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Relationship of Gamification to Discernment of Grade 12 Students at Young Achiever's School of Caloocan

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Abstract

Gamification activity help student because it can increase students' motivation, participation, and engagement through game-based elements like points, badges, rewards, leaderboards, and challenges, gamification has grown in popularity as an instructional strategy in education. Few studies have looked at its relationship with students' discernment, especially among Senior High School students in the Philippine setting, while prior research has concentrated on its impact on academic performance and motivation. The purpose of this study is to ascertain how gamification and the discernment of 12th grade students at Young Achiever's School of Caloocan are related. It specifically looks at how gamification affects students' capacity for information evaluation, critical thinking, and decision-making. To ascertain whether there is a significant relationship between the two variables, the study uses a quantitative correlational research design. Purposive

sampling will be used to choose 30 grade 12 students from Young Achiever's School of Caloocan strands. A validated questionnaire created by the researcher and distributed via Google Forms will be used to collect data. The strength and direction of the relationship between gamification and discernment will be determined by organizing, coding, and analyzing the gathered responses using the Pearson correlation (Pearson r). It is anticipated that the study's conclusions will offer insightful information about how well gamification works as a teaching method to foster students' critical thinking and sound judgment. By offering evidence that can support the integration of meaningful gamified learning activities to improve students' discernment and overall learning experiences in the classroom, the findings may be helpful to educators, school administrators, the Department of Education, parents, and future researchers.

Keywords: Gamification, discernment, Purposive

1. The Problem and a Review of Related Literature

Introduction

In order to grow student participation and motivation, gamification which include game features like points, badges, leaderboards, and rewards has grow in many teaching style as an educational strategy in senior high schools. Students in Grade 12 are expected to develop discernment to think critically, assess information, and make wise decisions as they become ready for college study or professional degrees. Because Grade 12 students at Young Achiever School of Caloocan often engage with game like study settings, it is critical to know the relationship between gamification and their discernment. Studying this connection could reveal whether gamified learning opportunities improve students' critical thinking, judgment, and decision-making abilities. Gamification is a style that educational institutions have been using more and more in recent years to increase student participation and learning output. According to (Zainuddin *et al.*, 2021). research, by making learning more dynamic and relevant, well-designed gamification can improve academic achievement, motivation, engagement, and teamwork. The development of critically thinking abilities, such as analysis, evaluation, and informed decision-making, which are crucial elements of discernment, is also encouraged by active and stimulating learning environments, according to research

(UNESCO, 2023). These results emphasize how crucial it is to investigate how gamification affects education outside of academic performance.

As digital learning continues to expand, educators are challenged to adopt teaching strategies that not only capture students' interest but also strengthen their cognitive and decision-making abilities. Gamification has emerged as one of the innovative approaches that promotes active participation and learner-centered instruction. However, while many studies have focused on its effects on motivation and academic performance, fewer have explored its relationship with students' discernment, particularly among senior high school learners in the Philippine context. This gap emphasizes the need for further investigation into how gamified learning experiences influence students' ability to make thoughtful and responsible judgments.

Therefore, this study aims to determine the relationship between gamification and the discernment of Grade 12 students at Young Achiever School of Caloocan. The findings of this research may benefit educators, school administrators, and future researchers by providing evidence on the effectiveness of gamification in fostering not only engagement but also the critical thinking and decision-making skills necessary for students' academic success and lifelong learning.

Background of the Study

Education is not only about knowledge but also about the ability to understand, expand and develop skills, attitudes and thinking that prepare students for individual challenges in the future.

This is also one of the most widely used strategies is gamification, here gamification motivates students because of the points, rewards and badges they get for cooperating in educational activities.

Gamification aims to increase students' critical thinking skills during critical moments of activity. As digital learning continues to evolve, many schools are beginning to incorporate gamified approaches to further enhance students' academic performance and classroom engagement and, more importantly, to shape or expand students' thinking. In addition to increasing student motivation, gamification can also influence students' discernment, helping them to think critically, analyze information, and evaluate different options.

Grade 12 students are at a crucial stage in their academic journey as they are being prepared for higher education or employment. At this level, students are expected to demonstrate independence, critical thinking, and good judgment in making academic and personal decisions.

Can provide valuable insights into whether learning strategies help develop important skills Gamification is a study that aims to determine whether gamification can benefit students, school teachers, and future researchers.

Gamification can be effective in improving not only communication but also critical thinking.

Review of Related Literature

According to Zen J *et al* (2024). Exploring the impact of gamification on students' academic performance Gamification, characterized by the integration of game design elements into non-game environments, has gained popularity in classrooms due to its potential for increased engagement and enjoyment compared to traditional lecture-

based teaching methods. While students generally exhibit positive attitudes towards gamification, its impact on academic achievement remains a subject of debate. This study employed a meta-analysis approach to examine the overall influence of gamification on students' academic performance. The sample comprised 22 experimental studies conducted between 2008 and 2023, comparing the effects of gamified and non-gamified classes. Utilizing a random effects model, the results revealed a moderately positive effect of gamification on student academic performance (Hedges's $g = 0.782$, $p < 0.05$). The paper further discussed the outcomes of various moderator analyses, providing valuable insights into the selection and utilization of game design elements, as well as considerations specific to different educational stages.

Suhartini, T. T. (2024). Problem-Based Learning with Gamification-based: Improving Critical Thinking Skills and Indonesian Learning Outcomes for Seventh Graders of SMPN 1 Jatiroto. Critical thinking skills are a foundational factor in student learning that can enhance academic achievement. However, the seventh-grade students at SMPN 1 Jatiroto exhibit low academic performance and underdeveloped critical thinking skills. Analysis shows that problem-based learning combined with gamification can improve both aspects. Therefore, this study aims to address the low academic performance and critical thinking skills of the seventh-grade students at SMPN 1 Jatiroto by implementing a problem-based learning and gamification strategy. This classroom action research involved 34 students from class 7B in the 2022/2023 academic year. Using a descriptive quantitative approach, the study was concluded after two cycles, as the success indicators had been met. The results indicate that the issues faced by the seventh-grade students at SMPN 1 Jatiroto can be resolved by employing a combination of these two strategies for optimal outcomes. Given that this study was not conducted in consecutive sessions, future research could address this gap by implementing the intervention over consecutive meetings with a wider variety of materials.

Ikhwan, S., Sugiarti, S., Hidayati, D., Slamet, J., & Hidayat, Y. (2025). A gamification-based reading comprehension course in learning management system: Enhancing learning outcomes, critical thinking, and self-directed learning skills for Islamic undergraduate students. While gamification has been extensively examined as an innovative teaching strategy, its potential to strengthen reading comprehension, critical thinking, and self-directed learning (SDL) in Islamic higher education has not been fully explored. Much of the existing research focuses primarily on its motivational impact, with less attention given to how gamified learning management system (LMS) environments can simultaneously support cognitive and metacognitive development. To address this gap, the present study evaluated the effectiveness of an LMS-based gamified reading comprehension course on undergraduate students' learning outcomes at STAI Diponegoro Tulungagung, Indonesia. A quasi-experimental design was applied, involving 70 students who were randomly assigned to an experimental group ($n = 35$) and a control group ($n = 35$). Data were collected through pretest and posttest on reading comprehension and critical thinking, a structured SDL questionnaire based on Garrison's (2021) framework (self-management, self-motivation, and self-monitoring), and follow-up interviews with six purposively selected students

from the experimental group. Results indicated that students exposed to the gamified LMS course showed significantly higher gains in comprehension, critical thinking, and SDL than those in the control group. Qualitative findings further suggested that gamification fostered continuous engagement and sustained motivation, though certain challenges, including technological constraints and external distractions. Overall, the study underscores the promise of integrating gamification into LMS-based reading courses to support cognitive, affective, and metacognitive advancement in Islamic higher education.

Xiuhua Li, Samuel Kai Wah Chu (2021). Exploring the effects of gamification pedagogy on children's reading: A mixed-method study on academic performance, reading-related mentality and behaviors, and sustainability. Gamification is becoming increasingly popular in primary education due to the widespread use of digital technology. However, gamified reading is new, and there is little empirical evidence regarding its effectiveness. The sustainability of the effects of gamification pedagogy is also in doubt as some scholars think that such effects are short-term and not sustainable. This paper presents the results of three sub-studies of examining the effects of an online gamified reading platform and the sustainability of these effects. Study 1 examined the change in students' academic performance between two groups divided based on their different participation levels. Study 2 addressed the question of how students/parents/teachers perceive students' motivation and gaining in the use of the gamified platform. Study 3 explored the sustainability of the effects of the gamified platform from a longitudinal perspective. Findings suggest that students' deep engagement in the gamified e-learning platform can help increase their reading motivation and improve their reading abilities. Such effects can be sustained for several semesters. Li, X., & Chu, S. K. W. (2021). Exploring the effects of gamification pedagogy on children's reading: A mixed-method study on academic performance, reading-related mentality and behaviors, and sustainability. *British Journal of Educational Technology*.

Chen-Chen Liu, Dan Wang, Gwo-Jen Hwang, Yun-Fang Tu, Ning-Yu Li & Youmei Wang (2024). Improving information discernment skills: through a concept mapping-based information evaluating framework in a gamified learning context. Information literacy is an essential twenty-first-century skill for students. Most students face difficulty in discerning online information while searching, evaluating, and utilizing it effectively. Appropriate information evaluating framework, such as RADAR (relevance, authority, date, appearance, and reason for writing), has been recommended to enhance students' accuracy in identifying information. Research suggests that the effectiveness of the learning framework can be enhanced in the gamification context by using graphic organizers (e.g. concept maps) to help students organize and analyze information. Therefore, this study proposed a concept mapping-based information evaluating framework in the gamification context to teach information identification skills in an elementary school. A quasi-experimental study was conducted with the experimental group class (35 students) using the concept mapping-based information evaluating framework (CM-IEF), and the control group (35 students) using the conventional information evaluating framework (C-IEF). According to the study's findings, students in the experimental group had more significant

increases in learning achievement, self-efficacy, and information discernment skills. However, there was no significant difference in learning motivation. Furthermore, the learning behavior of both groups was analyzed from the lag sequential analysis and interview. The study suggests that larger sample sizes and longer durations could be explored in the future. Liu, C. C., Wang, D., Hwang, G. J., Tu, Y. F., Li, N. Y., & Wang, Y. (2024). Improving information discernment skills: through a concept mapping-based information evaluating framework in a gamified learning context. *Interactive Learning Environments*.

Wilk Oliveira (2022) Tailored gamification in education: A literature review and future agenda. Gamification has been widely used to design better educational systems aiming to increase students' concentration, motivation, engagement, flow experience, and others positive experiences. With advances in research on gamification in education, over the past few years, many studies have highlighted the need to tailor the gamification design properties to match individual students' needs, characteristics and preferences. Thus, different studies have been conducted to personalize the gamification in education. However, the results are still contradictory and need to be better understood to advance this field. To provide a complete understanding of this research domain, we conducted a systematic literature review to summarize the results and discussions on studies that cover the field of tailored gamified education. Following a systematic process, we analysed 2108 studies and identified 19 studies to answer our research questions. The results indicate that most of the studies only consider students' gamer types to tailor the systems, and most of the experiments do not provide sufficient statistical evidence, especially regarding learning performance using tailored gamified systems. Based on the results, we also provided an agenda with different challenges, opportunities, and research directions to improve the literature on tailored gamification in education. Our study contributes to the field of gamification design in educational.

Federica Gini (2025) The role and scope of gamification in education: A scientometric literature review. Gamification – the use of game elements in non-game contexts – represents a promising solution to enhance motivation and engagement in education. Traditional lecture-based teaching has been increasingly viewed as insufficient for effective learning, promoting interest in gamified education to sustain student engagement and foster a positive learning environment. This study presents a comprehensive scientometric literature review on the use of gamification in education, analyzing 9163 manuscripts and over 300,000 references from the Scopus database. Through document co-citation analysis, author co-citation analysis, and keyword co-occurrence analysis, the review identifies the most influential publications, authors, and research trends shaping the field. The findings reveal a research trend that initially focused on game design and best practices but has shifted towards systematic literature reviews and evaluations of gamification's educational effectiveness. Six key research clusters emerged: gamified learning experience, student learning, K-12 education, science education, gamification effectiveness, and gaming elements. The study highlights the growing application of gamification in STEM and formal K-12 education, as well as the increasing relevance of online and personalized learning environments. The review also emphasizes significant research gaps,

particularly concerning the long-term impact of gamification, the isolated effects of individual game elements, and the need for improved research methodologies. This review offers a research agenda for future studies, calling for more rigorous, context-sensitive research that better addresses the complexity of gamified learning environments.

Fuentes-Riffo (2023). The primary aim of this study is to introduce a didactic programme that incorporates gamification in geometry classes for high school students. The purpose of this programme is to boost students' motivation towards learning. In the present educational scenario, the role of information and communication technologies (ICT) is paramount. Gamification has the potential to enhance the learning process by integrating game elements into non-game environments. This approach is deemed necessary as emotional factors in teaching may not lead to meaningful learning and improved academic performance. The research methodology employed a mixed approach and a pre-experimental design with pre- and post-test measurements. The sample comprised 45 10th grade students from a subsidised private high school in the Biobío Region of Chile. The study took 10 months and evaluated the factors of motivation, academic achievement, and lexical availability. Results showed a 23% increment in students' knowledge, as proven by pre- and post-tests. The findings suggest an improvement in students' perception regarding geometry and a significant improvement in academic performance. Furthermore, it has been confirmed that there is a noteworthy correlation between the group's overall motivation and their academic performance, supporting gamification as an effective pedagogical strategy.

Dr. Iftikhar Haider Malik (June 2026) THE EFFECT OF GAMIFICATION ON ENGLISH VOCABULARY: A STUDY OF UNDERGRADUATE STUDENTS IN DISTRICT GUJRAT. The study explores how gamification influences the vocabulary learning of Gujarati undergraduate learners. The use of game-based elements in assignments has become more common amongst instructors who desire to develop a teaching and learning platform that encourages learner involvement. The research adopted a mixed approach and quasi-experimental research design to examine the role of gamification in vocabulary learning, retention, and overall language proficiency. The experimental group received gamified instruction, while the control group received traditional education. Using the cultural dimensions of learning and dual code theory, the study explains how gamification impacts vocabulary acquisition and language retention. Pre- and post-tests, different groups of students, and a teacher survey were used to collect data. Descriptive and inferential analyses showed that the experimental group acquired more vocabulary than the control group. Gamification assisted students in building language competence, vocabulary, and memorization. The findings support active learning theories and the use of games such as Scrabble, Word Bingo, Word Jumble, Vocabulary Charades, and Vocabulary Memory in foreign language learning. The study highlights the importance of motivation and engagement in language development and concludes that gamification can be effectively incorporated into language teaching strategies. The findings will benefit language teachers and policymakers seeking to enhance vocabulary learning and language proficiency at the undergraduate level.

Rene Ellen Benneth (2024) Effectiveness of Gamification Strategy in Increasing the Grade 10 Student's Academic Motivation. As an essential aspect of education is to achieve academic objectives and enhance academic performance, student motivation is significant. This action research used gamification as a teaching strategy to increase the grade 10 students' academic motivation. The researchers tapped into this form of motivation by tracking the progress of each learner and providing badges for their achievements. The study utilized the researcher-made questionnaire composed of intrinsic and extrinsic motivation, as the instrument for data gathering. Statistical tools are used to analyze the data. The result showed that Grade 10 students had a very large extent of intrinsic and extrinsic motivation after the conduct of gamification. Moreover, the students had a very large extent of overall motivation. Comparing the mean results of the two components of motivation, the students were motivated more intrinsically than extrinsically after the intervention. There is no significant difference in the level of academic motivation of the Grade 10 students before and after the intervention of gamification in social studies class. Overall, these findings strongly support that gamification in education improves student motivation. Thus, gamification as a teaching strategy is highly recommended for use for it could effectively increase students' academic motivation.

Jesalyn Lazarte (2025) Effect of Gamification on the Attitudes of the Students toward Mathematics and Academic Performance. This study aimed to investigate the effect of gamification on the attitudes of the students towards Mathematics and academic performance of Grade 9 students. The attitudes of students were assessed using a ATMI- Likert scale before and after the intervention, with both the experimental and control groups exhibiting neutral attitudes towards mathematics. Academic performance was measured through pre-test and post-test scores, revealing a significant improvement in the experimental group, reaching a very satisfactory level, while the control group achieved a satisfactory level. Statistical analysis indicated no significant change in attitudes towards mathematics between the groups post-intervention. However, a substantial increase in academic performance was observed in the experimental group, with a mean score jump from 10.06 to 25.33, significantly higher than the control group's score of 17.82. These findings suggest that while attitudes remained neutral, the gamification intervention had a notable positive impact on the academic performance of students in the experimental group compared to the control group. Overall, the intervention had a more significant impact on academic achievement in comparison to the control group. The incorporation of gamification into mathematics education for students in the ninth grade has a great deal of promise for improving both students' attitudes about the subject as well as their academic achievement. Educators can create engaging learning experiences by utilizing the motivational components of games.

Jastine Kay Pajarito (2024) The Effectiveness of Gamification in The Learning Process of Higher Education. 21st century learners exhibit enthusiasm, passion, and interest towards learning which serves as one of the driving forces for an active participation in the educational process and to cope up with these qualities, educators were needed to be innovative in terms of teaching strategy, method, approach, and technique. Educators play an important role in the learning process and are expected to provide a proper

response to the educational needs of the learners. In this study, the innovation used by the researchers is gamification, a pedagogical method in improving the interest and motivation of the higher education students. The study examines the effectiveness of the integration of gamification in the academic performance of the learners. In determining the effectiveness of the innovation used, the researchers utilized a quasi-experimental method of research participated by two sections of higher education students in the study of Readings in the Philippine History, a General Education Course in the Philippine Higher Education. Both sections were exposed to a traditional and gamified approach in teaching. The product of the traditional approach serves as the controlled variable while the gamification approach serves as the experimental variable. Gamification as a teaching approach is starting to gain its popularity among educators and learners because it is a student-centered strategy in teaching which is being implemented in the curriculum. However, based on the findings of this research, there is no substantial difference in the effectiveness of gamification. The result indicates that for the development of subject mastery, the traditional approach in teaching is more effective. Therefore, the researchers formulated a recommendation for an effective implementation of student-centered teaching strategy without sacrificing the learners' cognitive development.

Dexile *et al.* (2024) Gamification has been noted to be very helpful to learners in increasing their collaboration, motivation, interest, engagement, and teamwork in the classrooms. This is the reason that this work was conducted to determine the extent of the integration of gamification in teaching as a step to help address the alarming performance of the learners in the international and local examinations. Using the descriptive-correlational research design with use of a survey questionnaire as the main data gathering tool, this work was implemented to junior high school science and mathematics teachers in the districts of Guinsiliban, Sagay and Catarman. Appropriate statistical tools were used to analyze the data to answer the inquiries of the study. Results showed that most of the respondents in science and mathematics were females, and majority of them were in Teacher I position, on the age group of 20 to 40, served for at most 10 years, proceeded to graduate studies, and specialized in science education. The respondents had moderately integrated gamification in teaching science and mathematics. While the learners of the respondents had a very satisfactory performance in science and mathematics. Demographic variables like sex, age, educational attainment, number of years of teaching, field of specialization, and teaching position did not influence the extent of integration of gamification in teaching. The study also found a positive, low correlation but significant relationship between the extent of integration of gamification and the academic performance of the learners. Lack of gadgets like laptops and computers, internet connection, lack of access to online game-based platforms, computer literacy of teachers, and time management were the most common challenges in the integration of gamification in the learning sessions of science and mathematics. The researcher recommended that future researchers may replicate this study in schools where gadgets and internet connection are available.

Junard P. Duterte (2024) This study examined the impact of educational gamification on student engagement, motivation, and academic performance in higher education.

Employing a mixed-methods research approach, a quasi-experimental pretest-posttest design was utilized with 133 undergraduate students from three private universities in Manila, Philippines. Gamification elements, including points, badges, leaderboards, and collaborative challenges were integrated into an online learning environment. Quantitative data were collected through pre- and post-intervention test scores and motivation surveys, while qualitative insights were gathered via focus group discussions and interviews. The results revealed statistically significant improvements in academic performance and motivation following the gamification intervention. Thematic analysis of qualitative data highlighted students' positive perceptions of the gamified learning environment, with increased engagement and enjoyment reported. However, individual differences, such as prior gaming experience, influenced responses to gamification, suggesting the need for tailored approaches. This study concluded that gamification could serve as a powerful tool for enhancing student outcomes when thoughtfully designed and aligned with educational objectives. Future research should investigate the long-term effects of gamification and its applicability across diverse educational contexts.

Candace *et al.* (2024) This study investigated the impact of gamification on student engagement and learning outcomes among grade 11 students. Specifically, it examined the relationship between the perceived effects of gamification and student engagement. A non-experimental quantitative research design with a descriptive correlational method was employed, involving 76 senior high school students from a medical school in Davao City. Data were collected using modified versions of the "Gamification and Learning Engagement Questionnaire" (GLEQ) and the "Student Course Engagement Questionnaire" (SCEQ). Results indicated high mean scores for both the effects of gamification and student engagement, with a significant positive correlation between the two variables. This suggests that gamification can significantly enhance learning outcomes by creating an engaging and dynamic learning environment. The study highlights the potential of gamification to foster student engagement, encouraging instructors to integrate game-like elements and activities into their teaching. Teachers can increase student interest and improve classroom performance by adopting various gamified strategies.

Jastine Kay Pajarito (2024) The Effectiveness of Gamification in The Learning Process of Higher Education. The study examined the effectiveness of gamification in improving the academic performance of higher education students in a Philippine History course. Using a quasi-experimental research design, the researchers compared traditional teaching with a gamified approach. The findings showed that although gamification increased students' interest and motivation, it did not significantly improve academic performance compared to the traditional teaching method. The study suggested that educators should carefully integrate gamification into instruction while maintaining students' cognitive development and subject mastery. Pajarito, J, Salcedo, M. & Fernando, J. (2024). The Effectiveness of Gamification in The Learning Process of Higher Education.

Candace Nathalie N. Casia (2024) Perceived Level of Effects of Gamification and Student Engagement of Senior High School Students. The study explored the impact of

gamification on student engagement and learning outcomes among Grade 11 students in a medical school in Davao City. Using a descriptive correlational research design, the researchers gathered data from 76 senior high school students through standardized questionnaires. The findings showed that students had positive perceptions of gamification and high levels of engagement. The study also found a significant positive relationship between gamification and student engagement, suggesting that gamified learning strategies can improve students' interest, participation, and overall classroom performance. Casia, C. N., Angga, C. O., Bayron, L. B., Caralos, A. A., Guinto, E. S., Iligan, J. Z., Lunasin, K. B., Palacio, I. T., Tampus, S. M. & Goc-Ong, M. (2024). Perceived Level of Effects of Gamification and Student Engagement of Senior High School Students.

Alexis Michael B. Oledan (2025) Students' Perceptions and Experiences with Gamified Learning, Open-Ended Mathematical Tasks, and Self-Directed Learning via Video Lessons in Mathematics. The study examined students' perceptions and experiences with mathematics lessons that used gamification, open-ended tasks, and video-based learning. Using a mixed-methods approach, the researchers involved 120 Grade 10 students from Northern Mindanao, Philippines. The findings showed that students had positive perceptions of the learning approach, which increased their motivation, engagement, and participation in mathematics. The study concluded that combining gamification with student-centered learning strategies can improve both students' learning experiences and academic performance. Oledan, A.M. (2025). Students' Perceptions and Experiences with Gamified Learning, Open-Ended Mathematical Tasks, and Self-Directed Learning via Video Lessons in Mathematics. *International Journal of Learning, Teaching and Educational Research*.

Jessica O. Medico Daryl S. Nepangue (2023) THE IMPACT OF DIGITAL GAMIFICATION AND TRADITIONAL BASED LEARNING ON STUDENTS' MATHEMATICS ACHIEVEMENT: EVIDENCE FROM THE PHILIPPINES The study investigated the effects of digital gamification and traditional learning on the mathematics achievement of Grade 10 students at Bantayan National High School in Cebu. Using a quasi-experimental research design, the researchers compared students who experienced gamified instruction with those who received traditional teaching. The findings revealed that digital gamification significantly improved students' mathematical performance. The study also emphasized that integrating gamified teaching strategies can increase student engagement and enhance learning outcomes. Medico, J. O., Nepangue, D. S., & Derasin, L. M. C. (2023). The impact of digital gamification and traditional based learning on students' mathematics achievement: evidence from the Philippines.

Synthesis of the Study

The integration of gamification into educational frameworks has transitioned from a novelty to a significant pedagogical strategy aimed at enhancing student engagement and learning outcomes. Current literature underscores that gamification the application of game-design elements in

non-game contexts serves as a dynamic tool to boost motivation, concentration, and academic achievement (Zainuddin *et al.*, 2021; Oliveira, 2022). A scientometric review by Gini (2025) confirms this global trend, noting a shift in research from basic game design toward evaluating the actual effectiveness of gamified learning experiences across various educational levels, including K-12 and STEM.

A critical theme emerging from recent studies is the necessity of personalization and the sustainability of these digital interventions. Oliveira (2022) highlights that while gamification is widely used to improve "flow experience" and engagement, there is a pressing need to tailor these systems to individual student characteristics to avoid contradictory results. This need for long-term efficacy is echoed by Li and Chu (2021), whose mixed-method study on gamified reading platforms demonstrated that deep engagement can lead to sustained improvements in academic performance and motivation over several semesters, countering the skepticism that gamification effects are merely short-term.

Most significantly, recent research has begun to bridge the gap between gamified engagement and higher-order cognitive functions, specifically regarding discernment. While much of the existing literature focuses on motivation, Liu *et al.* (2024) provide direct evidence that gamification can be a powerful vehicle for improving information discernment skills. By utilizing frameworks like concept mapping within a gamified context, students demonstrated significant increases in their ability to evaluate and identify information accurately. This aligns with the broader educational goal of fostering discernment the capacity for critical thinking and informed decision-making which is essential for students transitioning to postsecondary life (UNESCO, 2023).

In summary, while the literature establishes a strong link between gamification and increased student motivation and engagement, there remains a specific need to investigate how these elements influence the cognitive process of discernment within the unique context of Senior High School learners. The current study seeks to address this gap by examining the relationship between gamification and the discernment of Grade 12 students at Young Achiever School of Caloocan, moving beyond mere academic performance to explore the development of essential life skills in a technology-driven learning environment.

Conceptual Framework

According to John W. Creswell and J. David Creswell (2023), A conceptual framework acts as a guide for the research process and offers a structure that shows how the variables in a study relate to one another. It helps researchers with structuring their thoughts, identifying the variables under investigation, and outlining the anticipated relationships between these variables during the course of the study. In this study, the researchers used the Input–Process–Output (IPO) Model as the conceptual framework. The IPO model presents the flow of the study from the input, through the process, and finally to the expected output.

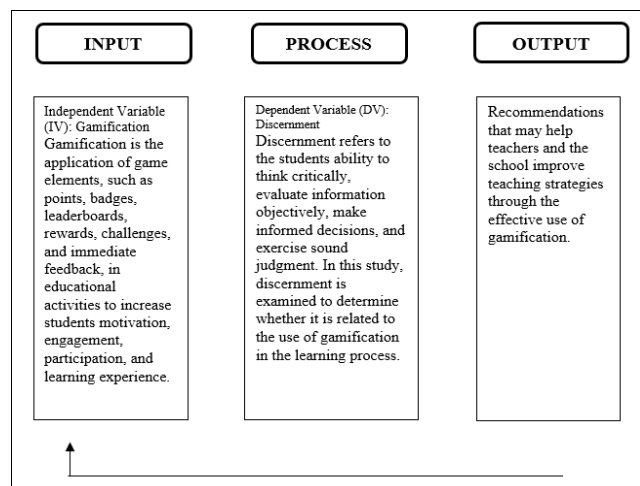


Fig 1

The Input–Process–Output (IPO) model is used in Fig 1 to show the study's conceptual framework. Gamification is the independent variable that makes up the input. The term "gamification" in this study refers to the incorporation of gaming features—such as points, badges, leaderboards, awards, challenges, and instant feedback—into educational activities in order to boost student motivation and engagement. Discernment is the dependent variable that makes up the process. The ability of students to think critically, assess information objectively, make well-informed judgments, and use sound judgment is referred to as discernment. The study investigates if gamification has a significance impact on Grade 12 students' discernment at Young Achiever School of Caloocan, inc The output of recommendations based on the results in the study's findings.

Statement of the Problem

This study aims to determine the relationship of gamification to discernment of grade 12 student from young achiever school of caloocan. Specifically, it seeks to answer the following questions:

1. How does gamification influence the discernment of Grade 12 students?
2. What is the relationship between gamification and the decision-making skills of Grade 12 students?
3. How is the use of gamification correlated to the deeper thinking skills of Grade 12 students?

Hypotheses of the Study

Hypothesis testing This study aimed to determine whether there is a significant relationship between gamification and the discernment of Grade 12 students at Young Achiever School of Caloocan, Inc.

Alternative Hypothesis (H_1): There is a significant relationship between gamification and the discernment of Grade 12 students at Young Achiever School of Caloocan, Inc.

Significance of the study

This study aimed to determine the relationship between gamification and the discernment of Grade 12 students at Young Achiever School of Caloocan, Inc. The findings of this study may benefit the following: Education Department: The Department of Education may receive useful information about the application of gamification as a

teaching approach from the study's findings. The findings could be used as a guide for creating or enhancing educational initiatives, policies, and programs that support learning environments and increase students discernment and critical thinking. Caloocan's Schools Division Office:

The results of this study could help Caloocan's Schools Division Office in assessing the efficacy of gamification in instruction. The findings could be used as a foundation for helping schools adopt cutting-edge teaching techniques that improve students engagement, critical thinking, and decision-making abilities. School: The findings of this study may assist the administration of Young Achiever School of Caloocan, Inc. in evaluating and improving instructional practices through the integration of appropriate gamification strategies.

The results may also guide the school in developing programs that strengthen students' discernment and overall learning experiences. parents: The study's conclusions might make it easier for parents to comprehend how gamification might enhance their kids' education. It might motivate them to support educational initiatives that improve their kids' discernment, critical thinking, and decision-making skills both within and outside of the classroom. Students: The results of this study may help students in comprehending how gamified learning affects their capacity for critical thought, knowledge evaluation, and decision-making. Additionally, it might motivate students to actively engage in educational activities that improve their judgment and general academic achievement.

Scope and Limitation of the Study

The study will cover the determination of the relationship between gamification and the learning engagement. The primary subject of this research study will consist of the Grade 12 students enrolled in academic year 2026-2027 at Young Achievers' School of Caloocan. Stating that students from different school, grade levels, strand, and academic year will not be included in the study. The participants will be limited to thirty (30), Grade 12 students.

Definition of Terms

Academic Achievement – Refers to the level of success, performance, or progress demonstrated by students in their school subjects, as measured through their learning outcomes and academic performance.

Analyzing – Refers to the process of examining information or ideas in detail to understand their nature, components, and meaning.

Critical Thinking – Refers to the ability to analyze, evaluate, and reason logically in order to make sound judgments and solve problems effectively.

Decision Making – Refers to the process of selecting the best course of action after carefully considering available facts, evidence, and possible alternatives.

Deeper Understanding – Refers to a comprehensive understanding of a topic that goes beyond surface-level knowledge by recognizing its concepts, relationships, and underlying meaning.

Discernment – Refers to the ability to distinguish between accurate and inaccurate information and to make sound judgments based on careful evaluation.

Gamification – Refers to the integration of game design elements, such as points, badges, leaderboards, and rewards, into educational activities to enhance student engagement,

motivation, and learning.

Insight – Refers to a deep understanding of a situation or concept gained through careful analysis and thoughtful reasoning.

Information Evaluation – Refers to the process of assessing the accuracy, credibility, reliability, and relevance of information before accepting or using it.

Judgment – Refers to the ability to form reasonable opinions, make informed decisions, and evaluate situations after careful consideration of evidence.

Lesson – Refers to the instructional content or learning sessions delivered by teachers using technology-based teaching methods and educational resources.

Motivation – Refers to the drive or willingness of students to participate actively in learning activities, which may be enhanced through the use of gamification.

Participation – Refers to the active involvement of Grade 12 students in classroom learning activities, including engaging in discussions, completing assigned tasks, and interacting with educational content.

Pearson's Product-Moment Correlation Coefficient (Pearson r) – Refers to a statistical measure used to determine the strength and direction of the linear relationship between two continuous variables.

Points – Refer to the numerical scores earned by students as a result of completing tasks or participating in gamified learning activities.

Purposive Sampling – Refers to a non-probability sampling technique in which participants are intentionally selected because they possess characteristics relevant to the objectives of the study.

Rewards – Refer to the incentives, recognition, or prizes given to students for successfully participating in gamified learning activities.

Strategies – Refer to the methods, techniques, or approaches employed by teachers to implement gamification and facilitate student learning.

Technology – Refers to the use of digital devices, software, applications, internet-based platforms, and other technological tools that support teaching, learning, and academic activities.

2. Methods

Research Design

This study used a quantitative correlational research design to determine the relationship between gamification and the discernment of Grade 12 students at Young Achiever School of Caloocan, Inc. Quantitative research is appropriate in this Research because it involves the collection of numerical data that can be analyzed using statistical methods. The correlational research design is used to examine whether a significant relationship exists between two variables (gamification and discernment) without manipulating them. According to John W. Creswell and J. David Creswell (2023), correlational research is a quantitative approach that examines the relationship between two or more variables. This design allows researchers to determine if one variable are associated with one another variable and see if it's have a correlation effect. In this study, gamification serves as the independent variable, while discernment serves as the dependent variable. Data will be collected through a structured questionnaire to the selected Grade 12 students of Young Achiever School of Caloocan, Inc. The collected data will be analyzed using Pearson R statistical tool to

determine whether a significant relationship exists between the two variables. Since the main goal of this study is to determine the relationship between gamification and Grade 12 students discernment rather than to demonstrate experimental intervention, therefore the use of a quantitative correlational research in this Research is appropriate.

Locale of the Study

The study was conducted at Young Achiever's School of Caloocan, Inc. located in Caloocan City. A Private-school network under the supervision of the Department of Education (DepEd) –Deparo, District 1, North Caloocan in Metro Manila, Philippines. The institution offers senior high school education and serves students from various academic strands, providing an appropriate environment for educational research. The researchers selected this school because it is the institution where the Grade 12 students, who serve as the respondents of the study, are enrolled. The locale was considered suitable since it provides access to the target population and enables the researchers to gather relevant data needed to examine the relationship between gamification and the discernment of Grade 12 students. Conducting the study in this setting also ensured that the data collected were directly aligned with the objectives of the research.

Respondents of the Study

The respondent of this Research was (100) student that is currently enrolled in Young Achiever's School of Caloocan, inc specifically the grade 12 student on different strand. The sampling technique used in this Research is purposive sampling technique where we choose a specific person who have a experience when it comes on gamification activity inside the classroom.

Data Gathering Procedure

Before conducting to the study, the researchers secured approval from the school coordinators and the research adviser of Young Achievers School of Caloocan. After obtaining permission, the researchers coordinated with the Grade 12 class advisers to identify the respondents. The respondents were selected using purposive sampling, wherein only Grade 12 students enrolled at Young Achievers School of Caloocan who met the inclusion criteria were invited to participate. This sampling technique was chosen because the study specifically aimed to examine the relationship between gamification and the discernment of Grade 12 students. The researchers created a structured questionnaire using Google Forms. The first section of the form contained an informed consent statement explaining the purpose of the study, assuring respondents that their participation was voluntary, and emphasizing that all responses would be kept confidential and used for academic purposes. Only respondents who agreed to participate were allowed to proceed with the survey. The Google Forms link was distributed to the selected Grade 12 students through the school's official online communication platforms, such as group chats. Respondents were given sufficient time to complete the questionnaire at their convenience. The researchers monitored the response rate and sent follow-up reminders to encourage participation while respecting the respondents' right to decline. After the data collection period ended, the researchers downloaded the responses from Google Forms and checked them for completeness and

consistency. Incomplete or duplicate responses were excluded from the analysis. The collected data were then organized, coded, tabulated, and analyzed using appropriate statistical methods to determine the relationship between gamification and the discernment of Grade 12 students at Young Achievers School of Caloocan.

Data Gathering Instrument

The data gathering instrument used in this research is online survey questionnaire created through google form. The questionnaire is divided into two part. First the demographic profile: name, section, sex, and age. The second part (10) question created by the researcher are included in this section to know respondents opinion about how gamified learning activities affect their judgment. Before the the distributing of the online survey, the questionnaire was validated by our practical research teacher and some expert to insure its validity, clarity, and relevance to the topic.

Statistical Tool

The data collected from the survey were analyzed using both descriptive and inferential statistics to provide a clear summary of student responses and to explore the relationship between the study variables.

For the descriptive part, the demographic profile of the respondents, including their academic strand, was summarized using frequency counts and percentages.

The formula for Percentage is:

$$\% = \left(\frac{f}{N} \right) \times 100$$

Where:

- % = Percentage
- f = Frequency
- N = Total number of respondents

The weighted mean was computed to describe the students' perceptions of gamification and their discernment levels, capturing the general trend of the responses.

The formula for Weighted Mean is:

$$\bar{x}_w = \frac{\sum f \cdot x}{N}$$

Where:

- f = Frequency of responses for each scale point
- x = Numerical weight or scale value
- N = Total number of responses

For the inferential part, the Pearson Product-Moment Correlation Coefficient (r) was utilized to determine the strength and direction of the relationship between the independent variable (Gamification) and the dependent variable (Discernment).

The formula for Pearson r is:

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \cdot \sum (y - \bar{y})^2}}$$

Where:

- r = Correlation coefficient
- x = Scores for Gamification

- y = Scores for Discernment
- $\bar{X} = \frac{\sum x}{N}$ = Mean of Gamification scores
- $\bar{Y} = \frac{\sum y}{N}$ = Mean of Discernment scores

This statistical tool allows the researchers to determine if a significant relationship exists between how students experience game elements and their ability to exercise discernment in academic settings. By applying these methods, the study ensures that the findings are grounded in objective data analysis, providing reliable evidence to support the research objectives.

3. Result and Discussion

The data collected for the study is presented, examined, and interpreted in this chapter. The results are arranged in accordance with the research questions, and the relevant statistical analyses are used for discussion. The findings are closely analyzed to ascertain the connection between gamification and the discernment of Young Achiever School of Caloocan Grade 12 students. In order to find similarities, differences, and their implications, the results are also interpreted in light of the reviewed literature and related studies. The purpose of this chapter is to give readers a clear understanding of the study's findings and how they relate to its goals.

1. Do gamified activities help you think more carefully before answering question?

Yes	62.5%
No	2%
Maybe	5.5%
Sometimes	30%
Never	0%
Total	100%

Out of 30 respondents, 62.5% answered "Yes," 2% answered "No," 5.5% answered "Maybe," and 30% answered "Sometimes." The results indicate that the majority of the respondents answered "Yes," suggesting that most participants agreed with the statement. Meanwhile, a smaller percentage answered "Sometimes," "Maybe," and "No," indicating varying levels of uncertainty or disagreement. These findings suggest that the majority of respondents have a positive perception of the issue being investigated. This is supported by Rivera and Garden (2021), who found that gamification could be integrated into ordinary teaching practices to enhance students' learning experiences.

2. Do rewards and points motivate you to solve problems more effectively?

Yes	90%
No	0%
Maybe	7.5%
Sometimes	2.5%
Never	0%
Total	100%

Out of the respondents, 90% answered "Yes," 7.5% answered "Maybe," and 2.5% answered "Sometimes." None of the respondents selected "No" or "Never." The results indicate that the majority of the respondents believe that rewards and points motivate them to solve problems more

effectively. These findings suggest that incorporating rewards and point systems in learning activities can encourage students to participate actively and improve their problem-solving skills. This finding is consistent with Rivera and Garden (2021), who reported that gamification enhances students' learning experiences by increasing motivation and engagement.

3. Do gamified lessons encourage you to analyze information before making decisions?

Yes	72.5%
No	7.5%
Maybe	10%
Sometimes	10%
Never	0%
Total	100%

Out of the respondents, 72.5% answered "Yes," 10% answered "Maybe," 10% answered "Sometimes," and 7.5% answered "No." None of the respondents selected "Never." The results indicate that the majority of the respondents believe that gamified lessons encourage them to analyze information before making decisions. The findings suggest that gamification promotes critical thinking by encouraging learners to evaluate information, consider different options, and make informed decisions during learning activities. This finding is supported by Rivera and Garden (2021), who emphasized that gamification can foster deeper cognitive engagement and enhance students' learning experiences through purposeful game-based strategies.

4. Do you become more engaged when learning activities include game elements?

Yes	82.5%
No	2.5%
Maybe	2.5%
Sometimes	12.5%
Never	0%
Total	100%

Out of the respondents, 82.5% answered "Yes," 12.5% answered "Sometimes," 2.5% answered "Maybe," and 2.5% answered "No." None of the respondents selected "Never." The results indicate that the majority of the respondents become more engaged when learning activities include game elements. These findings suggest that incorporating game-based features into classroom activities increases students' interest, participation, and overall engagement in the learning process. This finding is supported by Rivera and Garden (2021), who emphasized that gamification enhances student engagement and creates more interactive and meaningful learning experiences.

5. Do gamified activities help you identify mistakes in your thinking?

Yes	52.5%
No	5%
Maybe	10%
Sometimes	32.5%
Never	0%
Total	100%

Out of the respondents, 52.5% answered "Yes," 32.5% answered "Sometimes," 10% answered "Maybe," and 5% answered "No." None of the respondents selected "Never." The results indicate that the majority of the respondents believe that gamified activities help them identify mistakes in their thinking. These findings suggest that gamified learning encourages students to reflect on their responses, recognize errors, and improve their understanding through continuous feedback and active participation. This finding is supported by Rivera and Garden (2021), who emphasized that gamification promotes student engagement and enhances learning by encouraging active participation and meaningful reflection throughout the learning process.

6. Does time pressure in game challenges train you to make wise decisions faster?

Yes	57.5%
No	2.5%
Maybe	20%
Sometimes	20%
Never	0%
Total	100%

Out of the respondents, 57.5% answered "Yes," 20% answered "Maybe," 20% answered "Sometimes," and 2.5% answered "No." None of the respondents selected "Never." The results indicate that the majority of the respondents believe that time pressure in game challenges trains them to make wise decisions faster. These findings suggest that time-based challenges in gamified activities help students improve their quick-thinking abilities, decision-making skills, and ability to respond effectively under pressure. This finding is supported by Syed Khuzzan, Mohd Yushaa, and Hanid (2021), who found that gamification elements such as challenges, rewards, feedback, and progress-based activities positively influence students learning experiences by increasing motivation, engagement, and active participation.

7. Do gamified activities strengthen your ability to make logical decisions?

Yes	65%
No	2.5%
MAYBE	25%
Sometimes	7.5%
Never	0%
Total	100%

Out of the respondents, 65% answered "Yes," 25% answered "Maybe," 7.5% answered "Sometimes," and 2.5% answered "No." None of the respondents selected "Never." The results indicate that the majority of the respondents believe that gamified activities strengthen their ability to make logical decisions. These findings suggest that gamified activities encourage students to analyze situations, evaluate possible solutions, and apply logical reasoning when completing learning tasks. This finding is supported Ortiz-Colón, *et al.* (2021), who found that gamification can enhance students' learning experiences by promoting active participation, problem-solving, and higher levels of cognitive engagement through the use of game-based elements.

8. Do "consequences" for wrong choices in games teach you to judge better next time?

Yes	80%
No	2.5%
Maybe	12.5%
Sometimes	5%
Never	0%
Total	100%

Out of the respondents, 80% answered "Yes," 12.5% answered "Maybe," 5% answered "Sometimes," and 2.5% answered "No." None of the respondents selected "Never." The results indicate that the majority of the respondents believe that the consequences of wrong choices in games teach them to judge better in future situations. These findings suggest that gamified activities provide opportunities for students to learn from mistakes, reflect on their decisions, and develop better judgment when facing similar challenges. This finding is supported by Bai, Hew, and Huang (2021), who found that gamification elements, including feedback and game-based consequences, can improve students' learning experiences by encouraging reflection, motivation, and continuous improvement.

9. Do educational game help you think critically before taking action?

Yes	80%
No	0%
Maybe	10%
Sometimes	10%
Never	0%
Total	100%

Out of the respondents, 80% answered "Yes," 10% answered "Maybe," and 10% answered "Sometimes." None of the respondents selected "No" or "Never." The results indicate that the majority of the respondents believe that educational games help them think critically before taking action. These findings suggest that educational games encourage students to analyze situations, evaluate possible outcomes, and apply critical thinking skills before making decisions. This finding is supported by Bai, Hew, and Huang (2021), who found that gamification can positively influence students' learning outcomes by promoting active engagement, motivation, and cognitive processes involved in problem-solving and decision-making.

10. Do strategy-based games help you develop critical thinking skills?

Yes	85%
No	0%
Maybe	10%
Sometimes	5%
Never	0%
Total	100%

Out of the respondents, 85% answered "Yes," 10% answered "Maybe," and 5% answered "Sometimes." None of the respondents selected "No" or "Never." The results indicate that the majority of the respondents believe that strategy-based games help them develop critical thinking skills. These findings suggest that strategy-based games

encourage students to analyze situations, evaluate possible solutions, plan their actions, and make logical decisions while completing challenges. This finding is supported by Mao, Cui, Chiu, and Lei (2022), who found that game-based learning has a positive effect on students' critical thinking skills by engaging learners in activities that require analysis, problem-solving, and strategic thinking.

4. Summary, Conclusion, and Recommendations

This chapter contain the summury of the findings, the conclusion of the research, and the recommendation of the researcher.

Summary and Findings

The relationship between gamification and the discernment of Grade 12 students at Young Achievers' School of Caloocan was examined in this study. In order to ascertain how game-based components affect respondents' decision-making, critical thinking, and problem-solving skills, the study collected data from 30 respondents from a variety of academic disciplines. The survey's findings consistently demonstrated that a sizable majority of students view gamification as a beneficial tool for their academic journey. In particular, a significant portion of students stated that incentives, points, and time-based tasks successfully encourage them to do more in-depth research and exercise critical thought before acting.

The results demonstrate that gamified activities serves as a practical environment setting in which to practice judgment in addition to boosting engagement. The majority of respondents concurred that the consequences included in games assist them in recognizing errors in their own reasoning, which in turn teaches them how to make better choices in the future. According to the data, students feel more capable of making logical decisions when game mechanics are present, whether through competitive challenges or strategy-based games.

The agreement between student answers and previous research demonstrates that gamification promotes deeper cognitive engagement and aids in the development of higher-order thinking abilities that are essential for students in their senior year of high school. Furthermore, the data analysis revealed a clear upward trend in these strategies' effectiveness. It is clear that gamification is seen as a useful teaching strategy because the vast majority of students affirming that game elements help them recognize mistakes and enhance their ability to think quickly. The students at Young Achievers' School of Caloocan Inc. are not merely passive participants in gamified learning rather, they actively use these experiences to refine their discernment and assess options more skillfully, as evidenced by the consistency of these responses across all ten survey items.

Conclusion

Based on the research findings, it is possible to conclude that gamification has a substantial influence on the discernment of Grade 12 students at Young Achiever School of Caloocan, Inc. The data gathered suggest that the application of gamification in classrooms increases the critical thinking skills of the students and their ability to assess, judge, deliberate, and come to terms with decisions. Furthermore, the results of the study indicate that gamified learning activities can motivate students to learn and become more involved in the educational process, thus

promoting their discernment. Students will enjoy competing with each other and receiving points, rewards, badges, challenges, or feedback for accomplishing specific tasks, which will encourage them to participate actively in the game while developing their critical thinking and decision-making abilities.

Therefore, the study supports the alternative hypothesis that there is a significant relationship between the use of gamification and the discernment of Grade 12 students at Young Achiever School of Caloocan, Inc. It can also be concluded that the proper use of gamification can be an effective modality that increases the student's interest and develops their discernment. Finally, the results of this study may serve as a basis for educators, school administrators, and future researchers in improving teaching strategies and conducting further studies on gamification and its influence on students' learning and cognitive development.

Recommendation

For Teachers: Continue using gamification into classroom instructions to promote students learning engagement. Encouraged to use interactive and game based activities that enhance student participation and motivation.

For Students. Students are encouraged to actively participate in gamified learning activities and apply critical thinking when evaluating information encountered online. They should develop the habit of verifying information using credible and reliable sources before accepting or sharing it. Research indicates that gamified interventions can improve information and news discernment skills.

For School Administrators. The school administration may organize seminars, workshops, and training programs that equip teachers with the knowledge and skills needed to effectively implement gamified learning approaches and media literacy activities in the classroom.

For School: The school should integrate gamified learning activities in Grade 12 classes to enhance students' discernment and critical thinking skills while ensuring teachers are trained to use these tools effectively.

Future Researchers: Future researchers should expand this study to other grade levels and schools, and investigate which specific gamification elements most influence students' discernment and decision-making.

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6. References

1. American Psychological Association. Publication manual of the American Psychological Association (7th ed.). American Psychological Association, 2020.
2. Cohen J. Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum Associates. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications, 1988.
3. Deterding S, Dixon D, Khaled R, Nacke L. From game design elements to gamefulness: Defining "gamification." In Proceedings of the 15th International Academic Mind Trek Conference: Envisioning Future Media Environments. ACM, 2011, September, 9-15.
4. Dicheva D, Dichev C, Agre G, Angelova G. Gamification in education: A systematic mapping study. Educational Technology & Society. 2015; 18(3):75-88.
5. Field A. Discovering statistics using IBM SPSS statistics (4th ed.). SAGE Publications, 2013.
6. Fraenkel JR, Wallen NE, Hyun HH. How to design and evaluate research in education (9th ed.). McGraw-Hill Education, 2015.
7. Green SB, Salkind NJ. Using SPSS for Windows and Macintosh: Analyzing and understanding data (7th ed.). Pearson, 2016.
8. Hair JF, Black WC, Babin BJ, Anderson RE. Multivariate data analysis (8th ed.). Cengage, 2019.
9. Hamari J, Koivisto J, Sarsa H. Does gamification work? A literature review of empirical studies on gamification. 2014 47th Hawaii International Conference on System Sciences, 2014.
10. Kapp KM. The gamification of learning and instruction: Game-based methods and strategies for training and education. Wiley, 2012.
11. Koivisto J, Hamari J. The emergence of gamification: A review of literature on gamification. In Handbook of e-service and mobile business, 2019.
12. Landers RN, Armstrong MB. Enhancing learning with gamification: Game mechanics and their impact on student motivation and performance. In Advances in game-based learning, Springer, 2017, 1-26.
13. Landers RN. Developing a theory of gamified learning: Linking game design and learning outcomes. Simulation & Gaming, 2014.
14. Nunnally JC, Bernstein IH. Psychometric theory (3rd ed.). McGraw-Hill. Pallant, J. (2020). SPSS survival manual: A step by step guide to data analysis using IBM SPSS (7th ed.). Open University Press, 1994.
15. Rosenthal R, Rubin DB. Darkroom experiments: On the limits of randomization and the power of statistical tests. Psychological Bulletin, 1982.
16. Shadish WR, Cook TD, Campbell DT. Experimental and quasi-experimental designs for generalized causal

- inference. Houghton Mifflin, 2002.
17. Sailer M, Homner L. The gamification of learning: A meta-analysis. *Educational Psychology Review*, 2020.
 18. Seaborn K, Fels DI. Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, 2015.
 19. Tabachnick BG, Fidell LS. Using multivariate statistics (7th ed.). Pearson, 2019.
 20. Stevens J. Applied multivariate statistics for the social sciences (5th ed.). Routledge, 2012.
 21. Tuckman BW. Conducting educational research. Harcourt Brace Jovanovich, 1978.
 22. Werbach K, Hunter D. For the win: How game thinking can revolutionize your business. Wharton Digital Press, 2012.
 23. Nicholson S. A user-centered theoretical framework for meaningful gamification. *Games and Culture*, 2015.
 24. Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika*, 1951.
 25. Thomas G. How to do your research project (3rd ed.). SAGE Publications, 2016.
 26. Bryman A. Social research methods (5th ed.). Oxford University Press, 2016.
 27. Bryman A, Cramer D. Quantitative data analysis with IBM SPSS 17, 18 & 19: A guide for social scientists. Routledge, 2011.
 28. Schreiber JB, Nora A, Stage FK, Barlow EA, King J. Reporting structural equation modeling and confirmatory factor analysis results: A review. *Journal of Educational Research*, 2006.