IJGGSD
ISSN: 3155-7716
International Journal of Global Goals and Sustainable Development
RESEARCH | INNOVATION | INCLUSION | SUSTAINABLE FUTURES
DOI: https://doi.org/10.65339/ijggsd.V1.I1.25

Multimedia Assisted (Video Based) Instruction in PE 11 – Aerobics

Sunshine D. Conde
Master of Arts in Education - Major in Physical Education and Sports, Cebu Technological University – Main Campus, Cebu City, Philippines

Email: condeshine@gmail.com

ABSTRACT

This study examined changes in aerobic performance and students' experiences following multimedia-assisted (video-based) instruction in Grade 11 physical education, providing a basis for an enhanced teaching guide. A sequential explanatory mixed-methods design involved 90 purposively selected Grade 11 students at Liloan National High School, Cebu, during School Year 2025–2026. Following a two-week intervention, researcher-developed, expert-reviewed rubrics measured pretest and posttest cardiovascular endurance, flexibility, coordination, and agility; focus group discussions captured students' experiences. Descriptive statistics, paired-samples t-tests, and thematic analysis were employed. Mean scores increased in cardiovascular endurance (3.51 to 4.98), flexibility (2.27 to 4.32), coordination (1.28 to 3.86), and agility (3.38 to 5.00), with significant differences across all components ($p < .001$). Students reported greater engagement, confidence, and independence through repeatable, self-paced demonstrations, although unstable internet access, rapid movement sequences, and limited immediate feedback posed challenges. The findings indicate substantial short-term improvements in assessed aerobic performance alongside favorable learning experiences, without establishing that video instruction alone caused these changes. Teachers should apply the enhanced teaching guide using clear, accessible videos, guided practice, regular performance assessment, and timely feedback. The single-school, purposively sampled, two-week, uncontrolled design limits generalizability and causal inference. The study provides context-specific guidance for technology-supported physical education and contributes to Sustainable Development Goal 3 (Good Health and Well-Being) and Goal 4 (Quality Education) by informing health-promoting and accessible instructional practices.

Keywords: *Aerobic Performance, Multimedia-Assisted Instruction, Physical Education, Sequential Explanatory Design, Student Engagement, Teaching Guide, Video-Based Instruction*

1. INTRODUCTION

Physical education plays an essential role in developing adolescents' physical fitness, movement proficiency, and lifelong participation in physical activity. Aerobic exercise, in particular, supports cardiovascular endurance, flexibility, coordination, and agility, which are important components of physical fitness and functional movement. The World Health Organization (2022) emphasizes the importance of promoting physical activity through supportive policies and environments, while Donti et al. (2022) demonstrate the relevance of structured flexibility development during childhood and adolescence. Effective physical education instruction therefore requires appropriate teaching strategies that accommodate differences in students' physical abilities, learning needs, and opportunities for practice. Advances in educational technology have created opportunities to incorporate multimedia-assisted instruction into physical education. Video-based learning provides visual demonstrations, movement sequences, and opportunities for repeated observation and self-paced practice. Mödinger et al. (2022) identified the potential of video-based visual feedback to support motor learning in physical education, while Zhao et al. (2024) reported generally positive findings concerning the use of instructional videos to develop physical education content knowledge. However, effective implementation requires appropriate instructional design, teacher guidance, and consideration of learners' access to technology. Within this context, the present study investigated multimedia-assisted (video-based) instruction in teaching PE 11–Aerobics among Grade 11 students at Liloan National High School, Cebu, during the School Year 2025–2026. Specifically, it examined students' pretest and posttest performance in cardiovascular endurance, flexibility, coordination, and agility, together with their experiences using video-based instruction. The findings served as the basis for developing an enhanced teaching guide intended to support instructional delivery, student engagement, and aerobic skill development.

Research Problem

Teaching aerobics requires instructional approaches that integrate movement demonstrations, guided practice, and appropriate performance assessment. Conventional teaching approaches may be insufficient for students who require repeated demonstrations or additional opportunities to understand movement sequences. Adams et al. (2025) emphasize that appropriately designed instructional videos can support independent motor-skill practice, while Mödinger et al. (2022) highlight the potential of video-based feedback to enhance movement learning. Nevertheless, the effectiveness of these approaches depends on their instructional application and the learning environment. At Liloan National High School, the study identified concerns regarding limited multimedia instructional resources, insufficient audiovisual materials, and reliance on conventional teaching methods in aerobics instruction. These concerns pointed to a need for instructional alternatives that could accommodate differences in students' learning pace and provide opportunities to observe, practice, and refine aerobic movements. The study also recognized the importance of systematically assessing cardiovascular endurance, flexibility, coordination, and agility to identify learning needs and guide instructional improvements. Accordingly, the central research problem concerned the changes in Grade 11 students' aerobic performance following multimedia-assisted (video-based) instruction and their experiences with this learning approach. The investigation addressed the need for context-specific evidence on video-supported aerobics teaching and for an enhanced teaching guide grounded in students' assessed performance and reported experiences.

Assumptions of the Study

The study was anchored on the assumption that multimedia-assisted (video-based) instruction could enhance Grade 11 students' performance in aerobics by providing clear movement

demonstrations, repeated opportunities for observation, and guided practice. It further assumed that video-supported learning could encourage students' engagement, motivation, and confidence while developing cardiovascular endurance, flexibility, coordination, and agility. These assumptions are consistent with Adams et al. (2025), who describe the instructional potential of video demonstrations and feedback in physical education, and Zhao et al. (2024), who identify positive applications of video-supported learning in physical education. The study also tested the null hypothesis that there was no significant difference between students' pretest and posttest performance following multimedia-assisted instruction, using a 0.05 level of significance.

Objectives of the Study

This study aimed to determine the effectiveness of multimedia-assisted (video-based) instruction in teaching PE 11–Aerobics among Grade 11 students at Liloan National High School, Cebu, during the School Year 2025–2026, as a basis for developing an enhanced teaching guide. Specifically, it sought to assess students' pretest performance in cardiovascular endurance, flexibility, coordination, and agility; determine their posttest performance in these components following the implementation of video-based instruction; establish whether significant differences existed between their pretest and posttest performance; explore students' experiences, perceptions, and challenges in performing aerobic exercises through multimedia-assisted instruction; and develop an enhanced teaching guide based on the quantitative and qualitative findings.

Theoretical or Conceptual Basis

The study was grounded in three complementary perspectives: Social Learning Theory, the Cognitive Theory of Multimedia Learning, and Constructivist Learning Theory. These frameworks explain how observation, multimedia presentation, guided practice, and active learner participation may support aerobic skill development. The observational learning perspective emphasizes acquiring skills through demonstration, imitation, and repeated practice. In physical education, instructional videos enable students to observe movement execution, identify appropriate techniques, and reproduce demonstrated skills. Alali et al. (2024) discuss the relevance of cognitive and ecological approaches to skill acquisition, including the instructional value of demonstrations and feedback. Similarly, Mödinger et al. (2022) identified the potential of expert modeling and video-based visual feedback to support motor learning. These findings provide contemporary support for the study's use of observational learning principles in aerobics instruction. The Cognitive Theory of Multimedia Learning explains how learners process verbal and visual information through separate but complementary channels. Mayer (2024) emphasizes that effective multimedia learning involves selecting relevant information, organizing it meaningfully, and integrating it with existing knowledge. In aerobics instruction, visual movement demonstrations combined with appropriate verbal explanations and auditory cues may help students understand movement sequences, timing, and execution. The use of concise and appropriately structured instructional videos is therefore relevant to reducing unnecessary cognitive demands while supporting skill comprehension. The constructivist perspective emphasizes active participation, individual experience, and the progressive development of understanding through practice and feedback. Video-based aerobics instruction supports this perspective by allowing students to observe demonstrations, perform movements, evaluate their execution, and make adjustments through repeated practice. Fiorella (2022) provides contemporary evidence for the broader principle that active processing during video-supported learning can improve understanding compared with passive review. Although this evidence concerns cognitive learning rather than aerobics specifically, it supports the instructional rationale for integrating active learning opportunities with video presentation. Conceptually, the study followed an Input–Process–Output framework. The inputs included students' initial

performance in cardiovascular endurance, flexibility, coordination, and agility, together with the video-based instructional materials and performance assessment tools. The process involved administering pretests, implementing multimedia-assisted aerobics instruction, conducting posttests, and collecting students' experiences through focus group discussions. The resulting quantitative and qualitative findings provided the basis for developing an enhanced teaching guide. This framework connects the study's theoretical assumptions with its instructional intervention, performance evaluation, and intended educational output.

The study aligns primarily with Sustainable Development Goal 3 (Good Health and Well-Being) and Sustainable Development Goal 4 (Quality Education), reflecting its emphasis on physical fitness development and improved instructional practices. SDG 3 emphasizes the promotion of health and well-being, including the prevention of health risks associated with physical inactivity. The World Health Organization (2022) identifies physical activity promotion as an important public health priority. By investigating instructional strategies intended to improve students' aerobic performance and encourage participation in physical activities, the study contributes to the educational promotion of active and healthy lifestyles. Its relevance to public health sustainability lies in supporting the development of physical activity skills and habits among adolescents. SDG 4 promotes inclusive, equitable, and quality education. UNESCO (2023) emphasizes that educational technologies should be implemented according to learners' needs, instructional relevance, accessibility, and sustainability. The study contributes to this goal by examining video-based learning as a supplementary teaching strategy that provides movement demonstrations and opportunities for self-paced practice. The proposed enhanced teaching guide may assist physical education teachers in organizing instructional activities, monitoring student performance, and responding to individual learning needs. Overall, the study contributes to educational and public health sustainability by providing context-specific evidence for improving aerobics instruction and supporting students' physical development. Its contribution is consistent with the broader objectives of the United Nations Department of Economic and Social Affairs (2024), particularly the promotion of good health and quality education. However, its sustainability implications concern potential improvements in instructional practice and physical activity engagement rather than demonstrated long-term health outcomes.

2. METHODOLOGY

Research Design

The study utilized a sequential explanatory mixed-methods research design, integrating quantitative and qualitative approaches. The quantitative phase assessed students' performance in cardiovascular endurance, flexibility, coordination, and agility before and after the implementation of video-based aerobics instruction. Pretest and posttest scores were analyzed to determine changes in performance and identify statistically significant differences. Subsequently, the qualitative phase explored students' experiences, perceptions, and challenges through focus group discussions. The integration of both phases provided a comprehensive understanding of students' aerobic performance and learning experiences, serving as the foundation for developing an enhanced teaching guide.

Research Locale or Study Setting

The study was conducted at Liloan National High School, a public secondary school located in Barangay Poblacion, Liloan, Cebu, Philippines, during the School Year 2025–2026. The institution provides junior and senior high school education, including academic and technical-vocational programs. The research focused on Grade 11 students enrolled in PE 11–Aerobics, where multimedia-assisted instruction was implemented to support aerobic skill development. The

school served as the setting for the instructional intervention, performance assessments, and collection of students' learning experiences.

Participants or Data Sources

The participants consisted of 90 Grade 11 students enrolled at Liloan National High School during the School Year 2025–2026, comprising 24 males (26.67%) and 66 females (73.33%). Purposive sampling was employed to select students directly participating in PE 11–Aerobics who were capable of completing the required performance assessments. Participation was limited to students who submitted signed informed consent forms and voluntarily agreed to participate. Students with medical conditions, injuries, or incomplete consent documentation were excluded. The participants provided quantitative data through pretest and posttest assessments and qualitative information through focus group discussions.

Research Instruments or Materials

The study utilized researcher-developed performance assessment rubrics, pretest and posttest recording sheets, multimedia-assisted instructional videos, weekly monitoring sheets, and a questionnaire or interview guide for gathering students' experiences. The instruments were reviewed by two validators, a Physical Education specialist and an assessment and evaluation expert, to establish their content validity, clarity, and appropriateness. Cardiovascular endurance was assessed through one-minute jumping jacks, considering pulse rate, breathing, and stamina. Flexibility was evaluated through arm swings and overhead reaches, while coordination and agility were assessed through movement execution, body control, and directional changes. Performance was rated using a five-point rubric ranging from low to exemplary performance. The same assessment criteria were applied during the pretest and posttest to maintain consistency. The qualitative instrument explored students' engagement, perceived learning benefits, encountered challenges, and recommendations regarding video-based aerobics instruction.

Data Gathering Procedure

The researcher secured permission from the school principal of Liloan National High School before conducting the study during the first semester of the School Year 2025–2026. After obtaining informed consent, the participants underwent an orientation regarding the research objectives and procedures. A pretest was administered using researcher-developed performance rubrics to establish students' initial abilities in cardiovascular endurance, flexibility, coordination, and agility. Following the baseline assessment, multimedia-assisted (video-based) aerobics instruction was implemented for two weeks through synchronous instructional sessions. Students participated in guided video demonstrations and repeated movement practice, while weekly monitoring sheets supported formative assessment and progress evaluation. After the intervention, a posttest was administered using the same assessment instruments to determine changes in aerobic performance. Subsequently, focus group discussions were facilitated by the Physical Education teacher to gather students' experiences, perceived benefits, and challenges. Responses were documented and transcribed for qualitative analysis. The quantitative and qualitative findings were subsequently integrated to inform the development of an enhanced teaching guide.

Data Analysis

Quantitative data were analyzed using descriptive and inferential statistics. Frequency and percentage distributions were employed to describe students' performance classifications in cardiovascular endurance, flexibility, coordination, and agility. Weighted means determined the average performance levels, while standard deviations measured score variability during the pretest and posttest. A paired-samples t-test was conducted at the 0.05 level of significance to

determine whether students' performance differed significantly before and after multimedia-assisted instruction. Qualitative data from the focus group discussions were examined through thematic analysis involving coding, categorization, and identification of recurring themes concerning students' engagement, learning experiences, perceived benefits, and instructional challenges. The integration of quantitative and qualitative findings provided the basis for interpreting the instructional outcomes and developing the enhanced teaching guide.

Ethical Consideration

Ethical considerations were observed throughout the research process by securing permission from the school principal and obtaining informed consent from participating students before data collection. Participants were oriented regarding the study's objectives, procedures, potential benefits, and risks to support voluntary and informed participation. Students with medical conditions, injuries, or incomplete consent documentation were excluded to safeguard their well-being during physical activities. The study involved performance assessments and focus group discussions conducted within the school setting. Participation was based on the students' willingness to undergo the required assessments and share their learning experiences.

3. RESULTS AND DISCUSSION

3.1 Pretest Performance of Students in Aerobics

3.1.1 Cardiovascular Endurance

The pretest results showed that students demonstrated generally above-average cardiovascular endurance, with a weighted mean of 3.51 and a standard deviation of 0.41. Of the 90 students, 68.89% performed above average, 28.89% attained average performance, and 1.11% each achieved exemplary and below-average performance. None were classified under low performance. These findings established that most students possessed a satisfactory initial level of cardiovascular endurance, although differences in individual performance remained evident. The findings indicate the importance of providing differentiated aerobic activities to accommodate students with varying levels of physical fitness. Regular physical activity supports cardiovascular health and overall physical development, as emphasized by World Health Organization (2022), (Mu et al., 2025), and (Arrum et al., 2024). Furthermore, Chin-Cheng (2022) and Campoamor-Olegario et al. (2025) underscore the importance of engaging instructional approaches and equitable opportunities for physical activity. These perspectives support the use of multimedia-assisted instruction to improve participation and strengthen students' aerobic performance.

3.1.2 Flexibility

The pretest assessment revealed predominantly below-average flexibility, with a weighted mean of 2.27 and a standard deviation of 0.47. Most students (68.89%) were classified as below average, followed by 21.11% with average performance and 10.00% with low performance. None achieved above-average or exemplary ratings. These findings demonstrated that flexibility was an area requiring substantial improvement before the implementation of multimedia-assisted instruction. The low initial flexibility scores indicate the need for structured stretching activities and appropriate movement demonstrations. Flexibility development supports mobility and functional movement, as discussed by (Donti et al., 2022), (Kaur et al., 2025), and (Marinova & Popova-Dobreva, 2024). Similarly, Santos et al. (2024), Reyes and Bautista (2023), and Johnson et al. (2022) emphasize the relevance of flexibility training and multimedia-supported physical education activities. These findings support the instructional value of video demonstrations in helping learners observe and practice stretching techniques correctly.

3.1.3 Coordination

The pretest results revealed low coordination performance, with a weighted mean of 1.28 and a standard deviation of 0.35. Most students (97.78%) were classified under low performance, while 1.11% each obtained below-average and above-average ratings. No students were classified as average or exemplary. These results identified coordination as the weakest aerobic skill component before the intervention, reflecting students' difficulties in synchronizing body movements and executing coordinated routines. The findings suggest a need for instructional strategies emphasizing movement sequencing, timing, and repeated practice. Coordination requires the integration of body movements and neuromuscular control, as discussed by (Ortiqovna, 2025). Supporting studies by Mendoza et al. (2023), Thompson and Lee (2024), and Wang et al. (2022) highlight the importance of structured practice and instructional interventions in motor coordination development. Video-based instruction may address these learning needs by providing demonstrations that students can repeatedly observe and imitate.

3.1.4 Agility

The pretest results showed an overall agility mean of 3.38 and a standard deviation of 0.61. More than half of the students (51.11%) demonstrated above-average performance, while 31.11% achieved average performance and 17.78% were below average. None were classified as exemplary or low. These results indicated that students generally possessed developing agility skills, although some required additional support in performing rapid and controlled movements. The variation in agility performance emphasizes the importance of differentiated activities designed to improve directional changes, balance, and movement control. Chen et al. (2025) highlight the relevance of structured training interventions in developing change-of-direction performance among adolescents. Similarly, Ramos et al. (2023), Lee and Gomez (2024), and Matthews et al. (2022) emphasize the importance of agility development and instructional strategies for improving physical performance. These perspectives support the integration of guided video demonstrations and progressive movement practice in aerobics instruction.

3.2 Posttest Performance of Students After Multimedia-Assisted Instruction

3.2.1 Cardiovascular Endurance

Following the implementation of multimedia-assisted instruction, all 90 students (100%) attained exemplary performance in cardiovascular endurance. The weighted mean increased from 3.51 during the pretest to 4.98 during the posttest, with a standard deviation of 0.10. These findings demonstrated a substantial improvement in cardiovascular endurance performance, with students consistently achieving the highest performance classification after the intervention. The improved performance suggests that structured video demonstrations, guided practice, and repeated aerobic activities supported students' development of endurance-related skills. Multimedia instruction provides visual and auditory guidance that may facilitate movement accuracy and participation (Sharma et al., 2024). Supporting literature by Punzalan et al. (2023), Smith and Jones (2024), and Lee et al. (2022) also discusses the potential of multimedia-supported instruction in promoting physical activity participation and aerobic performance. The findings indicate that video-based activities may be a useful supplementary strategy in teaching cardiovascular endurance.

3.2.2 Flexibility

Students demonstrated considerable improvement in flexibility following the intervention. The weighted mean increased from 2.27 to 4.32, with 84.44% of students attaining above-average

performance and 15.56% reaching exemplary performance. No students remained in the average, below-average, or low-performance categories. These results demonstrated an overall improvement in flexibility performance after the implementation of multimedia-assisted instruction. The findings suggest that repeated video demonstrations and guided stretching activities helped students perform flexibility exercises more effectively. The intervention provided opportunities to observe proper movement techniques, adjust execution, and progressively practice stretching movements (Tiwari & Yadav, 2024). Related studies by Santos et al. (2024), Reyes and Bautista (2023), and Johnson et al. (2022) support the instructional relevance of structured flexibility activities and multimedia-assisted physical education. These findings indicate the value of integrating video-supported stretching routines into aerobics instruction.

3.2.3 Coordination

The posttest results showed a substantial improvement in coordination, with the weighted mean increasing from 1.28 to 3.86 and a standard deviation of 0.34. Most students (90.00%) achieved above-average performance, while 6.67% attained exemplary performance and 3.33% remained at the average level. No students were classified under below-average or low performance. These findings demonstrated a marked improvement in students' ability to execute coordinated aerobic movements after the intervention. The improvement suggests that video demonstrations, rhythmic cues, and repeated movement sequences supported students' coordination development. Structured practice enabled students to observe and reproduce movement patterns while refining timing and body control (Georgescu et al., 2025). Related literature by Orines (2023), Chin-Cheng (2022), and Ivey and Parrish (2022) discusses the instructional potential of multimedia resources in facilitating motor skill acquisition and psychomotor learning. These findings support the use of video-based demonstrations for developing movement accuracy and coordination in physical education.

3.2.4 Agility

The posttest assessment revealed that all 90 students (100%) achieved exemplary performance in agility. The weighted mean increased from 3.38 to 5.00, with a standard deviation of 0.00. These results indicated uniformly high performance in the assessed agility activities following multimedia-assisted instruction, representing a substantial improvement from the students' initial performance levels. The findings suggest that video-guided movement exercises, repeated practice, and formative monitoring supported students' execution of agility-related skills. The instructional activities emphasized movement accuracy, timing, balance, and rapid directional changes (Thieschäfer & Büsch, 2022) and (Porto & Nabor, 2025). Related research by Batni et al. (2025), Caballes (2025), and Alhulail (2023) highlights the relevance of interactive multimedia resources in promoting learning engagement and skill development. These findings support the integration of structured multimedia activities to strengthen agility performance in aerobics instruction.

3.3 Significant Differences Between Pretest and Posttest Performance

The paired-samples t-test revealed statistically significant differences between pretest and posttest performance in all four aerobic skill components at the 0.05 significance level. Cardiovascular endurance increased from 3.51 to 4.98, with a reported mean difference of 1.47, $t = 34.39$, $p < .001$, and effect size of 3.63. Flexibility increased from 2.27 to 4.32, with a reported mean difference of 2.04, $t = 8.61$, $p < .001$, and effect size of 0.91. Coordination increased from

1.28 to 3.86, with a reported mean difference of 2.57, $t = 49.90$, $p < .001$, and effect size of 5.26. Agility increased from 3.38 to 5.00, with a mean difference of 1.62, $t = 25.18$, $p < .001$, and effect size of 2.65. Consequently, the null hypothesis was rejected for all four skill components. The statistically significant differences indicate substantial improvements in students' assessed aerobic performance following multimedia-assisted instruction. The findings are consistent with evidence on the instructional value of feedback and video-supported motor learning reported by Han et al. (2022). Similarly, Martinez and Lopez (2023) and Rivera et al. (2024) discuss the use of structured instructional interventions and pretest–posttest assessments in evaluating physical education outcomes. The findings support the potential value of multimedia-assisted aerobics instruction in developing physical skills, although the observed improvements represent changes within the participating group rather than a controlled comparison with another teaching method.

3.4 Students' Experiences with Multimedia-Assisted Aerobics Instruction

3.4.1 Student Engagement and Motivation

The qualitative findings revealed generally positive experiences with video-based aerobics instruction. Students described the activities as enjoyable, convenient, engaging, and easy to follow. They reported increased motivation through self-paced learning, repeated practice, peer encouragement, and the ability to review instructional videos outside regular class sessions. Some students also preferred the video-based approach because it allowed them to control their learning pace and practice without feeling pressured. The findings suggest that learner autonomy, enjoyment, and flexible practice opportunities contributed to students' favorable perceptions of video-based instruction. Multimedia-supported activities may promote engagement by accommodating differences in learning pace and supporting independent practice (Borrego et al., 2024). The importance of motivation, self-efficacy, and positive learning experiences is also highlighted by (Lee & Martinez, 2024), (Yu et al., 2024), (Panjiantariksa, 2024), and (Al-Haliq et al., 2023). These perspectives reinforce the potential contribution of multimedia instruction to student-centered physical education.

3.4.2 Comprehension, Repetition, and Instructional Video Features

Students identified clear step-by-step demonstrations, pause and rewind functions, slow-motion playback, multiple viewing angles, and background music as helpful instructional features. The ability to repeat difficult movements and review specific demonstrations enabled students to understand aerobic sequences more clearly. Students also valued the flexibility to practice at their preferred pace, while background music contributed to enjoyment and motivation during aerobics activities. The findings indicate that clear visual demonstrations and learner-controlled playback can support movement comprehension and repeated skill practice. Previous research discusses the potential benefits of video replay, visual feedback, and self-paced instruction for motor learning (Adliah et al., 2025) and (Borrego et al., 2024). Similar perspectives on confidence and skill development through repeated practice are presented by (Dizon, 2022). Furthermore, (Kwan et al., 2024) and (Yu et al., 2024) highlight the instructional relevance of visual clarity, multimedia presentation, and engaging learning features. These findings support the use of structured video content that allows learners to observe and refine aerobic movements.

3.4.3 Skill Mastery, Confidence, and Learning Achievements

Students reported perceived improvements in coordination, timing, rhythm, jumping jacks, arm movements, hopping, and footwork. Several described becoming more confident after repeatedly practicing challenging movements. Others identified meaningful learning achievements, including successfully performing grapevine steps, synchronizing movements with musical beats, and coordinating breathing with aerobic routines. These experiences were associated with feelings of accomplishment, increased confidence, and willingness to continue practicing. The findings suggest that repeated video observation and self-paced practice supported students' perceived progress in movement execution and skill mastery. Video-supported motor learning provides opportunities to reinforce movement patterns and build confidence through repetition (Dizon, 2022). Related studies by Cichanowski et al. (2023) and Yau et al. (2022) highlight the relevance of practice, motivation, and achievement in physical skill development. These findings indicate that multimedia-assisted instruction may support both technical learning and positive psychological experiences during aerobics activities.

3.5 Challenges and Instructional Improvements

3.5.1 Challenges Encountered During Video-Based Instruction

Despite generally positive experiences, students identified several difficulties in using multimedia-assisted instruction. The most frequently described challenges involved unstable internet connectivity, buffering or delayed video playback, limited access to Wi-Fi, and difficulty following fast movement sequences. Some students also reported the absence of immediate teacher feedback, making it difficult to determine whether their movements were executed correctly. Although pausing, replaying, and slowing videos helped address pacing difficulties, students continued to identify the need for direct instructional support. These findings indicate that technological accessibility and the availability of immediate feedback influence students' experiences with video-based aerobics instruction. Connectivity limitations may interrupt learning activities, while insufficient feedback may delay the correction of movement errors. Similar challenges concerning technical accessibility and instructional feedback are discussed by (Grazitti, 2025) and (Liang et al., 2024). The importance of appropriate instructional support and accessibility in video-based physical education is also emphasized by (Adliah et al., 2025). These findings suggest that multimedia resources should complement, rather than entirely replace, teacher guidance and performance monitoring.

3.5.2 Suggested Improvements in Multimedia-Assisted Instruction

Students recommended improving video resolution, providing clearer explanations, using shorter instructional segments, and demonstrating difficult movements step by step. They also suggested incorporating engaging background music, interactive features, personalized feedback, and activities organized according to difficulty level. These recommendations reflected students' preference for instructional videos that are accessible, visually clear, engaging, and responsive to individual learning needs. The findings highlight the importance of improving instructional video design and strengthening teacher-supported learning opportunities. Clear demonstrations, appropriate pacing, and engaging multimedia elements may facilitate comprehension and sustained participation. These principles are consistent with discussions on multimedia presentation and learner engagement by (Kwan et al., 2024) and (Yu et al., 2024). Similarly, (Liang et al., 2024) emphasizes the relevance of instructional support and accessible video-based learning. The students' recommendations provide a practical basis for refining the proposed Enhanced Teaching Guide for PE 11–Aerobics through structured

movement demonstrations, appropriate assessment activities, and supplementary teacher feedback.

4. CONCLUSIONS AND RECOMMENDATIONS

The study examined multimedia-assisted (video-based) instruction in PE 11–Aerobics among 90 Grade 11 students at Liloan National High School, Cebu. Students' pretest performance varied across cardiovascular endurance, flexibility, coordination, and agility, with particularly low initial performance in coordination and flexibility. Following two weeks of video-supported instruction, posttest scores improved significantly across all four components. Students also described greater engagement, confidence, and independence, especially because demonstrations could be paused, replayed, and practiced at an individual pace. Their responses nevertheless identified internet interruptions, fast-paced sequences, and limited immediate feedback as instructional challenges. Taken together, the quantitative improvements and qualitative experiences suggest that video-supported activities were a useful approach for teaching aerobics in this group. The findings provide a context-specific basis for the Enhanced Teaching Guide, combining clear movement demonstrations, repeated practice, structured performance assessment, and teacher support. The observed changes do not, however, establish that video instruction alone caused the improvements.

Physical education teachers should use the developed Enhanced Teaching Guide to organize aerobics lessons around clear, step-by-step video demonstrations, guided rehearsal, individual or group practice, and consistent assessment of cardiovascular endurance, flexibility, coordination, and agility. Special attention should be given to movements requiring coordination and flexibility, which were the weakest skills at baseline. Teachers should provide opportunities to pause, replay, and slow difficult sequences and supplement videos with live demonstrations, timely corrections, and feedback on movement execution. To address students' reported barriers, schools should make videos available in accessible formats, including offline copies where feasible, and provide suitable practice spaces and audiovisual resources. School administrators should support teacher orientation in using the guide and monitoring learners' progress through the existing performance rubrics and formative assessments. Feedback from students should inform adjustments to video quality, pacing, instructional clarity, and activity difficulty. Further evaluations should examine whether improvements are sustained over longer instructional periods and in other school settings.

The study involved 90 purposively selected Grade 11 students from one public high school in Cebu, limiting the transferability of findings to other learners and settings. Its two-week intervention and single-group pretest–posttest assessment documented short-term changes but did not include a comparison group, so improvements cannot be attributed exclusively to video-based instruction. Performance was evaluated using researcher-developed rubrics reviewed by two validators, and students' experiences were collected through focus group discussions. The study therefore provides evidence of assessed performance changes and reported experiences, rather than long-term skill retention. Future research could incorporate comparison groups, longer follow-up periods, and additional schools.

5. REFERENCES

Amparo, J., & Vargan, R. C. (2023). Financial self-efficacy, performance, and happiness index of teachers in Saraburi Province, Thailand: Basis for an intervention program. *Human Behavior, Development and Society, 24*(2), 50–61. https://so01.tci-thaijo.org/index.php/hbds/article/view/265710

Capisonda-Porteza, E. J. (2023). Personal financial management practices and lived experiences of teachers in the Third Congressional District of Quezon. *Psychology and Education: A Multidisciplinary Journal, 7*(3), 210–218. https://doi.org/10.5281/zenodo.7653255

Flamiano, N. G. P. (2024). Reasons, effects, and challenges of loans: Input to financial literacy enhancement. *International Journal of Management and Accounting, 6*(4), 85–98. https://doi.org/10.34104/ijma.024.085098

Leal, J. P., & Baniel, M. B. (2024). Work commitment, motivation, and job satisfaction on the quality of life of teachers. *Diversitas Journal, 9*(1, Special Issue), 344–364. https://doi.org/10.48017/dj.v9iSpecial1.2941

Manalo, R. A., Uy, C., & Bayona, S. P. (2024). Factors affecting financial well-being of Filipino basic education teachers: A structural equation model. *Review of Integrative Business and Economics Research, 13*(2), 123–141. https://buscompress.com/uploads/3/4/9/8/34980536/riber_13-2_08_k23-031_123-141.pdf

Mencias-Tabernilla, M. C. L. (2023). The story behind “London” (loan dito, loan doon): Exploring teachers' expenditure patterns and debt profile. *Universal Journal of Educational Research, 2*(2), 131–149. https://doi.org/10.17613/9c9h-ms38

Mustafa, M. I. Z., Chusniyah, T., & Bimantoro, D. (2024). The relationship between financial wellness and job performance in employees of PDAM Tugu Tirta in Malang City. *Jurnal Sains Psikologi, 13*(1), 96–103. https://doi.org/10.17977/um023v13i12024p96-103

Paniza, G. I. P. (2023). Work motivation, work commitment and performance of public school teachers: Basis for an intervention program. *International Journal for Multidisciplinary Research, 5*(3). https://doi.org/10.36948/ijfmr.2023.v05i03.3878

Permejo, E., Jr., Enfermo, L., & Lumpas, A., Jr. (2024). Financial literacy status of public elementary school teachers: The case of Tolosa, Leyte, Philippines. *International Journal of Research Studies in Education, 13*(18), 133–144. https://doi.org/10.5861/ijrse.2024.24160

Rosso, V. F., Muñoz-Pascual, L., & Galende, J. (2024). Do managers need to worry about employees' financial stress? A review of two decades of research. *Human Resource Management Review, 34*(3), Article 101030. https://doi.org/10.1016/j.hrmr.2024.101030

Tagapulot, S. D., & Macalisang, D. (2024). Financial challenges among public school teachers: Basis for proposed program. *Journal of Interdisciplinary Perspectives, 2*(7), 494–499. https://doi.org/10.69569/jip.2024.0194

Wartenberg, G., Aldrup, K., Grund, S., & Klusmann, U. (2023). Satisfied and high performing? A meta-analysis and systematic review of the correlates of teachers' job satisfaction. *Educational Psychology Review, 35*(4), Article 114. https://doi.org/10.1007/s10648-023-09831-4

Wei, X., Wei, X., Yu, X., & Ren, F. (2024). The relationship between financial stress and job performance in China: The role of work engagement and emotional exhaustion. *Psychology Research and Behavior Management, 17*, 2905–2917. https://doi.org/10.2147/PRBM.S446520