

**LEVELING UP ENGAGEMENT: THE USE OF SCIENCE QUEST GAMES ON
THE MOTIVATION AND ACADEMIC ACHIEVEMENT OF GRADE 7
STUDENTS**

An Action Research Presented to
The College of Education
Misamis University
Ozamiz City

In Partial Fulfillment
of the requirement for the Degree
Bachelor of Secondary Education
Major in Science

by

DIANA G. LAURIE

May 2026

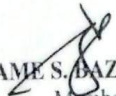
APPROVAL SHEET

This thesis, entitled "**LEVELING UP ENGAGEMENT: THE USE OF SCIENCE QUEST GAMES ON THE MOTIVATION AND ACADEMIC ACHIEVEMENT OF GRADE 7 STUDENTS IN EARTH SCIENCE**", prepared and submitted by **Diana G. Laurie**, in partial fulfillment of the requirements for the degree of **Bachelor in Secondary Education Major in Science**, has been examined and is recommended for acceptance for Oral Examination.


ALLE MEDIHA C. CAÑONIO, SST-III
Adviser

Approved by the Thesis Committee on Research Defense with a grade of Passed.


GENELYN R. BALUYOS, EdD
Chairman


JAMES S. BAZAR, MaED
Member

MAY NOREN D. NANUD, MSc
Member

Approved and accepted in partial fulfillment of the requirements for the degree of **Bachelor of Secondary Education Major in Science**.


GENELYN R. BALUYOS, EdD
Dean, College of Education

ACKNOWLEDGMENT

I, the researcher, am forever grateful to the following individuals who made significant contributions to the realization of this professional piece of work:

The Almighty Father, for the gift of wisdom, strength, and countless blessings that guided me throughout my research journey.

Dr. Genelyn R. Baluyos, our dean, instructor, and statistician, for her invaluable insights, unwavering support, and expertise that greatly contributed to the development and improvement of this study.

Mrs. Alle Mediha C. Cañonio, my research adviser, for her selfless guidance, encouragement, and dedication, which served as a pillar of strength in completing this work.

To our respondents, for their time, cooperation, and willingness to participate in the research activities.

To our families, for their unending love, support, and inspiration morally, spiritually, and financially.

Diana

DEDICATION

I, the researcher, wholeheartedly dedicate this humble academic work:

To my beloved parents,
who have been my constant source of strength,
inspiration, and unconditional love throughout
my academic journey;
To my family and loved ones,
for their endless support, encouragement,
and understanding during the completion of this study;
To my fellow teachers,
who served as my guides and role models as
I navigated the challenges of this research;
To Misamis University,
for equipping me with the knowledge, skills,
and experiences that made this research possible;
And to all learners who continue to pursue knowledge
with passion and excellence, this work is for you.

Diana

ABSTRACT

This action research determined the effects of the Science Quest Game on the academic performance of Grade 7 learners in Science in a public secondary school in Ozamiz City. The study employed a quasi-experimental one-group pretest-posttest design using a teacher-made test to assess learners' performance before and after the intervention.

Findings revealed that learners' performance improved from the Did Not Meet Expectations level to the Outstanding level after the implementation of the Science Quest Game. The results also showed a very highly significant difference between the learners' pre-test and post-test scores.

The study concluded that the Science Quest Game was an effective instructional strategy in improving learners' academic performance in Science through interactive and engaging learning activities.

Keywords: *Science Quest Game, gamification, academic performance, Science education.*

TABLE OF CONTENTS

	Page
TITLE	i
ACKNOWLEDGMENT	iii
DEDICATION	iv
ABSTRACT	v
TABLE OF CONTENTS	vii
LIST OF TABLES	vii
LIST OF FIGURE	vii
 Chapter	
1 GENERAL INTRODUCTION	1
Objectives of the Study	18
2 METHODS	
Research Design	20
Research Setting	20
Respondents of the Study	21
Instruments	21
Data Collection	24
Ethical Considerations	-
Data Analysis	25
3 RESULTS AND DISCUSSION	
Learners' Level of Performance before the Implementation of Science Quest Game	
Learning	26

Learners' Level of Performance After the implementation of Science Quest Game	30
Significant Difference between the Learners' Level of Performance Before and After the Implementation of Science Quest Game	26
4. SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS	60
REFERENCES	65
APPENDICES	
Appendix A Pretests and Posttests (Problem-Based Learning Assessment Test)	68
Appendix B Learners' Engagement and Problem-Solving Motivation Questionnaire (PBL)	70
CURRICULUM VITAE	84

LIST OF TABLES

Table	Page
1. Institutional Service Quality	29
2. Institutional Service Delivery	32
3. Institutional Student Satisfaction	37
4. Significant Relationship Between Service Quality and Service Delivery. . .	43
5. Significant Relationship Between Service Quality and Student Satisfaction .	49
6. Significant Relationship Between Service Quality And Student Satisfaction.	56
7. Mediating Role Of Institutions' Perceived Service Quality In The Relationship Between Service Delivery And Student Satisfaction	69

Chapter 1

INTRODUCTION

Context and Rationale

In the ever-evolving landscape of education, engaging students in meaningful learning experiences has become both a challenge and a necessity. Traditional teaching methods in Science often struggle to sustain students' motivation and curiosity, particularly at the lower secondary level, where abstract scientific concepts can appear complex or disconnected from real-world contexts (Juuti et al., 2021). A Science Quest Game is an educational game-based strategy that integrates Science learning competencies into structured quests, challenges, levels, and reward systems to enhance student engagement, motivation, and academic achievement. It combines instructional content with game mechanics such as problem-solving tasks, immediate feedback, collaboration, and competition, allowing students to actively participate in the learning process. Science Quest Games are designed to transform traditional Science lessons into interactive learning experiences where students learn by doing rather than by passive listening (Christopoulos et al., 2023).

Science Quest Games are grounded in the principles of game-based learning and gamification, which aim to increase learners' motivation and persistence by incorporating elements of play into educational contexts. Studies indicate that the use of game mechanics such as points, levels, challenges, and rewards significantly improves students' engagement and academic performance (Manzano-León et al., 2021). In Science education, these games help simplify abstract and complex concepts by

presenting them in meaningful and enjoyable contexts, making learning more accessible to junior high school students (Papadakis et al., 2023).

In the current educational landscape, maintaining student engagement in Science remains a challenge, particularly at the Grade 7 level where students begin to encounter more abstract scientific ideas. Traditional teaching approaches often rely on lecture-based instruction, which may not sufficiently sustain students' interest, curiosity, and motivation. As a result, many students show low participation, limited focus, and difficulty mastering Science learning competencies (Juuti et al., 2021). This situation highlights the need for innovative, learner-centered strategies that actively involve students in the learning process. Recent research demonstrates that educational games positively influence students' motivation and academic achievement by encouraging active participation and collaborative learning. Gamified and game-based learning environments promote higher levels of engagement, focus, and achievement compared to traditional instructional methods (Dahalan et al., 2024). Furthermore, engagement serves as a key mediating factor in the relationship between educational games and students' motivation for learning, indicating that interactive learning environments strengthen learning outcomes (Li et al., 2024).

In Science classrooms, Science Quest Games support students' intrinsic motivation by providing achievable challenges, immediate feedback, and opportunities for mastery. These elements align with self-determination theory, which emphasizes autonomy, competence, and relatedness as key drivers of motivation. When students feel capable, involved, and connected during learning activities, they demonstrate improved understanding and sustained interest in Science lessons (Papadakis et al., 2023).

Additionally, Science Quest Games foster collaboration and healthy competition, which contribute to a positive classroom learning environment (Chans et al., 2021).

With the increasing integration of technology and innovative teaching strategies, educational games are becoming more relevant in modern classrooms. Research shows that gamified learning environments result in higher academic performance, motivation, and retention compared to traditional approaches (Ortiz-Rojas et al., 2025). In the Philippine context, the integration of Science Quest Games aligns with the Department of Education's emphasis on learner-centered and interactive instruction that develops critical thinking, problem-solving, and scientific literacy among students (Detalla et al., 2025). Despite the growing body of research on game-based learning, limited empirical studies focus on the use of Science Quest Games in improving both motivation and academic achievement across specific Grade 7 Science learning competencies, particularly in public secondary schools in the Philippines. Most existing studies emphasize general engagement or other subject areas, leaving a gap in understanding how Science Quest Games influence students' learning outcomes in junior high school Science classrooms.

Therefore, this action research titled "Leveling Up Engagement: The Use of Science Quest Games on the Motivation and Academic Achievement of Grade 7 Students" aims to examine the effects of Science Quest Games on students' motivation, engagement, and academic performance. This study seeks to determine whether integrating Science Quest Games into Grade 7 Science instruction enhances students' participation, focus, and mastery of Science learning competencies, thereby contributing to a more engaging and effective Science learning environment.

Strategy

This study will employ a , one-group pretest-posttest quantitative design to determine the effectiveness of Science Quest Games on the motivation and academic achievement of Grade 7 students across Science learning competencies. This research design is appropriate for classroom-based studies where random assignment is not feasible and where comparisons of learning outcomes before and after an intervention are required (Creswell et al., 2021; Johnson et al., 2020).

The implementation of the study will begin with the identification of selected Grade 7 Science learning competencies where Science Quest Games can be effectively integrated. The researcher will design and implement Science Quest Games that may be digital, physical, or activity-based and are aligned with the prescribed Science curriculum and lesson objectives. Aligning game-based activities with learning outcomes ensures that instructional goals are met while maintaining high levels of student engagement (Wood & Drew, 2025).

Prior to the intervention, students will take a pre-test to assess their baseline academic achievement and will complete a motivation survey to determine their initial level of engagement and motivation in learning Science. The use of pre-tests and motivation surveys provides an objective measure of students' initial performance and attitudes, which is essential in evaluating instructional effectiveness (Johnson et al., 2020). Following the pre-intervention phase, Science Quest Games will be integrated into regular classroom instruction over a specified period. During this phase, students will actively participate in game-based learning activities that involve quests, challenges, collaboration, and immediate feedback. Research shows that game-based learning

environments promote active participation, sustained attention, and deeper understanding of scientific concepts (Dahalan et al., 2024; Papadakis et al., 2023).

After the intervention, a post-test and a post-motivation survey will be administered to measure changes in students' academic achievement and motivation. Classroom observations will also be conducted to document students' engagement, participation, and learning behaviors during the implementation of Science Quest Games. The comparison of pre-test and post-test results, supported by observation data, will determine the effectiveness of Science Quest Games in enhancing students' motivation and academic achievement in Science (Ortiz-Rojas et al., 2025).

Statement of the problem

This action research aims to determine the effects of Science Quest Games on the motivation and academic achievement of Grade 7 students during the School Year 2025–2026 in a public secondary school in Ozamiz City.

Specifically, it sought to answer the following questions:

1. How did the use of Science Quest game affect the motivation of Grade 7 students in learning science?
2. How did the use of Science Quest games influence the academic achievement of grade 7 students in selected learning competencies?
3. Was there a significant difference between the pre-test and post-test scores of grade 7 students after exposure to science quest game?

Null Hypotheses

H₀1: There is no significant difference in the motivation levels of Grade 7 students before and after the use of Science Quest Games.

H₀2: There is no significant difference in the academic achievement of Grade 7 students before and after the implementation of Science Quest Games

H₀3: Science Quest Games have no significant effect on the engagement of Grade 7 students during Science classes.

Chapter 2

RESEARCH METHODOLOGY

Research Design

This study employed a quasi-experimental one-group pre-test and post-test design to examine the effects of educational games on Grade 7 students' motivation and academic achievement in Science. This design was appropriate for natural classroom settings where random assignment could not be implemented, but comparisons before and after the intervention were possible (Creswell et al., 2021). The administration of a pre-test provided a baseline measure of students' initial performance and motivation, while the post-test, administered after the intervention, determined whether meaningful improvements had occurred. Such a design structure was frequently used in instructional innovation studies because it allowed teachers to assess the effectiveness of new strategies within their own classrooms (Johnson et al., 2020).

Research Setting

This study was conducted in one of the secondary public high schools in Ozamiz City, Misamis Occidental, Philippines. The institution offered a complete secondary education program, including Grade 7 Science, where educational games were integrated into instruction. The research focused on Grade 7 students enrolled during the academic year.

A single section of Grade 7 students was selected as respondents for this study. This group was considered ideal for examining the effects of Problem-Based Learning (PBL)

on mastery and problem-solving skills, as these learners were developing foundational competencies. By assessing their experiences with PBL, the study aimed to determine how problem-based instructional methods influenced their understanding, analytical thinking, and practical application of concepts.

Respondents of the study

This study will include Grade 7 students enrolled in a public high school in Ozamiz City, Misamis Occidental, Philippines, for the S.Y. 2025–2026. Purposive sampling was employed to ensure that the selected respondents were actively studying measures of position and probability and were directly engaged in problem-solving activities. Only students who consented to participate were included, ensuring adherence to ethical research standards. This selection aims to address the gap in research on the effectiveness of Educational Games in improving students' engagement and academic achievements. By focusing on this group, the study provides insights into how Educational Games can enhance meaningful learning in secondary science.

Research Instrument

The study used the following questionnaire as a data-gathering instrument:

A. Motivation Survey Questionnaire (Appendix A), which utilized a five-point Likert scale to assess students' levels of motivation toward science learning before and after the intervention. Likert scales were widely recognized as reliable tools for measuring students' attitudes, perceptions, and affective learning indicators (Johnson et al., 2020).

To assess students' mastery and problem-solving skills, the study used a five-point Likert scale, where 5 represented the highest level of proficiency and 1 represented the lowest.

Scores	Remarks
47-50	Outstanding
44-46	Very Satisfactory
42-43	Satisfactory
40-41	Fair
38-39	Poor
1-37	Very Poor

B. The Academic Engagement Observation Questionnaire (Appendix B) was a researcher-made instrument designed to assess students' engagement and motivation levels in a Problem-Based Learning (PBL) environment. The instrument used a five-point Likert scale, with responses ranging from Strongly Disagree (1) to Strongly Agree (5), and was adapted from (Song et al.2025). It comprised 20 items categorized into four key constructs: Cognitive Engagement (5 items), Affective Engagement (5 items), Behavioral Engagement (5 items), and Motivation (5 items). These constructs evaluated how students interacted with educational activities, their level of enthusiasm, and their persistence in each activity.

This questionnaire was highly relevant to the study as it measured the impact of educational games on students' engagement and motivation in learning measures of position and probability. The validity and reliability of the Academic Engagement Observation Questionnaire were established through expert consultations, pilot testing,

and statistical validation. Science educators and assessment specialists reviewed the questionnaire items to ensure alignment with Grade 7 competencies in Science and the use of educational games.

A pilot study was conducted to assess the clarity, coherence, and relevance of the instrument, and Cronbach's alpha was used to determine its internal consistency. Previous research highlighted that questionnaires measuring engagement and motivation in game-based environments effectively captured students' cognitive, affective, and behavioral responses, providing insight into their level of participation (Detalla et al.,).

Responses	Continuum	Interpretation
5 – Strongly Agree	4.20-5.00	Extremely High
4 – Agree	3.40-4.19	High
3 – Neutral	2.60-2.39	Moderate
2 – Disagree	1.80 – 2.59	Low
1 – Strongly Disagree	1.00 – 1.79	Extremely Low

C. Lesson Plan (Appendix C). In this study, educational games were integrated into the Grade 7 lessons, focusing on students' motivation and engagement. Each of the four sessions began with a pre-test to assess students' initial mastery of the concepts, followed by a teacher-facilitated activity in which students participated in different games based on real-life scenarios. By comparing pre-test and post-test scores, the study assessed the effectiveness of educational games in enhancing students' understanding, analytical thinking, and ability to apply concepts to real-world situations (Siege et al., 2023).

Data Collection

The data collection procedure began with securing the necessary approvals from the school head and the science teacher. After obtaining permission, the researcher administered the pre-test and motivation survey to establish the baseline academic performance and motivation levels of the Grade 7 students. The intervention, consisting of educational game-enhanced lessons, was implemented over a predetermined period. During this phase, the researcher regularly conducted lessons and documented the students' behavior and engagement.

Once the intervention was completed, the researcher administered the post-test and post-motivation survey to evaluate changes in the students' outcomes. All collected data were then encoded, organized, and prepared for analysis, with care taken to ensure the accuracy and consistency of data entry. The results from both assessments and observations served as the basis for determining the impact of educational games on students' motivation and academic achievement.

Ethical Consideration

The study strictly adhered to ethical guidelines to safeguard the rights and welfare of all participants. Approval to conduct the study was sought from the School Principal, the Grade Level Head, and the class Adviser, with each authority's consent obtained prior to any data collection. These approvals confirmed that the study complied with institutional and research guidelines.

Informed consent procedures were implemented for all participants, including the parents and guardians of the selected Grade 7 students. The participants were informed of the study's purpose, procedures, voluntary nature, and their option to withdraw at any

time without academic penalty. Anonymity and confidentiality were maintained by assigning codes instead of names in all data-gathering instruments and research documents.

Data Analysis

This study utilized the following statistical methods for data analysis using Jamovi software.

Frequency and *percentage* were employed to examine learners' motivation levels and academic performance before and after the intervention.

To determine whether there was a statistically significant difference in students' performance and motivation before and after the intervention, a paired-sample t-test was used. This test was appropriate because the same group of students was measured at two different points in time.

Qualitative data from observations underwent thematic analysis to identify recurring behaviors related to engagement, participation, and enthusiasm. The combination of qualitative and quantitative analyses provided a comprehensive understanding of the impact of educational games on students' motivation and academic achievement.

Dissemination Plan

The study's findings were shared with school administrators, cooperating teachers, Grade 7 students, and their parents through reports, discussions, and simple summaries, ensuring that all stakeholders understood the results and remained engaged throughout the process. Consent and assent procedures were highlighted when sharing results with students and parents to emphasize ethical research practices. The findings were also

presented to the university community and other educators through seminars, presentations, and publications to support the improvement of teaching strategies.

Utilization Plan

The results of the study were utilized through poster presentation and publication. A poster summarizing the key findings, conclusions, and recommendations was prepared and displayed during academic or research dissemination events. This allowed educators, school stakeholders, and other researchers to easily understand the study's outcomes and apply its insights. Additionally, the study was prepared for publication in an academic journal or institutional research repository, ensuring that its contributions reached a wider audience and supported further research on strengthening students' motivation and academic achievement across Science learning competencies.

COST ESTIMATES (Grade 7)

The estimated budget in the conduct of this study is broken down below from the personal money of the proponent. The proponent has a personal laptop and printer.

Materials	Amount
1 ream Short US bond paper	Php 185.00
1 set 664 ink	Php 1,179.00
4 sliding folders	Php 15.00 x 4 (Php 60.00)
Tokens (Pencil & Paper)	Php 1,000.00
Snacks	Php 1, 500.00
Total	Php 3, 889.00

Chapter 3

RESULTS AND DISCUSSIONS**Learners' Level of Performance before the Implementation of Science Quest Game**

Table 1 presents the performance of Grade 7 learners in Science before the implementation of the Science Quest Game. Overall, the learners' performance was at the *Did Not Meet Expectations* level ($M = 20.74$, $SD = 3.20$). The findings indicate that the learners had low mastery of Science concepts and competencies prior to the intervention. This suggests that many learners experienced difficulty in understanding scientific concepts when lessons were delivered using traditional instructional approaches. The result further implies that the learners may have lacked engagement, motivation, and opportunities for active participation during classroom instruction. Since Science involves critical thinking and conceptual understanding, learners may struggle when instruction is limited to teacher-centered discussions without interactive learning activities.

Among the performance levels, all 34 learners or 100% were classified under *Did Not Meet Expectations*. No learner reached the Fairly Satisfactory, Satisfactory, Very Satisfactory, or Outstanding levels. This pattern highlights the need for innovative and learner-centered instructional strategies that can help improve learners' understanding and academic performance in Science.

The findings are supported by the study of (Sailer et al. 2020), which revealed that learners exposed to traditional instruction often demonstrate lower academic performance

and engagement compared to those exposed to gamified learning activities. Similarly, (Papadakis et al. 2021) found that game-based learning increases learners' motivation and participation in Science classes. In the same manner (Huang et al. 2020) explained that gamification positively affects students' learning outcomes by promoting active engagement and interaction during lessons. Moreover, revealed that interactive educational games improve students' conceptual understanding and academic achievement in Science (Su et al. 2022).

These results suggest the need for instructional improvement among teachers and school administrators. Teachers may integrate game-based learning activities and interactive classroom strategies to increase learners' motivation and participation. School administrators may also provide training and instructional support on the use of gamified learning approaches in Science instruction. Additionally, activities such as collaborative games, science challenges, interactive quizzes, and learner-centered tasks may help improve learners' understanding of scientific concepts and enhance their academic performance.

Table 1

Learners' Level of Performance before the Implementation of Science Quest Game

Performance	Frequency	Percentage	M	SD
Did Not Meet Expectations	34	100.00	20.74	3.20
Overall Performance	34	100.00	20.74	3.20

Scale: 42-50 (Outstanding); 38-41 (Very Satisfactory); 34-37 (Satisfactory); 30-33 (Fairly Satisfactory); 29 and below (Did Not Meet Expectations)

Learners Level of Performance After the Implementation of Science Quest Game

Table 2 presents the performance of Grade 7 learners in Science after the implementation of the Science Quest Game. Overall, the learners' performance improved to the *Outstanding* level ($M = 41.34$, $SD = 2.19$). The findings indicate that the Science Quest Game became an effective instructional intervention in improving learners' academic performance in Science. The significant increase in the learners' mean score suggests that the learners were able to understand and apply Science concepts more effectively through interactive and engaging learning experiences.

Among the performance levels, 33 learners or 97.06% achieved an *Outstanding* level, while only 1 learner or 2.94% obtained a *Fairly Satisfactory* rating. No learner fell under the Did Not Meet Expectations, Satisfactory, or Very Satisfactory levels. This indicates that the majority of the learners demonstrated improved mastery of Science competencies after exposure to the Science Quest Game. The result implies that game-based learning strategies can enhance learners' motivation, participation, and conceptual understanding.

The findings support the study of (Bai et al. 2020), which found that gamification improves students' academic achievement and engagement in classroom learning. Similarly, (Alomari et al. 2021) revealed that educational games positively influence learners' motivation and retention of concepts. In the same manner, (Krouska et al. 2022) explained that game-based learning enhances students' participation, collaboration, and academic performance. Furthermore, (Hamari et al. 2020) emphasized that interactive

and enjoyable learning experiences increase learners' focus, engagement, and achievement.

These findings suggest that teachers may continuously utilize game-based instructional strategies to make Science lessons more interactive and meaningful. School administrators may also support the development of innovative learning materials and conduct training programs related to gamification in education. Activities such as science competitions, collaborative educational games, and interactive problem-solving tasks may further strengthen learners' understanding and interest in Science.

Table 2

Learners' Level of Performance After the Implementation of Science Quest Game

Performance	Frequency	Percentage	M	SD
Outstanding	33	97.06	46.67	2.19
Faily Satisfactory	1	2.94	36	-
Overall Performance	34	100.00	41.34	2.19

Scale: 42-50 (Outstanding); 38-41 (Very Satisfactory); 34-37 (Satisfactory); 30-33 (Fairly Satisfactory); 29 and below (Did Not Meet Expectations)

Significant Different between the Learners' Level of Performance Before and After in Implementation of Science Quest Game

Table 3 presents the significant difference between the learners' performance before and after the implementation of the Science Quest Game. The computed t-value of 35.21 and p-value of 0.000 indicate a very highly significant difference between the

pretest and posttest scores of the learners. Since the p-value is lower than the 0.01 level of significance, the null hypothesis was rejected.

The findings imply that the Science Quest Game significantly improved the academic performance of the Grade 7 learners in Science. The increase in the mean score from 20.74 before the intervention to 41.34 after the intervention indicates that learners developed better understanding and mastery of Science competencies through the use of game-based learning activities. The result further suggests that interactive and engaging instructional strategies can effectively improve learners' participation, motivation, and learning outcomes.

The findings are supported by (Huang et al. 2020), who concluded that gamification has a significant positive effect on students' academic achievement and engagement. Similarly, (Toda et al. 2021) found that gamified learning environments improve learners' participation and classroom interaction. In the same manner, (Buckley et al. 2020) explained that educational games enhance learners' motivation and knowledge retention. Moreover, (Krouska et al. 2022) revealed that game-based learning positively affects students' learning experiences and academic performance.

These findings suggest that teachers may adopt gamified instructional strategies as part of their regular classroom practices to improve students' learning outcomes in Science. School administrators may also encourage the integration of educational games and provide professional development opportunities related to game-based learning approaches. Through interactive and learner-centered activities, students may develop

stronger engagement, critical thinking skills, and improved academic performance in Science.

Table 3

Significant Difference between the Learners' Level of Performance Before and After the Implementation of Science Quest Game

Performance	M	SD	T-value	P-value	Decision
Before the Implementation of the Science Quest Game	20.74	3.20	35.21***	0.000	Reject H ₀₁
After the Implementation of the Science Quest Game	41.34	2.19			

*Note: *** $p < 0.01$ (Very Highly Significant); ** $p < 0.01$ (Highly Significant); * $p < 0.05$ (Significant)*

H₀₁: There is no significant difference between the learners' level of performance before and after the implementation of Science Quest Game.

Chapter 4

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This action research aimed to determine the effects of the Science Quest Game on the performance of Grade 7 learners in Science during the School Year 2025–2026 in one of the public secondary schools in Ozamiz City. Specifically, the study sought to determine the learners' level of performance before and after the implementation of the Science Quest Game and identify whether there was a significant difference between the pretest and posttest scores of the learners.

The study utilized a one-group pretest-posttest design involving 34 Grade 7 learners as respondents. A teacher-made test was used to assess the learners' performance before and after the implementation of the intervention. The gathered data were treated using frequency count, percentage, mean, standard deviation, and t-test.

The findings revealed that before the implementation of the Science Quest Game, the learners' performance was at the *Did Not Meet Expectations* level with a mean score of 20.74 and a standard deviation of 3.20. After the implementation of the intervention, the learners' performance improved to the *Outstanding* level with a mean score of 41.34 and a standard deviation of 2.19. The computed t-value of 35.21 and p-value of 0.000 showed a very highly significant difference between the learners' pre-test and post-test scores. Thus, the null hypothesis was rejected.

The results imply that the Science Quest Game significantly improved the learners' academic performance in Science through interactive and engaging learning experiences.

Findings

Based on the results of the study, the following findings were drawn:

1. Before the implementation of the Science Quest Game, all 34 learners or 100% were classified under *Did Not Meet Expectations* with an overall mean score of 20.74 and a standard deviation of 3.20.
2. After the implementation of the Science Quest Game, 33 learners or 97.06% achieved an *Outstanding* level of performance, while 1 learner or 2.94% obtained a *Fairly Satisfactory* rating. The overall mean score increased to 41.34 with a standard deviation of 2.19.
3. There was a very highly significant difference between the learners' performance before and after the implementation of the Science Quest Game, as reflected by the computed t-value of 35.21 and p-value of 0.000. Therefore, the null hypothesis was rejected.

Conclusions

Based on the findings of the study, the following conclusions were drawn:

1. The Grade 7 learners demonstrated low academic performance in Science before the implementation of the Science Quest Game, indicating limited mastery of Science concepts and competencies.

2. The implementation of the Science Quest Game significantly improved the learners' level of performance in Science. The intervention helped increase learners' engagement, participation, and understanding of scientific concepts.

3. The significant difference between the pre-test and post-test scores confirmed that the Science Quest Game was an effective and innovative instructional strategy in improving learners' academic performance in Science.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are offered:

1. Science teachers may integrate game-based learning activities such as Science Quest Game in their classroom instruction to improve learners' motivation, engagement, and academic performance.

2. School administrators may provide training, workshops, and instructional support related to gamified learning approaches and innovative teaching strategies in Science education.

3. Learners may actively participate in interactive and collaborative classroom activities to strengthen their understanding of scientific concepts and improve their academic achievement.

4. Future researchers may conduct similar studies involving larger groups of respondents, different grade levels, and other subject areas to further validate the effectiveness of game-based learning strategies.

REFERENCES

- Abidin, R., Suprapti, E., Hakim, M. H., & Asyari, A. (2025). The augmented reality game on inspirational figures to enhance literacy and creative thinking. *Research and Development in Education (RaDEn)*, 5(1), 259–272. <https://doi.org/10.22219/raden.v5i1.38328>
- Alomari, I., Al-Samarraie, H., & Yousef, R. (2021). The role of gamification techniques in promoting student learning: A review and synthesis. *Journal of Information Technology Education*, 20, 395–417.
- Bai, S., Hew, K. F., & Huang, B. (2020). Does gamification improve student learning outcome? Evidence from a meta-analysis and synthesis of qualitative data in educational contexts. *Educational Research Review*, 30, 100322.
- Buckley, P., & Doyle, E. (2020). Gamification and student motivation. *Interactive Learning Environments*, 28(2), 153–166.
- Chans, G. M., & Portuguese Castro, M. (2021). Gamification as a Strategy to Increase Motivation and Engagement in Higher Education Chemistry Students. *Computers*, 10(10), 132. <https://doi.org/10.3390/computers101001322>
- Christopoulos, A., & Mystakidis, S. (2023). Gamification in Education. *Encyclopedia*, 3(4), 1223-1243. <https://doi.org/10.3390/encyclopedia30400899>
- Dahalan, F., Alias, N. & Shaharom, M.S.N. Gamification and Game Based Learning for Vocational Education and Training: A Systematic Literature Review. *Educ Inf Technol* 29, 1279–1317 (2024). <https://doi.org/10.1007/s10639-022-11548-w>
- Deming Li, Wang Jianxing, The effect of gamified learning monitoring systems on Students' learning behavior and Achievement: An empirical study, *Entertainment Computing*, Volume 52, 2025, 100907, ISSN 1875-9521, <https://doi.org/10.1016/j.entcom.2024.100907>
- Gamification in Physics Education: Play Your Way to Better Learning. (2025). *International Journal of Serious Games*, 12(1), 59-81. <https://doi.org/10.17083/ijsg.v12i1.858>
- Genç, G., & Aydın, Z. E. (2023). The Effect of Game Integrated Flipped Classroom Application on Primary School 3rd Grade Students. *Journal of Teacher Education and Lifelong Learning*, 5(2), 524-537. <https://doi.org/10.51535/tell.1350501>
- Hamari, J., Shernoff, D., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2020). Challenging games help students learn: An empirical study on engagement, flow, and immersion in game-based learning. *Computers in Human Behavior*, 54, 170–179.

- Huang, R., Ritzhaupt, A. D., Sommer, M., Zhu, J., Stephen, A., Valle, N., Hampton, J., & Li, J. (2020). The impact of gamification in educational settings on student learning outcomes: A meta-analysis. *Educational Technology Research and Development*, 68(4), 1875–1901.
- Juuti, K., Lavonen, J., Salonen, V., Salmela-Aro, K., Schneider, B., & Krajcik, J. (2021). A Teacher–Researcher Partnership for Professional Learning: Co-Designing Project-Based Learning Units to Increase Student Engagement in Science Classes. *Journal of Science Teacher Education*, 32(6), 625–641. <https://doi.org/10.1080/1046560X.2021.18722077>
- Khalidi, A., Bouzidi, R. & Nader, F. Gamification of e-learning in higher education: a systematic literature review. *Smart Learn. Environ.* 10, 10 (2023). <https://doi.org/10.1186/s40561-023-00227-z>
- Kalogiannakis, M., Papadakis, S., & Zourmpakis, A. (2021). Gamification in science education: A systematic review of the literature. *Education Sciences*, 11(1), 22.
- Krouska, A., Troussas, C., & Sgouropoulou, C. (2022). Game-based learning through educational games: Effects on student academic performance and engagement. *Education and Information Technologies*, 27(3), 3401–3420.
- Lampropoulos G, Sidiropoulos A. Impact of Gamification on Students' Learning Outcomes and Academic Performance: A Longitudinal Study Comparing Online, Traditional, and Gamified Learning. *Education Sciences*. 2024; 14(4):367. <https://doi.org/10.3390/educsci14040367>
- Li Y, Chen D, Deng X (2024) The impact of digital educational games on student's motivation for learning: The mediating effect of learning engagement and the moderating effect of the digital environment. *PLoS ONE* 19(1): e0294350. <https://doi.org/10.1371/journal.pone.0294350>
- Manzano-León, A., Camacho-Lazarraga, P., Guerrero, M. A., Guerrero-Puerta, L., Aguilar-Parra, J. M., Trigueros, R., & Alias, A. (2021). Between Level Up and Game Over: A Systematic Literature Review of Gamification in Education. *Sustainability*, 13(4), 2247. <https://doi.org/10.3390/su13042247>
- Miles, D.A. (2017) A Taxonomy of Research Gaps: Identifying and Defining the Seven Research Gaps Methodological Gap. *Journal of Research Methods and Strategies*. <https://www.researchgate.net/publication/319244623>
- Minkai Wang, Jingdong Zhu, Hanjie Gu, Jie Zhang, Dan Wu, Peijuan Wang, Optimizing experiential learning in science education: The role of two-tier testing in digital game-based learning, *Entertainment Computing*, Volume 54,2025, 100960, ISSN 1875-9521, <https://doi.org/10.1016/j.entcom.2025.100960>

- Optimizing experiential learning in science education: The role of two-tier testing in digital game-based learning, *Entertainment Computing*, Volume 54, 2025, 100960, ISSN 1875-9521, <https://doi.org/10.1016/j.entcom.2025.100960>
- Ortiz-Rojas, M., Chiliza, K., Valcke, M. et al. How gamification boosts learning in STEM higher education: a mixed methods study. *IJ STEM Ed* 12, 1 (2025). <https://doi.org/10.1186/s40594-024-00521-3>
- Othman, M.K., Ching, S.K. Gamifying science education: How board games enhances engagement, motivate and develop social interaction, and learning. *Educ Inf Technol* 29, 24525–24561 (2024). <https://doi.org/10.1007/s10639-024-12818-5>
- Papadakis, S., Zourmpakis, A.I., Kalogiannakis, M. (2023). Analyzing the Impact of a Gamification Approach on Primary Students' Motivation and Learning in Science Education. In: Auer, M.E., Pachatz, W., Rüttmann, T. (eds) *Learning in the Age of Digital and Green Transition*. ICL 2022. *Lecture Notes in Networks and Systems*, vol 633. Springer, Cham. https://doi.org/10.1007/978-3-031-26876-2_66
- Pondee, P., Panjaburee, P. & Srisawasdi, N. Preservice science teachers' emerging pedagogy of mobile game integration: a tale of two cohorts improvement study. *RPTEL* 16, 16 (2021). <https://doi.org/10.1186/s41039-021-00152-0>
- Rayan, B., & Watted, A. (2024). Enhancing Education in Elementary Schools through Gamified Learning: Exploring the Impact of Kahoot! on the Learning Process. *Education Sciences*, 14(3), 277. <https://doi.org/10.3390/educsci14030277>
- Roos, Luiza, "The Literary Games We Play: Science Fiction in the Teaching of Secondary Science" (2025). School of Education and Leadership Student Capstone Projects. 1142. https://digitalcommons.hamline.edu/hse_cp/1142
- Sadeth S. Detalla, Alle Mediha C. Canonio, Genelyn R. Baluyos (2025). Improving Students' Performance in Earth Science Through Inquiry-Based Learning and System Model Integration. *International Journal of Research and Innovation in Social Science (IJRISS)*, 9(08), 5062-5072. <https://doi.org/https://dx.doi.org/10.47772/IJRISS.2025.908000409>
- Sailer, M., & Homner, L. (2020). The gamification of learning: A meta-analysis. *Educational Psychology Review*, 32, 77–112.
- Slamet, Joko, Yazid Basthomi, Francisca Maria Ivone, and Evi Eliyanah. 2024. "Unlocking the Potential in a Gamification-Based MOOC: Assessing Autonomous Learning and Self-Directed Learning Behaviors". *Teaching and Learning Inquiry* 12 (July):1–20. <https://doi.org/10.20343/teachlearningqu.12.19>
- Toda, A. M., Klock, A. C. T., Oliveira, W., Palomino, P. T., Rodrigues, L., Shi, L., & Isotani, S. (2021). Analysing gamification elements in educational environments

using an existing gamification taxonomy. *Smart Learning Environments*, 8(16), 1–27.

Topu, F. B. (2024). Role of the Students' Learning Styles on Motivation and Perception towards Gamified Learning Process. *Journal of Learning and Teaching in Digital Age*, 9(1), 61-79. <https://doi.org/10.53850/joltida.1293970>

Wood, K., & Drew, S. (2025). Aligning Gamified Learning Experiences to Learning Outcomes. *International Journal of Changes in Education*, 2(3), 181-190. <https://doi.org/10.47852/bonviewIJCE52023413>

Yang, W., Fang, M., Xu, J., Zhang, X., & Pan, Y. (2024). Exploring the Mediating Role of Different Aspects of Learning Motivation between Metaverse Learning Experiences and Gamification. *Electronics*, 13(7), 1297. <https://doi.org/10.3390/electronics13071297>

Zhao, F., He, Y., & Su, Y. (2022). Effects of gamified science instruction on students' achievement and engagement. *International Journal of Educational Research*, 115, 101998.

Appendix A

Name: _____

Grade and Section: _____

School: _____

Score: _____

Directions: Read each question thoroughly and choose the best answer from the given options. Write only the letter of your chosen answer on your answer sheet.

_____ 1. What causes most earthquakes?

- a. Heavy rainfall
- b. Rapid movements along faults
- c. Strong winds
- d. Sudden temperature changes

_____ 2. Which type of fault occurs when one block moves downward relative to another?

- a. Reverse fault
- b. Normal fault
- c. Strike-slip fault
- d. Transform fault

_____ 3. When does a reverse fault occur?

- a. When the ground moves sideways
- b. When rocks are pulled apart
- c. When rocks are pushed together
- d. When plates do not move

_____ 4. A strike-slip fault involves:

- a. Upward movement
- b. Sideways movement
- c. Downward movement
- d. No movement

_____ 5. The amount of damage an earthquake causes depends on?

- a. The color of the soil
- b. The weather during the quake
- c. The magnitude and distance from the

epicenter

- d. The phase of the moon

_____ 6. A stronger earthquake usually mean?

- a. Less damage
- b. More damage
- c. No shaking
- d. No aftershocks

_____ 7. Places closest to the epicenter usually experience?

- a. Weak shaking
- b. No shaking
- c. Stronger shaking
- d. No effect

_____ 8. What is the Earth's main external source of energy?

- a. Moonlight
- b. Ocean waves
- c. Sunlight
- d. Wind

_____ 9. Solar energy mainly affects the?

- a. Earth's core
- b. Weather and climate
- c. Earth's crust only
- d. Earth's mantle

_____ 10. What causes weather patterns on Earth?

- a. Sunlight heating the atmosphere
- b. Moonlight
- c. Star movement
- d. Earthquakes

_____ 11. The changing temperature on Earth is driven by?

- a. Solar energy
- b. Mountains
- c. Soil colors
- d. Volcanoes alone

_____ 12. Day and night occur because of Earth's?

- a. Revolution
- b. Rotation
- c. Tilt
- d. Gravity

_____ 13. How long does it take Earth to rotate once?

- a. 24 hours
- b. 1 week
- c. 1 month
- d. 1 year

_____ 14. Seasons happen because of Earth's?

- a. Shape
- b. Moons

- c. Tilt and revolution
- d. Clouds

_____ 15. Earth's revolution takes?

- a. 24 hours
- b. 30 days
- c. 365 days
- d. 10 years

_____ 16. When one hemisphere is tilted toward the Sun, it experiences?

- a. Winter
- b. Autumn
- c. Summer
- d. No season

_____ 17. What causes longer daytime during summer?

- a. Earth moves faster
- b. Earth tilts toward the Sun
- c. More clouds appear
- d. The moon reflects sunlight

_____ 18. During winter, a hemisphere receives?

- a. More direct sunlight
- b. Less direct sunlight
- c. Equal sunlight
- d. No sunlight at all

_____ 19. What explains the change in the length of shadows during the day?

- a. Earth's rotation
- b. Earth's revolution
- c. Earth's gravity
- d. Earthquake activity

_____ 21. Earthquakes occur when?

- a. Air masses collide
- b. Faults suddenly move
- c. The ocean heats up
- d. Magma cools down

_____ 22. A normal fault forms when rocks are ?

- a. Pushed together
- b. Pulled apart
- c. Sliding sideways
- d. Shaking vertically

_____ 23. Compression of rocks usually results in a ?

- a. Normal fault
- b. Reverse fault
- c. Strike-slip fault
- d. Divergent boundary

_____ 24. A fault where plates slide past each other horizontally is?

- a. Normal
- b. Reverse
- c. Strike-slip
- d. Convergent

_____ 25. Earthquake damage increases as?

- a. The magnitude increases
- b. Distance increases
- c. Weather worsens
- d. Rocks become older

_____ 26. Areas far from the epicenter experience?

- a. The strongest shaking
- b. Little to no shaking
- c. The deepest earthquakes
- d. Faster waves only

_____ 27. The intensity of shaking felt by people depends on?

- a. The color of buildings
- b. The distance from the epicenter
- c. The number of clouds
- d. The time of day

_____ 28. Solar energy directly affects the?

- a. Atmosphere and oceans
- b. Earth's mantle
- c. Inner core
- d. Lithosphere only

_____ 29. Weather patterns result from?

- a. The moon's reflection of sunlight
- b. Uneven heating of Earth by the Sun
- c. Movement of mountains
- d. Earthquakes releasing energy

_____ 30. Winds form because sunlight?

- a. Heats all places evenly
- b. Heats the Earth unevenly

- c. Turns into electricity
- d. Changes gravity

_____ 31. Day and night happen because Earth.

- a. Orbits the Sun
- b. Spins on its axis
- c. Changes shape
- d. Wobbles in space

_____ 32. When Earth rotates, the side facing the Sun experiences?

- a. Day
- b. Night
- c. No season
- d. Storms

_____ 33. Seasons occur because?

- a. Earth is tilted as it revolves
- b. Earth is closer to the Sun during summer
- c. Earth rotates faster in some months
- d. The Sun changes brightness

_____ 34. If Earth had no tilt, we would not have?

- a. Day and night
- b. Gravity
- c. Seasons
- d. Weather

_____ 35. During summer, the Sun's rays strike the Earth?

- a. Less directly
- b. More directly
- c. Not at all
- d. From below

_____ 36. During winter, days are?

- a. Longer
- b. Shorter
- c. The same
- d. Extremely long

_____ 37. Shadow length changes because of Earth's?

- a. Rotation
- b. Revolution
- c. Tilt
- d. Magnetic field

_____ 38. Which best explains why countries near the equator have little seasonal change?

- a. They rotate faster
- b. They always receive direct sunlight
- c. They have more clouds
- d. They are far from the sea

_____ 39. Which of the following BEST describes why Earth experiences seasons?

- a. Its tilt changes how sunlight is received
- b. The Sun rotates quickly
- c. The Moon blocks sunlight
- d. Earth's size changes

_____ 40. Earthquakes occur when?

- a. Air masses collide
- b. Faults suddenly move
- c. The ocean heats up
- d. Magma cools down

_____ 41. A normal fault forms when rocks are?

- a. Pushed together
- b. Pulled apart
- c. Sliding sideways
- d. Shaking vertically

_____ 42. Compression of rocks usually results in?

- a. Normal fault
- b. Reverse fault
- c. Strike-slip fault
- d. Divergent boundary

_____ 43. A fault where plates slide past each other horizontally is?

- a. Normal
- b. Reverse
- c. Strike-slip
- d. Convergent

_____ 44. Earth rotates on its?

- a. Axis
- b. Orbit
- c. Poles

d. Mantle

_____ 45. One full rotation of Earth causes?

- a. Seasons
- b. Day and night
- c. Weather patterns
- d. Earthquakes

_____ 46. The tilt of Earth is responsible for?

- a. Seasons
- b. Mountains
- c. Tides
- d. Eclipses

_____ 47. When the Northern Hemisphere is tilted toward the Sun, it is?

- a. Winter in the north
- b. Summer in the north
- c. Spring in both hemispheres
- d. Autumn in the south

_____ 48. When the Earth revolves, it?

- a. Spins on its axis
- b. Travels around the Sun
- c. Turns inside out
- d. Makes the moon appear larger

_____ 49. Weather mainly forms because?

- a. Clouds move randomly
- b. Earth shakes from earthquakes
- c. Sunlight heats the Earth unevenly
- d. Animals produce heat

_____ 50. Solar energy causes wind because?

- a. Warm air sinks and cold air rises
- b. Warm air rises and cold air sinks
- c. Sunlight pushes the air

Appendix B

5-week Science Lesson Plan (Grade 7)

5-WEEK INSTRUCTIONAL OUTLINE (3I's METHOD)

Learning Area: Science 7

Unit Theme: *Solar Energy and Weather Patterns*

Time Frame: 5 Weeks

Method: 3I's (Introduction – Interaction – Integration)

Week 1 – Sunlight as Earth's External Source of Energy

Content Focus:

- Sun as Earth's main source of energy
- Interaction of solar energy with atmosphere and surface

Learning Objectives:

1. Explain why the Sun is Earth's external energy source.
2. Describe how solar energy heats land, water, and air.
3. Appreciate the importance of solar energy in sustaining life.

3I's Outline:

I. Introduction

- Opening activity: "What powers Earth?"
- Quick discussion on life without sunlight.
- Motivation: Simple riddle or sun observation.

II. Interaction

- Demonstration: Comparing heat absorption of black vs. white paper.
- Class discussion: Uneven heating of Earth.
- Guided questions about temperature, sunlight, and weather.

III. Integration

- Students reflect: "How does sunlight influence daily weather?"
- Group outputs: Collage showing sunlight's effects on Earth.

Week 2 – Layers of the Atmosphere & Weather Formation

Content Focus:

- Atmospheric layers
- Role of solar energy in atmosphere behavior

Learning Objectives:

1. Identify and describe the five layers of the atmosphere.
2. Explain why the atmosphere is layered.
3. Relate atmospheric structure to solar energy absorption.

3I's Outline:

I. Introduction

- Drill: Label-the-Layers (as shown in file).
- Review previous lesson (solar energy).

II. Interaction

- Explore: Why temperature varies with altitude.
- Activity: “Match the Layer” (satellite–airplane–meteor–aurora).
- Class discussion: How solar energy interacts with each layer.

III. Integration

- Environmental linkage: Ozone layer importance.
- Students create a mini-poster showing one atmospheric layer and its role.

Week 3 – Cloud Formation (Evaporation, Condensation, Precipitation)

Content Focus:

- Water cycle processes
- Cloud formation steps
- Phase changes involved

Learning Objectives:

1. Describe the process of cloud formation.
2. Identify evaporation, condensation, and precipitation.
3. Explain the role of solar energy in driving the water cycle.

3I's Outline:

I. Introduction

- Motivation: “Be Observant!” picture sequencing (from file).
- Recap on evaporation and heating of Earth.

II. Interaction

- Guided discussion: Step-by-step cloud formation.
- Sorting activity: Arrange the process (evaporation → condensation → cloud formation → precipitation).
- Mini experiment: Water vapor condensation using a cold can/glass.

III. Integration

- Students write short reflection: “Why clouds are important to weather?”
- Share-out session.

Week 4 – Types of Clouds (Cirrus, Cumulus, Stratus, Nimbus + Alto & Cirro):

Content Focus:

- Main cloud types
- Altitude-based classification
- Predicting weather through cloud observation

Learning Objectives:

1. Identify and describe major cloud types.
2. Categorize clouds based on altitude and appearance.
3. Infer possible weather conditions based on cloud type.

3I's Outline:

I. Introduction

- Motivation: Cloud riddles and sky observation.
- Connect: Clouds and daily weather.

II. Interaction

- Detailed discussion using pictures (based on file).

- Group Activity: “Cloud Creation” using cotton
→ Groups: Cirrus, Cumulus, Stratus, Nimbus
- Analysis: Why cloud color varies? Why some clouds bring rain?

III. Integration

- Students compare two clouds in structure, altitude, weather meaning.
- Real-world application: “Why knowing clouds helps us plan our day.”

Week 5 – Weather Patterns, Prediction, and Environmental Linking

Content Focus:

- Clouds & atmospheric observations
- Weather forecasting basics
- Climate action and environmental awareness

Learning Objectives:

1. Interpret weather based on clouds and atmospheric conditions.
2. Identify how solar energy drives weather and climate.
3. Apply cloud knowledge to environmental protection and safety.

3I’s Outline:

I. Introduction

- Review game: “Name that Cloud!”
- Notebook check: Cloud sketches from assignment.

II. Interaction

- Case analysis: Identifying clouds from real photos.
- Discussion: How cloud types indicate storms, rain, or fair weather.
- Activity: Mini Weather Forecaster – students give a 1-minute weather report.

III. Integration

- Reflection: “How understanding clouds helps prevent disasters?”
- Link to SDG #7 (clean energy) and SDG #13 (climate action).
- Final Output: Weather journal with cloud observations and predictions.

Appendix C

Action Research Work Plan and Timelines

The following work plan outlines the major activities to be undertaken in the conduct of the action research titled **“LEVELING UP ENGAGEMENT: THE USE OF SCIENCE QUEST GAME ON THE MOTIVATION AND ACADEMIC ACHIEVEMENT OF GRADE 7 STUDENTS .”**

Activities	Date	Resources Needed
1. Finalize printing of the research proposal	February 1, 2026	Laptop, printer, ink, bondpaper
2. Submit research proposal to the School Principal for endorsement.	February 2, 2026	Final manuscript
3. Submit endorsed proposal to the School Division Superintendent.	February 3, 2026	Final Manuscript
4. Secure permissions from SDS, School Principal, and Cooperating Teacher	February 4-5, 2026	Final manuscript, locator slip
5. Distribute parental consent and student assent forms; orientation of participations.	February 6-7, 2026	Permission letters
6. Administer Pre-Test	February 10, 2026	Consent forms, envelopes, printer ink
7. Implement instructional sessions	February 11 – March 20, 2026	Pre-test questionnaires, bond paper
8. Administer Post-Test	March 21, 2026	Learning materials, charts, projector, worksheets
9. Gather, encode, and tabulate results	March 25-26, 2026	Post-test questionnaires, bond paper
10. Analyze data (Mean, SD, Percentage, T-Test)	March 27-28, 2026	

		Answer sheets, laptop, Excel
11. Prepare results, discussion, and interpretation	April 1, 2026	Laptop, research notes
12. Finalize research manuscript (Revisions, editing, formatting)	April 2-4,2026	Laptop, printer, editing notes
13. Submit final research output to the School Principal and SDS.	April 5, 2026	Printed output, locator slip

Appendix D

PARENTAL CONSENT

Greetings!

I, a student researcher of _____ under the program of _____, respectfully request your permission for your child/children, who are under 18 years of age, to participate in our study.

This study aims to determine the Motivation and Academic Achievement of Grade 7 Students. As part of this research, the participants will be asked to answer short Exit Pass activities at the end of selected lessons to check their understanding and reflections. These activities will help your child improve their focus, participation, and ability to remember the lesson, supporting better learning outcomes in Science

Your participation will be a great help for the success of our study.

Thank you very much!

Respectfully yours,

Researcher

Noted:

ACKNOWLEDGMENT

I have read this consent form and give my consent for my child/children to participate in this study.

Guardian's name: _____

Date: _____

Contact no.: _____

Signature: _____

Approved:

Name: _____

Ethics Review Board Chair

Contact no.: _____

PARENTAL CONSENT

Maayong Adlaw!

Ako, usa ka estudyante-researcher sa _____ ubos sa programa sa _____, mapailubon nga nangayo sa inyong pagtugot aron ang inyong anak/anak nga wala pa moabot sa 18 anyos moapil sa among pagtuon.

Ang pagtuon niining tinguha sa Motibasyon ug Akademikong Kalampusan sa mga Estudyante sa Grade 7 Pinahiuyon sa mga Kompetensi sa Pagkat-on sa Agham. Isip bahin sa pagtuon, ang mga partisipante hangyoon sa pagsulbad og mubo nga kalihokan sa katapusan sa pipila ka leksyon aron masusi ang ilang pagsabot ug mga hunahuna bahin sa leksyon. Kini nga mga kalihokan makatabang sa inyong anak sa pagpalambo sa iyang focus, partisipasyon, ug kahibalo sa leksyon, nga mo suporta sa mas maayong pagkat-on sa Science.

Ang inyong pagtugot dako kaayong tabang alang sa kalampusansa among pagtuon.

Daghang Salamat!

Respectfully yours,

Researcher

Noted:

ACKNOWLEDGMENT

Nasabtan nako kini nga porma ug naghatag ko og pagtugot nga moapil ang akong anak/anak sa pagtuon.

Ngalan sa Ginikanan: _____ Petsa: _____
Contact no.: _____ Pirma: _____

Giaprobahan:

Ngalan: _____

Ethics Review Board Chair

Contact no.: _____

Appendix E

KASABUTAN SA PAGTUGOT SA BATA

Ako, si _____, tibuok kasingkasing nga mosugot nga mahimong bahin sa pagtuon nga gitawag nga “ **Leveling Up Engagement: The use of Science Quest Games on the motivation and Academic Achievement Grade 7 Students** ”. Apil sa pamaagi ang pag-observe sa akong partisipasyon sa klase ug ang paggamit aron ma suta ang akong pokus ug pagkahinumdoman sa leksyon. Wala kini makadaot ug dili kini makahatag ug sakit o peligro sa akong lawas. Kini nga pamaagi himuon sulod sa takdang oras sa klase ug dili molapas sa kasagaraan nga kalihokan sa eskwelahan.

Wala ko gipugos, gikulbaan, o giingnan sa bisan unsang paagi aron moapil niining pagtuon.

Pirmasa Estudyante

Petsa

Saksi:

Ngalan ug Pirmasa Ginikanan

Petsa

Appendix F



Misamis University

Ozamiz City



MISAMIS UNIVERSITY RESEARCH CENTER

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA)

MU-RC-042/13 November 2024

Thesis/Research Data Gathering Approval Form

Date: _____

Name of Authors: _____

College/Department: _____

Research Title: _____

Data Gathering Procedure:

a. Type of Research: (Kindly check)

☐ Quantitative	☐ Qualitative	☐ Experimental
☐ Approved Research Title & Problem/Objectives	☐ Approved Data Gathering Procedure	☐ Approved Data Gathering Instrument/Data Sheets

b. Respondents/Participants/Subject/Samples to be Collected: _____

c. Procedure:

☐ Survey	☐ Interview	☐ Experimentation	☐ Laboratory Testing
---------------------------------	------------------------------------	--	---

d. Place of Implementation/Study Area: _____

If to be conducted outside the school campus, indicate the nature of transportation to be used:

☐ Own private vehicle	☐ public utility vehicle	☐ rental	☐ Others, please indicate _____
--	---	---------------------------------	--

e. Date/s of Implementation/Sampling: _____

Attachments:

☐ Approved Letter of Consent from the designated authority in the area/place where the study is to be conducted
☐ Signed Parents' Consent

The thesis proposal mentioned above is hereby recommended for the commencement of data gathering implementation.

Recommended by:

_____ Thesis/Research Adviser	_____ Thesis/Research Instructor
----------------------------------	-------------------------------------

Approved by: _____

College Dean

CONTROLLED DOCUMENT

Appendix G

INFORMED CONSENT FORM

1. I volunteer to participate in the research undertaken by Diana G. Laurie from the College of Education, Misamis University. I understand that the research is designed to gather information about using Educational Games on the Motivation and Academic Achievement of Grade 7 Students across Science Learning Competencies. I will be one of the participants who will be surveyed for this research.
2. My participation in this research is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty. If I decline to participate or withdraw from the study, no one will be told.
3. This research will involve my participation. I understand that most questions will find the discussion interesting and thought-provoking. If, however, I feel uncomfortable in any way during the survey session, I have the right to decline to answer any question or to end the survey.
4. The survey will last approximately 3-5 minutes.
5. I understand that the information to be gathered will be treated with confidentiality. I will not be identified in the paper. Only the researchers and their adviser will have access to the data of the research.
6. I understand that this research has been reviewed and approved by the DSAS Head of Misamis University.
7. I have read and understood the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.
8. I have been given a copy of this consent form.

Participant's Signature

Date

For further information, please contact: dianaglaurie@gmail.com

Appendix H

ASSENT FORM

I, _____, willingly agree to take part in the study titled **"Leveling Up Engagement: The use of Science Quest Game on the motivation and Academic Achievement Grade 7 Students "**. Part of the procedure includes observing my participation in class to check my focus and how well I remember the lesson. This activity is safe and will not cause any harm or discomfort. This procedure will be done only during regular class hours and will not go beyond our usual school activities.

I understand that I am not forced, threatened, or pressured in any way to join this study.

Signature of Student

Date

Witness:

Name and Signature of Parent/Guardian

Date

CURRICULUM VITAE

PERSONAL DATA

Name : Diana G. Laurie
Address : P-2A Banadero Ozamiz City, Misamis
Occidental
Date of Birth : September 19, 2002
Place of Birth : Ozamiz City, Misamis Occidental
Sex : Female
Civil Status : Single
Parents : Mr. & Mrs. Dennis B. Laurie



EDUCATION

College : Bachelor of Secondary Education Major in Science
Misamis University
Ozamiz City, Misamis Occidental

Secondary : Senior High School
Misamis University
General Academic Strand
Ozamiz City, Misamis Occidental
2020-2021
Junior High School
Misamis Institute of Technology INC.
Banadero Highway Ozamiz City, Misamis Occidental
2018-2019

Elementary : Felipe Carreon Central School
Banadero Ozamiz City, Misamis Occidental
2014-2015



MISAMIS UNIVERSITY
Ozamiz City
College of Education



RESEARCH ROUTING FORM

Date: August 26, 2026

Name of Candidate: DIANA G. LAURIE

Sem./SY: 2nd Semester 2025-2026

Program: Bachelor of Secondary Education Major: Science

Title of Research: Leveling Up Engagement: The Use of Science Quest Game on the Motivation and Academic Achievement of Grade 7 Students in Earth Science

	Signature	Date
Adviser: <u>Mrs. Alle Mediha C. Canonio</u>		
Program Head: <u>Jame S. Bazar, MAEd</u>		<u>8/26/26</u>
Chairman: <u>Genelyn R. Baluyos, EdD</u>		

Grammarly Result: 99/100

Approved for REPRODUCTION/PUBLICATION:


GENELYN R. BALUYOS, EdD
Dean, College of Education

LEVELING UP ENGAGEMENT: THE USE OF SCIENCE QUEST GAMES ON

by dianaglaurie

General metrics

122,563

characters

15,372

words

1,020

sentences

1 hr 1 min

reading time

1 hr 58 min

speaking time

Writing Issues



No issues found

Plagiarism

This text hasn't been checked for plagiarism

Unique Words

Measures vocabulary diversity by calculating the percentage of words used only once in your document

6%

unique words

Rare Words

Measures depth of vocabulary by identifying words that are not among the 5,000 most common English words.

44%

rare words

Word Length

Measures average word length

5.7

characters per word

Sentence Length

Measures average sentence length

15.1

words per sentence