-supportive or mastery-oriented elements. Overall, the consistent pattern of moderate-to-high significant correlations provides strong empirical support for rejecting the null hypothesis. The findings confirm that interaction strategies significantly influence student engagement in PATHFIT courses,

with the strongest effects observed in strategies that promote autonomy, reflection, collaboration, and accountability.

Table 5. *Test on the relationship between the Interaction Strategy of PATHFIT Instructors as Perceived by Students and Their Engagement*

Interaction Strategies	*Student Engagement*	*r-value*	*Int.*	*p-value*	*Int.*
Group-Based Physical Activities	Participation Motivation	0.696	HC	0.000	S
		0.745	HC	0.000	S
	Attentiveness	0.623	HC	0.000	S
	Performance	0.656	HC	0.000	S
Gamified Fitness Challenges	Participation Motivation	0.661	HC	0.000	S
		0.719	HC	0.000	S
	Attentiveness	0.6	HC	0.000	S
	Performance	0.676	HC	0.000	S
Student-Led Warm-Ups or Routines	Participation Motivation	0.669	HC	0.000	S
		0.768	HC	0.000	S
	Attentiveness	0.613	HC	0.000	S
	Performance	0.696	HC	0.000	S
Interaction of Music & Rhythm	Participation Motivation	0.542	MC	0.000	S
		0.543	MC	0.000	S
	Attentiveness	0.48	MC	0.000	S
	Performance	0.518	MC	0.000	S
Fitness Journals or Logs	Participation Motivation	0.705	HC	0.000	S
		0.713	HC	0.000	S
	Attentiveness	0.676	HC	0.000	S
	Performance	0.761	HC	0.000	S

Note. p>0.05=NS ;p-value<0.05=Significant (S) p-value<0.01=Highly Significant (HS); Int. =Interpretation ; r-value = correlation coefficient. 0.00–0.19 = Very Low Correlation (VLC); 0.20–0.39 = Low Correlation (LC); 0.40–0.59 = Moderate Correlation (MC); 0.60–0.79 = High Correlation (HC); 0.80–1.00 = Very High Correlation (VHC). Higher r-values indicate stronger relationships between variables.

Influence of Teaching Practices of PATHFIT Instructors as Perceived by Students and Their Engagement

This section presents the findings of the extent of influence of teaching practices of PATHFIT instructors as perceived by students and their engagement in PATHFIT courses across all dimensions. PATHFIT program implementations indicate that effective instructional delivery, assessment practices, and resource use are associated with higher student engagement, highlighting a substantial influence of instructor practices.

Additionally, student perceptions of teaching practices can shape engagement levels, underscoring the importance of aligning instructor strategies with learner experiences within PATHFIT.

Table 6. *Extent of Influence of Teaching Practices of PATHFIT Instructors as Perceived by Students and Their Engagement*

Teaching Practices	*Student Engagement*	*r-value*	*r2-value*	*Int.*
Instructional Delivery	Participation Motivation	0.636	40.4496	Weak
		0.575	33.0625	Weak
	Attentiveness	0.616	37.9456	Weak
	Performance	0.581	33.7561	Weak
Learner-Centered Approaches	Participation Motivation	0.682	46.5124	Moderate
		0.643	41.3449	Moderate
	Attentiveness	0.598	35.7604	Weak
	Performance	0.612	37.4544	Weak
Experiential Learning	Participation Motivation	0.725	52.5625	Moderate
		0.766	58.6756	Moderate
	Attentiveness	0.699	48.8601	Moderate
	Performance	0.789	62.2521	Strong
Integration of Technology	Participation Motivation	0.510	26.01	Moderate
		0.563	31.6969	Weak
	Attentiveness	0.618	38.1924	Weak
	Performance	0.612	37.4544	Weak
Assessment-Based Instruction	Participation Motivation	0.676	45.6976	Moderate
		0.730	53.29	Moderate
	Attentiveness	0.734	53.8756	Moderate
	Performance	0.706	49.8436	Moderate

Note: r²-value (in %) = extent of influence; 81–100 = Very Strong; 61–80 = Strong; 41– 60 = Moderate; 21–40 = Weak; 00–20 = Very Weak.

Table 6 presents the following values for the relationship between PATHFIT instructors' teaching practices as perceived by students and their engagement across dimensions. Instructional Delivery shows Participation r = 0.636, r2 = 40.4496, interpreted as Weak; Motivation r = 0.575, r2 = 33.0625, interpreted as Weak; Attentiveness r = 0.616, r2 = 37.9456, interpreted as Weak; Performance r = 0.581, r2 = 33.7561, interpreted as Weak. Learner-Centered Approaches show Participation r = 0.682, r2 = 46.5124, interpreted as

Moderate; Motivation r = 0.643, r2 = 41.3449, interpreted as Moderate; Attentiveness r = 0.598, r2 = 35.7604, interpreted as Weak; Performance r = 0.612, r2 = 37.4544, interpreted as Weak. Experiential Learning shows Participation r = 0.725, r2 = 52.5625, interpreted as Moderate; Motivation r = 0.766, r2 = 58.6756, interpreted as Moderate; Attentiveness r = 0.699, r2 = 48.8601, interpreted as Moderate; Performance r = 0.789, r2 = 62.2521, interpreted as Strong. Integration of Technology shows Participation r = 0.510, r2 = 26.01, interpreted as Moderate; Motivation r = 0.563, r2 = 31.6969, interpreted as Weak; Attentiveness r = 0.618, r2 = 38.1924, interpreted as Weak; Performance r = 0.612, r2 = 37.4544, interpreted as Weak. Assessment-Based Instruction shows Participation r = 0.676, r2 = 45.6976, interpreted as Moderate; Motivation r = 0.730, r2 = 53.29, interpreted as Moderate; Attentiveness r = 0.734, r2 = 53.8756, interpreted as Moderate; Performance r = 0.706, r2 = 49.8436, interpreted as Moderate.

Experiential learning emerges as the most influential teaching practice, showing broad and meaningful connections to student engagement across all dimensions, with the strongest link to performance. In contrast, instructional delivery appears to have relatively Higher r^2-values, indicating greater influence of interaction strategies on student engagement. Table 6 presents the extent of influence of teaching practices on student engagement across various dimensions. The results indicate that the computed r-values range from 0.510 to 0.789. In contrast, the corresponding r^2-values range from 26.01% to 62.25%, signifying that teaching practices account for a varying percentage of the variance in student engagement indicators. weaker effects, suggesting that simply delivering content or managing the classroom does not reliably boost engagement across the studied domains. Learner-centered approaches show mixed effects, enhancing participation and motivation but delivering less impact on attentiveness and performance, indicating a nuanced influence that may depend on how these approaches are implemented. Integration of technology tends to support participation more than attitudinal or cognitive engagement, implying that technology needs to be embedded within interactive and well-designed activities to matter. Assessment-based instruction demonstrates a fairly consistent positive influence across dimensions, pointing to the value of ongoing assessment practices in sustaining student engagement. Overall, the findings highlight that combining experiential learning with structured assessment and thoughtfully integrated learner-centered elements may yield the strongest engagement outcomes, while relying on technology or routine instruction alone may offer more limited benefits.

Influence of Interaction Strategies of PATHFIT Instructors as Perceived by Students and Their Engagement

This outlines the extent of influence of interaction strategies used by PATHFIT instructors, as perceived by students, on their engagement across multiple dimensions. It highlights how students' perceptions of instructors' interactive practices relate to their level of engagement in PATHFIT courses, informing both instructional design and teacher development efforts.

Table 7. *Extent of Influence of Interaction Strategies of PATHFIT Instructors as Perceived by Students and Their Engagement*

Interaction Strategies	*Student Engagement*	*r-value*	*r2-value*	*Int.*
Group-Based Physical Activities	Participation	0.696	48.442	Moderate
	Motivation	0.745	55.503	Moderate
	Attentiveness	0.623	38.813	Weak
	Performance	0.656	43.034	Moderate
Gamified Fitness Challenges	Participation	0.661	43.692	Moderate
	Motivation	0.719	51.696	Moderate
	Attentiveness	0.600	36.000	Weak
	Performance	0.676	45.698	Moderate
Student-Led Warm-Ups or Routines	Participation	0.669	44.756	Moderate
	Motivation	0.768	58.982	Moderate
	Attentiveness	0.613	37.577	Weak
	Performance	0.696	48.442	Moderate
Interaction of Music & Rhythm	Participation	0.542	29.376	Weak
	Motivation	0.543	29.485	Weak
	Attentiveness	0.48	23.040	Weak
	Performance	0.518	26.832	Weak
Fitness Journals or Logs	Participation	0.705	49.703	Moderate
	Motivation	0.713	50.837	Moderate
	Attentiveness	0.676	45.698	Moderate
	Performance	0.761	57.912	Moderate

Note: r^2-value (in %) = extent of influence; 81–100 = Very Strong; 61–80 = Strong; 41–60 = Moderate; 21–40 = Weak; 00–20 = Very Weak.. Higher r^2-values indicate greater influence of interaction strategies on student engagement. Table 7 presents the extent of influence of various interaction strategies on student engagement, as indicated by the computed correlation coefficients (r-values) and the corresponding coefficients of determination (r^2-values). The results show r-values ranging from 0.480 to 0.768, and r^2values from 23.04% to 58.98%, signifying that the extent of influence of interaction strategies on student engagement ranges from weak to moderate.

Table 7 presents the values for the relationship between PATHFIT instructors' interaction strategies and student engagement across dimensions. For Group-Based Physical Activities, Participation shows r = 0.696, r2 = 48.442, interpreted as Moderate; Motivation shows r = 0.745, r2 = 55.503, interpreted as Moderate; Attentiveness shows r = 0.623, r2 = 38.813, interpreted as Weak; Performance shows r = 0.656, r2 = 43.034, interpreted as Moderate. For Gamified Fitness Challenges, Participation shows r = 0.661, r2 = 43.692, interpreted as Moderate; Motivation shows r = 0.719, r2 = 51.696, interpreted as Moderate; Attentiveness shows r = 0.600, r2 = 36.000, interpreted as Weak; Performance shows r = 0.676, r2 = 45.698, interpreted as Moderate. For Student-Led Warm-Ups or Routines, Participation shows r = 0.669, r2 = 44.756, interpreted as Moderate; Motivation shows r = 0.768, r2 = 58.982, interpreted as Moderate;

Attentiveness shows r = 0.613, r2 = 37.577, interpreted as Weak; Performance shows r = 0.696, r2 = 48.442, interpreted as Moderate. For Interaction of Music & Rhythm, Participation shows r = 0.542, r2 = 29.376, interpreted as Weak; Motivation shows r = 0.543, r2 = 29.485, interpreted as Weak; Attentiveness shows r = 0.480, r2 = 23.040, interpreted as Weak; Performance shows r = 0.518, r2 = 26.832, interpreted as Weak. For Fitness Journals or Logs, Participation shows r = 0.705, r2 = 49.703, interpreted as Moderate; Motivation shows r = 0.713, r2 = 50.837, interpreted as Moderate; Attentiveness shows r = 0.676, r2 = 45.698, interpreted as Moderate; Performance shows r = 0.761, r2 = 57.912, interpreted as Moderate.

Intervention Strategies to Enhance PATHFIT Teaching Practices, Interaction Strategies, and Student Engagement

This uses the ADDIE framework to organize thinking about PATHFIT instructional improvement at Calabanga Community College, focusing specifically on analysis, design, and development (ADD) without detailing implementation or evaluation. The goal is to address identified gaps, such as limited experiential learning opportunities, contextual examples, technology integration, reflective activities, and timely feedback, and to articulate a coherent pathway for enhancing student engagement through theory-driven, student-centered approaches. By grounding the effort in Constructivist, Sociocultural, and Self-determination theories, the aim is to foster experiential learning, collaboration, and intrinsic motivation that translate into higher participation, attentiveness, and performance in PATHFIT courses. The resulting plan, titled FIT-ENGAGE, seeks to provide a practical, scalable framework for teacher development that aligns instructional practice with contemporary research and the college's engagement goals.

In the analysis phase, the focus is on diagnosing instructional gaps within PATHFIT and understanding the learning environment and student needs. This includes examining how experiential learning opportunities, contextualized examples, technology use, reflective practices, and feedback timing influence student engagement across behavioral, cognitive, affective, and social dimensions. Stakeholders, such as students, instructors, and administrators, are considered to identify priorities, capabilities, and constraints, such as resource availability, class sizes, and schedule realities. The analysis also looks at existing teaching practices, learner readiness, and motivational profiles to determine which interaction strategies and instructional supports are most likely to enhance autonomy, competence, and relatedness, thereby driving sustained engagement. Clear objectives are established to guide subsequent design decisions, ensuring alignment with theory and institutional goals.

During design, concrete objectives and activities are mapped to SDT-informed goals, translating analysis findings into a structured plan for an evidence-based, learner-centered curriculum. The design specifies a five-day sequence of workshops, demonstrations, microteaching, and integrated assessment, embedding strategies such as journaling, peer collaboration, contextualized modules, and reflective practice to build autonomy, competence, and relatedness. Materials such as lesson plan templates, activity guides, rubrics, and quick-reference tools are created to support consistent delivery and to facilitate ongoing feedback and adjustment by instructors. The sequence emphasizes experiential and collaborative approaches, with clear pacing, progression, and alignment to prior knowledge, ensuring that engagement across participation, motivation, attentiveness, and performance is systematically enhanced. Anticipated risks, accessibility considerations, and scalability factors are addressed to guarantee broad applicability.

In development, the actual instructional resources and supports are produced and assembled according to the design specifications. This includes drafting journaling prompts and reflection templates, creating group-based activity protocols, designing student-led warm-up guidelines, and scripting music-integrated activities to align with SDT aims. Support tools for feedback, peer support, and progress monitoring are developed, with explicit success criteria and exemplars to guide implementation. Facilitator guides, scoring rubrics, and demonstration videos are created to ensure consistent delivery and to assist instructors in executing the aligned interactions effectively. The development process emphasizes practicality, coherence with theory, and scalability, with an eye toward enabling smooth implementation and future evaluation.

Conclusions

Teaching practices in PATHFIT courses are effective, with experiential learning and assessment-based instruction producing the strongest engagement effects. At the same time, traditional instructional delivery and technology integration show limited impact when used alone.

Interaction strategies that promote autonomy, reflection, and collaboration, such as student-led routines, fitness journals, and group-based activities, most strongly enhance engagement, whereas passive strategies like music and rhythm yield modest benefits. Students are highly engaged overall, particularly in participation and motivation. Attentiveness and performance, though positive, indicate the need for additional guidance to achieve consistent skill application. Experiential and student-centered approaches consistently show moderate to strong influence on engagement dimensions, highlighting the importance of active, reflective, and collaborative learning experiences. Strengthen experiential and learner-centered teaching by incorporating hands-on activities, structured demonstrations, and guided practice. Plan weekly simulations, applied exercises, or project-based tasks; provide step-by-step instructions and feedback.

Integrate technology meaningfully to support, not replace, interactive learning. Use apps or digital tools for performance tracking, reflection logs, or collaborative goal-setting rather than passive presentation. Apply assessment-based instruction consistently to maintain motivation, attentiveness, and skill mastery. Implement formative assessments, skill checklists, or peer evaluations during and after activities.

Promote student-led routines and group-based physical activities to enhance autonomy, collaboration, and engagement. Rotate leadership roles, assign peer responsibilities, and facilitate team-based tasks or competitions. Incorporate fitness journals or logs for reflection, goal-setting, and self-monitoring. Dedicate 10–15 minutes per session for students to record progress, reflect on performance, and plan next steps. Use gamified challenges strategically to boost motivation and participation while maintaining structure and accountability. Introduce points, friendly competitions, or task-based rewards with clear objectives and monitoring. Leverage music and rhythm selectively to enhance enjoyment without compromising attentiveness. Pair music with active drills, warm-ups, or collaborative tasks rather than using it as the primary engagement tool. Address attentiveness gaps through personalized guidance and structured oversight. Provide reminders, scaffold complex tasks, and monitor individual and group focus during activities.

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