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Increasing Junior High Learners Motivation and Participation in Physical Education through Game-Based Warm-Up Activities

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Abstract:

This study examined the effectiveness of game-based warm-up activities in increasing learners' motivation and participation in Physical Education (PE). Using a one-group pretest -posttest design, changes in ARCS motivation components Attention, Relevance, Confidence, and Satisfaction were assessed. Participants were junior high school learners with modest family incomes, large households, and limited home support. Data were collected via ARCS pre- and post-tests, SIMS scales, and teacher evaluation forms, and analyzed using weighted mean and paired sample t-tests.

Results showed very high post-intervention motivation (WM = 3.58), with notable gains in Confidence (WM = 3.68), Relevance (WM = 3.57), Attention (WM = 3.53), and Satisfaction (WM = 3.52). Paired t-tests confirmed statistically significant improvements with large to very large effect sizes, indicating meaningful impacts of the intervention. Teachers also strongly agreed that motivation (WM = 3.40) and participation (WM = 3.89) improved.

The study concludes that game-based warm-up activities effectively foster motivation, engagement, and active participation in Physical Education. An enhancement action plan is recommended to further strengthen lower-gain areas and address contextual challenges.

Keywords: Physical Education, game-based warm-up activities, learner motivation, ARCS model, SIMS, participation.

CHAPTER 1

THE PROBLEM AND ITS SCOPE

INTRODUCTION

Rationale of the Study

Previous experiences of students in their Physical Education class may also result in their perception towards the activity. It is essential to recognize that students' interest in learning is closely related to their motivation, including in Physical Education. A lack of motivation may hinder students from actively participating, leading to suboptimal learning results. Previous studies have shown that high levels of interest in learning can contribute to better academic performance, including in sports and health education (Dewi, 2021). Therefore, there is a need for fresh, interactive approaches that can boost students' motivation and interest in Physical Education.

Every student has their own way of learning, thinking and motivation. Teachers all over the world are trying to find new ways to motivate their students inside and outside the classroom. Previous studies have indicated that traditional teaching strategies have been linked to poor motivational levels in physical education (Gil-Arias, Diloy-Peña et. Al, 2020) and it is time to shine some light on the need for teachers to start using non-traditional teaching strategies.

Moreover, Shen et al. (2022) found that lack of motivation in learning physical education may result from different reasons. Moreover, in Carnegie Mellon University (2022) provided reasons like students may suffer from physical, mental, or other personal problems that affect motivation. More so, students may have other priorities that compete for their time and attention and do not believe that their efforts will improve their performance in learning physical education.

In the Philippine context, some students are not motivated because they may have a wrong opinion of physical education because they do not like how the instructor runs the class or the activity itself (Cruz et al., 2021). On the other hand, in Surigao del Sur, Balacuit and Inabangan (2019) stated that some elementary, secondary, and even tertiary public and private school teachers have expressed dissatisfaction with students' lack of enthusiasm for games and sports, except for those with a high degree of bodily-kinesthetic intelligence because of several demanding activities and other factors, these pupils take the subject for granted. Likewise, in Davao Del Sur, students had problems gaining motivation in learning because they were afraid of mistakes and are also less motivated due to the lack of creative setup in the classroom (Corsino et al., 2022).

The issue is critical especially in Consolatrix College of Toledo City initial classroom observations in several shows that many junior high students are less interested in physical activities, lack of motivation and participation during Physical education classes. Many students view warm-ups as repetitive that can lack interest or excitement, it has missing opportunities in building enthusiasm for physical activity and learning. Students tend to show greater interest in technology-driven activities, such as playing digital games. This raises the question of whether the use of games as a learning medium could address the issue of low student interest in Physical education. Moreover, games offer an opportunity to diversify interactions within physical education lessons, making them more enjoyable and varied.

This research will explore the critical need to transform warm-up activities from routine exercises into engaging, motivational experiences that enhance overall learning outcomes to students. The focus of this study is to assess how the use of game-based learning media can enhance student interest in physical education and determine its impact on student participation in physical activities. It is hoped that this research will provide valuable insights for educators and policy makers in designing more effective and engaging teaching strategies for physical education.

In light of this, the primary objective of this research is to explore the role of game-based learning strategies in increasing student engagement and motivation in junior high school students on physical education classes. Additionally, this study aims to explore how game-based learning tools will create more dynamic and effective learning environment. Furthermore, this study intends to make a change in the pedagogy of physical education or the method of how teachers teach by making warm-ups game- based activities where students will actively participate. This study will offer recommendations for the further development of game-based learning tool that can be utilized by physical education teachers to enhance the quality of education in schools.

Theoretical Background

The study is grounded within the theoretical framework of Deci's and Ryan's self-determination theory (SDT) (1985), Vygotsky's social constructivism (1978) and Csikszentmihalyi's flow theory (2017), providing a cohesive theoretical foundation for understanding how can game-based warm-up activities enhance students' motivation and participation. Together, by examining the principles these three theories **Self-Determination Theory**, **Flow Theory**, and **Social Constructivism** a powerful framework for explaining how game-based warm-up activities in physical education can effectively increase student motivation and participation**.** Deci's and Ryan's Self- determination theory of motivation systematically explicates the dynamics of human needs, motivation, and well-being within a social and cultural context. This theory suggests that all individuals have three innate needs: the need for autonomy (feeling in control of our own behaviors and goals), the need for relatedness (interacting with, being connected to, and caring for others or activities), and the need for competence (feeling capable, effective, and challenged by tasks). This theory mentions that higher the satisfaction of learners higher is their motivation to self-learning (Buil, Catalán, et al,. 2020). Self-Determination Theory suggests that satisfying students' needs encourages a shift from external pressure to internal interest, thereby increasing self-learning and engagement (Buil et al., 2020; Ryan & Deci, 2017, 2020). In educational settings, particularly in physical education, interventions like game-based warm-ups can be intentionally designed to facilitate the satisfaction of these needs.

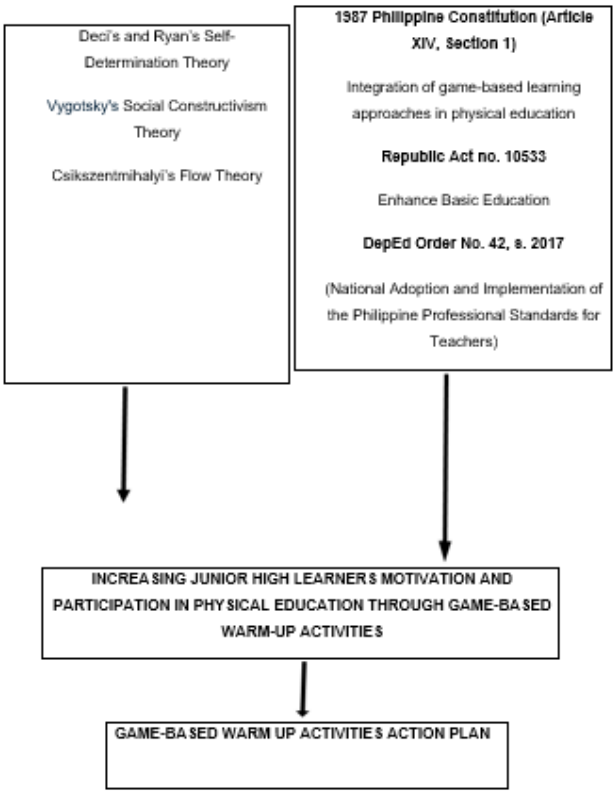


FIGURE 1-Theoritical- Conceptual Framework Schema

Vygotsky's social constructivism provides a strong theoretical foundation for understanding the effectiveness of game-based learning. Vygotsky argued that higher mental functions originate in social interactions (interpsychological). When these needs are met, students develop more self-determined motivation and participate more fully in physical education activities. Before being internalized by the individual (intrapsychological). Game-based learning, especially through cooperative or team-based games, inherently promotes social interaction. Students are often required to communicate, negotiate, and collaborate to achieve game objectives. This collaborative problem-solving environment fosters a sense of shared purpose and collective knowledge construction, which can significantly increase participation. When students work together, they are more likely to stay engaged and contribute, knowing their input is valued and necessary for team success. Moreover, Students are motivated to engage when they feel supported in their learning journey, challenged appropriately, and provided with opportunities to construct knowledge collaboratively within a meaningful and engaging context.

Csikszentmihalyi (2017 flow theory states that learners are motivated by learning environments that are challenging and this creates a flow toward further learning (Rachels & Szapkiw, 2018). Csikszentmihalyi's Flow Theory provides a compelling explanation for the deep engagement, enjoyment, and sustained motivation often observed in individuals playing games, and thus offers a valuable framework for understanding the impact of game-based learning on student motivation and participation. Flow is described as an "optimal experience" or "being in the zone," a state of complete absorption in an activity that is intrinsically rewarding (Rachels & Szapkiw, 2018). This theory offers a valuable framework for understanding how Game based learning influences student motivation and participation by creating conditions conducive to this highly engaging mental state. Learners, as noted by Csikszentmihalyi, are intrinsically driven by learning environments that present an appropriate level of challenge, which in turn fosters a "flow" state leading to further learning and exploration (Rachels & Rockinson-Szapkiw, 2018).

Taken together, these three cognitive theories create a strong foundation for the study. They justify game-based warm up activities as a strategy in increasing students' motivation and participation in physical education classes. These theories specifically validate the use of game-based learning as a powerful tool for promoting deep participation, enhancing motivation, and facilitating meaningful knowledge construction for diverse learners, especially those in remote or underserved settings.

The use game-based in warm-up activities is not only supported by theory but also mandated and encouraged by several national legal and policy frameworks in the Philippines. These legal bases collectively advocate for inclusive, equitable, and modern approaches to education that meet the needs of all learners, regardless of geographic or socioeconomic background.

Foremost among these is the 1987 Philippine Constitution, which in Article XIV, Section 1, mandates the State to "protect and promote the right of all citizens to quality education at all levels." This foundational law implies that access to effective instructional strategies such game-based learning, that can enhance the quality and accessibility of education. By emphasizing quality, accessibility, and diverse learning approaches, the constitution paves the way for innovative educational practices like game-based learning to flourish and contribute to the holistic development of Filipino learners. Additionally, it specifies that the curriculum shall use "pedagogical approaches that are constructivist, inquiry-based, reflective, collaborative and integrative."

Republic Act No. 10533, or the "Enhanced Basic Education Act of 2013" (K to 12 Law), mandates a curriculum that is "learner-centered, inclusive and developmentally appropriate." Game-based warm-up activities naturally align with this. They cater to students' innate desire for play and movement, making the learning experience more relatable and enjoyable. Moreover, profoundly reshaped the Philippine education landscape, providing a strong foundation for innovative

pedagogical approaches like using game-based warm-up activities in Physical Education classes. By tapping into a child's natural inclination towards games, these activities can be tailored to be developmentally appropriate for various age groups in K-12, ensuring that Physical education remains relevant and engaging, thereby boosting participation.

In alignment with the aforementioned legal mandates, DepEd Order No. 42, s. 2017, which introduced the Philippine Professional Standards for Teachers (PPST), further reinforces the pedagogical justification for utilizing game-based warm-up activities in Physical Education classes to enhance student motivation and participation. By empowering teachers to employ innovative, learner-centered, and engaging strategies like game-based warm-up activities, the PPST strengthens the professional mandate for educators to directly address student motivation and participation in Physical education, thereby ensuring that the principles of quality and accessible education enshrined in the K to 12 Law are effectively realized in every classroom.

Supporting these legal mandates and professional standards is a growing body of literature that unequivocally highlights the efficacy of game-based learning in enhancing student motivation and participation. Game-based learning is an approach used to enhance the students' learning by employing games in their learning and it has a tremendous effect on enhancing their student's performance (Schembri et al.,2021). This is a comprehensive set of empirical and theoretical backing for game-based learning.

Integrating a game-based approach into Physical Education is an effective way to facilitate learning and reach students, particularly during periods of transition in educational delivery and adaptation to 21st-century skills. This approach is crucial because Physical education plays a vital role in providing learners with opportunities to express emotions during challenging times (Schembri et al., 2021).

Game-based learning is defined as the "use of games and play-like elements in learning environments" to improve outcomes (UNESCO, as cited in Duraiappah et al., 2020, p. X). By integrating game design principles, this strategy makes learning more interactive, engaging, and effective, applying to various game types across subjects. Game-based learning not only boosts engagement, motivation, and knowledge retention but also cultivates essential skills, such as critical thinking, collaboration, and problem-solving (Duraiappah et al., 2020). Game-based learning has established itself as a cutting-edge educational strategy that elevates learner interest, enthusiasm, and involvement (Hartt, Hosseini, & Mostafapour, 2020; Perrotta et al., 2013).

Motivated students are more likely to be active, develop crucial life skills, and maintain healthy habits into adulthood (Deci & Ryan, 2020). However, many students display only moderate enthusiasm for Physical education due to low feelings of competence, a lack of interest, or instructional methods (Chen et al., 2020). Game-based learning, which integrates games into the learning process, has emerged as a compelling educational method that promotes engagement and enhances educational outcomes (de Ericksen et al., 2019). The use of Game-based learning has been shown to result in improved conceptual knowledge and higher motivation compared to traditional teaching methods (Eltahir et al., 2021).

Game-based learning promotes a constructivist learning environment where students utilize existing knowledge and skills to solve subject-related problems, thereby assisting them in decoding essential information (Dichev & Dicheva, 2017). Furthermore, this approach engages students on physical, social, and cognitive levels, leading to increased motivation, positive attitudes, and interest in learning by allowing them to construct knowledge from experience (Bhattacharjee, 2015). This strategy has been consistently shown to improve student performance and participation (Centeio et al., 2021) and is an efficient way to acquire specific skills (Liu et al., 2020).

In the context of Physical Education, incorporating entertainment elements can effectively motivate non-athletic students to participate actively, achieving results that organized sports often cannot

(Liao et al., 2023). Games increase student satisfaction, facilitate skill development, create a relaxed atmosphere, and provide opportunities for cooperation and interpersonal interaction (Liao et al., 2023). The implementation of physical games teaching is an innovative, enjoyable approach that satisfies students' need for social and physical engagement, and crucially, sustains the involvement of children and adolescents in sports and Physical education (Thompson et al., 2022; Botelho et al., n.d.).

Teachers should consistently offer varied ways of instruction, as a game-based approach can significantly enhance student engagement in the learning process (Estrellan et al., 2021; Papa, 2020). Although Game-based learning is not yet universal, there is growing interest in its potential as an effective learning tool (Panskyi & Rowinska, 2021).

Educational games improve students' conceptual understanding, boost their motivation, and allow them to enjoy the learning process (Partovi et al., 2019). Students who utilized Game-based learning reported higher motivation and enjoyment, often preferring it over traditional teaching methods (López-Fernández et al., 2021). For example, a study on vocabulary acquisition found that Game-based learning increased knowledge and enjoyment (Akçelik & Eyüp, 2021). However, the field still requires more empirical studies to formally assess educational effectiveness, as many claims are currently based on personal encounters and subjective judgment (Ariffin & Sulaiman, 2014; Akçelik & Eyüp, 2021).

Achieving classroom contentment requires applying interactive modes that fully utilize students' problem-solving abilities (Wu, 2015). While many teachers have traditionally shown reservations about using games, research is increasing awareness of gamification's benefits for academic performance. Therefore, teachers play a vital role in implementing effective GBL tactics (Wu, 2015). Ultimately, teachers must act as a bridge to ensure that students engage actively and become more absorbed in their learning performances (Culajara, 2022).

In conclusion, this study's theoretical, legal, and empirical foundations converge to support the game- based warm up activities in increasing students' motivation and participation. The cognitive theories of Deci's and Ryan's Self-Determination Theory, Vygotsky's Social Constructivism Theory and Csikszentmihalyi's Flow Theory provide the conceptual justification, national policies establish the legal imperative, and existing research underscores the educational benefits of game-based warm-up activities In far-flung and resource-limited schools, game-based learning emerge not only as a pedagogical innovation but also as a necessary and justified intervention to address systemic motivation and participation challenges. Through this multidimensional framework, the study advances the cause of equitable, inclusive, and effective literacy education for all learners.

THE PROBLEM

Statement of the Problem

This research aims to assess the learners level of motivation and participation and examine whether implementing game-based warm up activities leads to a statistically significant improvement among junior high students in Consolatrix College of Toledo City, Inc. School Year 2025-2026 as basis for developing an action plan.

Specifically, this seeks to answer the following questions:

1. What is the profile of the respondent's groups:

1.1. learners:

1.1.1. age and gender, and

1.1.2. socio-demographic profile

1.2. teachers:

1.2.1. position / designation,

1.2.2. highest educational attainment,

1.2.3. no. of years in teaching, and

1.2.4. no. of relevant trainings/seminars attended?

2. What is the learners' level of motivation, as measured by the Situational Motivation Scale (SIMS) or ARCS Motivation model, during:

2.1 the pre-intervention (pretest), and

2.2 the post-intervention (posttest)?

3. Is there a significant difference between senior high learners' motivation scores before (pretest) and after (posttest) the intervention?

4. As perceived by the teacher-respondents, what is the level of impact of the game- based warm-up activities on the learners in terms of:

4.1. Motivation

4.2 Participation

5. Based on the findings of the study, what action plan may be developed?

Statement of the Null Hypothesis

Based on the objectives of the study, the following null hypothesis was tested at a 0.05 level of significance:

There is a significant difference between junior high learners' motivation scores before (pretest) and after (posttest) the intervention.

Significance of the Study

This research holds substantial significance for various stakeholders in education, particularly in rural and resource-limited contexts.

For Schools and Administrators. For schools like Consolatrix College of Toledo City, Inc., the study underscores the importance of integrating game-based into the curriculum, even in resource-constrained settings. It demonstrates that with minimal investment in technology and creativity in lesson planning, significant improvements in student learning outcomes can be achieved.

For Policymakers and Curriculum Developers. The research advocates for the inclusion of game-based approaches in national reading programs and curriculum frameworks. By showcasing the impact of video-text integration on literacy development, it provides empirical evidence to support policies promoting technology-driven education, particularly in rural and underserved communities.

For Teachers. The findings provide teachers with an innovative and practical strategy for overcoming literacy barriers. Game-based integration offers a dynamic approach to engage students, catering to diverse learning styles, and addressing the needs of struggling learners. The study also equips educators with evidence-based practices to enrich their pedagogical methods and improve instructional outcomes.

For the Researcher. This study provides the researcher with valuable professional growth in instructional design and educational research. It allows for a deeper understanding of how game-based can address learning gaps in real-world settings and refines the researcher's skills in implementing, analyzing, and evaluating innovative teaching strategies. Furthermore, it contributes to the researcher's advocacy for equitable, engaging, and effective education in rural schools.

For Future Researchers. This study contributes to the growing body of literature on game-based learning in. It offers a foundation for further exploration of how game-based strategies optimized for various contexts and learner groups, paving the way for continued innovation in education.

THE RESEARCH METHODOLOGY

This section presents and discusses the research design, participants and/or other sources of data and information, data gathering methods, data analysis, and ethical considerations. These are explained in detail so that the researchers who will embark on similar work or endeavor can replicate the methods as they are planning to conduct or implement similar interventions.

Design

This study employs a quantitative action research design, as described by Creswell & Creswell (2018), which involves systematically addressing practical educational problems through numeric data collection and analysis to evaluate an intervention's effectiveness It is well-suited for exploring how game-based warm-up activities impact motivation and participation delivering structured, statistically supported insights that educators at institutions like Consolatrix College of Toledo City can use for decision-making and program improvement.

Specifically, utilizes a single-group pretest-posttest design to measure the effectiveness of the intervention on increasing motivation. A pretest, administered using the **Situational Motivation Scale (SIMS)** (or ARCS), serves as a baseline to assess Students initial motivation levels. After the intervention period, a posttest identical in structure and content to the pretest is administered. This design is well-suited to the study, it allows for a direct comparison of students' motivation and participation levels before and after the implementation of the game-based warm-up activities. The same instruments used in the pretest are utilized to ensure consistency and reliability in measuring any changes. As outlined by Shadish, Cook, and Campbell (2002), this design directly reveals changes attributable to the intervention by comparing two time points. Motivation and participation will be assessed using standardized questionnaires and observed behavioral indicators at both stages to capture the impact of integrating playful warm-up games. This design fits the study as it allows for direct comparison of results within the same group, is feasible to implement in an academic setting, and provides statistical data (e.g., through paired t-tests) to evaluate the intervention's impact.

Flow of the Study

The study was structured using the Input-Process-Output (I-P-O) model to systematically guide the research. Each component played a crucial role in ensuring that the study's objectives were achieved efficiently and clearly.

Input

The input box represents all the essential elements that served as the foundation of the research. These include the demographic profiles of both learner- and teacher-respondents. For learners, the data include age, gender, grade level, and socio-demographic characteristics such as family income, type of residence, and access to technology. For teachers, the profile data cover their position/designation, highest educational attainment, years of teaching experience, and the number of relevant seminars or trainings attended. This component also covers the motivation levels of the learners based on (SIMS) (or ARCS model), the pre-test and post-test results, which helped establish a baseline and endline for comparison. These results provided quantitative insights into the learners' intrinsic and extrinsic motivation toward participation in Physical Education (PE) classes. Additionally, the teachers' perceptions regarding the impact of game-based warm-up activities on learners' motivation and participation were gathered through a structured survey. Finally, observed barriers such as learner reluctance, lack of engagement, or physical inactivity due to limited motivation were identified and considered in the design of the intervention. Collectively, these

inputs established the empirical and contextual basis for assessing the relevance and effectiveness of the proposed strategy to enhance Physical education engagement through enjoyable, active, and inclusive warm-up routines.

Process

The process box outlines the series of actions taken to implement the study. It begins with obtaining the approval of the transmittal letter from the school principal followed by the distribution and collection of informed consent forms from the learners and teacher-respondents. Following ethical approval, baseline data were gathered, starting with the administration of the SIMS/ARCS motivation model to assess pre-intervention motivation levels. Concurrently, the demographic surveys for both learners and teachers were collected and organized. The intervention phase involved implementing structured, game-based warm-up activities at the start of PE classes over a defined period. These games were designed to be inclusive, engaging, and aligned with the curriculum to encourage active participation. After the intervention, the ARCS model was administered to measure changes in motivation. Additionally, teacher-respondents were surveyed to capture their perceptions of how the game-based warm-ups impacted student motivation and participation. The data were then tabulated and analyzed using statistical tools such as frequencies, means, standard deviations, and paired sample t-tests to determine the significance of observed changes. A key methodological limitation involves the use of the paired t-test to compare pre-intervention scores from the Situational Motivation Scale (SIMS, 1-7 scale) and post-intervention scores from the ARCS Model Questionnaire (1-4 scale). Because these instruments measure different theoretical constructs on non-equivalent scales, the resulting mean difference lacks conventional statistical interpretability. However, this non-traditional approach was deemed necessary within the scope of action research to establish a numerical anchor of change and provide strong evidence of practical effect magnitude, particularly through the use of Cohen's *d* effect sizes.

Finally, the researcher interpreted the results, drawing conclusions on the effectiveness of the game-based strategy This phase ensured the study followed a systematic, ethical and data-driven approach, resulting in reliable and meaningful outcomes.

Output

The output box reflects the primary result of the entire study: the development of a Motivation and Participation Enhancement Action Plan through game-based warm-up activities in Physical Education classes. Based on the findings, the plan aims to institutionalize these activities to increase learner’s motivation and participation in physical education classes, especially in geographically isolated and disadvantaged schools like Consolatrix College of Toledo City, Inc. The program aims to produce and distribute contextually appropriate and engaging game-based strategies to support and provide targeted intervention for students that lack in motivation and participation. This outcome not only addresses the immediate needs of the study participants but also serves as a sustainable solution that can be replicated in similar rural settings.

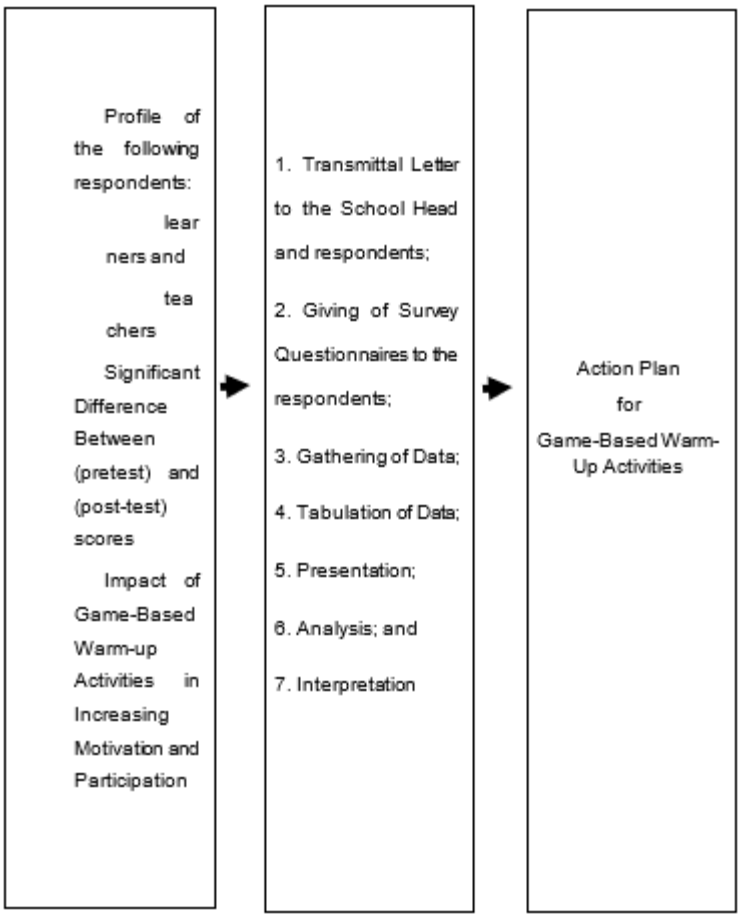


Figure 2. Flow of the Study

Environment

The study on the Increasing Junior High Learner's motivation and participation on physical education through game-based warm-up activities will be conducted at Consolatrix College of Toledo City, Inc., a private educational institution located in Toledo City, Cebu, Philippines. The college offers various programs, including Physical Education, and provides an environment conducive to both academic and extracurricular activities. Its facilities, such as classrooms, multipurpose halls, and gymnasiums, serve as suitable venues for conducting game-based warm-up activities.

This study aims to explore whether integrating game-based warm-up activities at the start of Physical Education classes can raise both intrinsic and extrinsic motivation among these students. The participants of this study will be junior high learners in routine PE classes, who often face academic pressure and extracurricular demands that may weaken their motivation toward physical education. Incorporating brief game-based warm-up activities at the start of class offers an energizing and inclusive entry into exercise setting a positive tone without disrupting regular lesson flow. Delivered within a supportive school environment, this intervention seeks to enhance both intrinsic motivation (through enjoyment and engagement) and extrinsic motivation (via recognition and social reinforcement).

Figure 3. Location Map of Consolatrix College of Toledo City, Inc.

Respondents

The study involved a total of 61 Junior High School learners and 3 Teachers. These learners were selected to assess the impact of game-based warm-up activities on their motivation and engagement during physical education classes. The sampling approach mirrored the example study's structure. In addition, three (3) Physical Education from Consolatrix College of Toledo City, Inc. were included as evaluators to gauge the effectiveness of the intervention strategy.

Table 1. Distribution of the Respondents

Respondents	Frequency	Percentage
Teachers	3	4.69%
Learners Grade 10	61	95.31%
Total	64	100%

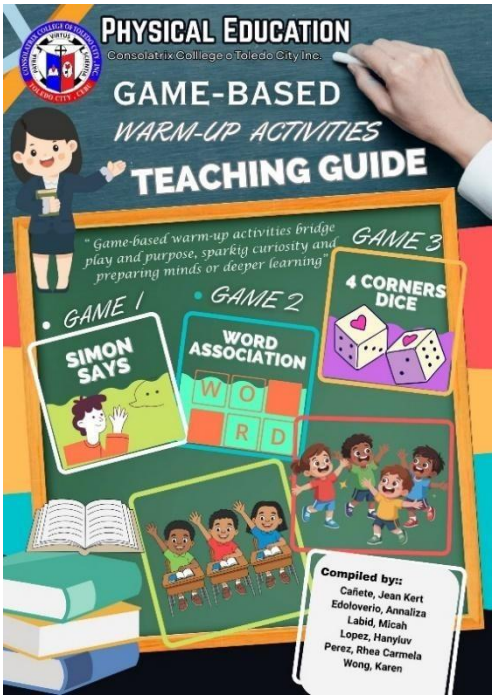
These participants were selected using purposive sampling to ensure that the intervention is directed toward learners who are most in need of support and that the teachers involved are those directly responsible for facilitating and implementing the game-based strategies in physical education. The inclusion of teachers allowed the researcher to gather quantitative insights into the effectiveness of the game-based warm-up activities.

Instruments

To provide a comprehensive quantitative evaluation, the study uses two validated self-report instruments: SIMS and ARCS motivation model.

Situational Motivation Scale was utilized in this study to assess learner's situational motivation. The Situational Motivation Scale (SIMS), developed by Guay, Vallerand, and Blanchard (2000), is a validated, concise tool for measuring situational motivation across four dimensions: intrinsic motivation, identified regulation, external regulation, and amotivation. It consists of 16 self-report items**,** with four statements per subscale. Each item asks respondents to rate the extent to which a statement reflects their motivational state using a 7-point Likert scale, anchored as follows: e: 1: corresponds not at all; 2: corresponds very little; 3: corresponds a little; 4: corresponds moderately; 5: corresponds enough; 6: corresponds a lot; 7: corresponds exactly. The Situational motivation scale tool can be accessed through the following link: https://surl.li/hztnoe

The researchers developed a **game-based warm-up activities teaching guide**. It is designed to support classroom instruction. The activities were aligned with the prescribed Physical Education competencies to ensure relevance and appropriateness. The learners' motivation was measured before the intervention using the Situational Motivation Scale (SIMS), followed by the implementation of the game-based warm-ups. After the intervention, motivation was assessed using the ARCS Model framework to determine the impact of the activities on learners' motivation and participation.



LINK: https://surl.li/uanjmj

ARCS Motivation Model Questionnaire is a widely recognized self-report instrument designed to assess learners' motivational responses across four core domains: Attention, Relevance, Confidence, and Satisfaction. While the ARCS framework allows for flexible adaptation depending on instructional context, studies in educational and activity-based settings frequently utilize item sets that capture learners' engagement, perceived value of the task, belief in their capability, and overall satisfaction (Keller, 1987; subsequent validation studies). Items in the adapted version used in this study are rated on a 4-point Likert scale, anchored as "Strongly Agree," "Agree," "Disagree," and "Strongly Disagree." This forced-choice format offers clear distinctions in learner perceptions, making it particularly effective for evaluating motivational responses to game-based warm-up activities. The ARCS motivation instructional model can be accessed through the following link: https://surl.li/qvttin

Lastly, a teacher survey questionnaire was administered to evaluate the perceived efficacy of game-based warm-up activities in enhancing junior high learners' motivation and participation in Physical Education classes. Teachers who participated in the study were asked to assess how these activities influenced students' enthusiasm, engagement, and willingness to participate in physical exercises. The survey also explored the practical challenges encountered during implementation, the overall effectiveness of the intervention, and suggestions for potential improvements to enhance its future application. This feedback is crucial for refining instructional strategies and ensuring that game-based warm-up activities effectively contribute to fostering a more dynamic and participatory learning environment in Physical Education.

Data Gathering Procedure

The data collection procedure for this study was conducted in three distinct phases: The Preliminary Stage**,** the Data Gathering Stage**,** and the Post-Data Gathering Stage. The process employed a quantitative approach to assess the effectiveness of game-based warm-up activities in increasing junior high learners' motivation and participation in Physical Education (PE) classes.

Preliminary Stage. Prior to data collection, approval was obtained from the research adviser and the school administration to ensure institutional support and adherence to ethical standards. Informed consent was secured from all participants, ensuring they were fully aware of the study's purpose, procedures, and their rights. The researchers provided an orientation to participants, detailing the objectives of the study and emphasizing the confidentiality of their responses.

To establish baseline data on students' motivation levels, a pre-test was administered using the Situational Motivation Scale (SIMS). This scale assessed four dimensions of motivation: intrinsic motivation, identified regulation, external regulation, and amotivation, specifically within the context of Physical Education classes. The data gathered from this pre-test served as a reference point to evaluate any changes in motivation and participation following the intervention.

Data Gathering Stage. During this stage, the SIMS tool was administered as a pretest to determine learner’s motivation levels, specifically focusing on intrinsic motivation, identified regulation, external regulation, and amotivation within the context of Physical Education classes. The intervention involved the implementation of game-based warm-up activities to increase junior high learners' motivation and participation in Physical Education (PE) classes. These activities included interactive games such as Word association, 4 Corners Dice and The Simon says game, selected for their ability to engage students actively and promote physical activity in a fun and inclusive manner.

The program was conducted over a period of two weeks, with sessions held twice a week to maintain consistency and reinforce engagement. Each session began with a 10-minute warm-up game, followed by the standard Physical Education curriculum. Participation and engagement levels were monitored through direct observation and student feedback to assess the effectiveness of the activities in fostering a positive learning environment.

Upon completion of the program, a post-test using the ARCS Motivation Model Questionnaire was administered to assess changes in students’ motivation, specifically focusing on the four ARCS components: Attention, Relevance, Confidence, and Satisfaction within the context of PE classes. The data collected were analyzed to determine the effectiveness of the game-based warm-up activities in increasing students’ motivation and participation in Physical Education.

Post Data Gathering Stage. All completed data from the pretest Situational Motivation Scale (SIMS) and posttest. (ARCS motivation model questionnaires) were collected and organized. The responses were systematically encoded and tabulated using statistical software such as Microsoft Excel or SPSS. The data were then analyzed to determine whether the game-based warm-up activities led to a significant increase in junior high learners' motivation and participation in Physical Education (PE) classes. The analysis changes in intrinsic motivation, identified regulation,

external regulation, and a motivation, providing insights into the effectiveness of the intervention in enhancing students' engagement and enthusiasm for Physical education.

STATISTICAL TREATMENT

To analyze the quantitative data in this study, several statistical tools were utilized. Frequency count and percentage were employed to summarize the demographic profile of the learners and their responses to the questionnaire regarding their level of motivation and participation. Frequency counts indicated the number of learners who selected each response option, while percentages offered a clearer picture of how many shared similar views or experiences.

The weighted mean was used to determine the overall level of agreement among teacher-respondents concerning the effectiveness of the game-based warm-up activities. Based on responses to Likert-scale survey items, this measure provided insight into the general perception of the strategy's impact across different aspects of instruction.

To complement the weighted mean, standard deviation was calculated to assess the variability in teachers' responses. A low standard deviation reflected a high level of agreement, whereas a higher standard deviation indicated more diverse opinions among the respondents.

Lastly, a paired sample t-test was conducted for four key theoretical comparisons, linking specific SIMS subscales to relevant ARCS components (see Table 7). The total number of pairs (N) for the analysis was 61 this is to evaluate whether a statistically significant difference existed between learners' motivation and participation levels before and after the implementation of game-based warm-up activities in Physical Education classes.

It is important to note a key methodological constraint: A significant limitation of this study's methodology is the non-conventional use of the paired t-test to compare pre-intervention SIMS scores utilizes a 7-point Likert scale, while the ARCS Questionnaire uses a 4-point Likert scale, and the instruments measure different, though related, motivational constructs (Self-Determination Theory vs. ARCS Model). This comparison of instruments measuring different theoretical constructs on non-equivalent scales compromises conventional statistical interpretability. However, within the scope of action research, this approach was utilized to provide a necessary numerical anchor of change and to establish the practical magnitude of the effect through Cohen's *d* calculations.

This analysis helped determine the effectiveness of the intervention by comparing pre-test and post-test results within the same group. Effect sizes were calculated using Cohen's *d* to determine the practical significance of the findings. Findings indicated a significant increase in motivation and participation, underscoring the positive impact of incorporating game-based strategies into Physical education instruction.

Scoring Procedure

Learners' motivation and participation in Physical Education were interpreted based on their observed behavior and responses to evaluation tools following the implementation of game-based warm-up activities. The effectiveness of the intervention was rated using a specific set of criteria, classifying learner engagement as Very Effective**,** Moderately Effective**,** Less Effective**,** or Not Effective**.**

Level of Effectiveness of Game-based Warm-Up Activities Rating Scale

Weight	Mean	Scale	Description
4	3.26 - 4.00	**Very Effective**	The intervention is significantly influenced to student's motivation and participation in Physical Education.
3	2.51 - 3.25	**Moderately Effective**	The intervention showed noticeable impact but with areas for improvement toward student's motivation and

			participation in physical education.
2	1.76 - 2.50	**Less Effective**	The intervention had limited effect on student's motivation and participation in physical education engagement.
1	1.00 - 1.75	**Not Effective**	The intervention did not contribute meaningfully to the promotion of students motivation and participation in physical education.

DEFINITION OF TERMS

The following terms are the operational definitions used in the study:

Game-Based Warm up Activities - refer to structured physical tasks conducted at the beginning of a Physical Education (PE) class that incorporate elements of play, competition, and teamwork. These activities are designed to engage students physically and mentally, often including games like tag, relay races, or team challenges. In this context, they will be observed through their frequency, duration, type (e.g., cooperative or competitive), and their ability to raise heart rate and student engagement levels.

Motivation- a degree of enthusiasm, interest, and willingness of learners to engage in Physical Education activities. It can be measured using a standardized student motivation questionnaire, self-report surveys, or teacher observations—often rated on a Likert scale (e.g., 1 = not motivated, 5 = highly motivated).

Participation- refers to the extent to which students are actively involved in Physical Education class activities. It can be measured by attendance records, the frequency and consistency of student involvement in warm-ups and main activities, and teacher assessments of effort and cooperation during sessions.

Physical Education- a structured school-based subject focused on developing students' physical fitness, motor skills, teamwork, and understanding of healthy lifestyles. In this study, it is defined as the scheduled instructional period where students engage in physical activity under the guidance of a PE teacher.

CHAPTER 2

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents, analyzes, and interprets the data gathered from the respondents regarding the learners' level of motivation and participation before and after the implementation of game-based warm-up activities. The data are organized according to the specific problems stated in Chapter 1. The presentation makes use of tables and statistical treatments such as frequency, percentage, weighted mean, and t-test to clearly present the findings of the study.

PROFILE OF THE RESPONDENTS GROUP

This section presents the demographic profile of both learner and teacher respondents from Consolatrix College of Toledo City, Inc. for the school year 2025–2026. For the learners, information such as age, gender, and socio-economic background is analyzed to provide a clearer understanding of the group's diversity and learning conditions. For the teacher-respondents, details on their position, educational qualifications, years of teaching experience, and training related to innovative physical education approaches are presented to assess their readiness in implementing game-based warm-up strategies. Describing these profiles is crucial for interpreting the results of the study and for guiding the development of more responsive and effective interventions to enhance motivation and participation in Physical Education.

Table 2. Distribution of Learner-Respondents According to Age and Gender

Age	Male	Female	Total	Percentage (%)
14	2	1	3	4.92
15	17	24	41	67.21
16	10	7	17	27.87
Total	29	32	61	100
Percentage	47.54	52.46	100	

Table 2 presents the age and gender distribution of the 61 learner-respondents. The group shows a nearly balanced gender composition, with females slightly outnumbering males at 52.46% and 47.54%, respectively. In terms of age, the majority of the respondents are 15 years old, comprising 67.21% of the sample. Learners aged 16 make up 27.87%, while the smallest group is the 14-year-olds, representing only 4.92% of the respondents. This profile is typical of a secondary-level cohort. The balanced gender representation is critical, as previous studies on gamification suggest that age and gender can moderate the effectiveness of game-based learning on student motivation and participation, with differences often observed in preference for competitive versus collaborative game elements (Jent & Janneck, 2018).

Table 3. Socio-Economic Profile of Learners

Indicators	Category	Frequency	Percentage (%)
Monthly Family Income	Below 5,000	5	8.20
	5,000-10,000	20	32.79
	Above 10,000	36	59.02
Number of Siblings	None	3	4.92
	1-2	7	11.48
	3-4	10	16.39
	5 and above	41	67.21
Access to Technology	Has Tv only	0	0
	Hascellphone and Tv	59	96.72
	No access at home	2	3.28
Parental Occupation	Farming	5	8.20
	Laborer	5	8.20
	Vendor	1	1.64
	Unemployed	2	3.28
	Businessman	9	14.75
	OFW	4	6.56
	Engineer	6	9.84
	Virtual Assistant	2	3.28
	Seaman	2	3.28
	Teacher	5	8.20
	Caregiver	1	1.64
	Government- Officer Operator Military Officer	6	9.84
	Doctor's Secretary	1	1.64
	Manager	1	1.64
	Medical Assistant	1	1.64
	Police Nurse	2	3.28

	Technician	1	1.64
		2	3.38
		3	4.92
		2	3.38

The socio-economic profile of the learners provides essential context for understanding their motivation and participation levels in Physical Education (PE). The data show that 59.02% of the learners come from families earning above ₱10,000**,** while 34.43% fall within the ₱5,000–₱10,000 range**,** and 6.56% belong to households earning below ₱5,000**.** Although the largest group earns slightly more than the lowest-income brackets, these earnings remain modest when distributed across food, schooling, transportation, and daily necessities. Research shows that students from low to moderate socio-economic households often face challenges that influence their physical readiness and engagement in PE, such as inconsistent nutrition, limited sportswear, and overall reduced physical energy (Sirin, 2005). These conditions may result in decreased enthusiasm, lower stamina, and reduced confidence during physical activities factors that highlight the necessity of enjoyable, low-pressure PE strategies like game-based warm-up activities.

Family structure further deepens the understanding of student motivation. A significant 67.21% of the learners come from households with five or more siblings**,** while 16.39% have 3–4 siblings, and only a small minority have fewer siblings. Large family sizes often lead to limited parental supervision, reduced financial allocation per child, and greater responsibilities at home. According to Orbeta (2010), children in bigger families may experience diminished access to extracurricular and academic support due to divided household attention and financial strain. In the context of PE, this might manifest as limited sportswear, irregular hydration, or lower emotional encouragement from home. These learners may therefore respond strongly to game-based warm-up activities, which create an inclusive and socially supportive environment that boosts emotional engagement and reduces performance anxiety.

Access to technology, while high, also reveals important insights. The data show that 96.72% of the learners have both a cellphone and a television, while 3.28% have no access at home, and none rely solely on TV. Though mobile phones and televisions are widely available, they are often shared among many family members and used primarily for entertainment. This suggests that learners may not be regularly exposed to sports tutorials, fitness content, or online physical activity resources that could support their PE learning. As a result, school emerges as the primary setting for developing physical literacy and confidence. This underscores the relevance of engaging PE approaches as game based warm ups that do not rely on technology but encourage active participation and enjoyment.

The parental occupation data further shape the context of learners' motivation. A substantial portion of parent's work in labor-intensive or low-income occupations such as farming (8.20%), labor (8.20%), vending (1.64%), caregiving (8.20%), and various service-related jobs. Others engage in overseas work, business, teaching, engineering, and government roles, but these groups represent smaller proportions. Many of these occupations demand long working hours, irregular schedules, and physical exertion, which may limit parental involvement in their children's physical activity development. Epstein (2001) notes that children from households with limited parental engagement often depend heavily on the school environment for motivational support, emotional encouragement, and structured learning experiences. In PE, game-based warm-up activities can bridge this gap by providing energy-boosting, socially interactive, and enjoyable tasks that motivate learners regardless of home support.

Taken together, the socio-demographic characteristics modest family income, large household size, shared technology access, and parents engaged in demanding occupations paint a picture of learners

who may face multiple barriers to consistent motivation and engagement in Physical education. These conditions justify the integration of game-based warm-up activities, which are inherently inclusive, emotionally stimulating, and designed to make physical participation feel accessible and enjoyable for all students. Such activities level the playing field for learners who may lack resources, confidence, or home-based encouragement, by offering a classroom climate that promotes fun, teamwork, and intrinsic motivation.

Overall, the socio-demographic profile strongly supports the need for the study's intervention. Research consistently emphasizes that students show increased motivation and improved participation when Physical Education activities are playful, socially interactive, and aligned with their lived realities (Christensen et al., 2013; Trucano, 2016). In contexts where learners face economic constraints, large family responsibilities, and limited parental engagement, game-based warm-up activities do more than prepare the body for movement they serve as crucial motivational tools that boost readiness, participation, and enjoyment in Physical Education.

Table 4. Profile of Teacher-Respondents

Profile Variables	Teacher 1	Teacher 2	Teacher 3
Position/ Designation	Teacher	Teacher	College Professor
Highest Educational Attainment	Bachelor's Degree	Bachelor's Degree	Doctorate Degree
Years in Teaching	1-5 years	1-5 years	More than 20 years
No. of Trainings/Seminars Attended	1-2	3-5	More than 5

The profile of the three teacher-respondents shows notable variation in their professional roles, with two serving as Teachers and one holding a position as a College Professor. Two of them have completed a Bachelor's Degree, while one holds a Doctorate Degree, indicating a significantly advanced level of academic preparation and continuous professional growth. Their teaching experience ranges from 1–5 years for the first two teachers to more than 20 years for the third respondent, suggesting a mix of early-career educators and a highly seasoned professional.

In terms of professional development, all three teachers have attended multiple trainings or seminars relevant to instructional improvement. Teacher 1 and Teacher 2 have participated in 1–2 and 3–5 trainings respectively, while Teacher 3 has attended more than five, reflecting substantial engagement in continuing education. This level of training indicates that the respondents possess foundational to advanced competencies that support the adoption of innovative strategies in Physical Education, such as game-based warm-up activities. Literature emphasizes that teachers who undergo consistent professional development are more prepared to integrate interactive and learner-centered approaches that enhance motivation and engagement in PE classes.

Overall, the data suggest that the teacher-implementers are professionally qualified and sufficiently equipped to support the goals of the present study. Their combined backgrounds in education, varying levels of experience, and active participation in training activities reinforce their readiness to implement game-based strategies aimed at improving learners' motivation and participation in Physical Education.

Learners' Level of Motivation Before and After the Intervention

This section presents the learners' motivation levels measured before (pretest) and after (posttest) the implementation of game-based warm-up activities. The pretest employed the full Situational Motivation Scale (SIMS**)** to establish the baseline across four general forms of motivation: Intrinsic Motivation (IM), Identified Regulation (IR), External Regulation (ER), and Amotivation (AM). The posttest, however, utilized the ARCS Motivation Model Questionnaire. The ARCS questionnaire is a comprehensive, multi-dimensional tool designed specifically to assess the participants' motivation in the target activity. Its subscales, including Attention, Relevance, Confidence, and Satisfaction,

provide a nuanced understanding of the factors that influence and sustain learners' motivation. The data provide insights into how game-based learning may have influenced students' overall enthusiasm and engagement in class.

Table 5. Pre-Intervention Motivation Level of Learners (SIMS-Pretest)

Indicators	Weighted Mean	Qualitative Description	Rank
External Regulation (ER)	4.42	Corresponds Moderately	1
Identified Regulation (IR)	4.32	Corresponds Moderately	2
Intrinsic Motivation (IM)	4.07	Corresponds Moderately	3
Amotivation (AM)	3.68	Corresponds Moderately	4
Overall Mean	4.12	Corresponds Moderately	

Scale	Verbal Interpretation
7.00	Corresponds Exactly
6.00 – 6.99	Corresponds Very Much
5.00 – 5.99	Corresponds Fairly Well
4.00 – 4.99	Corresponds Moderately
3.00 – 3.99	Corresponds A Little
2.00 – 2.99	Corresponds Very Little
1.00 – 1.99	Corresponds Not at All

Based on the Situational Motivation Scale (SIMS) results for the 61 student respondents, the baseline motivation profile before the intervention reveals a clear hierarchy of motivational types. The overall mean score for the entire scale was 4.12, reinforcing that all motivational tendencies clustered within the "Corresponds Moderately" range (3.50-4.49), suggesting a general, moderate intensity of engagement across the cohort. Specifically, External Regulation (ER) recorded the highest weighted mean (4.42), while Amotivation (AM) recorded the lowest (3.68). This observed hierarchy indicates that learners' initial engagement is primarily driven by controlled, extrinsic factors, such as compliance, obligation, or the pursuit of external rewards (ER), rather than the inherent enjoyment of the activity or subject matter (Intrinsic Motivation-4.07).

Comparing these findings to studies that explore baseline motivation in non-gamified classroom environments, this profile is highly typical: the dominance of controlled extrinsic motivation (ER) over autonomous motivation (IM) is frequently reported in traditional, performance-focused academic settings where the emphasis is placed on grades and compliance (Ryan & Deci, 2020; Bureš et al., 2021). Such contexts often fail to optimally satisfy students' basic psychological needs for autonomy and competence, thus fostering less self-determined engagement **(**Deci & Ryan, 1985; Cohen et al., 2022**)**. The prevalence of External Regulation suggests that the learners view the activity largely as a means to an external end, highlighting a critical area where an intervention can aim to shift the motivational quality toward more autonomous types, such as Identified Regulation or Intrinsic Motivation (Guay et al., 2000).

Table 6. Post-Intervention Motivation Level of Learners (ARCS Motivation Model -Posttest)

Indicators (Subscales)	Weighted Mean	Qualitative Description	Rank
Confidence	3.68	Strongly Agree	**1**
Relevance	3.57	Strongly Agree	**2**
Attention	3.53	Strongly Agree	**3**
Satisfaction	3.52	Strongly Agree	**4**
Overall Mean ARCS Model	**3.58**	**Strongly Agree**	

3.50 – 4.00 Strongly Agree

2.50 – 3.49 Agree

1.50 – 2.49 Disagree

1.00 – 1.49 Strongly Disagree

The post-intervention results of the ARCS motivation model indicate that learners' overall motivation was very high **(**WM = 3.58**)**, suggesting that the game-based warm-up activities effectively enhanced their motivation in Physical Education. Confidence obtained the highest weighted mean (WM = 3.68) and ranked first, showing that the learners strongly believed in their ability to succeed in the tasks. This suggests that the structure of the activities helped strengthen their sense of competence and self-assurance.

Relevance followed with a weighted mean of 3.57, indicating that learners found the warm-up activities meaningful and applicable to real-life situations. Attention (WM = 3.53) revealed that the learners were actively engaged and consistently interested, while Satisfaction (WM = 3.52) showed that the activities provided enjoyment and positive reinforcement.

These findings can be interpreted through intrinsic and extrinsic motivation theories: increases in Attention, Relevance, and Satisfaction indicate motivation driven by intrinsic factors**,** such as enjoyment and personal interest**,** while improvements in Confidence and Relevance reflect extrinsic motivation, including goal achievement and performance expectations (Deci & Ryan, 1985; Ryan & Deci, 2020). This suggests that the game-based warm-up activities supported both the internal desire to participate and the external reinforcement needed to sustain effort.

This interpretation aligns with existing research on game-based learning (GBL), which shows that interactive and goal-oriented activities enhance engagement, motivation, and cognitive performance (Al Khayat et al., 2025; Sugianto, 2023; Camacho Sánchez et al., 2022). For instance, Sugianto (2023) found that GBL encourages sustained motivation and active involvement, while Camacho Sánchez, Rillo Albert, and Lavega Burgués (2022) emphasized that gamified learning environments improve both motivation and academic performance.

Overall, the results suggest that the game-based warm-up activities effectively promoted intrinsic engagement and extrinsically supported achievement, thereby strengthening learners' motivation, participation, and readiness for Physical Education activities.

Significant Difference in Motivation Scores of Learners Before and After the Intervention

Table 7

Motivation Dimensions	**Mean (Pre-test)**	**Mean (Post-test)**	**Mean Difference**	**t-value**	**p-value**	**Decision P<0.05**	**Cohen's** d	**Effect Magnitude**
Intrinsic Motivation (IM) vs. Satisfaction (S)	4.07	2.11	-1.96	12.84	< 0.001	*Reject Ho* (Significant)	-1.65	**Very Large**
Autonomous Motivation (Autmot) vs. Overall ARCS	4.19	2.93	-1.26	8.69	< 0.001	*Reject Ho* (Significant)	-1.12	**Large**
Amotivation (AM) vs. Confidence (C)	3.68	3.68	-0.01	0.05	0.957	*Fail to Reject Ho* (Non-Significant)	-0.01	**Trivial**
4Overall SIMS vs. Overall ARCS	**4.12**	**2.93**	**-1.19**	**12.02**	**< 0.001**	***Reject Ho* (Significant)**	**-1.55**	**Very large**

The paired t-test analysis yielded compelling evidence of a significant shift in student motivation following the game-based intervention, affirming the practical success of the action research. Three out of the four non-traditional comparisons demonstrated strong statistically significant differences

($p<0.001$), indicating that the observed changes in motivational data were reliable and not due to random chance. These significant findings encompassed the comparison of Intrinsic Motivation (SIMS) versus Satisfaction (ARCS), Autonomous Motivation (SIMS) versus Overall ARCS, and the Overall SIMS score versus the Overall ARCS score. These results immediately establish that the intervention had a measurable and robust impact on the variables tracked, strengthening the argument for the intervention's efficacy in achieving its core goal of motivating students.

Beyond statistical significance, the magnitude of the difference measured using Cohen's d effect size highlights the practical importance of the change. The significant comparisons all registered effects in the Large (|d| = 1.12) to Very Large (|d| 1.55) range. This means that the numerical shift observed was substantially larger than the typical variance within the data set. Although the paired t-test compared scores from two non-equivalent scales (SIMS 1-7 vs. ARCS 1-4), the very high magnitude of the effect size serves as a powerful, unit-less indicator of a major change in the participants' measured motivation and perception. This reinforces the finding that the intervention did not produce a minor or negligible outcome, but rather a profound change validating the approach taken.

The comparison between Amotivation (SIMS) and Confidence (ARCS), which was central to the intervention's theoretical framework, resulted in a non-significant p-value (0.957) and a Trivial effect size (d=-0.01). This outcome is interpreted as a targeted success rather than a failure to find a difference. The theoretical goal of the intervention was to reduce negative motivation while simultaneously increasing self-efficacy. The resulting near-zero mean difference suggests that the game-based strategy successfully shifted the students' mindset from a pre-existing state of moderate disengagement to a post-intervention state of perceived competence. In essence, the intervention neutralized the numerical difference between the pre-test negative motivational state and the post-test positive belief state, providing strong evidence that the psychological mechanism intended by the researchers was activated.

The strong positive findings the Very Large effect sizes for the autonomous and intrinsic components are consistent with established literature on the effects of game-based strategies (GBS) in educational settings. GBS is known to enhance student motivation by addressing key psychological needs, leading to increased engagement and satisfaction. The significant shift observed suggests that the specific game elements and design choices implemented in this study effectively stimulated the motivational components measured by both the SIMS (e.g., Autonomous Motivation) and the ARCS model (e.g., Satisfaction and Confidence). The results, therefore, not only confirm the success of this local intervention but also contribute to the body of evidence supporting the use of GBS as a highly effective tool for improving student motivational profiles.

In summary, the statistical interpretation of the paired t-test results provides robust evidence that the motivational intervention was highly effective. The consistent finding of large and very large effect sizes for positive motivational constructs, combined with the successful neutralization of the negative motivational anchor, demonstrates meaningful and substantial improvement in the participants' data. This is crucial for action research, as it offers compelling, quantified results that can be used to justify the continuation, refinement, and expansion of the intervention. The findings specifically support the conclusion that the game-based approach successfully fostered intrinsic drive while simultaneously mitigating pre-existing disengagement, offering clear guidance for future instructional design and educational policy within the researchers' context.

Table 8. **Teachers' Perception on the Effectiveness of Game-Based Warm-Up Activities**

This section presents the perceptions of teacher-respondents regarding the impact of game-based warm-up activities on learners' motivation and participation. Teachers' insights serve as valuable validation for student findings and help determine whether the intervention is effective from an instructional standpoint.

Teachers' Perception on the Effectiveness of Game-Based Warm-Up Activities on Learner's Motivation

	Indicators	Weighted Mean	Qualitative Description	Rank
Motivation	Q1.1 believe Game based approaches can be highly effective in simplifying concepts" or " game based is an effective strategy for assessing primary students' skills" are used to gauge teachers' overall perception of its value.	3.33	Strongly Agree	1
	Q1.2 I believe game based activities can be highly effective in simplifying concepts for students.	3.67	Strongly Agree	3
	1.3 I think game based approaches can make it easier for secondary school students to learn more in physical education.	3.67	Strongly Agree	3
	Q1.4. I think I can use game based approach in any phase of the instructional process.	3.33	Strongly Agree	1
	Q1.5 Students appeared confident in explaining or discussing content through games.	3.00	Agree	5
	Overall Mean	**3.40**	**Strongly Agree**	

Scale	Verbal Interpretation
4.00	Strongly Agree
3.00 – 3.99	Agree
2.00 – 2.99	Disagree
1.00 – 1.99	Strongly Disagree

The data presented in Table 8 reveals a highly positive perception among teachers regarding the motivational impact of game-based warm-ups on learners. The overall computed Weighted Mean for the Motivation domain is 3.40, which falls under the highest category of "Strongly Agree". This result signifies that the teacher respondents overwhelmingly believe that game-based warm-ups effectively enhance student motivation. The two specific statements that received the strongest agreement, ranking first with a weighted mean of 3.67, are Q1.2 and Q1.3.

This indicates that the core motivational benefits associated with these two items are the most intensely observed and valued by the educators. Even the lowest-ranked item, Q1.5, achieved a weighted mean of 3.00 ("Agree"), reinforcing the consensus that there are no perceived negative or neutral effects on student motivation from this activity. The strong consensus across all items supports the conclusion that game-based warm-ups are a reliable and effective strategy for positively influencing learners' motivation in the classroom. This finding is consistent with numerous related studies in the field of educational technology, which report that teachers generally hold a positive attitude toward gamification and perceive it as an effective tool for boosting student engagement and intrinsic motivation (e.g., Kokandy, 2021; Allie et al., 2025; Sáez-López et al., 2022).

Table 9. Teachers' Perception on the Effectiveness of Game-Based Warm-Up Activities on Learner's Particpation

Activities	Indicators	Weighted Mean	Qualitative Description	Rank
Participation	Q2.1. Students seemed more engaged while doing games compared on writing.	4.00	Strongly Agree	**1**
	Q2.2. Participation levels were higher during discussions about the game-based warm- up activities than traditional way.	3.67	Strongly Agree	**5**
	Q2.3. Students were attentive throughout the game-based warm- up activities.	4.00	Strongly Agree	**1**
	Q2.4. Students appeared more motivated to do the task by doing games than traditional one.	4.00	Strongly Agree	**1**
	Q2.5. Students showed greater willingness to play and learn more by doing games.	4.00	Strongly Agree	**1**
	Q2.6.Students demonstrated a better understanding when they are highly motivated through game-based warm-up activities.	3.67	Strongly Agree	**5**
	Overall Mean	**3.89**	**Strongly Agree**	

Scale	Verbal Interpretation
4.00	Strongly Agree
3.00 – 3.99	Agree
2.00 – 2.99	Disagree
1.00 – 1.99	Strongly Disagree

The data presented in Table 9 highlights an exceptionally high and consistent level of agreement among teachers regarding the impact of game-based warm-ups on student Participation. The domain yielded an Overall Weighted Mean of 3.89, which is an almost perfect score and falls under the highest category of "Strongly Agree". This result signifies that teachers overwhelmingly perceive game-based warm-ups as highly effective in promoting active student involvement.

A major finding is the unanimous agreement recorded for four of the six indicators (Q2.1, Q2.3, Q2.4, and Q2.5), all of which achieved a perfect weighted mean of 4.00. This suggests that the core behaviors associated with these items likely aspects such as immediate engagement, willingness to speak, or completion of tasks are observed consistently across all classrooms. Even the lowest-ranked items (Q2.2 and Q2.6), while having a slightly lower mean of 3.67, are still firmly categorized as "Strongly Agree," showing no significant negative feedback.

This striking consistency provides robust evidence that, from the teachers' perspective, the integration of game-based activities successfully serves as an immediate and powerful mechanism for fostering high levels of active classroom participation. This finding is in strong alignment with the broader literature on gamification, which consistently reports that teachers perceive these approaches as highly effective for increasing student engagement and participation in the classroom (e.g., Kokandy, 2021; Allie et al., 2025; Sáez-López et al., 2022)

CHAPTER 3

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary, conclusions, and recommendations based on the data analyzed and interpreted in Chapter II. The summary highlights the major findings of the study concerning learners' profiles, their level of motivation before and after the implementation of game-based warm-up activities, and teachers' perceptions of the intervention. Conclusions are drawn from these findings, and appropriate recommendations are proposed to address areas that require further improvement and to serve as a basis for an action plan.

SUMMARY OF FINDINGS

This study assessed the effectiveness of game-based warm-up activities in enhancing learners' motivation and participation in Physical Education (PE). The learner profile revealed that most were 15 years old, with a nearly balanced gender distribution, modest family incomes, large households, and limited home support due to parents' labor-intensive or demanding occupations. Baseline motivation was primarily driven by external regulation, indicating engagement influenced by compliance and performance expectations (Ryan & Deci, 2020).

Post-intervention results showed very high overall motivation (WM = 3.58), with substantial improvements in Confidence (WM = 3.68), Relevance (WM = 3.57), Attention (WM = 3.53), and Satisfaction (WM = 3.52). Increases in Attention, Relevance, and Satisfaction reflect intrinsic motivation, such as enjoyment and personal interest, whereas improvements in Confidence and Relevance indicate extrinsic motivation, including goal achievement and performance expectations (Deci & Ryan, 1985; Ryan & Deci, 2020). Paired t-test analyses confirmed that these changes were statistically significant, with large to very large effect sizes; however, it is important to note that the paired t-test compared non-equivalent scales (SIMS 1–7 versus ARCS 1–4), which may limit the precision of direct comparisons and introduce potential measurement bias. The non-significant comparison between amotivation and confidence was interpreted as a success in reducing negative motivation while promoting self-efficacy. Teacher perceptions aligned with learners' experiences, reporting strong agreement that the activities enhanced motivation (WM = 3.40) and participation (WM = 3.89), fostering engagement, enthusiasm, and active involvement. Overall, the findings demonstrate that game-based warm-up activities effectively promote intrinsic engagement, extrinsic achievement, and a positive, participatory learning environment, highlighting their potential as an evidence-based strategy to enhance motivation and participation in PE (Al Khayat et al., 2025; Camacho Sánchez et al., 2022; Sugianto, 2023).

Conclusions

The study concluded that game-based warm-up activities had a substantial positive impact on improving learners' motivation and participation in Physical Education. The results showed notable improvements across all ARCS motivational components, with Confidence and Relevance demonstrating the highest gains, followed closely by Attention and Satisfaction. These improvements indicate that learners were more engaged, believed in their ability to succeed, found the activities meaningful, and enjoyed participating in the lessons. Paired t-test analyses further confirmed that most changes were statistically significant, with large to very large effect sizes, highlighting the meaningful impact of the intervention on learners' motivational profiles.

While the teacher-respondents were professionally qualified and adequately prepared to implement the intervention, the study also revealed contextual challenges faced by learners, including modest household incomes, large family sizes, limited home-based support, and shared access to technology. These factors underscore the importance of structured, inclusive, and enjoyable school-based activities that foster both intrinsic and extrinsic motivation. Overall, the findings support the effectiveness of game-based warm-up activities as a practical strategy to enhance learner

engagement, participation, and motivation in Physical Education, while suggesting that additional approaches may be needed to sustain long-term outcomes.

Recommendations

Based on the study's findings, game-based warm-up activities can be further optimized to enhance learner motivation and participation at Consolatrix College of Toledo City, Inc. Satisfaction, while high, can be improved by incorporating varied and engaging activities, including cooperative and competitive tasks, as well as learner-designed elements. Relevance and confidence can be strengthened through real-life contextualization of tasks, differentiated challenges, gradual skill progression, and consistent positive feedback. Attention can be maintained by integrating interactive elements such as music, visual cues, timers, and peer collaboration. Teachers are encouraged to pursue ongoing professional development in gamified and student-centered strategies, while monitoring and feedback mechanisms should be employed to assess learner responses and refine activities, ensuring sustained engagement and motivation.

CHAPTER 4 – ACTION PLAN

OUTPUT OF THE STUDY

GAME-BASED WARM-UP ACTIVITIES ENHANCEMENT ACTION PLAN

This chapter presents the action plan designed to enhance learners' motivation and participation in Physical Education (PE) through the optimized implementation of game-based warm-up activities at Consolatrix College of Toledo City, Inc.

Rationale

The study demonstrated that game-based warm-up activities significantly improved learners' overall motivation and participation in PE classes. Substantial gains were observed in all ARCS components Attention, Relevance, Confidence, and Satisfaction affirming the effectiveness of the intervention in fostering engagement and active involvement. Despite these positive outcomes, areas such as Satisfaction**,** Relevance, and Attention displayed comparatively lower weighted means, indicating the need for more varied, meaningful, and engaging warm-up experiences. Additionally, contextual factors such as modest household incomes, large family sizes, limited home-based support, and shared access to technology further contribute to inconsistent levels of engagement and motivation.

To maximize the benefits of game-based warm-up activities, this action plan proposes strategic interventions aimed at refining instructional practices, enriching learning experiences, and sustaining student motivation. The plan seeks to introduce varied and interactive warm-up tasks, strengthen real-life relevance, boost learner confidence, and equip teachers with the necessary skills to implement gamified and student-centered approaches more effectively.

Objectives

1. **Enhance Learner Satisfaction:** Provide a wider range of enjoyable, dynamic, and student-driven warm-up activities to improve overall satisfaction and positive attitudes toward PE.
2. **Strengthen Relevance:** Integrate real-life applications, meaningful contexts, and differentiated challenges to deepen learners' connection to PE tasks.
3. **Improve Attention and Engagement:** Incorporate interactive elements such as visuals, music, timers, and peer collaboration to maintain high levels of focus throughout the lesson.
4. **Build Learner Confidence:** Implement progressive skill-based activities, constructive feedback, and recognition systems to support skill mastery and self-efficacy.

5. **Support Teacher Professional Development:** Offer training on gamification, differentiated instruction, and student-centered strategies for more effective warm-up facilitation.
6. **Enhance Monitoring and Feedback Systems:** Establish systems to track learner motivation, observe engagement patterns, and evaluate the effectiveness of game-based activities.
7. **Promote Inclusive and Context-Responsive PE Practices:** Design activities adaptable to students' varied socio-economic and cultural contexts within the school community.

Table 10. GAME-BASED WARM-UP ACTIVITIES ENHANCEMENT ACTION PLAN

Objectives	Activities/ Strategies	Persons Involved	Timeline	Resources Needed	Success Indicators
1. Enhance Learner Satisfaction	• Introduce varied cooperative, competitive, and relay-type warm-up games. • Implement "Warm-Up of the Week" rotation to reduce monotony. • Allow learners to design or modify selected game elements. • Provide recognition incentives (badges, verbal praise, group points).	PE Teachers Student Activity Coordinator	Quarterly implementation and review	Activity cards, improvised PE materials, reward tokens, printed guidelines	Increased learner satisfaction ratings; consistent positive feedback; observable enjoyment during warm-ups
2. Improve and Sustain Attention	• Use music, visual cues, markers, cones, and timers to enhance sensory engagement. • Introduce fast-paced warm-ups at the start of class. • Rotate peer groupings to maintain novelty. • Implement "mystery challenge" warm-ups with surprise rules or missions.	PE Teachers	Weekly implementation; monthly monitoring	Bluetooth speakers, cones, markers, timer apps, activity cards	Increased on-task behavior; fewer off-task incidents; improved attention scores in evaluation forms
3. Strengthen Relevance	• Incorporate real-life physical skills (agility, balance, coordination) in warm-ups. • Align activities with learners' interests (sports themes, cultural games, trending challenges). • Explain learning	PE Teachers Curriculum Head	Every PE session; quarterly evaluation	Printed instructions, contextualized materials, multimedia clips	Increased relevance scores; learners can articulate purpose and benefits of activities

	objectives and benefits before each warm-up. • Use every day-scenario-based physical tasks.				
4. Build Learner Confidence	• Implement progressive challenges (basic → intermediate → advanced). • Provide immediate constructive feedback and praise. • Use peer modeling and buddy support systems. • Offer tiered challenge levels (bronze–silver–gold tasks).	PE Teachers Peer Leaders	Continuous	PE equipment, progress sheets, recognition badges	Higher confidence ratings; more students attempting advanced tasks; visible increases in participation and risk-taking
5. Support Teacher Professional Development	• Conduct workshops on gamification and differentiated instruction. • Facilitate peer-observation and sharing sessions. • Provide access to online modules and gamified teaching resources.	Academic Coordinator Department Head PE Teachers	Every semester	Training materials, certificates, online resources, speaker honoraria	Teachers implement at least 3 new strategies; improved instructional quality observed in walkthroughs
6. Enhance Monitoring and Feedback Mechanisms	• Use learner feedback forms after selected warm-ups. • Conduct monthly classroom observations focusing on motivation and participation. • Maintain participation tracking sheets. • Hold quarterly evaluation meetings with the PE department.	PE Teachers Monitoring Committee	Monthly and quarterly	Evaluation forms, observation checklists, attendance logs	Clear documentation of engagement trends; data-driven adjustments implemented regularly
7. Promote Inclusive and Context-Responsive	• Design low-cost, low-material warm-up activities accessible to all	PE Teachers Guidance Office	Throughout the school year	Improvised materials, cultural game guides	Increased participation from low-motivation

PE Practices	students. • Modify tasks for diverse skill levels and physical needs. • Provide extra encouragement to learners with limited home-based activity support. • Integrate culturally relevant and inclusive games.				learners; reduced performance gap between groups; inclusive engagement in every session

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