**Game Motivation and Cognitive Ability among Senior High School Students: A Correlational Analysis**



**ABSTRACT**

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| --- |
| In recent years, the immense popularity of video games among adolescents has sparked research interest in why people play and how gaming may impact cognitive abilities. Cognitive ability refers to the mental skills and capabilities involved in learning, understanding, reasoning, problem-solving, decision-making, and other aspects of thinking. Game motivation refers to the underlying reasons that drive a person to play. It varies significantly based on different motives, including achievement, social interaction, and immersion. This study aims to examine the relationship between Game Motivation and Cognitive Ability among Senior High School students. Understanding this relationship informs educators and policymakers on how best to integrate games into the classroom environment and apply game-based strategies to enhance learning and cognitive development.  A correlational research design was employed, and the study was conducted at Marber National High School, Bansalan, Davao del Sur, between October 2024 and December 2024. The study adopted a stratified random sampling method to ensure the representation from different groups within the population. Data were collected from 228 Senior High School students through an online survey. Game Motivation was assessed based on Intrinsic and Extrinsic factors, while Cognitive Ability was evaluated in terms of Attention, Memory, and Problem-Solving Skills. Statistical analysis was conducted to determine relationships between the variables, with significance set at 0.05.  The results revealed a weak positive correlation between Game Motivation and Cognitive Ability (R = 0.123, p = 0.066). Among the motivational factors, External Regulation emerged as the most prominent, with a mean score of 3.53 (SD = 1.162), while Attention and Concentration were identified as the strongest cognitive abilities, with a mean score of 3.95 (SD = 0.987). Overall, the impact of Game Motivation on Cognitive Ability was minimal. Although the weak correlation suggests a limited influence of Game Motivation on Cognitive Ability, the potential for video games to contribute to cognitive development remains significant when thoughtfully applied. By analyzing the levels of game motivation and cognitive ability, as well as their correlation, the study provided insights into whether gaming habits contribute to cognitive development. It is recommended to foster Intrinsic Motivations, such as Enjoyment and Self-Improvement, to enhance the cognitive benefits of gaming. Investigating specific game genres and their impact on different cognitive functions, such as problem-solving, analytical thinking, and memory recall, could provide deeper insights. Further research is needed to explore the long-term implications of these findings. |

***Keywords:*** *Game Motivation, Cognitive Ability, IT Skills, Employee Performance, problem-solving, decision-making,*

**1. INTRODUCTION**

* 1. **Background of the Study**

          Motivation means to be moved to do something, or to perform an action, and in the educational field, it is considered one of the most essential factors for teaching and learning effectiveness (Leitão et al., 2022). Game motivation refers to the factors that drive individuals to engage in their preferred gaming activities. While there may not be a single, standardized definition of game motivation, it generally involves elements such as fun, social interaction, competition, challenge, escapism, and a sense of achievement (Bediou et al., 2018; Bertoni et al., 2024). Simply put, motivation within games reflects the reasons why people choose to play. Cognitive ability refers to the mental skills and capabilities involved in learning, understanding, reasoning, problem-solving, decision-making, and other aspects of thinking (Kim et al., 2022; Squire et al., 2023). These functions include memory, attention, perception, language, and executive functioning. Cognitive ability is essential for information processing, making sense of the world, and adapting to new situations (Blumberg et al., 2024; Choi et al., 2020). It varies among individuals and is influenced by genetic, environmental, and experiential factors. In recent years, the immense popularity of video games among adolescents has sparked research interest in why people play and how gaming may impact cognitive abilities (Ramos et al., 2020). Today, video games are recognized not only as a form of entertainment but also as a medium that engages users in cognitive activities, potentially enhancing skills such as problem-solving, memory, and attention. According to Granic et al. (2014), game motivation refers to the underlying reasons that drive a person to play. It varies significantly based on different motives, including achievement, social interaction, and immersion. These motivations have been linked to cognitive engagement, which can influence related cognitive abilities such as spatial awareness, reaction time, and working memory (Eichenbaum et al., 2014).

     Cognitive ability refers to an individual's capacity for mental processes such as attention, reasoning, and memory. Studies have suggested that cognitive function can be enhanced through various activities, including gaming, as video games often require players to navigate complex tasks and make rapid decisions (Green & Bavelier, 2007). In a review investigating video gaming and cognitive tasks, gaming was found to be associated with attentional benefits, including improvements in bottom-up and top-down attention, optimization of attentional resources, integration between attentional and sensorimotor areas, and improvements in selective and peripheral visual attention (Chaarani et al., 2022). Another study considered visual working memory skills and found that participants who played video games for more than 5 hours per week outperformed participants who played video games for less than 5 hours per week in connection to these skills (Martinez et al., 2023). This highlights the significance of exploring the relationship between game motivation and cognitive abilities, particularly among high school students, who are at a crucial stage in their cognitive and social development. According to Dankbaar et al., simulation games have become increasingly popular in education; however, further insight into their critical design features is still needed. Their study investigated the effects of fidelity in open patient cases as an adjunct to an instructional e-module on students' cognitive skills and motivation. The researchers employed a three-group randomized post-test-only design, consisting of a control group that worked solely on an e-module, a cases group that combined the e-module with low-fidelity, text-based patient cases, and a game group that integrated the e-module with a high-fidelity simulation game using the same patient cases.

     This research aims to explore the relationship between Game Motivation and Cognitive Ability among Senior High School students, providing insights into how different gaming motivations correlate with cognitive skills essential for success in school and beyond. Understanding this relationship informs educators and policymakers on how best to integrate games into the classroom environment and apply game-based strategies to enhance learning and cognitive development.

**1.3 Conceptual Framework**

**Independent Variable Dependent Variable**

**Game Motivation**

Intrinsic Motivation

Integrated Regulation

Identified Regulation

Introjected Regulation

External Regulation

Amotivation

**Cognitive Ability**

**Attention & Concentration**

**Cognitive Processing & Motor Skills**

**Memory & Recall**

   
**Figure 1. Conceptual Framework of The Study**

This theory represents the proposed relationship between Game Motivation, Engagement Level, and Specific Cognitive Abilities among Senior High School students. It suggests that different types of motivation, including Intrinsic Motivation, Integrated Regulation, Identified Regulation, Introjected Regulation, External Regulation, and Amotivation, influence students' engagement in video games, which in turn affects their cognitive abilities. The theory posits that higher game motivation leads to deeper engagement, which positively influences Attention & Concentration, Cognitive Processing & Motor Skills, and Memory & Recall. In other words, video games can contribute to cognitive development when played with purposeful and meaningful engagement.

**1.3 Research Question**

This study aims to investigate the relationship between Game Motivation and Cognitive Ability among Senior High School students. Specifically, it seeks to determine whether there is a significant correlation between these two variables and to explore the extent to which Game Motivation influences cognitive performance.

1. What is the level of Game motivation of Senior High in terms of:
   1. Intrinsic Motivation
   2. Integrated Regulation
   3. Identified Regulation
   4. Introjected Regulation
   5. External Regulation
   6. Amotivation
2. What Is the Level of Cognitive Ability of Senior High School Students In Terms Of:

2.1 Attention And Concentration

2.2 Cognitive processing and Motor skills

2.3 Memory and Recall

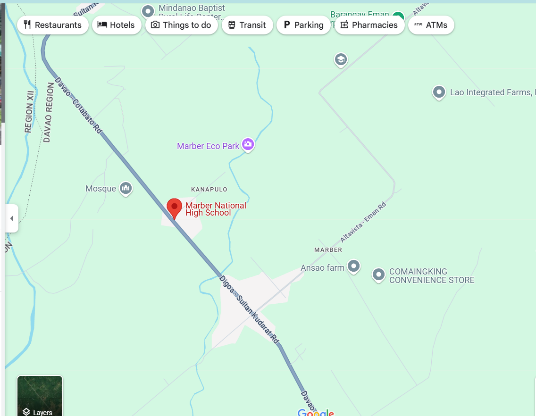
1. Is there a significant relationship between Game motivation and the Cognitive ability of Senior High School students in the Municipality of Bansalan?
   1. **Null Hypothesis**

Ho1: There is no significant relationship between Game Motivation and Cognitive Ability among Senior High School students

**2. methodology**

**2.1 Research Design**

This study employed a quantitative correlational research design to examine the relationship between Game Motivation and Cognitive Ability among Senior High School students. A correlational design was chosen as it allows for the assessment of the strength and direction of the relationship between two variables without manipulating them. This approach is appropriate for understanding how different types of game motivation may influence specific cognitive abilities.

**2.2 Research Locale**

**Figure 2. Research Locale**

The study was conducted at Marber National High School, located in Bansalan, Davao del Sur, Philippines. This school served as an ideal research setting due to its diverse population of Senior High School students enrolled in various academic and technical-vocational tracks. By focusing on Marber National High School, the study aimed to capture insights into students' gaming motivations and cognitive abilities within a structured educational environment.

     Data collection took place on campus with the cooperation of school administrators and teachers, ensuring minimal disruption to students’ schedules by conducting the research during school hours. The familiar and supportive school environment provided an optimal setting for administering questionnaires, interviews, and cognitive assessments, contributing to the collection of accurate and valid data. Additionally, the researcher had the opportunity to engage directly with a relatively homogeneous student body, which facilitated a clearer understanding of the relationship between game motivation and cognitive ability among Senior High School students.

**2.3 Participants of the Study**

The participants of this study were Senior High School students from Marber National High School in Bansalan, Davao del Sur. The study included students from different academic tracks and grade levels (11 and 12), specifically from STEM (Science, Technology, Engineering, and Mathematics), HUMSS (Humanities and Social Sciences), TVL (Technical-Vocational-Livelihood), GAS (General Academic Strand), and Shielded Metal Arc Welding.

Participants were randomly selected to ensure a diverse sample that included students with varying academic performance levels, backgrounds, and gaming habits. Both male and female students within the age range of 16 to 18 years old were included to provide a comprehensive perspective on game motivation and cognitive abilities across genders.

To ensure the relevance of the study, participants were required to meet specific inclusion criteria. They had to be Senior High School students enrolled at Marber National High School, specifically from Grade 11 or 12 under any academic track, including STEM, HUMSS, TVL, GAS, or Shielded Metal Arc Welding. Participants were also required to be between 16 to 18 years old at the time of the study. Lastly, participation was entirely voluntary, with parental consent required for students under 18 to ensure ethical compliance and research integrity.

Ethical research practices were strictly followed, with informed consent obtained from participants, as well as approval from school administrators and parents of students under 18. The study aimed to provide valuable insights into the influence of game motivation on cognitive ability among Senior High School students while ensuring participant welfare and research integrity.

**2.4 Sampling Techniques**

In this study, the researcher adopted a stratified random sampling method to ensure the representation from different groups within the population. The Senior High School population at Marber National High School consisted of 228 students from Grades 11 and 12, enrolled in various academic tracks such as STEM, HUMSS, TVL, GAS, and Shielded Metal Arc Welding. To achieve a balanced sample, the population was divided into strata based on grade level and academic track, and participants were randomly selected from each stratum. Stratified random sampling is a probability sampling method that ensures each subgroup is proportionally represented, reducing sampling bias and improving the study's validity. The selected sample size was sufficient for reliable data collection and analysis.

**2.5 Data Collection Procedure**

The respondents, Senior High School students at Marber National High School, completed a survey designed by the researchers to collect data. The study employed both descriptive and inferential statistical methods to analyze the association between game motivation and cognitive ability. Summary statistics, including means and standard deviations, were used to present the levels of game motivation and cognitive ability, highlighting overall trends and variations.

To determine the strength and direction of the association between variables, Pearson correlation analysis was conducted. Correlation values were interpreted based on predefined ranges. Hypothesis testing, using a significance level of 0.05, evaluated whether the correlation was statistically significant. Findings were presented through tables and graphs to ensure clarity and accessibility, effectively reflecting the study's objectives.

**2.6 Data Analysis Procedure**

      Before conducting the study, the researcher sought approval through a formal permission letter, which was signed by the BSIT Program Head, approved by the Dean of the College at St. Mary's College of Bansalan, and submitted to the Principal of Marber National High School. To successfully collect the required data, the researchers utilized a survey form. The questionnaire was distributed online via Google Forms. However, before providing the survey, the researcher first obtained informed consent from the respondents, who were personally selected. The questionnaire followed a systematic survey format, similar to other research surveys, and was designed to be completed by the target respondents. It was employed to gather essential quantitative data necessary for analysis. Since this study followed a quantitative research methodology, numerical data were used to analyze relationships between variables. The collected information was regarded as crucial for the study, as it formed the basis for statistical analysis and interpretation.

**2.7 Research Instrument**

       The questionnaire survey was the primary research tool used in this study. The self-administered questionnaire was designed to collect data on Cognitive Ability and Game Motivation. The Game Motivation section of the questionnaire utilized validated scales that were adopted and modified from the study of André, Lafrenière, Filion, and Vallerand (2012). These scales measured both intrinsic and extrinsic motivations, incorporating Self-Determination Theory constructs such as Intrinsic Motivation, Identified Regulation, Introjected Regulation, External Regulation, and Amotivation.

      The Cognitive Ability section of the questionnaire was adopted and modified from the study of Annunziata, Muzzatti, Giovannini, and Luchini (2012). It included various tasks designed to assess Attention, Memory, and Problem-Solving Skills. These tasks were selected due to their relevance to gaming activities and their established psychometric properties, ensuring their reliability and validity in measuring cognitive abilities.

**2.8 Ethical Considerations**

We considered several important factors to ensure ethical conduct throughout the research process. First, all participants provided informed consent after being fully informed about the study’s objectives, methods, potential risks, and benefits. They were assured of anonymity and confidentiality, with their personal data protected and used solely for research purposes. The survey design was carefully structured based on clear objectives, with consideration for the participants’ time and privacy. Additionally, as researchers, we adhered to all relevant ethical guidelines and standards to ensure that the study was conducted responsibly and ethically. Prioritizing these ethical considerations helped safeguard the rights and well-being of all participants.

**3. RESULTS AND DISCUSSIONS**

     Table 1 presents the degree of game motivation among Senior High School students. The findings indicate an average game motivation score of 3.33 with a standard deviation of 1.214, which falls under the descriptive category of neutral. This suggests that students, on average, neither strongly agree nor disagree about their motivation for gaming. Among the game motivation indicators, External Regulation received the highest mean score of 3.53 with a standard deviation of 1.162, interpreted as agree. This means that students are primarily motivated to play games due to external factors such as rewards, social influence, or external pressures. Following this, Identified Regulation (3.36, SD = 1.363) was slightly higher than Integrated Regulation (3.30, SD = 1.427), Introjected Regulation (3.29, SD = 1.358), and Amotivation (3.29, SD = 1.358), all of which were categorized as neutral. Lastly, Intrinsic Motivation had the lowest mean of 3.24 with a standard deviation of 1.401, also categorized as neutral, indicating that students do not strongly associate gaming with personal enjoyment or internal satisfaction.

These results suggest that while students engage in gaming, their motivation is primarily influenced by external factors rather than personal enjoyment or deep internal drive**.**

**Table 1.** **Level Of Game Motivation**

|  |  |  |  |
| --- | --- | --- | --- |
| **Game Motivation** | **N** | **Sd** | **Descriptive Equivalent** |
| Intrinsic Motivation | 3.24 | 1.401 | Neutral |
| Integrated Regulation | 3.30 | 1.427 | Neutral |
| Identified Regulation | 3.36 | 1.363 | Neutral |
| Introjected Regulation | 3.29 | 1.358 | Neutral |
| External Regulation | 3.53 | 1.162 | Agree |
| Amotivation | 3.29 | 1.358 | Neutral |
| Overall | 3.33 | 1.214 | Neutral |

Table 2 presents the degree of cognitive ability among Senior High School students. The results show an overall average cognitive ability score of 3.90 with a standard deviation of 0.934, which falls under the descriptive category of agree. This suggests that students generally perceive gaming as having a positive effect on their cognitive skills.

Among the cognitive ability indicators, Attention & Concentration received the highest mean score of 3.95 with a standard deviation of 0.987, categorized as agree. This indicates that students believe gaming improves their ability to focus and maintain attention. Cognitive Processing & Motor Skills followed with a mean score of 3.81 and a standard deviation of 1.066, also categorized as agree, suggesting that students perceive gaming as beneficial to their reaction time, decision-making speed, and motor coordination. Memory & Recall, however, had the lowest mean score of 3.33 with a standard deviation of 1.214, categorized as neutral. This means that students do not strongly agree that gaming enhances their ability to remember and recall information.

These findings imply that while students recognize potential cognitive benefits from gaming, its impact on memory and recall is less evident compared to attention, concentration, and cognitive processing skills.

**Table 2. Level of Cognitive ability**

|  |  |  |  |
| --- | --- | --- | --- |
| **Cognitive Ability** | **N** | **Sd** | **Descriptive Equivalent** |
| **Attention and Concentration** | **3.95** | **0.987** | **Agree** |
| **Cognitive Processing and Motor Skills** | **3.81** | **1.066** | **Agree** |
| **Memory and Recall** | **3.33** | **1.214** | **Neutral** |
| **Overall** | **3.90** | **0.934** | **Agree** |

Figure 3 displays a scatterplot with a regression line showing the correlation between Game Motivation (x-axis) and Cognitive Ability (y-axis). The findings indicate a very weak positive correlation, suggesting that students with higher game motivation tend to have slightly higher cognitive ability. However, the correlation is weak, meaning that game motivation alone is not a strong predictor of cognitive ability.

This suggests that while there is a slight relationship between game motivation and cognitive skills, other factors may have a more significant influence on cognitive development. Further studies may explore additional variables such as educational background, study habits, and the types of games played to better understand the connection between gaming and cognitive abilities.

**Table 3. Correlation Between Game Motivation and Cognitive Ability**

|  |  |  |
| --- | --- | --- |
|  | **Cognitive Development** | **Decision** |
| **Game Motivation** | **0.123**  **(.066)** | **Accept Ho** |

1. **CONCLUSIONS AND RECOMMENDATIONS**

The role of gaming in cognitive development has been a topic of interest among educators and researchers, particularly in understanding how game motivation influences cognitive abilities. This study aimed to examine the relationship between game motivation and cognitive ability among Senior High School students at Marber National High School. By analyzing the levels of game motivation and cognitive ability, as well as their correlation, the study provided insights into whether gaming habits contribute to cognitive development.

**4.1 Conclusions**

   The findings revealed that students generally have a neutral stance toward game motivation, with External Regulation being the most dominant factor. This indicates that students are primarily motivated by external rewards or social influences rather than by intrinsic enjoyment. Other motivation indicators, such as Intrinsic Motivation, Integrated Regulation, Identified Regulation, Introjected Regulation, and Amotivation, were rated lower, suggesting that students do not strongly associate gaming with personal fulfilment or internalized goals.

In terms of cognitive ability, students generally agreed that gaming positively affects their Attention & Concentration and Cognitive Processing & Motor Skills, but they were more neutral about its impact on Memory & Recall. This suggests that while gaming may enhance focus and reaction time, it may not significantly contribute to long-term memory retention or recall. The statistical analysis also showed a very weak positive correlation between game motivation and cognitive ability, indicating that game motivation is not a strong predictor of cognitive ability. While students who are more motivated to play games tend to have slightly better cognitive abilities, the relationship is not substantial enough to conclude that gaming directly enhances cognitive performance.

**4.2 Recommendations**

For educators and school administrators, it is recommended to explore game-based learning strategies that enhance intrinsic motivation. By integrating educational games that promote problem-solving, memory retention, and critical thinking, teachers can make learning more engaging while improving students' cognitive abilities. Schools can also encourage the use of interactive digital platforms that simulate real-world problem-solving scenarios to enhance student engagement and learning outcomes.

For students, it is important to balance gaming activities with academic responsibilities. While certain games can enhance focus, reaction time, and cognitive processing, excessive or unstructured gaming may not provide significant cognitive benefits. Choosing games that involve strategy, logic, and memory exercises can contribute to better cognitive skills, but they should be played in moderation and not interfere with schoolwork.

For future researchers, further studies are encouraged to explore the long-term effects of gaming on cognitive development. Investigating specific game genres and their impact on different cognitive functions, such as problem-solving, analytical thinking, and memory recall, could provide deeper insights. Additionally, future research could incorporate qualitative approaches, such as interviews or observational studies, to gain a more comprehensive understanding of how students engage with games and how it affects their thinking processes.

**Ethical Approval and Consent:**

Before conducting the study, the researcher sought approval through a formal permission letter, which was signed by the BSIT Program Head, approved by the Dean of the College at St. Mary's College of Bansalan, and submitted to the Principal of Marber National High School. Written informed consent was obtained from participants, as well as approval from school administrators and parents of students under 18.

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Details of the AI usage are given below:

1.

2.

3.

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