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Effectiveness of Peer-Teaching Strategy to Students Performance in Teaching Health Related Components in MAPEH 8

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ABSTRACT

This study aimed to determine the effectiveness of the peer-teaching strategy in improving cardiovascular endurance, muscular endurance, and flexibility among Grade 8 students at Gun-ob High School, Lapu-Lapu City, Cebu, during School Year 2026–2027. A quantitative, one-group pretest–posttest pre-experimental design was employed involving 57 eligible non-athlete students selected through eligibility screening. Data were gathered using the Three-Minute Step Test, Basic Plank Test, and Sit-and-Reach Test and analyzed through descriptive statistics, paired-samples t-tests, and Cohen's d at the 0.05 significance level. Results revealed significant improvements in cardiovascular endurance (2.23 to 3.81), muscular endurance (2.26 to 3.86), and flexibility (2.33 to 3.89), with all differences statistically significant ($p < .001$) and very large effect sizes ($d = 1.66–1.80$). Overall performance improved from Fair to Very Good, indicating substantial gains following the intervention. The findings suggest that structured peer teaching may support students' health-related fitness development through demonstrations, guided practice, and constructive feedback. The study recommends strengthening supervised peer-teaching activities and developing an enhanced MAPEH 8 lesson guide responsive to students' fitness needs. However, the single-school sample and absence of a comparison group limit generalizability and causal interpretation. The study contributes school-based evidence supporting collaborative Physical Education instruction and provides a practical foundation for improving fitness-related teaching strategies and performance-based assessments.

Keywords: *Cardiovascular Endurance, Flexibility, Grade 8, Muscular Endurance, Peer Teaching, Physical Education, Pretest–Posttest Design*

1. INTRODUCTION

Physical Education plays an essential role in developing students' physical fitness, movement skills, and habits that promote active living. The World Health Organization (2020) recognizes that regular physical activity contributes to cardiorespiratory and muscular fitness, bone health, and mental well-being among children and adolescents. These benefits emphasize the importance of effective instructional strategies that encourage students' active participation and improve their health-related fitness. He et al. (2026) and Zhang and Zhang (2026) examined school-based physical activity and fitness interventions, providing broader evidence for the importance of structured exercise programs in supporting children's physical fitness development. Similarly, Moin et al. (2026) reviewed interventions designed to promote physical activity among adolescents in school settings, highlighting the relevance of schools as environments for encouraging active participation. Peer teaching is a student-centered instructional strategy that involves learners in explaining procedures, demonstrating movements, guiding practice, and providing constructive feedback under teacher supervision. Jenkinson et al. (2014) reported varied outcomes in peer-assisted learning within Physical Education and physical activity settings, emphasizing the importance of peer-tutor preparation and structured implementation. Armada-Crespo et al. (2026) examined cooperative learning in Physical Education through a systematic umbrella review, while Boke et al. (2025) investigated its effects on students' learning outcomes through a meta-analysis. These studies provide a broader research context for considering collaborative instructional approaches in Physical Education. Although previous studies support collaborative learning, further investigation is needed to determine how peer teaching relates to students' performance in specific health-related fitness components. This study examined the effectiveness of the peer-teaching strategy in improving cardiovascular endurance, muscular endurance, and flexibility among Grade 8 students at Gun-ob High School, Lapu-Lapu City, Cebu, during School Year 2026–2027. By comparing students' pretest and posttest performance, the study sought to generate evidence for developing an enhanced MAPEH 8 lesson guide integrating structured peer-teaching activities, guided practice, feedback, and performance-based assessments (Moeller et al., 2024; Wang et al., 2025).

Research Problem

Developing students' health-related fitness requires instructional approaches that promote proper exercise execution, consistent participation, and meaningful learning experiences. However, students may experience difficulties in performing fitness activities involving cardiovascular endurance, muscular endurance, and flexibility. These challenges highlight the need to examine instructional strategies that provide appropriate demonstrations, guided practice, and constructive feedback. Although peer-assisted learning has been investigated in Physical Education, Jenkinson et al. (2014) identified variations in outcomes and peer-tutor preparation, suggesting that its effectiveness depends on structured implementation. Saha et al. (2026) reviewed collaborative and game-based pedagogies in Physical Education and identified variations in movement-related outcomes across instructional models, educational levels, and assessment methods. Similarly, Tian et al. (2026) examined the comparative effects of Physical Education teaching models on motor skill development among school-aged children and adolescents. These studies highlight the importance of examining instructional approaches in relation to specific performance outcomes. Existing findings do not directly establish how peer teaching influences the selected fitness components among Grade 8 students at Gun-ob High School. The study therefore addressed this contextual gap by examining students' performance before and after implementing the peer-teaching strategy. Specifically, cardiovascular endurance was assessed using the Three-Minute Step Test, muscular endurance through the Basic Plank Test, and flexibility through the Sit-and-Reach Test. The study also determined

whether significant differences existed between pretest and posttest performance, providing a basis for developing an enhanced Physical Education lesson guide responsive to students' instructional needs.

Assumptions of the Study

The study assumed that a structured peer-teaching strategy could improve students' performance in cardiovascular endurance, muscular endurance, and flexibility. It further assumed that peer demonstrations, explanations, guided practice, and constructive feedback could strengthen students' understanding of exercise procedures, encourage active participation, and support appropriate movement execution. These assumptions were grounded in the view that learning can be facilitated through social interaction, observation, and guided participation. However, improvements in physical fitness also depend on the frequency, intensity, and duration of exercise activities. Accordingly, the effectiveness of peer teaching was examined through students' pretest and posttest performance rather than assumed from the instructional strategy alone. The study adopted the null hypothesis that no significant difference existed between students' pretest and posttest performance in the selected health-related fitness components following the peer-teaching intervention, tested at the 0.05 level of significance.

Objectives of the Study

The study aimed to determine the effectiveness of the peer-teaching strategy in improving the performance of Grade 8 students at Gun-ob High School in selected health-related fitness components during School Year 2026–2027. Specifically, it sought to assess students' pretest and posttest performance in cardiovascular endurance, muscular endurance, and flexibility using the Three-Minute Step Test, Basic Plank Test, and Sit-and-Reach Test, respectively. It also aimed to determine whether significant differences existed between students' pretest and posttest performance following the implementation of the peer-teaching strategy at the 0.05 level of significance. Furthermore, the findings served as the basis for developing an enhanced MAPEH 8 lesson guide incorporating structured peer-teaching activities, exercise demonstrations, guided practice, constructive feedback, and performance-based assessments to support students' health-related fitness development.

Conceptual and Theoretical Framework

The study was anchored on Vygotsky's Sociocultural Theory, as presented in Mind in Society (Vygotsky, 1978), and Bandura's Social Learning Theory, as presented in Social Learning Theory (Bandura, 1977). Vygotsky's theory emphasizes learning through social interaction and guidance from more capable peers, while Bandura's theory highlights observational learning through modeling, practice, and motivation. Together, these theories support peer teaching as an instructional strategy that promotes collaborative learning, exercise demonstrations, guided practice, and constructive feedback. Aligned with the K–12 Curriculum Guide for Music, Arts, Physical Education, and Health (MAPEH), the study examined the effectiveness of peer teaching in improving students' cardiovascular endurance, muscular endurance, and flexibility through pretest and posttest assessments. The findings served as the basis for developing an enhanced MAPEH 8 lesson guide.

Sustainable Development Goal and Multidisciplinary Sustainability Relevance

The study aligns with Sustainable Development Goal 3 (Good Health and Well-Being) and Sustainable Development Goal 4 (Quality Education) by promoting students' health-related fitness and improving instructional practices in Physical Education (Contardo Ayala et al., 2024). It supports SDG 3 by examining how structured peer teaching, guided practice, and constructive

feedback may improve cardiovascular endurance, muscular endurance, and flexibility among adolescents. It also contributes to SDG 4 by encouraging collaborative learning, active participation, and shared responsibility through student-centered instruction. The proposed enhanced MAPEH 8 lesson guide may strengthen teaching practices and support students' diverse learning needs. Overall, the study highlights the potential of peer teaching to promote physical well-being, quality education, and sustainable school-based Physical Education practices.

2. METHODOLOGY

Research Design

The study utilized a quantitative, one-group pretest–posttest pre-experimental design to examine changes in students' performance following the implementation of the peer-teaching strategy. Students underwent initial assessments in cardiovascular endurance, muscular endurance, and flexibility before participating in structured peer-teaching activities involving exercise demonstrations, guided practice, peer observation, and constructive feedback under teacher supervision. The same fitness assessments were administered after the intervention to determine changes in performance. Descriptive and inferential statistics were employed to evaluate the results at the 0.05 level of significance. Since the study did not include a comparison group, observed improvements could not establish that peer teaching alone caused the changes.

Research Locale or Study Setting

The study was conducted at Gun-ob High School, located along A. Tumulak Street, Gun-ob, Lapu-Lapu City, Cebu, during School Year 2026–2027. The school provided an appropriate setting for integrating peer-teaching activities into regular Grade 8 Physical Education classes. Classroom facilities were used for instructional discussions and student orientation, while a designated school activity area was utilized for exercise activities and physical fitness assessments. Appropriate equipment and comparable testing conditions were maintained to support the safe and consistent administration of the pretest and posttest.

Participants or Data Sources

The participants were selected from 118 Grade 8 students enrolled at Gun-ob High School, comprising 38 students from Section 8-SSC, 41 from Section 8-Azarcon, and 39 from Section 8-Baguio. Following eligibility screening, 57 non-athlete students qualified and participated in the study, consisting of 31 males and 26 females. Of these participants, 21 were from Section 8-SSC, 24 from Section 8-Azarcon, and 12 from Section 8-Baguio. Eligible participants were officially enrolled in the identified sections, physically fit to participate safely in the required activities, and had no prior varsity training or participation in DepEd provincial interschool sports competitions. Students with health conditions, injuries, or physical restrictions affecting safe participation, as well as those without parental consent or voluntary assent, were excluded. The participants provided the primary data through their pretest and posttest performance in the selected health-related fitness components.

Research Instruments or Materials

The study utilized selected physical fitness assessments adopted from the Revised Physical Fitness Test Manual issued by the Department of Education (DepEd, 2019) through DepEd Order No. 034, s. 2019. These included the Three-Minute Step Test for cardiovascular endurance, the Basic Plank Test for muscular endurance, and the Sit-and-Reach Test for flexibility. The Three-Minute Step Test required students to step on a 12-inch platform for three minutes at 96 beats per minute, with post-exercise heart rate recorded in beats per minute. The Basic Plank Test

measured the duration students maintained proper plank position, with a maximum of 90 seconds. The Sit-and-Reach Test measured forward-reaching distance in centimeters, recording the better of two trials. Performance was classified as Excellent, Very Good, Good, Fair, or Needs Improvement using the prescribed scoring standards. Individual recording sheets documented participants' codes, sections, assessment dates, scores, and performance ratings. Identical instruments, procedures, and scoring standards were used during both assessments to ensure consistency.

Data Gathering Procedure

Data gathering began with securing approval from the Graduate School, research ethics clearance, and permission from the principal of Gun-ob High School. The researcher coordinated with the MAPEH teacher regarding schedules, facilities, equipment, and instructional materials. An orientation was conducted among 118 Grade 8 students, followed by eligibility screening and the collection of parental consent and student assent, resulting in 57 qualified participants. Before the intervention, students received conventional instruction covering the selected health-related fitness components. Pretest assessments were subsequently administered using the Three-Minute Step Test, Basic Plank Test, and Sit-and-Reach Test to establish baseline performance. The peer-teaching strategy was then implemented during scheduled Physical Education classes, with students alternating as peer teachers and learners. Activities involved exercise demonstrations, explanations, guided practice, peer observation, and constructive feedback under the supervision of the researcher and MAPEH teacher. Following the intervention, the same assessments were administered under comparable testing conditions. The collected data were checked, organized, and analyzed to determine changes in students' performance. The findings served as the basis for developing an enhanced MAPEH 8 lesson guide integrating peer-teaching activities and performance-based assessments.

Data Analysis

The collected pretest and posttest data were analyzed using descriptive and inferential statistics. Frequency and percentage were used to determine the distribution of students across performance categories, while the mean and standard deviation described their average performance and score variability in cardiovascular endurance, muscular endurance, and flexibility. A paired-samples t-test was employed to determine significant differences between the pretest and posttest performance of the 57 participants at the 0.05 level of significance. A p-value below 0.05 indicated a statistically significant difference and served as the basis for rejecting the null hypothesis. Cohen's d was also used to determine the magnitude of observed performance changes. Each fitness component was analyzed separately because the assessments measured different physical fitness outcomes.

Ethical Considerations

The study followed ethical procedures to protect the rights, safety, and confidentiality of the participants. Approval from the Graduate School, research ethics clearance, and permission from the school principal were secured before data collection. Students were informed about the study's purpose, procedures, participation requirements, and their right to withdraw without penalty or consequences to their academic grades. Written parental or guardian consent and voluntary student assent were obtained before participation. Eligibility screening excluded students with health conditions, injuries, or physical restrictions that could compromise their safety. The researcher and MAPEH teacher supervised all physical activities to ensure proper exercise execution and minimize risks. Participant codes were used instead of names in recording assessment results, and research records were handled confidentially throughout data collection and analysis.

3. RESULTS AND DISCUSSION

3.1 Students' Performance in Health-Related Fitness Components

3.1.1 Cardiovascular Endurance

The pretest results showed that 25 students (43.86%) were classified as Fair and 13 (22.81%) as Needs Improvement in cardiovascular endurance. The mean pretest score was 2.23 (SD = 0.91), interpreted as Fair. Following the peer-teaching intervention, the mean increased to 3.81 (SD = 0.96), interpreted as Very Good. Of the 57 students, 20 (35.09%) achieved Very Good, 18 (31.58%) Excellent, 12 (21.05%) Good, and 7 (12.28%) Fair ratings. No students remained in the Needs Improvement category, indicating an overall mean increase of 1.58 points. The improvement suggests that structured cardiovascular activities supported by peer demonstrations, guided practice, and constructive feedback may contribute to better fitness performance. Lee (2014) reported improved 800-meter run performance among Grade 7–8 students participating in cooperative learning, while Whipp et al. (2015) found that trained peer teaching supported motor performance and structured learning time in Physical Education. These findings support the relevance of collaborative instruction, although the assessment methods differed from those used in the present study.

3.1.2 Muscular Endurance

The pretest results revealed that 25 students (43.86%) were rated Fair and 13 (22.81%) Needs Improvement in muscular endurance. The mean score was 2.26 (SD = 0.97), interpreted as Fair. After the intervention, the mean increased to 3.86 (SD = 0.99), interpreted as Very Good. Among the participants, 20 (35.09%) obtained Very Good ratings, 18 (31.58%) Excellent, 12 (21.05%) Good, and 7 (12.28%) Fair. No students were classified as Needs Improvement, reflecting a mean increase of 1.60 points. These results indicate improved muscular endurance following structured peer-teaching activities involving exercise demonstrations, supervised practice, and corrective feedback. Lee (2014) reported significant improvements in bent-knee sit-up performance among Grade 7–8 students exposed to cooperative learning, while Whipp et al. (2015) found that trained peer teaching improved motor performance in high-school Physical Education. Villa-González et al. (2023) systematically reviewed school-based interventions designed to improve muscular fitness outcomes among children, providing additional context for the importance of structured fitness activities within educational settings. These findings are consistent with the observed improvement, although the earlier studies employed different muscular endurance assessments and instructional interventions.

3.1.3 Flexibility

The pretest findings showed that 25 students (43.86%) received Fair ratings and 13 (22.81%) were classified as Needs Improvement in flexibility. The mean pretest score was 2.33 (SD = 1.03), interpreted as Fair. Following the peer-teaching intervention, the mean increased to 3.89 (SD = 1.01), interpreted as Very Good. The posttest results indicated that 20 students (35.09%) achieved Very Good ratings, 18 (31.58%) Excellent, 12 (21.05%) Good, and 7 (12.28%) Fair. No students remained in the Needs Improvement category, representing a mean increase of 1.56 points. The findings suggest that structured stretching activities, peer demonstrations, guided practice, and feedback may support flexibility development. Lee (2014) reported significant improvements in sit-and-reach performance among Grade 7–8 students participating in cooperative learning. Similarly, Hill and Najera (2020) found improved sit-and-reach scores

following a stretching program conducted during Physical Education classes. Ingram et al. (2025) investigated the optimization of static stretching dosage for improving flexibility through a systematic review and meta-analysis, while Warneke et al. (2025) presented expert consensus recommendations concerning stretching exercise. These sources provide additional scientific context for considering the duration, frequency, and implementation of stretching activities in flexibility development. These findings support the importance of structured flexibility activities, although the interventions were not identical to those implemented in the present study.

3.2 Significant Differences Between Pretest and Posttest Performance

The paired-samples t-test revealed statistically significant differences between students' pretest and posttest performance across all three health-related fitness components. Cardiovascular endurance increased from 2.23 to 3.81, with a mean difference of 1.58 ($t = -9.860$, $p < .001$, Cohen's $d = 1.72$). Muscular endurance increased from 2.26 to 3.86, with a mean difference of 1.60 ($t = -10.140$, $p < .001$, Cohen's $d = 1.80$), while flexibility increased from 2.33 to 3.89, with a mean difference of 1.56 ($t = -9.720$, $p < .001$, Cohen's $d = 1.66$). The overall mean increased from 2.27 to 3.85, with a mean difference of 1.58 ($t = -16.570$, $p < .001$, Cohen's $d = 2.72$). All differences were significant at the 0.05 level, leading to the rejection of the null hypothesis. The effect sizes were classified as very large based on the study's interpretation criteria. These findings indicate substantial improvements in students' measured fitness performance following the peer-teaching intervention. The results are consistent with Lee (2014), who reported improvements in sit-and-reach, bent-knee sit-up, and 800-meter run performance through cooperative learning. Similarly, Whipp et al. (2015) found that trained peer teaching supported motor performance and structured learning in high-school Physical Education. These studies reinforce the relevance of collaborative instructional approaches in fitness education. However, because the present study employed a one-group pretest–posttest design without a comparison group, the observed improvements cannot be attributed exclusively to the peer-teaching strategy.

3.3 Implications for Physical Education Instruction

The findings demonstrated improvements across all three fitness components following the intervention, with mean performance ratings increasing from Fair to Very Good. Muscular endurance recorded the largest mean increase of 1.60 points, followed by cardiovascular endurance at 1.58 points and flexibility at 1.56 points. Despite these improvements, seven students (12.28%) remained in the Fair category in each component, indicating that some learners continued to require additional practice and instructional support. The findings support the development of an enhanced MAPEH 8 lesson guide incorporating structured peer demonstrations, guided practice, progressive fitness activities, constructive feedback, and teacher supervision. Lee (2014) and Whipp et al. (2015) provide related evidence supporting collaborative learning and structured peer instruction in Physical Education. Moon et al. (2024) examined school-based physical activity interventions aimed at improving children's motor competence, emphasizing the relevance of structured school physical activity programs to movement development. Although motor competence differs from the health-related fitness components assessed in the present study, this research provides broader support for incorporating organized physical activities and performance-based learning experiences into Physical Education instruction. Integrating these approaches into classroom instruction may help address students' varying fitness levels while promoting active participation and

appropriate exercise performance. Nevertheless, the findings should be interpreted as improvements observed after the intervention rather than definitive evidence of a causal effect.

4. CONCLUSIONS AND RECOMMENDATIONS

The study concluded that the peer-teaching strategy was associated with significant improvements in cardiovascular endurance, muscular endurance, and flexibility among 57 Grade 8 students at Gun-ob High School during School Year 2026–2027. Students' performance improved from Fair in the pretest to Very Good in the posttest across all three health-related fitness components. The statistically significant differences led to the rejection of the null hypothesis, indicating measurable improvements following the intervention. These findings suggest that structured peer-teaching activities involving exercise demonstrations, guided practice, peer observation, and constructive feedback may support students' physical fitness development within MAPEH 8 instruction. The consistent improvements across the three components provide school-based evidence supporting the integration of collaborative instructional approaches into Physical Education lessons. However, the observed improvements cannot be attributed exclusively to peer teaching because the study lacked a comparison group. Overall, the findings provide a basis for developing an enhanced MAPEH 8 lesson guide responsive to students' fitness needs.

Based on the findings, Gun-ob High School administrators are encouraged to support structured peer-teaching activities in MAPEH 8 by providing appropriate facilities, exercise equipment, and sufficient instructional time for safe physical fitness activities. Physical Education teachers should strengthen the implementation of peer teaching through clear instructions, prepared peer teachers, appropriate exercise demonstrations, guided practice, constructive feedback, and continuous supervision. Particular attention should be given to students who remain in lower performance categories to provide additional practice and instructional assistance. The proposed enhanced MAPEH 8 lesson guide should be finalized using the study findings, reviewed by Physical Education experts, and pilot-tested before wider implementation. Feedback from teachers and students may guide improvements in instructional activities, peer-teaching procedures, and assessment strategies. Future researchers are encouraged to investigate peer teaching using larger samples, longer intervention periods, and comparison groups while examining students' experiences and other factors that may influence physical fitness performance.

The study was limited to 57 eligible non-athlete Grade 8 students from three sections of Gun-ob High School during School Year 2026–2027, restricting the generalizability of the findings to other populations and educational settings. Its one-group pretest–posttest design lacked a comparison group, preventing definitive attribution of observed improvements to peer teaching alone. The assessments focused exclusively on cardiovascular endurance, muscular endurance, and flexibility. Although student interviews were included in the methodology, their findings were not reported. Future investigations may address these limitations through larger and more diverse samples, comparison groups, longer intervention periods, and documented qualitative findings.

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