IJAMS
INTERNATIONAL JOURNAL OF ADVANCED MULTIDISCIPLINARY STUDIES
Volume V, Issue 12 December 2025, eISSN: 2799-0664

Utilizing Gamified Instruction in Elementary Learners

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Abstract — This study examined elementary science teachers' knowledge, application, and proficiency in the use of gamified instruction in the Tinoc District, Ifugao. The study was done in the identified elementary schools which fall under the Department of Education (DepEd) -Tinoc District of the province of Ifugao in the Philippines. The survey-descriptive method of research was used to evaluate the present phenomena underlying teachers' proficiency in utilizing gamified instruction, and its relationship of level of knowledge, level of application and level of proficiency of teachers in the implementation of gamified instruction in the elementary level of DepEd-Tinoc District for School Year 2023-2024. The respondents composed of 16 public elementary schools with a total combined number of elementary teachers of around 120 science teachers. The findings show that teachers have only moderate knowledge and application of gamification techniques such as rewards, competitions, storytelling, feedback mechanisms, and social interaction. There is not much use of the badges and leaderboards, while the use of storytelling and tracking feedback is evident. A strong correlation is shown between teachers' understanding of gamification and their efficacy in implementing these strategies. The findings finally support the possibility of gamified instruction as an educational revolution technique which proves worth exploring and using more in classrooms based on game-based learning.

Keywords — Gamified Instruction, Elementary, Teacher Proficiency

I. Introduction

Gamification has recently become an active concept in educational context, especially when teachers want to find new ways to engage students and improve educational performance. The basis of gamification is that learning would be effective and more meaningful when it is interesting and fun. By taking game elements into account in the instructional design (i.e., systems with points, leaderboard, challenges, interactive storytelling, etc.), educators are trying to create a more dynamic and activity based learning system which does not only focus on the direct acquisition of knowledge but also the intrinsic motivation.

Gamified strategies have demonstrated a promising prospect in the context of elementary science education. The given research focuses on the use of gamification in elementary science classrooms, as well as on its feasibility as an effective pedagogical tool. The idea is that with the integration of game mechanics into science classroom activities, the students should be activated in the learning process more than it can be done generally and due to the great ability to maintain the concentration on the learning process, better content retention, and the development of the

critical thinking should be achieved. Gui et al. (2023) also underline that the key role of gamification as an educational tool is not so much in the entertainment part of the game process, but in the purposeful organization of the game to promote the mastery of material and the formation of valuable educational experiences. When applied well, gamification has been linked to improved academic performance and revelation of a greater level of scientific knowledge, especially when it is more than just engaging and is concerned with the essence of the curriculum.

However, the procedure of implementing gamified instruction is not devoid of challenges as well. Among the barriers that Lester et al. (2023) report, there are time blockages, deficiency in resources, and doubts concerning the efficacy of game-based techniques. These issues are the main reason educators hesitate to work with digital tools, especially those who have never used or are not keen on using non-traditional instruction methods. Besides, not all teachers might know how to align the game mechanics with the learning activities in order to avoid expending too much of the academic integrity in the latter. Nonetheless, there is a persistent implication on the notion that gamification can be used to arouse the spirit of student cooperation, or to render them active learners, or to establish a classroom scenario that embraces exploration and discovery in the teaching of new or new concepts.

This study will give useful information about the practical and theoretical implications of gamification in elementary science classrooms. It tries to find out whether the deliberate application of game-based learning can lead not only to increased academic performance, but also increase engagement, teamwork, and interest in knowledge among young learners. This study can help shape the discussion of educational innovation in general and contribute to the creation of more interactive, student-centered strategies of teaching science.

Finally, the study aimed to assess the teachers' in utilizing gamified instruction in teaching science subjects at the elementary level in selected Elementary Schools in Tinoc District, School Year 2023-2024. Specifically,

1. What is the level of knowledge of teachers in the implementation of gamified instruction?
2. What is the level of application of teachers in the implementation of gamified instruction?
3. What is the level of proficiency of teachers in the implementation of gamified instruction?
4. Is there a correlation between the level of application and the level of knowledge?
5. Is there a correlation between the level of knowledge and the level of proficiency?

II. Methodology

Research Design

The survey-descriptive method of research was used to assess the present phenomena underlying teachers' proficiency in utilizing gamified instruction, and its relationship of level of knowledge, level of application and level of proficiency of teachers in the implementation of gamified instruction in the elementary level of DepEd-Tinoc District for School Year 2023-2024.

Population and Locale of the Study

The study was done in the identified elementary schools which fall under the Department of Education (DepEd) -Tinoc District of the province of Ifugao in the Philippines. The Tinoc District as it was at study period was composed of 16 public elementary schools with a total combined number of elementary teachers of around 120 science teachers, 9 Head Teachers, 6 School Principals, and one Public Schools District Supervisor.

The choice of location is Tinoc District because it has specific educational conditions, and the results of the research will be of practical value.

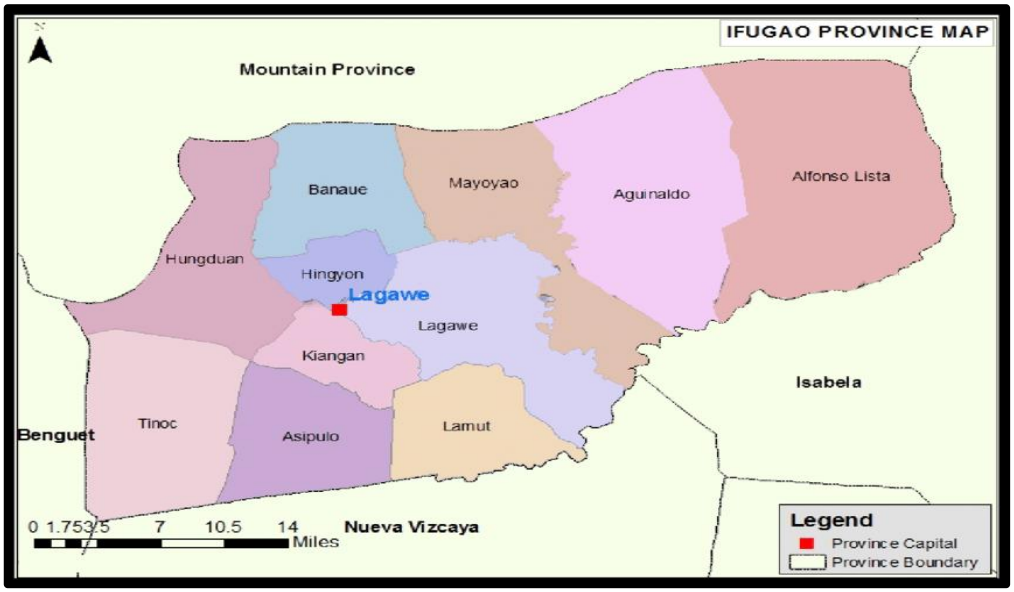

Figure 1. Ifugao Map

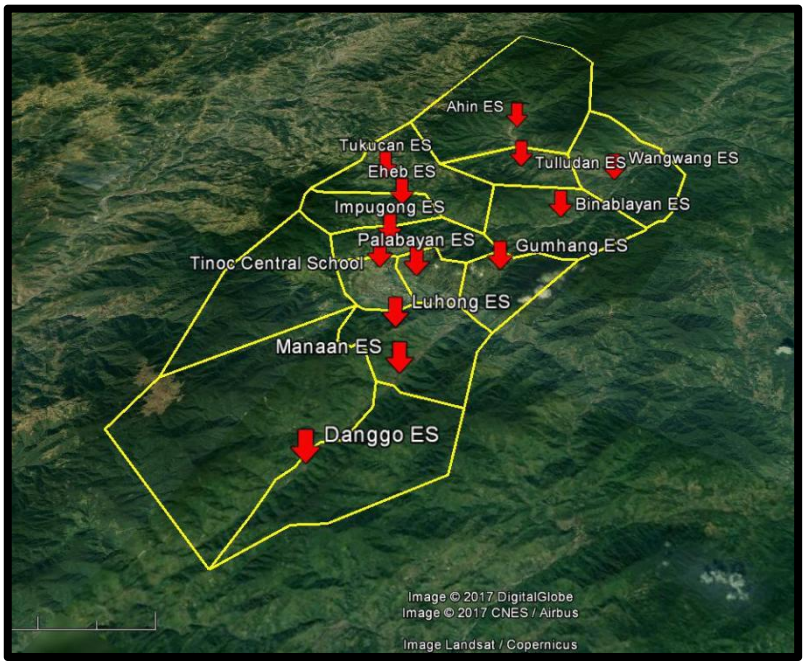

Figure 2. Location of elementary schools in Tinoc District

Data Collection Instruments

The researchers devised a systematic survey questionnaire that was designed to measure three prevailing constructs, including the degree of knowledge, the degree of application, as well as the degree of competence in the use of game-based strategies when it comes to teaching. To ascertain the reliability of the instrument, test-retest measure was administered in at least five elementary schools. The Pearson Product-Moment Correlation Coefficient was used to evaluate the reliability of the instrument throughout the period thus justifying its applicability in collecting the data in this study.

The questionnaire contained a set of descriptive questions under each construct and the items were ranked along a four-point scale with the following interpretations: a rating of (1) indicated no knowledge, not applied, or not proficient; (2) represented a performance level of 74% and below in knowledge, application, or proficiency; (3) denoted a range of 75% to 94%; and (4) signified a high level of knowledge, application, or proficiency, ranging from 95% to 100%.

Data Collection Procedure

The researchers administered and retrieved all the completed surveys on-site and highlighted aspects on confidentiality and anonymity of all responses. The final dataset could not contain names or other identifying information of the participants in order to uphold their privacy and integrity.

Treatment of Data

The descriptive statistical measures that were used to summarize the responses included the percentage, the mean, and the standard deviation to give a full picture of what percentage of the teachers were at what levels of knowledge, implementation, and competency in the gamified instructions. The T-test of the independent sample was applied to test significant differences between groups or demographic variables in the responses of the respondents. While, Pearson Product-Moment Correlation Coefficient was once more used to establish the nature and magnitude of the relationship between the use of the gamified instruction as applied by the teachers and academic performance of learners in science.

III. Results and Discussion

Table 1
Level of knowledge of teachers in the implementation of gamified instruction

GAMIFIED INSTRUCTION	W.M.	D.E.
1. Rewards and Recognition		
Badges and Achievements	2.77	MK
Points and Scoring Systems	3.07	MK
Avatars and Customization	2.50	SK
Overall Mean	2.78	MK
2. Competition and Progress		
Leaderboards	2.53	SK
Quests and Challenges	2.77	MK
Mini-Games	2.87	MK
Overall Mean	2.72	MK
3. Engagement through Storytelling		
Storytelling and Narratives	3.13	MK
Simulations and Virtual Environments	3.03	MK
Overall Mean	3.08	MK
4. Feedback and Progress Tracking		
Feedback Mechanisms	3.03	MK
5. Social Interaction and Collaboration		
Collaboration and Social Interaction	3.07	MK
Overall Mean	2.94	MK

Legend:

3.26 – 4.00	Highly Knowledgeable (HK)
2.51 – 3.25	Moderately Knowledgeable (MK)
1.76 – 2.50	Slightly Knowledgeable (SK)
1.00 – 1.75	No Knowledge (NK)

The level of knowledge in the implementation of gamified Instruction along with rewards and recognition, competition and progress, engagement through storytelling, feedback and progress tracking, and social interaction and collaboration generally the respondents perceived that they were Moderately Knowledgeable in the implementation of gamified instruction with an overall mean of 2.94. Engagement with storytelling as the highest with an overall mean of 3.08, while the least is competition and progress. This simply implies that the respondents' knowledge is moderately knowledgeable and this means that they are more knowledgeable in the engagement through storytelling, feedback and progress tracking and social interaction and collaboration.

Table 2
Level of application of teachers in the implementation of gamified instruction

GAMIFIED INSTRUCTION	W.M.	D.E.
1. Rewards and Recognition		
Badges and Achievements	2.50	SA
Points and Scoring Systems	2.73	MA
Avatars and Customization	2.20	SA
Overall Mean	2.48	SA
2. Competition and Progress		
Leaderboards	2.20	SA
Quests and Challenges	2.43	SA
Mini-Games	2.67	MA
Overall Mean	2.43	SA
3. Engagement through Storytelling		
Storytelling and Narratives	2.80	MA
Simulations and Virtual Environments	2.73	MA
Overall Mean	2.77	MA
4. Feedback and Progress Tracking		
Feedback Mechanisms	2.77	MA
5. Social Interaction and Collaboration		
Collaboration and Social Interaction	2.73	MA
Overall Mean	2.64	MA

Legend:

3.26 – 4.00	Highly Knowledgeable (HK)
2.51 – 3.25	Moderately Knowledgeable (MK)
1.76 – 2.50	Slightly Knowledgeable (SK)
1.00 – 1.75	No Knowledge (NK)

Table 2 presents the level of application of teachers in the implementation of gamified instruction. Generally, the respondents moderately applied the gamified instruction with an overall mean of 2.64. The area where the respondents with highest weighted mean of 2.80 is

storytelling and narratives while the least is Quests and Challenges with weoghted mean of 2.43.

This result aligns with the study of Rahmi et al., (2025) that emphasizes the importance of teachers' application of reward-based gamification techniques like points, levels, badges, achievements, and leaderboards. It aligns with the finding that rewards and recognition, as well as competition and progress, were slightly applied, indicating a potential gap in utilizing these specific gamification elements effectively.

Table 3
Level of proficiency of teachers in the implementation of gamified instruction

GAMIFIED INSTRUCTION	W.M.	D.E.
1. Rewards and Recognition		
Badges and Achievements	2.33	SP
Points and Scoring Systems	2.60	MP
Avatars and Customization	2.30	SP
Overall Mean	2.41	SP
2. Competition and Progress		
Leaderboards	2.23	SP
Quests and Challenges	2.30	SP
Mini-Games	2.73	MP
Overall Mean	2.42	SP
3. Engagement through Storytelling		
Storytelling and Narratives	2.67	MP
Simulations and Virtual Environments	2.63	MP
Overall Mean	2.65	MP
4. Feedback and Progress Tracking		
Feedback Mechanisms	2.73	MP
5. Social Interaction and Collaboration		
Collaboration and Social Interaction	2.63	MP
Overall Mean	2.57	MP

Legend:

3.26 – 4.00	Highly Knowledgeable (HK)
2.51 – 3.25	Moderately Knowledgeable (MK)
1.76 – 2.50	Slightly Knowledgeable (SK)
1.00 – 1.75	No Knowledge (NK)

Generally, the respondents are moderately proficient level in the implementation of gamified instructionin using the gamified instruction with an overall mean of 2.57. Feedback and progress tracking 2.73, having the highest weighted mean while under the competition and progress that leaderboards has the least weighted mean.

They found that respondents are moderately proficient in areas such as feedback and progress tracking, which are important aspects to good, gamified instruction. Additionally, the work of Ratinho and Martins (2023) shows that teachers highly proficient in gamification application enhanced student intrinsic motivation, satisfaction, effort, and achieved performance concurs with the fact that respondents were moderately proficient in the use of gamified teaching, above all regarding feedback mechanisms, competition and progress.

Table 4
Correlation between level of application and level of knowledge

	Level of Application	Level of Knowledge
Level of Application	1	
Level of Knowledge	0.98	1

Legend:

Scale of correlation coefficient	Value
$0 < r \leq 0.19$	Very low correlation
$0.2 \leq r \leq 0.39$	Low correlation
$0.4 \leq r \leq 0.59$	Moderate correlation
$0.6 \leq r \leq 0.79$	High correlation
$0.8 \leq r \leq 1.0$	Very high correlation

The strong positive relationship between application and knowledge level is defined by the value of the correlation coefficient of 0.98. The latter implies that the more teachers know and understand gamification elements in gamified instruction, the greater their ability to use the elements in gamified instruction will become, which is the case. Nevertheless, areas such as avatars and customization, leaderboards, challenges/ quests may need more application and knowledge levels.

The result with 0.98 correlation coefficient between teachers' knowledge and their usage of gamified instruction has a strong correlation with the results of a number of other similar studies. Caballero et al. (2022) shows a positive correlation between the expertise in gamified instruction of teachers and correct application of gamification techniques. In line with this, there is the idea that effective gamification elements come from increased teachers' knowledge on gamification elements which consequently results in increased application of gamification elements in teaching, thereby enhancing the rate of student engagement and academic achievement.

Ratinho and Martins, (2023), building upon this correlation, confirms beyond doubt that there is a strong relation between teachers' degrees of knowledge in gamified instruction and where they could apply gamification techniques to increase the motivation, satisfaction, effort,

and achievement of students. This means that with good knowledge of gamification strategies, teachers could also create better learning experiences involving students that would be keener and more willing to learn.

Table 5
Correlation between level of knowledge and level of proficiency

	Level of Knowledge	Level of Proficiency
Level of Application	1	
Level of Knowledge	0.98	1

Legend:

Scale of correlation coefficient	Value
$0 < r \leq 0.19$	Very low correlation
$0.2 \leq r \leq 0.39$	Low correlation
$0.4 \leq r \leq 0.59$	Moderate correlation
$0.6 \leq r \leq 0.79$	High correlation
$0.8 \leq r \leq 1.0$	Very high correlation

The correlation coefficient of 0.86 indicates a strong positive relationship between teachers' level of knowledge and proficiency across these indicators. However, it is evident that while teachers have a good understanding of gamification elements, there are areas where their ability to translate that knowledge into effective practice can be improved.

Caballero et al., (2022) study, which examined the relationship between the teachers' knowledge of gamified instruction and how effectively they can use gamification strategies. As for their study, they were able to find that teachers who were truly knowledgeable in gamified instruction were very skilled in boosting game elements into their teaching practices which produced more absorbing and also far better scholastic achievement.

Likewise, the meta-analysis conducted by Bai et al., (2020) also keeps in line with the correlation between teachers' knowledge of comprehensive gamification strategies and the competency in using these strategies. Through their analysis, they discovered that teachers with high knowledge levels were more skillful in developing and operating gamified activities to inspire student motivation, take part, and widespread success. This paper adds further emphasis on teachers' proficiency in gamified instruction under these varying conditions.

These findings also go well with longitudinally study by Ratinho and Martins (2023), which emphasizes a link between teachers' level of knowledge in gamified instruction and their capability of applying gamification techniques.

This also corroborates Rahmi et al., (2025) that teachers' knowledge should be aligned with their capacity of gamified instruction proficiency. When the teachers were proficient and knew gamification strategies, they were able to create enjoyable experiences that facilitate grounded learning, autonomy, competence, and relatedness amongst students.

Discussion Summary

1. The level of knowledge of teachers in the implementation of gamified instruction is moderately knowledgeable.
2. The level of application of teachers in the implementation of gamified instruction is moderately applied.
3. The level of proficiency of teachers in the implementation of gamified instruction moderately proficient.
4. The correlation between the level of application and the level of knowledge is exceedingly high.
5. The correlation between the level of knowledge and the level of proficiency is extremely high.

IV. Conclusion

The conclusions were established that the relationship of level of knowledge, level of application and level of proficiency of teachers in the implementation of gamified instruction;

1. Majority of the teachers have a basic knowledge of the concept of gamification, mechanics, and the potential that it has in the classroom, more professional development is still required. Their present educational status implies that they are not only knowledgeable about simple gamification features like points system, rewards, and interactive actions, but that they are unlikely to know more deep-seated and pedagogically integrated applications.
2. The degree of usage amongst teachers also came up as moderate. This indicated that educators actively strive to introduce gamified teaching to their daily classroom activities, yet they are not fully efficient and steady with the implementation at the moment. The moderate adoption indicates that gamification exists in the classroom activity but is not comprehensive in the use of lessons or results based on the objectives of learning as it could be.
3. Teachers also turned out to be at an intermediate level in terms of proficiency. It implies that their awareness of gamified instruction is satisfactory, and they can apply the most essential elements of this kind of fast learning methodology but there is still much to do as far as an increase in the quality, homogeneity, and novelty of its use are concerned.

4. There was a high correlation between the level of application and level of knowledge on a remarkably high scale. The finding means that educators with more extensive knowledge on gamified problem instruction are likely to implement it in their classrooms effectively. This relationship is strong, and this supports the applicability of constant upgrading of the professionals. It also highlights the premise that there is a direct connection to better teachers understanding the theoretical backgrounds of gamification and therefore the ability and desire to implement said knowledge in actual practice.
5. There was a remarkably high correlation between the level of knowledge of teachers and their level of proficiency. This strong association implies that the greater the knowledge system, the more likely the greater level of competence in the execution of gamified instruction will be obtained. The better informed a teacher is about game design knowledge, methodology of motivating learners, and incorporation into a curriculum, the more able and willing they are to apply the same strategy in a classroom situation.

V. Recommendations

1. As teachers' knowledge about gamification is moderate, it is suggested that they attend training sessions or workshops on innovative and advanced gamification practice, good practices in gamified instruction and most recent research findings related to gamified instruction.
2. To increase the scope of gamified instruction application, it is advisable to create a nurturing environment where there is freedom to experiment and innovate. Offer such resources including technology tools, templates and lesson plans which are specifically designed for gamification. Provide teachers with the opportunity to collaborate and share successes and lessons learned for the sharing of effective strategies and lessons learned.
3. Given the strong correlation between knowledge and application, prioritize initiatives that strengthen teachers' understanding of gamified instruction. Offer advanced training courses, webinars, and peer learning opportunities that delve deeper into gamification principles and practical implementation strategies.

REFERENCES

[1] Bai, S., Hew, K. F., & Huang, B. (2020). Does gamification improve student learning outcomes? Evidence from a meta-analysis and synthesis of qualitative data in educational contexts. Educational Research Review, 30, Article 100322. https://doi.org/10.1016/j.edurev.2020.100322
[2] Department of Education. (2010). National assessment and grading system frameworks (DepEd Order No. 71, s. 2010). https://www.deped.gov.ph/
[3] Department of Education. (2015). Policy guidelines on classroom assessment for the K to 12 Basic Education Program (DepEd Order No. 8, s. 2015). https://www.deped.gov.ph/wp-content/uploads/2015/04/DO-s2015-08
[4] Department of Education. (2016a). Department of Education People's Freedom of Information Manual and implementing details (DepEd Order No. 72, s. 2016). https://www.deped.gov.ph/2016/11/25/do-72-s2016
[5] Department of Education. (2016b). K to 12 curriculum guide. https://www.deped.gov.ph/wp-content/uploads/issuanceImg/K12new
[6] Department of Education. (2019). National assessment and grading system frameworks (DepEd Memorandum No. 175, s. 2019). https://www.deped.gov.ph/
[7] Dichev, C., Dicheva, D., & Irwin, K. (2020). Gamifying learning for learners. International Journal of Educational Technology in Higher Education, 17(1), Article 54. https://doi.org/10.1186/s41239-020-00231-0
[8] Duterte, J. (2024). The impact of educational gamification on student learning outcomes. International Journal of Research and Innovation in Social Science, 8(10), 477–487. https://doi.org/10.47772/IJRISS.2024.8100040
[9] Ede, S. (2022). Gamification and motivation. Issues and Trends in Learning Technologies, 10(1). https://doi.org/10.2458/itlt.4872
[10] Rahmi, I., Rimenda, T., & Ariyanti, T. D. (2025). Gamification as an alternative to increase students' motivation: A scoping review. Journal of Education and Learning (EduLearn), 19(2), 1125–1133. https://doi.org/10.11591/edulearn.v19i2.21771
[11] Ratinho, E., & Martins, C. (2023). The role of gamified learning strategies in student's motivation in high school and higher education: A systematic review. Heliyon, 9(9), Article e19033. https://doi.org/10.1016/j.heliyon.2023.e19033
[12] Smiderle, R., Rigo, S. J., Marques, L. B., et al. (2020). The impact of gamification on students' learning, engagement, and behavior is based on their personality traits. Smart Learning Environments, 7, Article 3. https://doi.org/10.1186/s40561-019-0098-x