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Research Article

Game-Based Learning and Academic Performance Among Pupils

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ABSTRACT

Existing learning gaps in schools have drawn considerable attention from teachers in public schools in the Philippines. Due to this, teachers employed various teaching approaches to address the pupils' dismal performance. It is therefore the intention of this work to investigate the utilization of a game-based approach in teaching English and its relationship to the academic performance of learners. Following the observance of research protocols, 45 Key Stage 2 teachers voluntarily participated as respondents in the study. A quantitative descriptive research design was employed in this inquiry. A survey questionnaire supplemented with a casual interview was used to gather the required data from the respondents. Appropriate statistical tools were used to produce reliable results. The analysis revealed that the majority of respondents were young adults in the mid-career stage of their teaching profession and had already earned units in a master's degree program. Large school sizes and at least six (6) trainings attended have the highest counts in their respective groups. The respondents similarly perceived all the indicators to a high extent, producing an overall impression that they always utilized a game-based approach in teaching English among their pupils. At the time the respondents claimed to have always used a game-based approach, the pupils achieved a "Very Satisfactory" performance level. However, the extent of utilization of the game-based approach did not affect or contribute to the academic performance of the pupils. There may be a tendency for academic performance to decline as the utilization of the game-based approach decreases. Finally, the respondents similarly perceived the indicators of the game-based approach in teaching English to a high extent, as they did not significantly differ when grouped by age, number of years in teaching, highest educational attainment, school size, and training attended. Based on these findings, the researcher recommended that a quasi-experiment be conducted to determine whether a game-based approach influences the academic performance of the pupils.

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Keywords: *Academic Performance, Game-based Approach, Utilization*

Background of the Study

Reading serves as the fundamental gateway to academic success, yet a significant portion of Filipino learners continue to struggle with literacy, creating a persistent barrier to further learning. According to Idulog et al. (2023), mastery of reading is not merely an academic asset but a psychological one, as it bolsters a student's self-concept through a sense of achievement. Nurmalasari and Haryudin (2021) emphasized that the true value of reading is realized only through comprehension. Accordingly, the act of reading without understanding is absolutely futile. Reading comprehension is a multidimensional process that requires the synergy of cognitive and linguistic skills. Banditvilai (2020) suggested that comprehension needs a robust vocabulary for decoding and making sense of complex texts.

The results of the 2022 Programme for International Student Assessment (PISA) showed that Filipino students consistently scored below the minimum proficiency levels in reading. This lingering underperformance since 2018 highlights a widening gap in critical thinking and communication skills compared to global cohorts. Tabora (2024) confirmed that the performance of the Filipino learners reaches "learning poverty" in the rural divisions across the country. Accordingly, this is often rooted in a lack of specialized vocabulary instruction during the transition from mother tongue to English-medium subjects. This suggests that current intervention strategies must effectively address the root cause of reading deficits among school learners.

Ong et al. (2021) underscored that a significant number of young learners remain in the frustration level or non-reader category due to inadequate word knowledge. The study of Dela Cruz and Santos (2023) found that traditional rote memorization did not bridge the vocabulary gap, opening a high stake of disengagement among Grade 4 pupils. To address this, Justo et al. (2022) and Villanueva (2024) suggested adopting a game-based learning (GBL) approach. This interactive method fosters a low-stress learning environment and encourages repeated, meaningful encounters with new words, which is essential for the long-term retention necessary for reading success.

Improving reading and comprehension performance among learners is a direct contribution to the United Nations Sustainable Development Goal 4 (Quality Education). This is a commitment of the Philippines to ensure inclusive, accessible, and equitable learning for all. Opening an avenue for vocabulary exposure is a lifelong necessity that helps learners to navigate complex information across all learning areas.

The present study aims to investigate the effect of game-based learning on the vocabulary capacity of Grade 4 learners in a district within DepEd-Bukidnon. This work is a strategic response to the district's low literacy scores and offers school officials and policy makers evidence-based insights to implement interventions with a profound and lasting academic impact.

Methods

This study aimed to evaluate the utilization of game-based learning (GBL) in improving the vocabulary skills of Grade 4 pupils. This inquiry employed a descriptive-survey research design with the use of the questionnaire as the main data gathering tool supplemented with a casual interview. The Input-Process-Output (IPO) model was used to isolate specific demographic and pedagogical factors to produce data-driven insights for instructional improvement (Balanquit et al., 2023)

This study was conducted in the Don Carlos and Kibawe districts of the DepEd-Bukidnon Division in Northern Mindanao, Philippines. The districts are situated in a landscape with people of different cultures and origins. The sizes of the schools vary from small to medium to large elementary schools. Besides the proximity of the researcher to the places, there are strong ties and active support of the local government units. According to Sarmiento (2023), the critical role of the communities dictates the professional development and instructional interventions.

English teachers from Key Stage 2 (Grades 4 to 6) with at least one full year of teaching

experience were used as respondents to ensure data reliability. With a total of 50 English teachers from Key Stage 2, the Rao soft sample size calculator gave 45 target respondents. The proportionate random sampling technique was applied in determining the number of respondents per school in Don Carlos and Kibawe districts. Pacturan (2024) suggested a balanced representation of respondents among schools due to their various sizes.

This work utilized a researcher-made and validated survey questionnaire divided into two parts: a) the demographic profile of the respondents with the average ratings of their learners, and b) the perceptions on GBL. A 4-point Likert scale was used to measure the extent of game-based learning utilization. The indicators of the latent variable were validated by five experts and a psychometrician from Bukidnon. The instrument was pilot tested in two schools of DepEd-Bukidnon. The analysis of the responses yielded a Cronbach's alpha value of 0.81, considered good or highly reliable.

Data collection was conducted with observance of the research protocols implemented by DepEd-Bukidnon. It started with the seeking of the approval of the Schools Division Superintendent, down to the school heads. After this, the researcher sought the consent of the target respondents with the assistance of the school head. Copies of the survey questionnaires were personally distributed and retrieved after two weeks to give more time for the respondents to answer the instrument. Then, the responses were transferred to Excel and thoroughly examined for possible encoding errors.

The data were analyzed using Jamovi, a free statistical software. Observance of the assumptions required in every statistical tool was maintained to produce reliable results. Hence, appropriate descriptive and inferential statistics were utilized in the analysis of data.

To interpret the responses of the construct or indicators, a scoring guide was used as shown in Table 1.

Table 1. Guide on Scoring the Extent of Utilization of Game-Based Learning

Arbitrary Value	Statistical Limits	Descriptive Equivalent	Interpretation
4	3.26 - 4.00	High Extent	Game-based learning is constantly utilized.
3	2.51 - 3.25	Moderate Extent	Game-based learning is sometimes utilized.
2	1.76 - 2.50	Less Extent	Game-based learning is rarely utilized.
1	1.00 - 1.75	No Extent	Game-based learning is never utilized.

Similarly, the appreciation of the ratings of the pupils followed the provision of DepEd Order No. 8, series 2015, known as Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program in the Philippines. This is contained in Table 2.

Table 2. Academic Performance of the Pupils

Grading Scale	Qualitative Description
90 to 100	Outstanding
85 to 89	Very Satisfactory
80 to 84	Satisfactory
75 to 79	Fairly Satisfactory

The study followed all the research protocols and ethical standards. It further adhered to the Data Privacy Act of 2012 (RA 10173) to protect respondent confidentiality and maintain professional standards. All gathered data were strictly used for this inquiry.

Results and Discussions

The analysis and interpretation of the gathered data are presented to provide an answer to the inquiry.

Demographic Profile of the Respondents

As shown in Table 3, there were five (5) explanatory variables included in the inquiry. Forty-five (45) English teachers from Key Stage 2 cooperated in the study about the utilization of GBL.

Table 3. Demographic Profile of the Respondents of the Study

Variables		Counts	Percentage (%)
Age (in years)			
40 – 64		20	44.44
25 – 39		25	55.56
	Total	**45**	**100.00**
Number of Years in Teaching			
21 and above		8	17.78
11 to 20		27	60.00
6 to 10		10	22.22
	Total	**45**	**100.00**
School Size			
Large		19	42.22
Medium		10	22.22
Small		16	35.56
	Total	**45**	**100.00**
Highest Educational Attainment			
MA Degree Holder		14	31.11
With MA Units		23	51.11
College Graduate		8	17.78
	Total	**45**	**100.00**
Number of Trainings Attended			
0 to 2		15	33.33
3 to 5		9	20.00
6 and above		21	46.67
	Total	**45**	**100.00**

It can be gleaned that 25 (55.56%) of respondents were categorized as young adults (25-39 years old) and 20 (44.44%) as middle-aged adults (40–64 years old). This mirrors the national trend reported in the DepEd Teacher Statistics (2023). In the context of this work, the age distribution shows that the respondents belong to the Millennial and Gen Z cohorts. Francisco (2020) noted that this age distribution is suitable for GBL utilization. This age group is expected to possess higher digital self-efficacy.

Aligning with the age distribution, 27 (60%) of the respondents have served for 11 to 20 years. This indicates a cohort of highly stable and seasoned teachers. This length of service suggests that most of the respondents have experienced several changes in the school curriculum. Mohd Ismail et al. (2018) theorized that mid-career teachers serve as pedagogical mentors of a district. However, only 8 (17.78%) of respondents reached more than 21 years of service. This suggests a potential gap in veteran mentorship or high turnover in late-career stages within these specific districts.

In school size, 19 (42.22%) of the respondents come from large elementary schools, followed by 16 (35.56%) from small elementary schools. Only 10 (22.22%) are stationed in medium elementary schools. The distribution of school size follows the geographical reality of Bukidnon. The large schools are the central schools that cater to areas of high-density populations, while the small schools are situated in far-flung communities. Yang and Seyed (2024) observed in their work that large school sizes are placed in high-growth areas, and Pacturan (2024) noted that school size in Northern Mindanao is a parameter of resource allocation for literacy programs.

Professional growth has been a priority among the respondents, where 14 (31.11%) of them completed a master's degree, and 23 (51.11%) are currently earning units in a master's degree. Only 8 (17.78%) remained static in pursuit of professional advancement. This trend suggests that most of the respondents are into improving their teaching methodology. Martinez (2023) found that Filipino teachers are increasingly viewing graduate studies as an avenue to instructional innovation.

With a majority of respondents serving for 11 to 20 years, 21 (46.67%) of them attended at least 6 trainings. While 9 (20%) participated in 3 to 5 trainings, 15 (33.33%) of the respondents have not attended any training. According to Nunez and Rosales (2021), this disparity is strongly influenced or caused by budget limitations. Besides, training opportunities were awarded to more tenured staff, potentially setting aside neophyte teachers a slim opportunity to master modern strategies like GBL.

Extent of Utilization of Game-Based Learning Among Teachers

As shown in Table 4, the respondents had a "High Extent" on the utilization of GBL as evidenced by an overall mean of 3.53, indicating their constant implementation of the intervention in the classroom. Besides, the standard deviation ($SD = 0.52$) supported a consensus of the perceived utilization of GBL. This highlights the idea that the respondents have moved beyond the traditional approach in teaching and are now embracing a more dynamic and student-centered pedagogy. In the overall perspective, this finding is supported in the study of Remo and Velasco (2022), who found that consistent implementation of GBL is a significant predictor of learners' academic performance.

Table 4. Extent of the Utilization of Game-Based Learning Among Teachers ($n = 45$)

Indicators	Mean	Qualitative Description
Encourage pupils' participation and engagement.	3.82	High Extent
Integrate available technology to support game-based learning and enhance student engagement.	3.78	High Extent
Encourage collaboration and teamwork among students through game-based learning activities, promoting social learning and communication skills.	3.69	High Extent
Observe students' engagement and motivation when game-based learning is employed, resulting in improved learning outcomes.	3.58	High Extent
Incorporate games into the lesson plans to teach specific English language skills, such as vocabulary, grammar, or reading comprehension.	3.56	High Extent
Implement game-based activities, such as quizzes, challenges, or competitions, to reinforce English language skills and enhance learning.	3.56	High Extent
Evaluate the effect of game-based learning on pupils' learning outcomes.	3.51	High Extent
Use educational games, such as board games, and other available games to promote learning.	3.47	High Extent
Reflect on the effectiveness of game-based learning in teaching reading.	3.47	High Extent
Use game-based learning to personalize instruction and differentiate learning experiences for students with varying learning styles and abilities.	3.36	High Extent

Indicators	Mean	Qualitative Description
Design game-based learning activities that promote creativity and critical thinking, such as problem-solving or role-playing games, to enhance student engagement and motivation.	3.33	High Extent
Utilize game-based learning to provide immediate feedback and assessment to improve learners' performance.	3.27	High Extent
Overall Mean	**3.53**	**High Extent**
Standard Deviation	**0.52**	

The respondents considered pupils' participation and engagement ($M = 3.82$) as the most important factor in the utilization of GBL. This is necessary in capturing pupils' attention. As revealed in the casual interviews, the respondents believed that learning can never happen without full student engagement. While the second indicator on the integration of available technology ($M = 3.78$) follows closely despite the logistical challenges of rural schools. According to the respondents, GBL does not require high-end gadgets to use. Dela Cruz (2023) observed that unplugged gamification, like using board games or physical challenges as often more sustainable than a purely digital approach.

Furthermore, the respondents perceived collaboration and teamwork ($M = 3.69$) with high extent. For having constantly utilized GBL, the respondents believed that this can be a vehicle of social learning, allowing students to learn from their peers with fun. However, the indicators for providing immediate feedback ($M = 3.27$) and designing for critical thinking ($M = 3.33$) suggest that GBL was not utilized for formal assessment or for higher-order cognitive tasks. According to Villanueva (2024), games are often viewed as "engagement hooks" rather than comprehensive frameworks for critical analysis or personalized instruction. In simpler words, GBL is just a simple intervention to motivate learners to actively engage in classroom activities with fun.

Finally, the high extent of GBL utilization among the respondents indicates the shift of instructional paradigm, thereby addressing the literacy challenges existing in the schools. By increasing the vocabulary of the learners through the use of GBL, there is a high likelihood that reading comprehension of the learners may significantly increase and be translated into academic performance and test scores in the upcoming national and local assessments.

Academic Performance of the Pupils in English

With respect to the assumptions of using a measure of centeredness, Shapiro Wilk test of the Jamovi software showed no normal distribution of the learners' average ratings ($p < .01$). As shown in Table 5, the median ($Mdn = 88$) falls under the "Very Satisfactory" performance level, indicating that half of the learners' average ratings are below or equal to it. While the standard deviation ($SD = 3.00$) underscores that the other half of the average ratings are distributed between 88 and 100, or it simply suggests that some of the learners have very high ratings. Overall, the performance of the learners is impressive since none of them got below the very satisfactory performance level.

Table 5. The Academic Performance of the Pupils in English in the Fourth Quarter of School Year 2024-2025

Grading Scale	Counts	Percentage	Descriptor
90 - 100	13	28.89	Outstanding
85 - 89	32	71.11	Very Satisfactory
Median = 88; SD = 3.00			

It can also be seen that the majority of the average ratings (71.11%) are within the 85-89 range, while the rest (28.89%) are within the 90-100 range. Again, this gives an idea that some of the learners got very high ratings. The distribution of the average ratings of the learners suggests that the instructional environment in the locale of the study was effective in supporting student literacy. This is supported in the work of Obenza-Tanudtanud and Obenza (2024), who claimed that a game-based approach is instrumental in improving student performance from just obtaining the passing level to a higher level of academic achievement. According to the respondents, GBL is an interactive pedagogy that reduces anxiety and promotes better retention of complex English vocabulary.

Since no average ratings fall below the very satisfactory performance level, there is a likelihood that the performance of the learners is influenced by other factors, like the effectiveness of the remediation and intervention programs implemented alongside the GBL. Lumapas (2024) confirmed that fourth-quarter ratings in Philippine public schools often reflect the cumulative impact of the year-long interventions. This can be reflected in nearly 30 percent of the average ratings distributed between 90 and 100, the outstanding performance range.

Relationship Between Game-Based Learning Utilization and Academic Performance

Using the same statistical software, the distribution of the summation of the responses and the average ratings of the respondents' learners were found not normal, with p-values less than 0.01. For this violation, Spearman's rank correlation coefficient (r_s) an appropriate tool was used to analyze the association of the two variables, as shown below.

Table 6. Relationship Between the Perceived Utilization of Game-Based Learning and Academic Performance in English

Variables	r_s	df	p-value	Decision
Utilization of Game-Based Learning vs Academic Performance	-0.11	43	.474	Failed to Reject H_o

Table 6 reveals that there was a negative and non-significant relationship between the perceived utilization of GBL and the ratings of the learners ($r_s(43) = -0.11, p = .474$). Consequently, this study failed to reject the null hypothesis at 0.05 significance level. Based on the standard scales for correlation strength, a value of 0.11 indicates a negligible or very weak relationship. While the negative sign suggests an inverse direction. In this work, if GBL utilization is increased, the ratings would tend to decrease. With this, it simply implies that there are remediation and intervention programs that may have influenced the academic performance of the learners. Dela Cruz (2023) clarified that the perceived utilization of GBL or in any teaching approach focuses on the frequency of the activity (fund and participating) rather than using it as a scaffolding and assessment. This relates to Table 4, where immediate feedback and critical thinking ranked at the bottom of the constructs.

Moreover, the coefficient of determination ($r^2 = 0.0121$) further clarifies that the perceived utilization of GBL explains a mere 1.21 percent of the variation in academic performance. Meaning, 98.79 percent come from other factors not accounted for, or can be attributed to programs already implemented in the school. The current finding contradicts the study of Adipat et al. (2021), arguing that the motivational advantages of utilizing GBL generally outweigh the ensuing disadvantages. Tabora (2024) explained that the implementation of GBL made the pupils highly motivated and active during play. However, the cognitive transition from the mechanics to the actual mastery of vocabulary fails to occur effectively. This is called the engagement-achievement gap.

Differences in the Utilization of Game-Based Learning by Demographic Variables

Before the inferential analysis, the summations of the responses of every indicator on GBL utilization were used to answer the inquiry. The distribution of the summations in the subgroups of every explanatory variable was tested using Shapiro Wilk test of the same statistical software. Results showed no normal distribution with p-values less than 0.01. For the violation of normality, the Kruskal-Wallis test, a non-parametric alternative to analysis of variance (ANOVA), was used to determine significant differences in the extent of GBL utilization among respondents grouped by explanatory variable.

Table 8. Significant Difference in the Extent of the Utilization of Learning Activity Sheets in Teaching English When Grouped According to the Variable

Variables	H	df	p	Decision
Age	0.009	1	.923	Failed to Reject H_o
Number of Years in Teaching	0.255	2	.880	Failed to Reject H_o
Highest Educational Attainment	0.357	2	.837	Failed to Reject H_o
School Size	3.070	2	.215	Failed to Reject H_o
Trainings Attended	2.640	2	.267	Failed to Reject H_o

Table 8 indicates that there was no significant difference in the extent of GBL utilization across all tested variables when grouped according to age ($H(1) = 0.009, p = .923$), teaching experience ($H(2) = 0.255, p = .880$), educational attainment ($H(2) = 0.357, p = .837$), school size ($H(2) = 3.070, p = .215$) and training ($H(2) = 2.640, p = .267$), where all exceeded the 0.05 threshold of significance level. This implies the failure to reject the null hypothesis. These findings align with the consensus of the respondents presented in Table 4, the extent of perceived GBL utilization. Hence, the perception of the respondents did not vary regardless of age, length of service as a teacher, educational attainment, school size, and training attended.

These findings contradict existing educational studies. Ahmad and Hehman (2022) and Camino (2021) theorized that the age and teaching experience potentially dictate instructional management styles. Similarly, Shireen et al. (2020) posited that teachers in smaller schools provide more personalized, strategy-heavy instruction compared to large schools. Likewise, Willian et al. (2025) and Lara et al. (2025) hypothesized that training frequencies help the adoption of a pedagogical approach. However, Martinez (2023) noted that individual differences in teacher profiles do not matter if there is a passion to help learners improve their academic performance in the school. Finally, Balanquit et al. (2023) confirmed that, when learning gaps or challenges occurred in a school division or district, teachers often adopt a collective resilience approach to address the problem, just like the utilization of GBL. Hence, teacher profiles no longer matter.

Conclusion

This study concluded that the respondents, the English teachers of Key Stage 2 in Don Carlos and Kibawi districts, have engaged in a collective effort to address the existing literacy problem. This is evidenced by the non-significant difference in the utilization of GBL when grouped by age, length of service, educational attainment, school size, and training attended. However, the perceived utilization of GBL at high extent does not manifest influence on the academic performance of the learners. With this, all the opportunities given to the learners through GBL do not translate into academic performance. There is a need to utilize GBL as a rigorous framework for assessment or critical thinking. Despite the professional advancement of the respondents, the application of GBL remains focused on social interaction and play rather than the direct mastery of vocabulary competencies. Finally, the frequency of game utilization cannot be sufficiently enough to address the literacy problem without aligning it to the cognitive demands required in the school curriculum.

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