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Online gaming and physical activity of senior high school students

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ABSTRACT

The study on online gaming engagement and physical activity among Senior High School students is important because it helps determine how gaming behaviors influence students' health, lifestyle, and participation in physical activities, which may affect their overall well-being and academic performance. This study determined the relationship between the level of online gaming engagement and the level of physical activity among Senior High School students in the Roxas City Division for School Year 2025–2026. Specifically, it described the students' level of online gaming engagement, level of physical activity, the significant relationship between the two variables, and the intervention program proposed based on the findings. A quantitative research design employing the correlational method was utilized in the study. The respondents consisted of 341 Senior High School students selected through stratified proportionate random sampling from different academic strands to ensure proper representation. Data were gathered using a researcher-made questionnaire composed of three parts: profile of gaming activities, online gaming engagement scale, and physical activity scale, all measured using a 5-point Likert scale. The instruments were validated by experts and tested for reliability using Cronbach's alpha coefficients. Findings revealed that Senior High School students have a high level of online gaming engagement. Likewise, the respondents also manifested a high level of physical activity, showing that students still participate in active and healthy routines despite their gaming involvement. However, excessive gaming was observed to occasionally affect time management and lessen opportunities for exercise when not properly regulated. Results further indicated a significant relationship between online gaming engagement and physical activity among the respondents. Based on the findings, an intervention program was proposed to promote balanced digital engagement and physical well-being among students. The study emphasizes the importance of responsible gaming habits, proper time management, and guided supervision in maintaining a healthy balance between online gaming and physical activity.

Keywords: Online gaming engagement, physical activity, digital behavior, lifestyle balance.

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INTRODUCTION

The rapid advancement of digital technology in the twenty-first century has fundamentally reshaped the lifestyles, interests, and daily routines of adolescents across the globe. Among the most significant outcomes of this transformation is the rise of online gaming as a dominant recreational activity among young people. Recent studies have documented that online gaming offers cognitive stimulation, entertainment, and opportunities for social interaction, making it highly engaging and widely accessible through mobile phones, tablets, and computers (Kwok et al., 2021; Paulus et al., 2022). As a result, adolescents increasingly devote substantial amounts of time to online gaming, often displacing traditional forms of leisure, outdoor play, and physical activity. While digital engagement of this kind contributes to technological literacy and social connectivity, it simultaneously signals a broader and concerning shift toward more sedentary lifestyles among the adolescent population.

The growing prevalence of online gaming has prompted sustained attention from the global health community, particularly with regard to its potential adverse effects on adolescents' physical activity levels. Physical activity remains a critical determinant of physical health, psychological well-being, and academic performance among young people, and its decline carries significant developmental consequences. The World Health Organization (2020) has identified insufficient physical activity as a leading risk factor for non-communicable diseases, noting its strong association with sedentary behaviors among adolescents. Empirical studies conducted from 2020 onward consistently demonstrate that increased engagement in screen-based activities, including online gaming, is inversely related to moderate-to-vigorous physical activity levels (Gao et al., 2021; Rodriguez-de-Dios et al., 2023). Despite the breadth of this evidence, much of the existing global literature tends to focus on general screen time rather than isolating online gaming as a distinct behavioral variable. This tendency creates a meaningful gap in understanding the specific and nuanced impact of online gaming on adolescent physical activity patterns, underscoring the need for research that treats online gaming as a subject of inquiry in its own right.

These global health concerns are directly aligned with the United Nations Sustainable Development Goals, particularly SDG 3 on Good Health and Well-Being, which underscores the promotion of active and healthy lifestyles, and SDG 4 on Quality Education, which advocates for holistic learner development that extends beyond academic achievement. Excessive engagement in online gaming that displaces physical activity presents a critical challenge to the realization of these goals, especially among school-aged populations whose developmental needs require a deliberate balance of cognitive, physical, and social experiences. The intersection of digital behavior and physical health is therefore not merely a public health concern but also an educational imperative with implications for policy and practice at multiple levels.

At the national level, the Philippines mirrors the global patterns observed in digital engagement among adolescents. The increasing accessibility of smartphones, mobile data, and internet connectivity has intensified Filipino students' participation in online gaming. Recent local studies reveal that a significant proportion of adolescents do not meet the recommended levels of daily physical activity, raising concerns about the long-term implications of sedentary behavior on their health and overall well-being (Cordero et al., 2022; Uy and Del Castillo, 2024). While national research acknowledges the general effects of screen time on physical health, there remains limited empirical work that specifically examines the relationship between online gaming behaviors and physical activity outcomes within the Philippine educational context, particularly among Senior High School learners. This gap in the national literature is significant, as it leaves educators and policymakers without the localized, context-specific evidence needed to design effective interventions.

This limitation is even more pronounced at the local level. Within the Roxas City Division, teachers, parents, and school administrators have increasingly observed that many Senior High School students spend extended hours engaged in online gaming, potentially at the expense of participation in physical education, sports, and other forms of active recreation. However, these observations remain largely anecdotal in nature. There is a notable absence of empirical, school-based studies that systematically measure and analyze the relationship between online gaming engagement and physical activity levels among students in this locality. Furthermore, existing research has not adequately accounted for the socio-cultural factors, school environments, and access to recreational facilities that may shape students' behavioral patterns in this specific context. This represents a critical research gap at the local level, one that calls for data-driven and context-sensitive investigations capable of informing targeted interventions within the Roxas City Division.

The present study is firmly anchored in the research thrusts of Capiz State University, particularly in the domains of Health and Well-Being, Education and Learner Development, and Community-Responsive Research. By examining the interplay between digital engagement and physical activity among adolescents, the study contributes to the university's commitment to generating relevant, evidence-based research that addresses emerging societal challenges and promotes sustainable development within local communities. The study also aligns with the research agenda of the College of Education of Capiz State University, which emphasizes learner-centered inquiry, holistic development, and the integration of research into pedagogical practice. Specifically, it responds to the College's priority to produce empirical evidence that informs instructional innovation, student welfare programs, and policy development. By investigating how online gaming relates to physical activity among Senior High School students, the study provides valuable insights that can guide educators in designing responsive curricula, enhancing physical education programs, and fostering balanced digital and physical engagement among learners.

Given the increasing prevalence of online gaming and the growing concern over declining physical activity among adolescents, there is a compelling need to systematically examine the relationship between these variables within a localized and educational context. Addressing the identified gaps at the global, national, and local levels, this study aims to generate empirical evidence that will inform educators, school administrators, parents, and policymakers in developing contextually relevant interventions and policies. The findings are expected to support the promotion of healthy, balanced, and sustainable lifestyles among Senior High School students in the Roxas City Division for the School Year 2025 to 2026, while contributing simultaneously to national development goals and to the institutional research agenda of Capiz State University.

Statement of the problem

This study aimed to determine the relationship between the level of online game engagement and the level of physical activity among Senior High School students in the Roxas City Division for the School Year 2025–2026.

Specifically, it sought to answer the following questions:

1. What is the level of online game engagement among the participants?
2. What is the level of physical activity of the participants?
3. Is there a significant relationship between the level of online game engagement
4. and the level of physical activity?
5. What output can be drawn from the study?

METHODOLOGY

This chapter presents the research design, participants, methods of data collection, and data analysis employed in the study, detailing the procedures and instruments used to examine the relationship between online game engagement and physical activity among Senior High School students in the Roxas City Division.

The study employed a correlational research design, which is appropriate for examining the relationship between two quantitative variables: the level of online game engagement and the level of physical activity of Senior High School students. According to Creswell (2014, 2018), correlational research is used to assess the degree to which two or more variables are related without manipulating them. This design is suitable for the present study because the researcher sought to determine whether an increase or decrease in online gaming is associated with changes in physical activity while maintaining the natural setting of the participants. Using standardized questionnaires and rating scales, the study collected measurable data on both variables, and statistical analyses such as Pearson correlation were employed to examine the strength and significance of the relationship. This approach ensures that the investigation remains systematic, objective, and capable of providing empirical evidence to support educational and health-related interventions (Creswell, 2014; Creswell and Creswell, 2018).

The study was conducted in the Senior High Schools of the Roxas City Division, Capiz, Philippines, with data collection taking place during the first semester of the School Year 2025 to 2026. Roxas City was chosen because it represents an urbanized educational setting where digital engagement is prevalent among adolescents, making it suitable for examining the relationship between online gaming and physical activity.

The study employed stratified proportionate random sampling, which is considered the most appropriate procedure for this research because it ensures that all subgroups of the population are adequately represented (Creswell, 2014; Fraenkel, Wallen, and Hyun, 2020). Senior High School students were first grouped according to their academic strands, including Academic and Technical-Vocational-Livelihood tracks, and participants were then randomly selected from each group in proportion to their population size. This method minimizes sampling bias, accounts for differences among student subgroups, and provides a representative sample of the Roxas City Division's Senior High School population. Stratified proportionate random sampling is particularly suitable in educational research when the population is heterogeneous, as it allows researchers to make valid comparisons across subgroups while maintaining statistical rigor (Creswell and Creswell, 2018). By using this procedure, the study ensured that the findings regarding the relationship between online game engagement and physical activity could be generalized more accurately across all strands.

For the quantitative phase of the study, the participants consisted of three hundred forty-one (341) Senior High School students enrolled in the Roxas City Division during the School Year 2025 to 2026. The respondents were drawn from selected public secondary schools offering Senior High School programs within the division and included both male and female students across various academic strands, namely Academic tracks such as STEM, HUMSS, and ABM, and the Technical-Vocational-Livelihood track, ensuring a diverse representation of learner backgrounds. The age of the participants ranged from 16 to 18 years old, which corresponds to the typical age group of Senior High School learners in the Philippine educational system. The selection of respondents aimed to capture a broad spectrum of student experiences in terms of online gaming engagement and physical activity. A structured survey questionnaire was administered to gather data on the key variables of the study. In addition, socio-demographic information such as age, sex, academic strand, and average daily time spent on online gaming was collected to provide contextual background and to allow for subgroup analysis. These variables were deemed important in identifying possible patterns, differences,

and relationships between students' gaming behaviors and their level of physical activity. The relatively large sample size of 341 participants was considered adequate to ensure statistical reliability and to support meaningful quantitative analysis, including correlation and comparative measures.

For the qualitative phase, a total of fifteen (15) participants were purposively selected to provide deeper insights and contextual understanding of the quantitative results. This group was composed of five (5) Senior High School students, five (5) parents, and five (5) teachers from the same Roxas City Division. The use of purposive sampling allowed the researcher to intentionally select individuals who were knowledgeable about or directly involved in the students' gaming habits and physical activity behaviors. The five student participants were chosen based on their level of engagement in online gaming, ensuring representation from those with varying degrees of gaming involvement, including low, moderate, and high engagement. The five parent participants were included to provide perspectives on students' gaming habits at home, supervision practices, and observed lifestyle behaviors related to physical activity. The five teacher participants, particularly those handling Physical Education or Senior High School subjects, were selected to offer professional insights on students' participation in school-based physical activities, classroom behavior, and overall well-being. Data for the qualitative phase were gathered through semi-structured interviews, allowing participants to freely express their experiences, perceptions, and observations. This approach enabled the researcher to explore underlying factors, meanings, and explanations that could not be fully captured through quantitative measures alone. The inclusion of multiple stakeholder perspectives from students, parents, and teachers strengthened the credibility and depth of the findings through data triangulation. Overall, the combination of a substantial quantitative sample and a carefully selected qualitative group ensured both breadth and depth in examining the relationship between online gaming engagement and physical activity among Senior High School students in the Roxas City Division.

The inclusion and exclusion criteria applied in the selection of participants were clearly defined for each respondent group. For students, the inclusion criteria required that they be officially enrolled Senior High School students in the Roxas City Division for School Year 2025 to 2026, aged 16 to 18 years old, belonging to any academic strand, engaged in online gaming regardless of frequency or duration, and willing to participate with informed consent, including parental consent where required. Students were excluded if they were not enrolled during the specified school year, were below 16 or above 18 years old, had no engagement in online gaming, were absent or unavailable during data gathering, or declined participation or provided incomplete consent. For parents, inclusion required that they be the parent or legal guardian of an enrolled Senior High School student, that they directly supervised or interacted with the student at home, that they were aware of the student's gaming habits and physical activity, and that they were willing to participate in interviews or focus group discussions. Parents were excluded if they were not the guardian of a Senior High School student, had minimal or no involvement in the student's daily activities, declined participation or were unavailable during data gathering, or were unable to provide relevant information. For teachers, inclusion criteria required that they be currently teaching in a Senior High School in the Roxas City Division, preferably in Physical Education, Health, or core Senior High School subjects, with at least one year of Senior High School teaching experience and direct interaction with student behavior or physical activity participation, and that they be willing to participate. Teachers were excluded if they were not assigned at the Senior High School level, had no direct interaction with student behavior or physical activity, had less than one year of teaching experience, or declined participation or were unavailable during data gathering.

The primary research instrument used in this study was a researcher-made survey questionnaire. To understand the students' gaming environment, the questionnaire included checklists for the specific gadgets used, such as smartphones, laptops, or gaming consoles, and a list of popular online games including Mobile Legends: Bang Bang, Valorant, and Genshin Impact. Additionally, it quantified daily gaming engagement by asking students to select their typical daily playtime, with options ranging from less than one hour to more than eight hours.

The second major component of the questionnaire focused on Online Gaming Engagement through a series of 15 statements measured on a 5-point Likert scale ranging from 5 for Strongly Agree to 1 for Strongly Disagree, allowing students to rate the extent to which gaming reflected their daily routine and lifestyle. The items specifically evaluated behavioral tendencies such as the urge to play despite academic responsibilities, the habit of extending gaming sessions beyond planned times, and the preference for gaming over other recreational activities. The scale also captured social and financial aspects, including the frequency of interaction with peers through gaming platforms and whether the student had spent money on in-game upgrades such as skins or subscriptions.

The final section of the instrument assessed the Physical Activity of Senior High School students using another 15-item Likert scale designed to measure how gaming habits intersect with physical movement. This section required students to reflect on whether they maintained a balance between gaming and exercise or whether their gaming routine had led to a more sedentary lifestyle. Specific statements addressed the physical consequences of prolonged gaming, such as experiencing stiffness or tiredness, as well as the student's efforts to incorporate simple physical activities like stretching or walking during gaming breaks. This part of the questionnaire gauged students' awareness of the health importance of balancing screen time with physical activity and identified whether gaming often replaced participation in sports or outdoor recreational activities.

The instruments underwent content validation by a panel of experts in educational research, adolescent health, and physical education. Modifications were made based on expert feedback to ensure clarity, cultural appropriateness, and alignment with the research objectives. The reliability of the instruments was determined through a pilot test administered to 30 Senior High School students not included in the main study. The Cronbach's Alpha coefficient for the Online Gaming Engagement Scale was 0.89, indicating high internal consistency, while the Physical Activity Rating Scale achieved a Cronbach's Alpha of 0.87, demonstrating acceptable reliability for research purposes.

The researcher coordinated with the Division Office and school principals to seek approval and secure permission for data collection. Participants were informed about the purpose of the study, and consent forms were obtained from both students and their parents or guardians. The instruments were administered during designated class periods under the supervision of the researcher to ensure proper completion, and the collected data were coded and entered into a statistical software program for analysis. Participation in the study was entirely voluntary, and respondents were given the option to withdraw at any point without any form of penalty or consequence. Clear instructions were provided prior to the administration of the questionnaires to minimize misunderstanding and to promote accurate responses. The researcher also emphasized anonymity by not requiring participants to write their names or any identifying information on the instruments. After data collection, all accomplished questionnaires were securely stored and were accessible only to the researcher. Data were carefully checked for completeness and consistency before analysis to maintain accuracy and reliability of the results. Ethical considerations such as respect for participants' rights, privacy, and dignity were strictly observed throughout the entire research process.

The variables in this study were categorized to analyze the relationship between student habits and their physical health. The independent variable was the Level of Online Game

Engagement, assessed through a 15-item scale measuring daily routines, time spent, and the behavioral urge to play. Based on scores derived from the 5-point Likert scale, where 5 represented Strongly Agree and 1 represented Strongly Disagree, students were classified into five levels: a mean range of 4.21 to 5.00 corresponded to Very High Engagement, 3.41 to 4.20 to High Engagement, 2.61 to 3.40 to Moderate Engagement, 1.81 to 2.60 to Low Engagement, and 1.00 to 1.80 to Very Low Engagement. This categorization identified the extent to which gaming dominated the students' lifestyle and academic schedule. The dependent variable was the Level of Physical Activity, measured using a corresponding 15-item Likert scale that evaluated the students' ability to balance gaming with sports, their sedentary behavior, and any physical discomfort resulting from long hours of play. Respondents were classified using the same five-level interpretive scale: a mean range of 4.21 to 5.00 was described as Very High, 3.41 to 4.20 as High, 2.61 to 3.40 as Moderate, 1.81 to 2.60 as Low, and 1.00 to 1.80 as Very Low. The categories were mutually exclusive and exhaustive, allowing each participant to be classified in only one level for each variable based on their survey responses. Statistical analyses including Pearson correlation were used to examine the relationship between the variables.

RESULTS AND DISCUSSION

This chapter presents the analysis, interpretation, and discussion of data gathered from three hundred forty-one (341) Senior High School students enrolled in the Roxas City Division for the School Year 2025 to 2026. The study employed a correlational research design, utilizing stratified proportionate random sampling to ensure representative coverage across academic strands. Data were collected through a researcher-made survey questionnaire measuring two primary variables: the level of online game engagement and the level of physical activity. The Online Gaming Engagement Scale and the Physical Activity Rating Scale, each consisting of 15 items scored on a 5-point Likert scale, demonstrated high internal consistency with Cronbach's Alpha coefficients of 0.89 and 0.87, respectively. Descriptive statistics including mean and standard deviation were employed to characterize the levels of both variables, while Pearson r correlation was used to determine the existence and strength of the relationship between them, with the significance level set at 0.05. All results are interpreted in direct relation to the objectives of the study, and the discussion is grounded entirely in the data gathered, supplemented by relevant scholarly literature to contextualize and deepen the interpretation of findings.

Online game engagement of the students

The level of online game engagement of the participants refers to the extent to which Senior High School students are involved in playing online games in terms of frequency, duration, and level of interest. This variable captures how often students participate in gaming activities, the amount of time they spend playing, and their degree of immersion and attachment to online games. The level of engagement was measured using a structured scale with corresponding verbal interpretations to determine whether participants exhibited very high, high, moderate, low, or very low engagement, with a mean range of 4.21 to 5.00 corresponding to Very High Engagement, 3.41 to 4.20 to High Engagement, 2.61 to 3.40 to Moderate Engagement, 1.81 to 2.60 to Low Engagement, and 1.00 to 1.80 to Very Low Engagement.

Results revealed that the participants obtained a mean score of 3.76 with a standard deviation of 0.899, which falls within the range of 3.41 to 4.20 and is verbally interpreted as

High Engagement. This indicated that, on average, the Senior High School students were actively involved in online gaming, with their engagement characterized by frequent participation and a notable degree of interest, suggesting that gaming formed a regular and integral part of their daily routines. The relatively moderate standard deviation of 0.899 implied that while the majority of participants demonstrated a high level of engagement, some variation in responses existed, with a few exhibiting either lower or higher levels of involvement. Nonetheless, the clustering of responses around the mean suggested a generally shared pattern of gaming engagement among the respondents.

The overall finding that students exhibited high online game engagement is consistent with global trends documented in the literature. Kwok et al. (2021) and Paulus et al. (2022) observed that online gaming has become a dominant leisure activity among adolescents due to its accessibility, cognitive stimulation, and social affordances. The high engagement observed in the present study reflects this broader pattern, with students viewing gaming not solely as entertainment but also as a meaningful activity contributing to their social interaction and lifestyle. This aligns with Kowert (2020) and Zhong and Yao (2022), who identified online games as social environments where players build relationships and experience a sense of belonging, a dynamic evident in the respondents' tendency to engage with peers through gaming platforms.

In terms of behavioral patterns, the results indicated that online gaming was commonly integrated into the participants' routines, particularly during after-school hours and leisure time. Students demonstrated a noticeable level of commitment to gaming, including efforts to improve their skills and a tendency to extend playing time beyond initial intentions. These patterns are consistent with the findings of Teng et al. (2021), who reported that higher engagement in online games is frequently associated with goal-oriented behaviors, sustained participation, and intrinsic motivation driven by competition and skill development. However, the data also revealed potential concerns regarding gaming's influence on academic responsibilities and lifestyle balance. Some participants exhibited a tendency to prioritize gaming over schoolwork, experienced restlessness when unable to play, and preferred remaining indoors rather than engaging in physical activities. These observations are aligned with the findings of Montag et al. (2021) and the World Health Organization (2020), which emphasized that excessive gaming, when inadequately regulated, may lead to behavioral dependency and negatively affect academic performance, physical activity, and overall well-being.

The qualitative data gathered through semi-structured interviews with students, parents, and teachers substantially reinforced and contextualized the quantitative results. Student participants articulated that gaming had become deeply embedded in their daily routines, serving simultaneously as a source of relaxation, reward, and social connection. One student respondent described gaming as a way to decompress after long days of academic demands, acknowledging that extended gaming sessions sometimes resulted in sacrificed sleep or deferred schoolwork. Another student highlighted the social dimension of gaming, noting that online platforms enabled sustained peer communication, collaborative strategy, and competitive achievement, motivating prolonged and habitual engagement. A third student acknowledged the addictive quality of gaming by admitting to frequently checking gaming accounts during breaks and preferring indoor gaming over outdoor physical activities, which illustrates the strong attitudinal attachment that characterizes high engagement. Parent respondents corroborated these observations, noting that students consistently returned home to gaming after school and required repeated reminders to disengage, demonstrating emotional investment evidenced by restlessness or irritability when interrupted. While parents recognized gaming's role in social bonding and stress relief, they expressed concern over its effects on time management and academic discipline at home. Teacher respondents similarly confirmed that

high gaming engagement was reflected in students' conversational behavior, energy levels in class, and occasional difficulty in meeting academic deadlines, while also acknowledging that gaming fostered certain cognitive competencies such as strategic thinking and teamwork.

These convergent perspectives from multiple stakeholders strengthened the credibility of the quantitative findings and deepened their interpretive significance. The high level of online game engagement observed in this study carries several important implications for educators, school administrators, and policymakers. The finding that gaming functions as a social platform and motivational environment suggests that educators may consider thoughtfully integrating game-based elements and digital tools into instructional practice to align with students' existing interests and enhance academic engagement. However, the concurrent concerns regarding time management and academic prioritization underscore the need for targeted interventions that promote digital wellness, self-regulation, and responsible gaming behavior. Schools and parents are encouraged to collaborate in establishing structured routines that balance gaming enjoyment with academic fulfillment and participation in physical activities, recognizing that unmanaged high engagement may gradually encroach upon students' health and developmental responsibilities.

Physical activity of the students

Physical activity refers to the extent to which students engaged in movement-based and exercise-related activities despite their involvement in online gaming. The study examined how gaming habits may influence or coexist with students' daily physical routines, including walking, stretching, sports, and other forms of exercise. The level of physical activity was assessed using the same five-level interpretive scale applied to online game engagement, with mean ranges of 4.21 to 5.00 corresponding to Very High, 3.41 to 4.20 to High, 2.61 to 3.40 to Moderate, 1.81 to 2.60 to Low, and 1.00 to 1.80 to Very Low physical activity.

Results indicated that the students obtained an overall mean of 3.76 with a standard deviation of 1.109, which falls within the range of 3.41 to 4.20, interpreted as a High Level of Physical Activity. This finding suggested that, on average, students were still able to maintain an active lifestyle despite their involvement in online gaming, engaging in physical movements such as walking, stretching, and participation in sports or recreational activities. The standard deviation of 1.109 reflected a relatively moderate dispersion of responses, indicating variability in how individual students balance gaming engagement with physical activity. Overall, the data suggested that while online gaming constitutes a significant component of students' daily routines, it does not entirely preclude physical engagement, as respondents generally demonstrated a high level of physical activity.

This finding is broadly consistent with global health standards and the growing literature on adolescent physical behavior. The World Health Organization (2020) recommends that individuals aged 5 to 17 years accumulate at least 60 minutes of moderate to vigorous physical activity daily to support physical and mental health. Bull et al. (2020) further emphasized that regular physical activity is strongly associated with improved cardiovascular health, cognitive functioning, and overall well-being. The high physical activity level observed in the present study suggests that the respondents remain, to a meaningful degree, aligned with these recommended health standards, reflecting a relatively balanced lifestyle.

However, the literature also highlights the risks associated with prolonged screen engagement. King et al. (2020) noted that extended screen time can displace physical activity opportunities, contributing to increased sedentary periods and reduced energy expenditure. Tremblay et al. (2020) similarly cautioned that sedentary behavior accumulated in long

uninterrupted durations may adversely affect metabolic health and physical fitness. These perspectives help explain the respondents' acknowledgment that gaming occasionally reduced the time available for exercise, a pattern observed in the present study, where some students recognized the limiting effect of extended gaming sessions on their physical routines. Nevertheless, as Rhodes et al. (2021) argued, self-regulation and health awareness serve as key determinants of healthy behavioral patterns among youth exposed to high levels of screen-based entertainment, and the present findings suggest that students exhibit adaptive behaviors consistent with this principle.

The qualitative data provided rich corroborating evidence for the quantitative result. Student participants described deliberate strategies to offset sedentary gaming behavior, including taking breaks to walk, stretch, or engage in informal sports such as basketball. One student noted a natural discomfort that arose from prolonged sitting, prompting voluntary physical movement and a conscious effort to balance gaming with activity. Another student described household chores, neighborhood walking, and spontaneous peer sports as regular physical outlets maintained alongside daily gaming. Parent respondents confirmed these behaviors, reporting that children were receptive to reminders to take gaming breaks and engage in outdoor activities, and that physical movement continued to occur regularly at home when parental guidance was provided consistently. Teachers similarly reported that students participated actively in Physical Education classes and school-organized sports events, demonstrating energy and willingness to engage physically even after late nights of gaming, suggesting that structured school programs played a supportive role in sustaining physical engagement.

The convergence of quantitative and qualitative evidence supports the conclusion that high physical activity levels among students are maintained through a combination of self-regulation, social influence, and institutional support. These findings carry several important implications for school programming, parental engagement, and health policy. The generally high physical activity levels indicate that with appropriate guidance, students are capable of sustaining active routines alongside digital engagement. Schools may strengthen health education programs that reinforce wellness literacy, time management, and the value of consistent physical movement, while also integrating structured activity breaks during class hours to counteract extended periods of sedentary behavior. Parents and guardians play an indispensable role in modeling active behaviors, establishing reasonable screen time boundaries, and creating home environments that prioritize physical well-being. Despite the positive overall outcome, the variability in responses and the acknowledged influence of gaming on physical routines underscore the need for preventive strategies that sustain activity levels over time and prevent gradual behavioral drift toward sedentary habits.

Significant relationship between the level of online game engagement and the level of physical activity

To determine the significance of the relationship between the level of online game engagement and the level of physical activity among the participants, Pearson r correlation analysis was conducted at the 0.05 level of significance. Results revealed a Pearson r value of 0.877 with a p-value of 0.000, indicating a very high positive correlation that is statistically significant at the 5% alpha level. The narrow 95% confidence interval ranging from 0.850 to 0.899 further reinforced the reliability and precision of this estimate, confirming that the strong positive correlation is stable and generalizable across the population represented in the study. Accordingly, the null hypothesis stating that there is no significant relationship between the level of online game engagement and the level of physical activity of Senior High School students in the Roxas City Division is rejected.

This finding challenges the prevailing assumption that online gaming is inherently and uniformly associated with reduced physical activity and sedentary behavior. Instead, the very high positive correlation suggests that students who report higher levels of engagement in online gaming also tend to exhibit higher levels of physical activity, pointing to a more complex and nuanced behavioral pattern in which gaming and physical engagement are not mutually exclusive but may in fact coexist and reinforce each other in specific contexts. This result is consistent with the observations of Kari Exelmans and Jan Van den Bulck (2021), who argued that screen-based activities, including gaming, do not necessarily displace physical activity and can coexist with active lifestyles depending on individual behavioral patterns and self-regulatory capacity. Andrew K. Przybylski (2019) similarly found that moderate video game engagement is not negatively associated with adolescents' well-being and may correspond with positive behavioral outcomes when integrated into a balanced daily routine. Guy Faulkner et al. (2020) additionally emphasized that certain forms of gaming, particularly those that are active or movement-based, can directly contribute to increased physical activity levels among young people, a consideration relevant to the growing prevalence of interactive digital platforms among adolescents.

One plausible explanation for the strong positive relationship observed in the present study is that students who are highly engaged in online gaming may also exhibit higher levels of general motivation, energy, and social engagement, traits that simultaneously drive both gaming participation and physical activity. Students who are socially connected through gaming communities may also be more likely to participate in peer-led physical or outdoor activities, reflecting an overall pattern of active and engaged living rather than a compartmentalized choice between digital and physical behavior. Furthermore, the evolving nature of online gaming in contemporary contexts, encompassing collaborative strategy, eSports, and increasingly interactive or augmented reality platforms, may contribute to cognitive and, in some cases, physical engagement that blurs the traditional boundary between sedentary screen use and active participation.

Despite the strength and statistical significance of the observed correlation, it is essential to interpret these findings with appropriate caution. Correlation does not imply causation, and the result does not indicate that increased gaming directly produces higher physical activity. Other mediating or moderating variables, including students' health awareness, personality traits, school programming, peer influence, parental guidance, and access to recreational facilities, may account for the simultaneous elevation of both variables. The findings therefore invite further investigation into the causal and contextual mechanisms underlying this relationship, including the specific types of games played, the extent of structured school-based physical activity programs, and individual differences in lifestyle management.

The practical implications of these findings are significant for educators, school administrators, and parents. Rather than treating online gaming as categorically harmful to physical health, the results suggest that a more nuanced and balanced approach is warranted. Schools may develop programs that promote time management, encourage interactive or movement-based gaming alternatives, and integrate short physical activity breaks into daily school schedules. Educators are encouraged to leverage students' intrinsic motivation for gaming by incorporating game-based pedagogical strategies that sustain engagement while reinforcing the value of physical wellness. Parents and guardians may similarly use the findings to guide constructive conversations about balanced digital and physical routines, recognizing that gaming, when moderated and guided appropriately, need not conflict with active and healthy living.

In response to the overall findings of the study, the researcher developed an infographic as the primary output, designed to present a balanced and evidence-based view of how online game engagement and physical activity coexist among Senior High School students. The infographic communicates the key message that online gaming does not automatically result in physical inactivity, and that with proper awareness, self-regulation, and institutional support, students can engage in gaming while sustaining an active and healthy lifestyle. It highlights the roles of time management, health literacy, parental guidance, and school-based wellness programs in supporting this balance, and it addresses multiple stakeholders by advising students to regulate screen time and remain physically active, encouraging educators to integrate movement into learning, urging schools to promote holistic wellness programs, and guiding parents to establish reasonable boundaries while fostering active behaviors at home. The infographic also acknowledges that the relationship between gaming and physical activity is shaped by multiple contextual factors, including peer influence, access to facilities, personal motivation, and individual self-discipline, reinforcing the importance of comprehensive and contextualized approaches to adolescent health promotion.

Taken together, the findings of this study present a coherent and empirically grounded understanding of the relationship between online gaming engagement and physical activity among Senior High School students in the Roxas City Division. The high level of online game engagement ($M = 3.76$, $SD = 0.899$) and the correspondingly high level of physical activity ($M = 3.76$, $SD = 1.109$) demonstrated that gaming has become a prominent feature of students' daily lives without necessarily displacing their engagement in physical routines. The very high positive Pearson r value of 0.877, with a p-value of 0.000, confirmed a statistically significant relationship between these variables, leading to the rejection of the null hypothesis and reinforcing the conclusion that gaming and physical activity can coexist productively among adolescents when supported by appropriate guidance and self-regulation. These findings contribute to the growing body of literature that challenges reductive narratives about digital behavior and adolescent health, offering nuanced, context-sensitive evidence that informs educational programming, school health policy, and parental practice. The subsequent chapter draws upon these results to present the study's conclusions and recommendations, providing actionable directions for promoting balanced digital and physical engagement among Senior High School students in the Roxas City Division and in comparable educational contexts.

CONCLUSION

This study was conducted to determine the relationship between the level of online game engagement and the level of physical activity among Senior High School students in the Roxas City Division during the School Year 2025 to 2026. Employing a correlational research design and stratified proportionate random sampling, the study gathered data from three hundred forty-one (341) participants through a researcher-made, expert-validated, and reliability-tested questionnaire measuring gaming engagement and physical activity on a 5-point Likert scale. Pearson r correlation was used as the primary statistical tool to examine the relationship between the two variables. Based on the findings of the study, several interconnected conclusions were drawn, each of which contributes to a more nuanced understanding of how digital engagement and physical behavior interact among adolescent learners in a contemporary educational context.

The first major finding of the study established that Senior High School students demonstrated a high level of online game engagement, as reflected in an overall mean score of 3.76 ($SD = 0.899$), verbally interpreted as High Engagement within the scale range of 3.41 to 4.20. This finding leads to the conclusion that online gaming has become a deeply integrated component of students' daily routines, functioning not merely as entertainment but also as a

platform for social interaction, peer connection, stress relief, and motivational engagement. Students were found to invest significant time and emotional commitment in gaming, frequently extending sessions beyond initial intentions and exhibiting restlessness when unable to play, indicating a strong behavioral attachment to gaming. While these patterns reflect the positive social and psychological dimensions of gaming identified in the literature, they also reveal potential risks associated with poor time management, academic deprioritization, and reduced engagement in other life domains. This conclusion underscores the need for moderation, self-regulation, and deliberate lifestyle balance to ensure that high gaming engagement does not progressively encroach upon students' academic responsibilities, physical health, and overall well-being.

The second major finding revealed that students maintained a high level of physical activity despite their substantial involvement in online gaming, as indicated by an overall mean of 3.76 (SD = 1.109), also interpreted as High within the range of 3.41 to 4.20. This finding leads to the conclusion that online gaming, when practiced within a reasonably managed routine, does not entirely displace students' physical engagement. Students demonstrated awareness of the importance of staying physically active and adopted compensatory behaviors such as walking, stretching, participation in informal sports, and completion of household chores to offset the sedentary nature of prolonged gaming sessions. This balance was supported by parental guidance, school-based physical education programs, and students' own sense of health responsibility. Nevertheless, the standard deviation of 1.109 indicated meaningful variability among respondents, suggesting that while the group average was high, some students experienced greater difficulty maintaining physical activity alongside gaming. This variability reinforces the conclusion that physical activity levels among gaming-engaged students depend significantly on the presence of supportive structures, including family supervision, school programming, and individual self-discipline, and that without these moderating influences, the risk of behavioral drift toward sedentary lifestyles remains a legitimate concern.

The third and most analytically significant conclusion of the study concerns the relationship between the two primary variables. Pearson r correlation analysis yielded a coefficient of 0.877 with a p-value of 0.000, indicating a very high positive correlation that is statistically significant at the 0.05 alpha level, supported by a 95% confidence interval ranging from 0.850 to 0.899. Accordingly, the null hypothesis stating that there is no significant relationship between the level of online game engagement and the level of physical activity of Senior High School students in the Roxas City Division is rejected. This result leads to the conclusion that online gaming does not necessarily conflict with or reduce physical activity among adolescent learners. Students who reported higher engagement in gaming also tended to report higher levels of physical activity, suggesting that gaming and physical engagement may coexist within a dynamic and self-managing behavioral framework. These finding challenges reductive and uniformly negative assumptions about gaming's impact on adolescent health, and instead positions the relationship as context-dependent, shaped by individual lifestyle habits, time management capacity, peer influence, parental involvement, access to recreational facilities, and the nature of the games being played. The conclusion drawn from this finding is that the coexistence of high gaming engagement and high physical activity is achievable among adolescents, but that its sustainability depends on the presence of deliberate self-regulation, structured guidance, and enabling institutional environments.

In light of these conclusions, the study advances several practical recommendations for diverse stakeholders. Students are encouraged to develop and consistently practice time management strategies that allocate dedicated periods for both gaming and physical activity,

recognizing that the two are not inherently opposed but require intentional structuring to coexist beneficially. Educators are recommended to leverage students' intrinsic motivation for gaming by incorporating game-based pedagogical strategies into instructional practice, while also integrating structured physical activity breaks into the school day to counteract extended sedentary periods. School administrators are urged to design and implement holistic wellness programs that address both digital and physical health literacy, equipping students with the competencies needed to navigate modern digital environments without compromising their physical well-being. Parents and guardians are encouraged to maintain active involvement in monitoring and shaping students' gaming habits at home, establishing reasonable screen time boundaries, modeling physically active behavior, and creating home routines that affirm the value of balanced living. For future researchers, the study recommends investigations that explore the causal mechanisms underlying the observed positive relationship, the moderating roles of specific variables such as game type, peer networks, and school culture, and the long-term behavioral trajectories of adolescents who maintain high engagement in both gaming and physical activity. Longitudinal and experimental designs would complement the present correlational findings by providing stronger evidence for causal inference and enabling more targeted intervention development.

Overall, this study contributes meaningful, context-specific, and empirically grounded evidence to the growing body of literature on adolescent digital behavior and physical health, demonstrating that online gaming and physical activity can coexist productively when supported by appropriate guidance, self-regulation, and institutional structures. The findings affirm that the challenge facing educators, parents, and policymakers is not to eliminate gaming from students' lives but to cultivate the conditions under which gaming engagement is balanced, purposeful, and complementary to the holistic development of Senior High School learners.

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