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Effectiveness of Game-Based Learning Quizzes in Enhancing the Academic Performance of Araling Panlipunan 8 Learners

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Abstract. Araling Panlipunan 8 requires learners to understand interconnected historical and sociopolitical concepts; however, lecture-centered instruction may provide limited opportunities for active retrieval, immediate feedback, and repeated practice. This study examined the effectiveness of Game-Based Learning Quizzes (GBLQs) in improving the formative assessment, posttest, and gain-score performance of Grade 8 learners compared with conventional lecture-discussion instruction. It employed a quantitative quasi-experimental pretest-posttest non-equivalent group design involving 74 learners from two intact sections of San Jose Integrated High School, San Pablo City, Laguna, during School Year 2025-2026. The experimental group (n = 37) received curriculum-aligned GBLQs through Kahoot!, Wayground, Wordwall, and researcher-made quiz games, while the comparison group (n = 37) received conventional lecture-discussion instruction. Data were analyzed using descriptive statistics, independent-samples and paired-samples t-tests, and Cohen's d. Both groups had identical pretest means (M = 8.76, SD = 3.91), indicating comparable measured baseline performance. The experimental group obtained significantly higher total formative assessment scores (M = 66.13, SD = 4.70) than the comparison group (M = 57.03, SD = 7.22), $t(72) = 6.425$, $p < .01$, $d = 1.49$. It also achieved significantly higher posttest scores (M = 17.73, SD = 2.10) than the comparison group (M = 13.46, SD = 2.85), $t(72) = 7.340$, $p < .01$, $d = 1.71$. Although both groups improved significantly, the experimental group attained a significantly greater mean gain (M = 8.97, SD = 4.82) than the comparison group (M = 4.70, SD = 5.06), $t(72) = 3.72$, $p < .001$, $d = 0.86$. These findings demonstrate that curriculum-aligned GBLQs produced a statistically significant and educationally meaningful advantage in the measured academic performance of Grade 8 learners in Araling Panlipunan. Therefore, GBLQs may serve as structured formative assessment, review, and concept-reinforcement tools when quiz items align with curriculum competencies and are followed by explanatory feedback and teacher-guided discussion.

Keywords: *academic performance; Araling Panlipunan; formative assessment; game-based learning; game-based quizzes*

Introduction

Quality education remains a central pillar of sustainable development. Sustainable Development Goal 4 emphasizes ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. In contemporary education systems, this goal requires schools to provide learning experiences that develop not only content mastery but also higher-order thinking, collaboration, creativity, communication, and problem-solving skills. As classrooms respond to technological advancement and changing learner profiles, traditional lecture-based instruction is increasingly challenged to meet the needs of students accustomed to interactive, digital, and feedback-rich learning environments.

In recent years, Game-Based Learning (GBL) has gained attention as an innovative instructional strategy that integrates educational content with game elements such as challenge, competition, rewards, progression, and immediate feedback. Unlike passive learning approaches, GBL encourages learners to actively participate by solving problems, making decisions, collaborating with peers, and receiving timely feedback. Research shows that game-based and gamified learning environments can enhance motivation, engagement, participation, and academic achievement when carefully aligned with instructional objectives and learning competencies.

In the Philippine context, educational reforms such as the MATATAG Curriculum and the Philippine Development Plan 2023–2028 highlight the importance of improving instructional quality, strengthening learner competencies, and integrating technology-supported teaching strategies. These reforms encourage teachers to adopt learner-centered approaches that promote meaningful learning, active participation, and mastery of essential competencies. In line with these priorities, integrating Game-Based Learning Quizzes (GBLQs) offers a promising strategy for improving classroom instruction, particularly in content-heavy subjects.

Araling Panlipunan plays a vital role in developing historically aware, socially responsible, culturally grounded, and civically competent Filipino learners. The subject aims to cultivate critical thinking, nationalism, civic participation, and appreciation of history, geography, culture, economics, and governance. However, many learners see Araling Panlipunan as a memorization-based subject because it emphasizes historical facts, dates, personalities, places, and concepts. This perception may limit students' interest, participation, and deeper understanding of socio-historical issues. Consequently, instructional approaches are needed to make Araling Panlipunan more interactive, analytical, relevant, and meaningful to learners.

At the classroom level, these challenges are particularly evident in Grade 8 Araling Panlipunan, where learners encounter complex topics such as the Enlightenment, revolutions, nationalism, imperialism, colonial responses, and socio-political transformations. These topics require learners to analyze cause-and-effect relationships, compare historical experiences, interpret social changes, and connect past events to present realities. When taught mainly through lecture and memorization, students may struggle to develop meaningful understanding and sustained engagement. Thus, teachers need instructional strategies that can support active recall, formative feedback, conceptual reinforcement, and higher-order thinking.

Game-Based Learning Quizzes are one such strategy. GBLQs refer to quiz-driven game activities that use interactive platforms or game mechanics to assess and strengthen learners' understanding of lesson content. These may include digital tools such as Kahoot!, Wordwall, Wayground, Gimkit, ClassPoint, and similar platforms, or teacher-designed quiz games that incorporate points, timers, rewards, instant feedback, and healthy competition. In Araling Panlipunan instruction, GBLQs may help learners recall important facts, analyze historical relationships, compare concepts, and correct misconceptions through immediate feedback and repeated practice.

Although existing studies show the positive effects of GBL on student motivation and academic performance, more context-specific evidence is needed on its effectiveness in Philippine public school classrooms, particularly in Araling Panlipunan. Many studies on GBL have focused on other subject areas or technology-rich settings, while fewer have examined curriculum-aligned, quiz-based game strategies in junior high school Araling Panlipunan. This gap is significant because Araling Panlipunan requires both factual mastery and analytical understanding of historical, civic, cultural, and social concepts.

This study addressed this gap by examining the effectiveness of Game-Based Learning Quizzes in improving the academic performance of Grade 8 learners in Araling Panlipunan during School Year 2025–2026. Specifically, the study compared the formative assessment performance, posttest achievement, and learning gains of students exposed to GBLQs with those taught using conventional instructional strategies. By generating local empirical evidence, this study aimed to provide insights for Araling Panlipunan teachers, school administrators, curriculum planners, and future researchers on how game-based assessment strategies may enhance instruction, engagement, and academic performance.

Ultimately, this study contributes to the broader effort of making Araling Panlipunan instruction more meaningful, interactive, and learner-centered. It positions GBLQs not merely as classroom games but as purposeful instructional and formative assessment tools that can support mastery of competencies, improve learner participation, and strengthen students' understanding of historical and civic concepts.

Theoretical Framework

This study was anchored on three interrelated theoretical perspectives: Game-Based Learning Theory, Self-Determination Theory, and Constructivist Learning Theory. These theories provided the foundation for understanding how Game-Based Learning Quizzes may influence students' motivation, engagement, and academic performance in Araling Panlipunan.

Game-Based Learning served as the study's primary instructional framework. GBL emphasizes integrating game elements into learning activities to create engaging, interactive, and goal-oriented educational experiences. These elements may include challenges, points, levels, leaderboards, rewards, immediate feedback, and progression. In this study, GBLQs were used as structured, quiz-based activities designed to reinforce Araling Panlipunan concepts and assess learners' understanding in an interactive way. Through these quizzes, students were encouraged to recall information, analyze concepts, respond to questions, and improve their performance through feedback.

In Araling Panlipunan, GBL is particularly relevant because the subject requires learners to understand complex historical and social processes. Topics such as nationalism, revolution, imperialism, governance, and civic responsibility require both factual knowledge and analytical thinking. By transforming formative assessments into interactive, game-based activities, GBLQs may help learners engage more deeply with content, improve retention, and build confidence in answering questions about historical and civic concepts.

The study's motivational aspect was supported by Ryan and Deci's Self-Determination Theory. This theory explains that learners become more motivated when their needs for autonomy, competence, and relatedness are satisfied. Game-Based Learning Quizzes promote autonomy by allowing learners to participate actively and make decisions during quiz activities. They promote competence by providing immediate feedback, scores, and opportunities for improvement. They also promote relatedness by encouraging interaction, collaboration, and healthy competition among classmates. These motivational conditions matter in Araling Panlipunan classrooms, where learners are more likely to participate when activities are interactive, challenging, and socially engaging.

The study was also grounded in Constructivist Learning Theory, which views learners as active constructors of knowledge. From a constructivist perspective, learning occurs when students connect new information with prior knowledge, test their understanding, receive feedback, and reconstruct misconceptions. In this study, GBLQs served as formative learning experiences that allowed students to check what they knew, identify errors, and refine their understanding of Araling Panlipunan concepts. The interactive nature of game-based quizzes supported active learning because students were not merely receiving information but were continuously responding, reflecting, and improving.

Vygotsky's concept of the Zone of Proximal Development is also relevant to using GBLQs. When quiz questions are arranged from simple recall to higher-order analysis, learners are scaffolded toward deeper understanding. For instance, students may first identify historical events, then explain causes and effects, and later analyze the relationship between imperialism, nationalism, and civic identity. Through feedback and teacher facilitation, GBLQs can help learners progress from basic knowledge to more advanced levels of understanding.

Taken together, these three theories explain how Game-Based Learning Quizzes may enhance academic performance in Araling Panlipunan. Game-Based Learning provides the instructional structure, Self-Determination Theory explains the motivational process, and Constructivist Learning Theory explains how learners actively build understanding through feedback, practice, and reflection. These frameworks support the assumption that GBLQs can improve learners' formative performance, posttest achievement, and learning gains when properly aligned with Araling Panlipunan competencies.

Based on the foregoing theories, the study assumed that the use of Game-Based Learning Quizzes could influence learners' academic performance in Araling Panlipunan. The intervention provided interactive formative assessment experiences characterized by immediate feedback, challenge, participation, and repeated practice. These features were expected to improve learners' formative assessment performance, posttest achievement, and learning gains. Thus, the study compared the academic performance of learners exposed to GBLQs with that of learners taught using conventional instructional strategies.

Statement of the Problem

This study aimed to determine the effectiveness of Game-Based Learning Quizzes in improving the academic performance of Grade 8 learners in Araling Panlipunan during School Year 2025–2026.

Specifically, it sought to answer the following questions:

1. What are the pretest, formative assessment, and posttest results of the experimental and comparison groups?
2. Is there a significant difference between the mean formative assessment scores of the experimental group and the comparison group?
3. Is there a significant difference between the mean posttest scores of the experimental group and the comparison group?
4. Is there a significant difference between the mean gain scores of the experimental group and the comparison group from pretest to posttest?

Hypotheses of the Study

The following null hypotheses were tested at the 0.05 level of significance:

Ho_1: There is no significant difference between the mean formative assessment scores of the experimental group and the comparison group.

Ho_2: There is no significant difference between the mean posttest scores of the experimental group and the comparison group.

Ho_3: There is no significant difference between the mean gain scores of the experimental group and the comparison group from pretest to posttest.

Literature Review

Game-Based Learning (GBL) is an instructional approach that integrates educational content with meaningful game structures to create active, interactive, and goal-oriented learning experiences. Unlike conventional teacher-centered instruction, GBL allows learners to participate in activities involving decision-making, problem-solving, collaboration, repeated practice, and feedback processing. Foundational literature explains that game-based environments are most effective when game mechanics are intentionally connected to learning objectives rather than being used primarily for entertainment (Gee, 2007; Plass et al., 2015). Thus, the instructional value of GBL depends not merely on points, rewards, competition, or visual appeal but on the purposeful alignment of these features with curriculum competencies, assessment goals, and appropriate learning activities.

GBL should be distinguished from gamification, although the two concepts are closely related. GBL generally involves learning through games or game-like activities, whereas gamification refers to the application of game elements, such as points, badges, challenges, timers, rewards, and leaderboards, in a non-game learning environment. Game-Based Learning Quizzes (GBLQs) incorporate characteristics of both approaches because they use quiz-based learning activities while integrating game mechanics intended to encourage active participation, repeated responding, and feedback. This distinction is important because studies of educational games, gamification, and gamified assessment do not necessarily investigate identical interventions. Nevertheless, these related bodies of research provide complementary evidence regarding the potential effectiveness of GBLQs.

A substantial body of research indicates that game-based and gamified instruction can positively influence academic achievement. Sailer and Homner (2021) found that gamification produced positive effects on cognitive, motivational, and behavioral learning outcomes, although the magnitude of the effects depended on the quality of instructional design and the combination of game elements. Bai et al. (2022) similarly concluded that gamification can improve student learning outcomes, while Zainuddin et al. (2022) emphasized the importance of clear goals, meaningful feedback, active learner participation, and alignment between game mechanics and instructional objectives.

More recent meta-analytic evidence strengthens these conclusions. Karakoç et al. (2022) synthesized 38 experimental studies and reported a large overall positive effect of game-based learning on academic achievement. Their findings suggest that GBL can support achievement across different educational levels and disciplines, although the studies included in the analysis varied in instructional context, research design, and type of game-based intervention. This heterogeneity means that the positive overall effect should not be interpreted as evidence that every game or gamified activity will produce the same outcome.

Lei et al. (2022) conducted a meta-analysis of 41 primary studies involving 6,256 participants and found that game-based learning produced a significant positive effect on science achievement, $g = 0.705$. Their moderation analyses showed that the strength of the effect varied according to geographical context, educational level, form of assessment,

and intervention duration. The findings provide strong evidence that GBL can outperform traditional instruction under appropriate conditions, but they also indicate that its effectiveness is influenced by how, where, and for how long it is implemented. Although the study focused on science, its findings support the broader proposition that structured game-based activities can improve learners' performance when they are aligned with academic content and assessment.

Evidence from school-based digital game interventions provides a similarly positive but qualified conclusion. Barz et al. (2024) reported significant effects of digital game-based learning on overall learning, g = 0.54, and cognitive outcomes, g = 0.67. However, the effect on affective-motivational outcomes was smaller, g = 0.32, and no significant effect was found for metacognitive outcomes. These findings demonstrate that digital game-based interventions do not affect all educational outcomes equally. Consequently, an improvement in academic achievement should not automatically be interpreted as evidence of equivalent improvements in engagement, motivation, self-regulation, or metacognition.

In an Asian context, Diaz and Estoque-Loñez (2024) synthesized 15 studies published between 2018 and 2022 and found that gamification had a statistically significant positive effect on student learning achievement. The relevance of their analysis lies in its focus on studies conducted in Asian educational settings, which may share certain contextual characteristics with Philippine classrooms. Nevertheless, variation in countries, educational systems, learning areas, participants, and intervention designs means that findings from the broader Asian context cannot be applied automatically to Philippine basic education. Context-specific empirical research therefore remains necessary.

Collectively, these meta-analyses provide stronger empirical support than individual classroom investigations because they synthesize results across multiple studies and larger participant samples. At the same time, they consistently indicate heterogeneity in the effects of game-based learning. Differences in educational level, subject matter, intervention duration, game design, comparison condition, assessment format, teacher facilitation, and learner characteristics may explain why some interventions produce stronger outcomes than others. The literature therefore supports GBL as a potentially effective instructional approach but does not justify treating all games, platforms, and gamification strategies as equally effective.

Game-Based Learning Quizzes are a focused form of game-based and gamified instruction that uses interactive quiz platforms to combine assessment with game elements. Platforms such as Kahoot!, Wayground, Wordwall, Gimkit, and similar applications commonly incorporate points, timers, rankings, challenges, visual effects, immediate correctness feedback, and repeated attempts. These features can make formative assessment more interactive by requiring learners to respond actively rather than receive information passively.

Evidence concerning gamified assessment tools is particularly relevant to GBLQs. Bolat and Taş (2023) conducted a meta-analysis of 17 primary studies representing 23 independent results and 2,836 participants. They found that gamified assessment tools had a moderate positive effect on academic achievement, g = 0.62. The effect differed according to the learners' educational stage, with stronger results in higher education than in K-12 settings. The authors consequently emphasized the need for additional experimental research involving elementary and secondary learners.

The findings of Bolat and Taş (2023) are directly relevant to the present study because they concern digital tools that turn assessment activities into game-like experiences rather than complete educational games or simulations. Their results suggest that gamified quizzes can improve achievement when used in formal learning environments. However, the smaller evidence base for K-12 education means that additional studies are needed to establish how these tools function among younger learners, in different disciplines, and in varied technological settings. The present study responds to this need by examining

curriculum-aligned GBLQs among Grade 8 learners in Araling Panlipunan.

Su and Zou (2024) further examined game-based assessment through a systematic review of 21 studies. They found that game-based assessment has been implemented through simulations, immersive environments, video games, and other game formats that allow learners to pursue educational objectives while producing evidence of their developing competencies. However, much of the reviewed research originated in the United States and concentrated on physics education. The limited disciplinary and geographical distribution of the evidence indicates that game-based assessment remains underexamined in other subject areas and national settings.

Game-based assessment must nevertheless be distinguished from the simple addition of points, timers, and leaderboards to conventional tests. A GBLQ becomes instructionally formative when it generates evidence of learner understanding and when that evidence is used to improve teaching and learning. Automated scoring can indicate whether an answer is correct, but meaningful formative assessment requires learners to understand their errors and teachers to use response patterns to identify misconceptions, determine appropriate corrective instruction, and modify subsequent learning activities.

Platform-specific evidence also supports the potential educational value of GBLQs. Licorish et al. (2018) found that learners perceived Kahoot! as beneficial to classroom interaction, participation, and learning. More recently, Özdemir (2025) conducted a comprehensive meta-analysis of 43 studies involving 1,706 experimental-group participants and 1,647 control-group participants. Kahoot! demonstrated a significant positive effect on academic achievement, with an average effect size of 0.772. The study also reported positive results for motivation, attitudes, and retention, although these outcomes were drawn from different studies and measurement conditions.

The platform literature should still be interpreted cautiously. Findings about Kahoot! cannot automatically be generalized to Wordwall, Wayground, Gimkit, or researcher-developed quiz games because these platforms differ in pacing, feedback, collaboration, interface, scoring, and game mechanics. The effect of any platform may also vary according to the quality of the questions, duration of use, characteristics of the learners, type of content, and teacher facilitation. Studies that combine multiple platforms can therefore establish the effectiveness of an instructional package but cannot identify the separate contribution of each application.

The potential effectiveness of GBLQs may be understood more clearly when they are situated within the broader literature on formative assessment. Formative assessment is an ongoing process through which teachers and learners collect, interpret, and use evidence of learning to determine the next instructional steps. Its purpose is not limited to measuring performance. It also involves identifying misconceptions, providing corrective feedback, adjusting instruction, and helping learners determine how to improve.

Karaman (2021) conducted a meta-analysis of 32 studies with 47 effect sizes and reported a positive overall effect of formative assessment on student learning. The study also found that the magnitude of the effect differed according to the source and form of feedback. Student-initiated and mixed feedback produced larger effects than computer-initiated feedback alone. This finding is particularly relevant to digital quizzes because it suggests that automated correctness indicators may not be sufficient to maximize learning. Computer-generated feedback should be supplemented by teacher explanation, learner reflection, peer discussion, or opportunities to revise responses.

Yao et al. (2024) provided broader evidence through a meta-analysis of 258 effect sizes from 118 K-12 studies. They confirmed that formative assessment had a positive overall effect on academic achievement. The effect was relatively similar across different assessment types and content areas but was larger in studies involving high school students, quasi-experimental designs, and settings outside North America and Western Europe. These characteristics make the study especially relevant to the present

investigation, which involved junior high school learners, a quasi-experimental design, and a non-Western educational setting.

Sortwell et al. (2024) strengthened this evidence through an umbrella review of 13 meta-analyses on formative assessment in K-12 education. The review found effects ranging from trivial to large and did not identify an overall negative effect on learning. However, the authors also noted differences in methodological quality and the robustness of the available evidence. Their findings support formative assessment as a generally beneficial practice while cautioning that effectiveness depends on the form of assessment, the quality of its implementation, and the use of assessment information by teachers and learners.

These findings support using GBLQs within a systematic formative assessment cycle. Learners respond to competency-aligned questions, receive timely feedback, examine the reasons for correct and incorrect responses, and apply the corrected understanding in subsequent activities. Teachers can then use response data to identify misconceptions, clarify difficult concepts, modify lesson pacing, and provide enrichment or remediation. Accordingly, the instructional effectiveness of GBLQs likely depends more on how teachers use the assessment evidence than on competition, animations, points, or rewards alone.

Retrieval practice provides a strong cognitive foundation for using GBLQs. It refers to actively recalling previously studied information rather than passively rereading or repeatedly exposing oneself to it. Because quiz activities require learners to retrieve information from memory, they can serve not only as assessment tools but also as learning opportunities.

McDermott (2021) explained that practicing retrieval shortly after learning can slow forgetting and strengthen learners' ability to recall the information later. These benefits have been observed across different learning materials, age groups, ability levels, and assessment formats. Correct-answer feedback is particularly important when learners retrieve incorrect information or cannot produce a response.

Agarwal et al. (2021) systematically reviewed retrieval-practice research conducted in authentic schools and classrooms. After screening nearly 2,000 records, they examined 50 experiments involving 5,374 learners and reported 49 effect sizes. Approximately 57% of the effects were medium or large, and the benefits appeared across educational levels, content areas, experimental designs, test formats, feedback conditions, and retention intervals. However, only 6% of the experiments were conducted in non-WEIRD countries, indicating a substantial geographical limitation in the evidence base.

This limitation supports the need for retrieval-based research in Philippine public-school settings. GBLQs may operationalize retrieval practice by requiring learners to repeatedly recall historical events, concepts, causes, consequences, and relationships. Repeated retrieval may strengthen access to curriculum content, particularly when related competencies are revisited across multiple formative assessments.

However, retrieval activities must be carefully designed. Poorly constructed multiple-choice items may encourage guessing, superficial recognition, or reliance on test-taking strategies rather than meaningful understanding. Questions should therefore progress from foundational recall to more complex tasks involving explanation, comparison, interpretation, and application. In Araling Panlipunan, such progression can help learners connect historical events, compare responses to imperialism, examine the influence of political ideas, and understand the development of nationalism and nation-states. Nevertheless, improvements on quiz items should not automatically be treated as evidence of broader historical or analytical thinking unless suitable performance-based instruments directly measure these competencies.

Immediate feedback is commonly identified as an important feature of digital quiz platforms, but its educational value depends on its content and instructional use. Wisniewski et al. (2020) synthesized 435 studies, 994 effect sizes, and more than 61,000 participants. They found a moderate overall effect of feedback on learning, d = 0.48, but also reported substantial heterogeneity. The effect of feedback varied according to the information communicated to the learner, and feedback produced stronger effects on cognitive and motor outcomes than on motivational and behavioral outcomes.

These findings suggest that feedback should not be treated as a single, uniformly effective instructional strategy. Feedback is most useful when it helps learners identify the difference between their current performance and the intended learning goal and gives them actionable information about how to improve. A basic correct-or-incorrect indicator may confirm performance but may not explain the conceptual reasoning underlying the answer.

Explanatory feedback is particularly important in Araling Panlipunan because learners' errors may involve chronology, causation, historical significance, political concepts, or relationships among social developments. Teachers should therefore supplement automated quiz feedback with explanations and post-quiz discussions. When many learners select an incorrect response, the teacher can clarify the misconception, provide additional examples, revisit a source or historical event, or administer a follow-up item.

The feedback literature also explains why GBLQs should not focus exclusively on speed, rankings, or competition. If feedback communicates only scores and rank positions, learners may prioritize winning over understanding. By contrast, feedback that explains errors, identifies misconceptions, and provides opportunities for correction can transform a game-based quiz into a meaningful formative learning experience.

Game-based approaches may be particularly relevant to Social Studies and history because these subjects are often perceived as text-heavy and dependent on memorizing names, dates, places, and events. However, meaningful historical learning extends beyond factual recall. It requires learners to interpret evidence, analyze cause-and-effect relationships, compare perspectives, establish chronology, understand context, and construct evidence-based explanations.

Hwang et al. (2015) found that a contextual game-based learning environment improved achievement, attitudes, and flow experiences in history education. Lo and Hew (2022) similarly noted that game-based approaches can support history learning when games are accompanied by teacher facilitation, discussion, and reflection. These findings suggest that games should not function as isolated activities. They should be integrated into a broader instructional process in which teachers connect game experiences with historical concepts, evidence, and interpretation.

Bjørner (2024) provided a more cautious assessment in a systematic review of game-based learning in K-12 history education. From 688 initially identified records, only 12 studies met the review criteria. Most reported positive motivational outcomes, but relatively few provided statistically significant evidence of improved learning. The review also found substantial differences in game content, technology, instructional context, teacher involvement, and evaluation methods.

Bjørner (2024) cautions against assuming that positive learner perceptions necessarily translate into stronger historical learning. Many history-oriented studies rely on self-report questionnaires or general knowledge tests, while games do not always include clearly defined historical learning objectives. Therefore, GBLQs intended for Araling Panlipunan must be deliberately aligned with the competencies being assessed. Improvements in factual performance should not be interpreted as evidence of historical reasoning, source analysis, or critical thinking unless those competencies are directly measured.

Lai and Hu (2025), in a review of 118 selected publications, concluded that game-based learning holds promise for improving engagement, motivation, and understanding in history education. However, successful integration depends on curriculum alignment, teacher readiness, instructional assessment, and sufficient technological and pedagogical resources. These conditions are relevant to Philippine Araling Panlipunan classrooms, where GBLQs must correspond with national curriculum standards and be accompanied by appropriate teacher guidance.

The existing history-education evidence is therefore less extensive and less conclusive than the more general research on games and academic achievement. Strong motivational findings occur frequently, but rigorous evidence concerning historical learning outcomes remains limited. This gap demonstrates the need for studies that measure achievement through curriculum-aligned assessments and distinguish factual knowledge from historical reasoning and other higher-order outcomes.

Wordwall is particularly relevant to classroom-based formative assessment because it allows teachers to create quizzes, matching activities, review drills, random wheels, and other interactive tasks. Do and Huynh (2024) found that learners responded positively to the use of Wordwall for vocabulary memorization, while Fajaryati (2024) reported that Wordwall-supported formative assessment improved learning outcomes in physics. These studies demonstrate that Wordwall can support interactive assessment in different learning areas.

However, findings from language or science education cannot automatically establish effectiveness in Araling Panlipunan. Subject areas differ in their learning objectives, forms of knowledge, cognitive demands, and assessment requirements. The application of Wordwall and similar platforms to Araling Panlipunan should therefore include questions that assess not only recognition and recall but also relationships among events, historical causation, comparison of social responses, application of concepts, and interpretation of political ideas.

The available platform-specific research also suggests that the application itself is not the sole source of instructional effectiveness. Outcomes may depend on the validity of the questions, the activity's alignment with the lesson, the nature of the feedback, the level of teacher facilitation, and the opportunities provided for discussion and correction. Thus, the same platform may produce different outcomes under different implementation conditions.

Philippine-based studies provide important contextual support for using game-based and gamified instruction. In Araling Panlipunan, Panga et al. (2025) found that gamification improved Grade 10 learners' engagement, with learners showing stronger participation after using points, rewards, and leaderboards. This finding is relevant because Araling Panlipunan is sometimes perceived as content-heavy and less interactive when instruction relies predominantly on lectures and memorization.

Florese (2025) examined digital game-based learning among Grade 8 students in Araling Panlipunan and reported improvements in engagement, motivation, autonomy, and academic performance following the intervention. The study supports using interactive, learner-centered strategies in junior high school Araling Panlipunan. However, its findings concerning psychological and motivational outcomes should not be assumed to apply to every intervention unless equivalent constructs are assessed using comparable instruments.

Daquiado (2026) investigated a Wordwall-supported Interactive Game-Based Learning Environment in Grade 7 Araling Panlipunan and reported higher achievement, active learning, and engagement among learners exposed to the intervention. Torres (2026) also reported improved academic performance among Grade 6 learners following digital game-based Araling Panlipunan instruction. Collectively, these studies indicate that game-based strategies may be applicable in both elementary and secondary Philippine Social Studies settings.

Gamification has also produced positive findings in other Philippine learning areas. Yap and Gonzaga (2024) reported improved Grade 7 academic performance through ClassPoint-supported gamified instruction, while Villanueva (2024) found that game-based learning improved performance in Grade 11 Earth and Life Science. Although these studies were conducted in learning areas other than Araling Panlipunan, they contribute contextual evidence that game-based and gamified strategies may support achievement in Philippine classrooms when appropriately implemented.

Nevertheless, Philippine studies differ in research design, instruments, intervention duration, grade level, subject area, and outcomes. Many are localized to a single school or a small number of intact classes. Their findings therefore provide contextual relevance but limited generalizability. They support further investigation rather than establishing that GBLQs are universally effective across all Philippine classrooms.

Academic performance refers to learners' measurable achievement in relation to expected learning outcomes and may be represented by test scores, grades, formative assessment results, posttest performance, and learning gains. In Araling Panlipunan, performance reflects learners' mastery of historical, geographical, economic, political, cultural, and civic competencies.

Abao et al. (2024) found that academic performance in Araling Panlipunan is influenced by learner-related factors, including study habits, attitudes, interest, and the learning environment, as well as teacher-related factors such as commitment and subject-matter knowledge. This indicates that academic performance is not determined by instructional strategy alone. Consequently, even when GBLQs are associated with stronger achievement, factors involving learners, teachers, classrooms, and access to technology must be considered.

The need for effective instructional strategies is also supported by national and international educational concerns. The OECD's PISA findings indicate continuing challenges in the performance of Filipino learners, while the Department of Education's MATATAG Curriculum promotes meaningful, active, competency-based, and learner-centered instruction. These educational directions provide a policy basis for exploring GBLQs as formative assessment and review tools, provided their use remains aligned with prescribed competencies and inclusive learning principles.

Despite their potential benefits, GBLQs may reproduce or intensify educational inequities when learners have unequal access to devices, internet connectivity, digital skills, or appropriate learning environments. Technical problems may affect learners' response speed, completion, and scores. In speed-based platforms, performance may partly reflect reading speed, device responsiveness, or network stability rather than mastery of content.

Inclusive implementation may therefore require shared devices, group-response arrangements, printed quiz cards, offline versions, untimed alternatives, and flexible response modes. These measures can help ensure that technological access does not become a source of unfairness. Teachers must also consider whether competition, public rankings, and time pressure are appropriate for all learners.

Teacher readiness is equally important. Effective GBLQ implementation requires more than operational knowledge of digital platforms. Teachers need skills in writing valid assessment items, aligning questions with competencies, interpreting response data, explaining misconceptions, ensuring accessibility, and managing competition constructively. The literature on history education and game-based assessment consistently indicates that curriculum alignment, instructional assessment, and teacher facilitation are essential to meaningful implementation.

The reviewed literature provides several complementary explanations for the potential effectiveness of GBLQs. Meta-analyses of game-based learning and gamification report

generally positive effects on academic achievement. Research on gamified assessment indicates that quiz-based tools can enhance achievement in formal educational settings. Formative assessment literature explains how evidence of ongoing learning may guide corrective instruction, retrieval-practice research demonstrates the learning benefits of repeated recall, and feedback research emphasizes the importance of informative correction. Together, these bodies of evidence suggest that the effectiveness of GBLQs is likely to arise from the interaction of curriculum alignment, repeated retrieval, timely feedback, teacher facilitation, and learner participation rather than from game mechanics alone.

However, several limitations remain in the literature. First, studies differ substantially in their definitions of GBL, gamification, and game-based assessment. Second, international evidence frequently combines subject areas, age groups, platforms, and intervention types. Third, findings from higher education, science, language learning, or Western contexts cannot be generalized automatically to Philippine junior high school Araling Panlipunan. Fourth, systematic reviews of history education indicate that motivational outcomes are reported more consistently than significant learning outcomes. Fifth, gamified-assessment research identifies a continuing need for rigorous K-12 investigations. Finally, improvements in academic achievement do not independently establish greater engagement, motivation, retention, historical reasoning, or analytical thinking.

The present study addresses these gaps by examining curriculum-aligned GBLQs in Grade 8 Araling Panlipunan within a Philippine public-school setting. It evaluates academic performance during instruction through formative assessments, immediately after instruction through a posttest, and across the intervention through learner-level gain scores. The direct comparison of gain scores is particularly important because it determines whether the experimental group improved significantly more than the comparison group rather than merely establishing that each group improved independently.

Accordingly, the contribution of the study is contextual, methodological, and appropriately bounded. It provides local quasi-experimental evidence concerning the academic-performance outcomes associated with a four-week package of curriculum-aligned GBLQs. It does not establish that every quiz platform is equally effective, identify which game mechanic produces the strongest effect, or prove changes in engagement, motivation, long-term retention, historical reasoning, or analytical thinking. These outcomes require platform-specific comparisons, delayed posttests, validated psychological instruments, systematic classroom observations, qualitative evidence, and performance-based assessments.

Methodology

Research Design

This study employed a quantitative quasi-experimental non-equivalent group design to determine the effectiveness of Game-Based Learning Quizzes (GBLQs) in improving the academic performance of Grade 8 learners in Araling Panlipunan. This design was appropriate because it allowed the collection of measurable data, such as test scores, for statistical analysis and objective interpretation (Creswell & Creswell, 2018). Two intact groups were involved: an experimental group that used GBLQ platforms such as Kahoot!, Wayground, Wordwall, and researcher-made quiz games, and a comparison group that received traditional lecture-based instruction. Both groups took a pretest to determine baseline knowledge, followed by formative assessments and a posttest after the intervention to measure learning gains. By comparing test results, the study assessed whether GBLQs significantly improved academic performance over traditional teaching methods. This design also strengthened the study's validity by examining the relationship between GBLQs and academic performance while minimizing the influence of other variables.

Sampling and Participants of the Study

This study involved 74 Grade 8 learners from two intact sections of San Jose Integrated High School in San Pablo City, Laguna. The sections were purposively selected based on their comparability in terms of class size, curriculum coverage, class schedule, accessibility, and prior academic performance. Each section consisted of 37 learners who were included in the statistical analysis. Because the study was conducted under actual school conditions, the learners remained in their original sections throughout the investigation and were not individually matched, randomly assigned, transferred, or reassigned between groups. Following the selection of the two intact sections, one section was designated as the experimental group and received instruction incorporating Game-Based Learning Quizzes, while the other was designated as the comparison group and received conventional lecture-discussion instruction. Pretest scores and previous academic performance were examined solely to determine the initial comparability of the two sections and were not used to match individual learners or reorganize the groups. The identical pretest means of the experimental and comparison groups ($M = 8.76$, $SD = 3.91$) indicated comparable measured baseline performance before the intervention. Nevertheless, because the study involved purposively selected intact sections without participant-level randomization, it remained a quasi-experimental pretest-posttest non-equivalent group design. Although the baseline similarity strengthened the comparability of the groups, possible unmeasured section-level differences could not be completely ruled out and should be considered when interpreting the findings.

Research Instrument

This study used pretest, posttest, and formative assessments to measure the effectiveness of Game-Based Learning Quizzes (GBLQs) in improving Grade 8 learners' academic performance in Araling Panlipunan. The pretest established students' baseline knowledge before the intervention, while the posttest measured learning gains after implementing GBLQs. The researchers conducted formative assessments regularly to monitor student progress and provide feedback throughout the intervention. The formative tests were researcher-made and aligned with the Department of Education (Philippines) MATATAG Curriculum for Araling Panlipunan 8. Test items were primarily multiple-choice questions designed to assess both factual knowledge and higher-order thinking skills, such as analysis, interpretation, and application. Quiz platforms such as Kahoot!, Wayground, Wordwall, and researcher-made digital quizzes served as the primary instructional and assessment tools. To establish content and face validity, the pretest, posttest, and formative assessment instruments were reviewed by a Master Teacher in Araling Panlipunan, curriculum specialists, and assessment experts. The reviewers examined the alignment of the items with the intended Araling Panlipunan 8 competencies, appropriateness of the content, clarity of the language and directions, accuracy of the answer keys, cognitive demand of the questions, and suitability of the instruments for Grade 8 learners. The researchers made necessary revisions based on the reviewers' comments before administering the instruments.

To address possible technology-related limitations, coordination with the school ICT coordinator ensured the availability of devices, internet access, and computer laboratories, allowing all students to participate effectively in the intervention.

Research Procedure

Before the conduct of the study, the researcher secured approval from Laguna State Polytechnic University Graduate Studies and Applied Research and obtained formal permission from the principal of San Jose Integrated High School. Two intact Grade 8 sections were purposively selected based on their comparability in terms of class size, curriculum coverage, class schedule, accessibility, and prior academic performance. The learners remained in their original sections throughout the study and were not individually matched, randomly assigned, transferred, or reassigned between groups. One intact section was designated as the experimental group and received instruction incorporating Game-Based Learning Quizzes through Kahoot!, Wayground, Wordwall, and researcher-made quiz games, while the other intact section was designated as the comparison group

and received conventional lecture-discussion instruction. Pretest scores and previous academic performance were examined solely to assess the initial comparability of the two sections and were not used to match individual learners or reorganize the groups. Both groups studied the same Araling Panlipunan competencies during the four-week intervention, with two instructional sessions conducted each week. Formative assessments were administered throughout the intervention to monitor learners' academic performance. After the intervention, both groups completed a posttest comparable to the pretest, and each learner's gain score was computed by subtracting the pretest score from the posttest score. The collected data were subsequently analyzed using the appropriate descriptive and inferential statistical procedures. Ethical considerations were observed by securing informed consent from parents or guardians and assent from the participating learners, maintaining the confidentiality of their information, and upholding voluntary participation throughout the study.

Statistical Treatment of Data

To address the research questions and test the hypotheses of the study, descriptive and inferential statistical procedures were employed to determine the effectiveness of Game-Based Learning Quizzes (GBLQs) in improving the academic performance of Grade 8 learners in Araling Panlipunan. Mean and standard deviation were used to describe the pretest, formative assessment, posttest, and gain scores of the experimental and comparison groups by indicating the central tendency and variability of the scores. A five-number summary, consisting of the minimum, first quartile, median, third quartile, and maximum, was also used to present the distribution of the pretest, formative assessment, and posttest scores. Independent-samples t-tests were employed to compare the experimental and comparison groups in terms of their total formative assessment scores, posttest scores, and learner-level gain scores. Each learner's gain score was computed by subtracting the pretest score from the posttest score. The direct between-group comparison of gain scores was used to determine whether the experimental group achieved significantly greater improvement than the comparison group and to test the third null hypothesis. Paired-samples t-tests were also conducted as supplementary analyses to determine whether the pretest and posttest scores differed significantly within each group. However, these within-group analyses were not used to conclude that one group improved more than the other. Cohen's d was computed to determine the magnitude of the differences between the experimental and comparison groups and the magnitude of the pretest-to-posttest changes within each group. All null hypotheses were tested at the .05 level of significance. These statistical procedures were limited to the academic-performance variables directly measured in the study. Motivation, engagement, long-term retention, historical reasoning, and analytical thinking were not included in the statistical analyses because these constructs were not separately assessed using validated instruments or delayed measures.

Results

The findings were discussed systematically according to the research questions, with emphasis on the significance and implications of the results, supported by tables, statistical analyses, and related literature.

Table 1.
Pretest mean scores of the comparison group and experimental group in Araling Panlipunan

Group (n = 37/group)	Five Number Summary							
	Mean	SD	Descriptive Interpretation	Minimum	1st Quartile	Median	3rd Quartile	Maximum
Experimental	8.76	3.91	*Fairly Satisfactory*	3.00	5.00	9.00	11.00	16.00
Comparison	8.76	3.91	*Fairly Satisfactory*	3.00	5.00	9.00	11.00	16.00

Legend; 16.00–20.00 (Outstanding), 13.00–15.99 (Very Satisfactory), 10.00–12.99 (Satisfactory), 5.00 – 9.99 (Fairly Satisfactory), and 0.00–4.99 (Did Not Meet Expectations)

Table 1 presents the pretest mean scores of the experimental and comparison groups in Araling Panlipunan. Both groups obtained an identical mean score of 8.76 (SD = 3.91),

classified within the “Fairly Satisfactory” performance level. This result indicates that, before the implementation of the intervention, learners in both groups demonstrated limited mastery of the targeted Araling Panlipunan competencies.

The five-number summary further supports this interpretation. Both groups recorded scores ranging from 3.00 to 16.00, with a median of 9.00. The identical means, standard deviations, medians, and score ranges indicate that the experimental and comparison groups had highly similar distributions of pretest performance. Thus, the two groups were comparable in terms of their measured baseline academic achievement before the intervention.

The comparable pretest results provide an appropriate basis for examining subsequent differences in formative assessment, posttest, and gain-score performance. In a quasi-experimental design involving intact sections, baseline comparability reduces the possibility that later differences are attributable solely to initial disparities in measured academic achievement. However, identical pretest statistics do not establish that the groups were equivalent in all relevant learner and classroom characteristics. Because there was no participant-level random assignment, unmeasured differences involving study habits, motivation, classroom dynamics, or prior familiarity with game-based platforms cannot be completely excluded.

The “Fairly Satisfactory” pretest performance also suggests that both groups had substantial room for improvement. The learners’ initial limited mastery may be associated with the complexity of the targeted Araling Panlipunan competencies, which required them to understand historical developments, relationships among political ideas, and the causes and consequences of social transformations. The result therefore established the instructional need that the GBLQ intervention was intended to address.

Table 2.
Formative test mean scores of the comparison group and experimental group in Araling Panlipunan

Formative Test	Group (n = 37)	Mean	SD	Descriptive Interpretation	Five Number Summary				
					Minimum	1st Quartile	Median	3rd Quartile	Maximum
1	Experimental	7.57	1.25	Very Satisfactory	5.00	7.00	8.00	8.75	9.00
	Comparison	6.73	1.44	Satisfactory	5.00	5.00	7.00	8.00	9.00
2	Experimental	7.63	1.10	Very Satisfactory	5.00	7.00	8.00	8.00	10.00
	Comparison	6.70	1.32	Satisfactory	5.00	6.00	7.00	7.00	10.00
3	Experimental	9.43	0.94	Outstanding	7.00	9.00	10.00	10.00	10.00
	Comparison	8.57	1.41	Very Satisfactory	5.00	8.00	9.00	9.75	10.00
4	Experimental	7.43	1.83	Very Satisfactory	5.00	5.25	8.50	9.00	10.00
	Comparison	7.77	1.94	Very Satisfactory	5.00	5.25	8.50	9.00	10.00
5	Experimental	7.33	1.63	Very Satisfactory	5.00	6.25	8.00	8.00	10.00
	Comparison	6.50	1.25	Satisfactory	5.00	5.00	7.00	7.00	9.00
6	Experimental	9.43	1.04	Outstanding	7.00	9.25	10.00	10.00	10.00
	Comparison	7.27	2.83	Very Satisfactory	3.00	5.00	8.00	10.00	10.00
7	Experimental	8.80	1.16	Very Satisfactory	6.00	8.00	9.00	10.00	10.00
	Comparison	7.10	2.47	Very Satisfactory	3.00	5.00	8.00	9.00	10.00
8	Experimental	8.50	1.83	Very Satisfactory	5.00	7.25	9.00	10.00	10.00
	Comparison	6.40	1.28	Satisfactory	5.00	5.00	6.50	7.00	9.00
Total	Experimental	66.13	4.70	Very Satisfactory	55.00	63.00	66.00	70.00	75.00
	Comparison	57.03	7.22	Satisfactory	45.00	51.00	58.50	63.00	68.00

Legend; 9.01–10.00 (Outstanding), 7.01–9.00 (Very Satisfactory), 5.01–7.00 (Satisfactory), 3.01–5.00 (Fairly

Satisfactory), and 0.00–3.00 (Did Not Meet Expectations)

Table 2 presents the formative test mean scores of the experimental and comparison groups in Araling Panlipunan across eight formative tests and the total score. Overall, the experimental group consistently obtained higher mean scores than the comparison group in most formative tests, indicating better performance during the formative assessment phase. Based on the formative test results, the findings may be combined according to the competencies and topics covered in Araling Panlipunan 8. Under the competency *Nasusuri ang imperyalismong Europeo at Japan sa Asya at Africa*, which focused on the topic *Panahon ng Imperyalismo*, the experimental group obtained "Very Satisfactory" mean scores in Formative Tests 1 and 2 covering the *Pag-usbong ng mga Imperyo ng England, France, the Netherlands, Portugal, at Spain sa America, India at East Indies*, while the comparison group remained at the "Satisfactory" level. In Formative Tests 3 and 4, which dealt with the *Pagpasok ng mga Imperyalistang Estado ng Russia, Italy, Germany, United States, at Japan*, the experimental group achieved "Outstanding" performance in Formative Test 3 and "Very Satisfactory" in Formative Test 4, surpassing or matching the comparison group, which reached "Very Satisfactory" in both assessments. These results highlight stronger mastery of the concepts related to imperialism among students exposed to the intervention.

For the competency *Naiuugnay ang Enlightenment at Rebolusyong Amerikano sa paglinang ng nasyonalismo at pagkabansa*, under the topic *Panahon ng Absolutismo, Liberalismo at Enlightenment*, the experimental group obtained a mean score of 7.33 (*SD* = 1.63) in Formative Test 5, interpreted as "Very Satisfactory," whereas the comparison group obtained a mean score of 6.50 (*SD* = 1.25), interpreted as "Satisfactory." The experimental group's higher mean and descriptive rating indicate stronger performance on the competencies assessed in Formative Test 5. However, this descriptive difference should not be treated as statistically significant because no separate inferential analysis for this individual formative test was reported. In Formative Test 6, which focused on the *Rebolusyong Amerikano*, the experimental group attained a mean score of 9.43 (*SD* = 1.04), interpreted as "Outstanding," while the comparison group obtained a mean score of 7.27 (*SD* = 2.83), interpreted as "Very Satisfactory." The experimental group also recorded a median of 10.00, compared with 8.00 for the comparison group. Moreover, the experimental group's lower standard deviation indicates that its scores were more closely concentrated around the higher mean, whereas the comparison group displayed greater variability. These descriptive results indicate a pronounced performance advantage for the experimental group on the content and competencies measured in Formative Test 6. In Formative Test 7, both groups achieved a "Very Satisfactory" descriptive rating. Nevertheless, the experimental group obtained a higher mean score of 8.80 (*SD* = 1.16) than the comparison group, which obtained a mean score of 7.10 (*SD* = 2.47). The experimental group also had a higher median of 9.00, compared with 8.00 for the comparison group. Although both means fell within the same descriptive category, the 1.70-point difference indicates stronger descriptive performance among learners exposed to GBLQs. The lower variability in the experimental group further suggests that its learners demonstrated more consistent performance on the competencies assessed in Formative Test 7. Under the competency *Nasusuri ang mahahalagang pangyayari sa panahon ng Rebolusyong Pranses at pagtatag ng mga bansang estado*, which covered the topic *Rebolusyong Pranses at Pag-usbong ng mga Bansang Estado*, the experimental group obtained a mean score of 8.50 (*SD* = 1.83) in Formative Test 8, interpreted as "Very Satisfactory." In comparison, the comparison group obtained a mean score of 6.40 (*SD* = 1.28), interpreted as "Satisfactory." The experimental group also recorded a median of 9.00, whereas the comparison group had a median of 6.50. The 2.10-point difference between the group means indicates that the experimental group demonstrated stronger performance on the historical content and competencies assessed in Formative Test 8.

Overall, the results of Formative Tests 5–8 reveal a consistent descriptive advantage for the experimental group. The experimental group obtained higher mean scores than the comparison group in all four assessments and achieved a higher descriptive rating in Formative Tests 5, 6, and 8. In Formative Test 7, both groups were classified as "Very Satisfactory," although the experimental group still obtained a higher mean and median and showed less score variability. These findings suggest that learners exposed to GBLQs

demonstrated stronger and generally more consistent performance on the assessed competencies related to the Enlightenment, the American Revolution, nationalism and nationhood, the French Revolution, and the development of nation-states.

Across the eight formative assessments, the experimental group recorded higher means in seven tests, while the comparison group was slightly higher in Formative Test 4. This pattern indicates a generally consistent, but not universal, performance advantage for learners exposed to GBLQs. The exception is important because it suggests that the intervention did not improve every assessment equally and that topic difficulty, item characteristics, or classroom conditions may have influenced individual test results.

For the total formative score, the experimental group obtained M = 66.13 (SD = 4.70), interpreted as Very Satisfactory, compared with M = 57.03 (SD = 7.22), interpreted as Satisfactory, for the comparison group. The higher median and narrower variability in the experimental group indicate that the advantage was not limited to a small number of high-performing learners. Inferential testing of this total-score difference is presented in Table 4.

The five-number summaries showed that the experimental group generally had higher medians and upper quartiles, indicating stronger central performance and a greater proportion of high scores. In contrast, the comparison group exhibited wider score ranges and higher variability in several formative tests, as reflected by larger standard deviations. When the total formative test scores were considered, the experimental group obtained a mean score of 66.13 (SD = 4.70), interpreted as “Very Satisfactory”, while the comparison group recorded a lower mean score of 57.03 (SD = 7.22), interpreted as “Satisfactory”. These overall results suggested that students in the experimental group consistently performed better in formative assessments, implying that the instructional approach applied to the experimental group was more effective in enhancing ongoing learning in Araling Panlipunan.

Table 3.
Posttest mean scores of the comparison group and experimental group in Araling Panlipunan

Group (n = 37/group)	Five Number Summary							
	Mean	SD	Descriptive Interpretation	Minimum	1st Quartile	Median	3rd Quartile	Maximum
Experimental	17.73	2.10	Outstanding	10.00	16.00	18.00	19.00	20.00
Comparison	13.46	2.85	Very Satisfactory	10.00	11.00	13.00	15.00	20.00

Legend; 16.00–20.00 (Outstanding), 13.00–15.99 (Very Satisfactory), 10.00–12.99 (Satisfactory), 5.00 – 9.99 (Fairly Satisfactory), and 0.00–4.99 (Did Not Meet Expectations)

Table 3 presents the posttest mean scores of the experimental and comparison groups in Araling Panlipunan. The experimental group obtained a mean score of 17.73 (SD = 2.10), classified as “Outstanding,” while the comparison group obtained a mean score of 13.46 (SD = 2.85), classified as “Very Satisfactory.” Descriptively, the experimental group scored 4.27 points higher than the comparison group following the intervention.

The five-number summary further illustrates the difference in the performance distributions of the two groups. The experimental group’s scores ranged from 10.00 to 20.00, with a median of 18.00, while the comparison group’s scores also ranged from 10.00 to 20.00 but had a lower median of 13.00. Although both groups reached the same maximum score, the five-point difference between their medians indicates that the typical learner in the experimental group performed considerably better than the typical learner in the comparison group.

The experimental group also recorded a lower standard deviation than the comparison group. This indicates that its posttest scores were more closely concentrated around the higher mean. Therefore, the experimental group’s superior performance was not attributable only to a small number of exceptionally high-scoring learners. Instead, the higher median and lower variability suggest that stronger achievement was observed more

consistently across the group. The descriptive findings indicate that learners exposed to GBLQs attained stronger immediate post-intervention mastery of the assessed competencies than learners who received conventional lecture-discussion instruction.

Table 4.
Test of significant difference between the formative test mean scores of the students in the experimental and comparison groups in Araling Panlipunan

Test	Group	Mean	Mean Difference	t-value	Cohen's d
Formative test	Experimental	66.13	9.10	6.425**	1.49 (Very Large)
	Comparison	57.03			

*df=72**Significant at .01 level; Cohen's d: 0.20 (Small); 0.50 (Medium); 0.80 (Large); 1.20 = Very Large; 2.00 and above = Huge*

Table 4 presents the test of significant difference between the total formative assessment scores of the experimental and comparison groups in Araling Panlipunan. The experimental group obtained a higher mean score of 66.13 (SD = 4.70), while the comparison group obtained a mean score of 57.03 (SD = 7.22). The resulting mean difference of 9.10 points favored the experimental group.

The independent-samples t-test showed that the difference between the two groups was statistically significant, $t(72) = 6.425$, $p < .001$. Accordingly, the first null hypothesis, which stated that there was no significant difference between the mean formative assessment scores of the experimental and comparison groups, was rejected. The result indicates that learners exposed to curriculum-aligned Game-Based Learning Quizzes achieved significantly higher total formative assessment scores than learners who received conventional lecture-discussion instruction.

In addition to statistical significance, Cohen's d of 1.49 indicated a very large effect. This effect size shows that the observed difference was educationally substantial, rnotmerely statistically detectable. The experimental group's advantage was therefore evident both in the 9.10-point difference between the group means and in the standardized magnitude of the difference. The findings support the instructional value of GBLQs in improving learners' performance during the formative phase of Araling Panlipunan instruction.

The result suggests that GBLQs supported learners' academic performance during the instructional process. Game-based formative assessments may have created more frequent opportunities for learners to retrieve previously presented information, receive immediate feedback on correct and incorrect responses, and revisit concepts they had not yet mastered. Through repeated assessment and corrective feedback, the intervention may have helped learners identify misconceptions before these became persistent learning difficulties.

Table 5.
Test of significant difference between the posttest mean scores of the students in the experimental and comparison groups in Araling Panlipunan

Test	Group	Mean	Mean Difference	t-value	Cohen's d
Posttest	Experimental	17.73	4.27	7.340**	1.71 (Very Large)
	Comparison	13.46			

*df=72**Significant at .01 level; Cohen's d: 0.20 (Small); 0.50 (Medium); 0.80 (Large); 1.20 = Very Large; 2.00 and above = Huge*

Table 5 presents the test of significant difference between the posttest mean scores of the experimental and comparison groups. The experimental group obtained a posttest mean of 17.73, while the comparison group obtained a mean of 13.46. The mean difference of 4.27 points favored the experimental group.

The difference was statistically significant, $t(72) = 7.340$, $p < .01$. Therefore, the second null hypothesis, which stated that there was no significant difference between the posttest mean scores of the experimental and comparison groups, was rejected. This result

confirms that the descriptive advantage observed in Table 3 was statistically supported.

Cohen's d of 1.71 indicated a very large between-group effect. This effect size demonstrates that the posttest difference was educationally meaningful. Under the conditions of the study, learners exposed to curriculum-aligned GBLQs performed substantially better on the immediate posttest than learners who received conventional lecture-discussion instruction.

Table 6.
Test of significant difference between the pretest and posttest mean scores of the students in the experimental and comparison groups in Araling Panlipunan

Group	Test	Mean	Mean Difference	t-value	Cohen's d
Comparison	Posttest	13.46	4.7	5.65**	0.93 (Large)
	Pretest	8.76			
Experimental	Posttest	17.73	8.97	11.31**	1.86 (Very Large)
	Pretest	8.76			

*df = 36; **Significant at .01 level; Cohen's d: 0.20 (Small); 0.50 (Medium); 0.80 (Large); 1.20 = Very Large; 2.00 and above = Huge*

The original within-group pretest-posttest analyses showed that both instructional groups improved. The comparison group increased from a pretest mean of 8.76 to a posttest mean of 13.46, resulting in a mean gain of 4.70. Its improvement was statistically significant, $t(36) = 5.65$, $p < .01$, with a large effect size of $d = 0.93$.

The experimental group increased from a pretest mean of 8.76 to a posttest mean of 17.73, producing a larger mean gain of 8.97. Its within-group improvement was also statistically significant, $t(36) = 11.31$, $p < .01$, with a very large effect size of $d = 1.86$. These findings demonstrate that both conventional lecture-discussion instruction and GBLQ-supported instruction contributed to improvement from pretest to posttest.

However, separate within-group tests do not determine whether the experimental group improved significantly more than the comparison group. A statistically significant result in one group and another statistically significant result in the second group cannot, by themselves, establish that the magnitudes of improvement were significantly different. Therefore, the third hypothesis must be evaluated through a direct between-group comparison of learner-level gain scores.

The direct gain-score analysis showed that the experimental group obtained a mean gain of 8.97 (SD = 4.82), while the comparison group obtained a mean gain of 4.70 (SD = 5.06). The experimental group's mean improvement was therefore 4.27 points greater than that of the comparison group. This difference was statistically significant, $t(72) = 3.72$, $p < .001$, with a large effect size of $d = 0.86$. Accordingly, the third null hypothesis, which stated that there was no significant difference between the mean gain scores of the two groups, was rejected.

This direct comparison provides stronger evidence than the separate paired-samples tests because it answers whether the groups differed significantly in the magnitude of their improvement. The result indicates that the experimental group did not merely improve relative to its own baseline. Rather, it achieved significantly greater improvement than the comparison group.

The finding suggests that conventional lecture-discussion instruction remained beneficial, as shown by the comparison group's statistically significant improvement. However, the larger gain attained by the experimental group indicates that GBLQ-supported instruction provided an additional academic advantage. Repeated retrieval, immediate feedback, opportunities to correct misconceptions, and continued interaction with the lesson content offer plausible instructional explanations for this pattern. These mechanisms are consistent with evidence that formative assessment effectiveness depends on feedback

quality and the capacity to use assessment information to modify teaching and learning.

Discussion

The pretest findings in Table 1 indicated that the experimental and comparison groups had comparable baseline performance prior to the implementation of the instructional intervention. Both groups obtained identical mean pretest scores, indicating that they initially possessed similar levels of prior knowledge and readiness regarding the targeted Araling Panlipunan competencies. This comparability provided a reasonable basis for examining the subsequent effects of Game-Based Learning Quizzes (GBLQs) on learners' formative assessment, posttest, and gain-score performance. In a quasi-experimental study, establishing baseline comparability is important because it reduces the likelihood that post-intervention differences are primarily attributable to initial disparities in measured academic achievement.

Nevertheless, comparable pretest means should not be interpreted as evidence that the two intact sections were equivalent in all relevant characteristics. Although the pretest results reduced concerns regarding initial differences in measured academic performance, other factors such as study habits, attitudes toward the subject, classroom dynamics, access to technology, learner motivation, and previous exposure to digital learning tools may not have been equally distributed between the groups. This qualification is consistent with Abao, Taganas, and Comon (2024), who emphasized that academic performance in Araling Panlipunan is influenced by learner-related, teacher-related, and environmental factors. Therefore, the baseline similarity strengthened the comparison between the groups, but the findings must still be interpreted within the limitations of a quasi-experimental design involving intact sections and no participant-level random assignment.

The low to moderate pretest performance of both groups also reflects a common instructional challenge in Araling Panlipunan. Learners often struggle to understand abstract historical, political, and sociocultural concepts, particularly when lessons require them to analyze relationships among events, ideas, and social transformations. Topics such as the Enlightenment, the American Revolution, nationalism, imperialism, and anti-colonial responses require more than memorizing names, dates, places, and events. They demand an understanding of cause-and-effect relationships, ideological influences, historical patterns, and connections across societies and periods. Consequently, the initial limited mastery demonstrated by both groups underscores the need for instructional approaches that actively involve learners in recalling, interpreting, comparing, and applying historical and civic concepts.

Table 2 showed that the experimental group generally obtained higher formative assessment scores than the comparison group. This result supports the instructional value of using GBLQs as formative assessment tools in Araling Panlipunan. Rather than treating quizzes exclusively as evaluative measures administered after instruction, GBLQs made assessment part of the learning process. Through immediate feedback, repeated practice, visual prompts, points, and interactive tasks, learners could identify errors, correct misconceptions, and reinforce their understanding while lessons were still in progress. This function is particularly relevant in Araling Panlipunan, where learners need continuous reinforcement to understand complex historical developments, civic ideas, political systems, and social relationships.

The formative assessment findings align with studies showing that interactive, technology-supported formative assessment can enhance learner performance. Agonia and Panoy (2022) reported that technology-based formative assessment supported improved learning outcomes among Grade 10 learners, while Lo and Hew (2022) emphasized that technology-supported formative assessment can strengthen performance when feedback is immediate and instructionally meaningful. These studies and the present investigation are similar in that they use assessment not merely to assign scores but also to help learners recognize errors and improve their understanding during instruction.

However, the present study differs from the cited studies in terms of subject area, participants, and mode of implementation. Agonia and Panoy (2022) examined technology-based formative assessment in science, while Lo and Hew (2022) investigated formative assessment within a broader technology-supported instructional context. In contrast, the present study applied curriculum-aligned GBLQs specifically to Grade 8 Araling Panlipunan competencies and employed several platforms and researcher-developed quiz activities. This contextual difference provides additional local evidence that the instructional benefits associated with technology-supported formative assessment may also be realized in a Philippine junior high school Araling Panlipunan setting.

The findings further indicate that the experimental group's performance advantage was evident throughout the formative assessment period and not only in the final posttest. This pattern suggests that the influence of GBLQs may have developed progressively during instruction. The combination of repeated retrieval, immediate feedback, and opportunities to revisit misconceptions may have supported the gradual consolidation of learners' understanding. In Araling Panlipunan, teachers can use these features not only to assess learners' recall of names, dates, places, and events but also to determine whether learners can explain historical relationships, compare the responses of colonized societies, identify causes and consequences, and evaluate the significance of political ideas.

Nevertheless, the experimental group did not outperform the comparison group uniformly in every individual formative assessment. The comparison group obtained a slightly higher mean in one formative test, indicating that the effectiveness of GBLQs may vary according to the content, difficulty of the assessment, design of the quiz items, pacing of instruction, and classroom conditions during implementation. This result is important because it prevents an unqualified interpretation of GBLQs as automatically superior in every lesson or assessment. Instead, it suggests that the effectiveness of game-based quizzes depends on how closely their content, mechanics, feedback, and timing are aligned with the intended competencies.

The significant difference between the total formative assessment scores of the experimental and comparison groups, as shown in Table 4, provides stronger evidence of the overall effectiveness of the intervention during instruction. The experimental group obtained a total formative mean of 66.13, compared with 57.03 for the comparison group. The difference was statistically significant, $t(72) = 6.425$, $p < .01$, with a very large effect size of $d = 1.49$. This indicates that the difference was not only statistically significant but also educationally substantial. Accordingly, Ho1 was rejected.

The formative assessment results are similar to the findings of Do and Huynh (2024) and Fajaryati (2024), particularly regarding the use of interactive platforms to reinforce learning and provide immediate responses. However, these studies were conducted in vocabulary and physics contexts, whereas the present investigation involved historical, political, and sociocultural content. The current finding therefore extends existing evidence by demonstrating that interactive quiz platforms may also be adapted to a discipline that requires learners to understand chronological relationships, ideological developments, and connections among historical events and social processes.

The formative assessment results also imply that GBLQs may help address the perceived passivity of content-heavy Araling Panlipunan lessons. When instruction relies primarily on lectures, note-taking, and memorization, some learners may have limited opportunities to interact actively with the content. Game-based formative quizzes can make classroom assessment more participatory by allowing learners to respond to challenge-based questions, receive instant scoring and feedback, and compare their responses with established answers or peer performance. Panga et al. (2025) similarly found that gamification improved learners' engagement in Araling Panlipunan, particularly through points, leaderboards, and reward mechanisms.

The present study is similar to Panga et al. (2025) in recognizing the potential of game elements to make Araling Panlipunan instruction more participatory. However, the two

studies measured different primary outcomes. Panga et al. focused directly on learner engagement, whereas the present investigation primarily measured academic performance through formative assessments, posttest scores, and gain scores. Therefore, although the experimental group's higher scores may reflect increased attention or participation, they do not independently establish improved learner engagement. A validated engagement scale, systematic observation protocol, or qualitative account of learners' experiences would be necessary to support such a conclusion. Engagement should consequently be presented as a theoretically plausible explanation and an area for further investigation rather than as a directly measured outcome of the present study.

Table 3 showed that learners exposed to GBLQs also obtained higher posttest scores than those in the comparison group. The experimental group achieved a mean posttest score of 17.73, interpreted as Outstanding, while the comparison group obtained a mean of 13.46, interpreted as Very Satisfactory. This descriptive difference was supported by the inferential result presented in Table 5. The difference between the groups was statistically significant, $t(72) = 7.340$, $p < .01$, with a very large effect size of $d = 1.71$. Ho2 was therefore rejected. The effect size indicates that learners exposed to GBLQs showed a substantial advantage in immediate post-intervention academic performance.

This result is supported by research on game-based learning and history instruction. Hwang et al. (2015) found that a contextual game-based learning environment improved students' achievement, attitudes, and flow experiences in history education. Similarly, Lai and Hu (2025) emphasized that game-based learning in formal history education can support learner motivation and engagement when it is appropriately aligned with curriculum standards and accompanied by teacher facilitation. This study shares with these investigations the principle that game-based learning becomes educationally meaningful when game features connect to disciplinary content, intended learning outcomes, and teacher-guided feedback.

However, the intervention in the present study differs from the broader contextual game environments and history games examined in previous research. Hwang et al. (2015) used a contextual game-based environment, while Lai and Hu (2025) examined the broader practices and challenges of integrating games into formal history education. This investigation focused specifically on quiz-based applications used for formative assessment, review, and reinforcement. This distinction matters because GBLQs are a more focused and potentially accessible form of game-based learning that teachers can integrate into regular classroom instruction without creating a full educational game or simulation.

The experimental group's higher posttest performance suggests that learners benefited from repeated retrieval practice, immediate error correction, and more opportunities to interact with the subject matter. These instructional features can help explain why the GBLQ group demonstrated stronger mastery of the assessed competencies. Nevertheless, the posttest findings should not be interpreted as direct evidence of long-term retention. Retention refers to the ability to maintain acquired knowledge over an extended period and is ordinarily assessed through a delayed posttest. Because the posttest in the present study was administered immediately after the intervention, the results demonstrate stronger immediate post-intervention achievement rather than the sustained retention of lesson content.

The findings in Table 4 also have important implications for using formative assessment in Araling Panlipunan. Formative assessment allows teachers to determine whether learners understand the relationships among ideas, events, and social processes while instruction is ongoing. For example, the experimental group's improved formative performance may indicate stronger mastery of the assessed concepts of how the Enlightenment and the American Revolution contributed to the development of nationalism and nationhood. Through repeated exposure to interactive questions, learners could revisit how political ideas influenced historical movements and how revolutions contributed to modern concepts of citizenship and self-determination.

The findings may also indicate that GBLQs helped learners examine responses to European imperialism in Asia, Africa, and Latin America. These topics require learners to compare patterns of resistance, adaptation, reform, and nationalism across different societies. Scenario-based and analysis-oriented game quizzes can encourage learners to classify responses, identify causes and effects, and recognize similarities and differences among historical experiences. However, the higher scores should not automatically be interpreted as proof that learners developed stronger analytical thinking as a separate construct. Although some assessment items may have involved analysis, interpretation, and application, the instruments primarily generated academic performance scores. A more definitive conclusion about analytical thinking would require validated performance tasks, document-based questions, source-analysis activities, or analytical reasoning rubrics.

From an instructional perspective, the findings suggest that Araling Panlipunan teachers may use GBLQs as part of a systematic formative assessment cycle. Teachers may introduce a concept, administer a game-based formative quiz, provide immediate and explanatory feedback, clarify misconceptions, and allow learners to reflect on their responses. This cycle aligns with the purpose of formative assessment: to guide both teaching and learning. The quiz's effectiveness therefore depends not only on the game mechanics but also on the quality of the questions, the usefulness of the feedback, and the teacher’s ability to connect quiz responses to subsequent explanation and reflection.

Compared with conventional lecture-discussion instruction, the GBLQ approach appears to have provided more frequent opportunities for learners to retrieve information and receive corrective feedback during instruction. This difference plausibly explains the experimental group's higher formative and posttest performance. Nevertheless, the findings do not indicate that conventional instruction was ineffective. Learners in the comparison group also demonstrated improvement, showing that teacher explanation, discussion, and regular classroom instruction contributed to academic achievement. The comparison is therefore not between an effective and an ineffective instructional approach. Rather, it is between two instructional conditions that produced different magnitudes of improvement.

This distinction suggests that the greatest instructional value may be achieved when GBLQs complement teacher explanation, classroom discussion, written analysis, source examination, collaborative inquiry, and reflective activities rather than replace them. Game-based quizzes may be particularly effective for retrieval, reinforcement, misconception diagnosis, and immediate feedback, while non-game activities may be better suited to extended argumentation, document analysis, historical interpretation, and civic deliberation. The two approaches should therefore be regarded as potentially complementary components of a broader learner-centered instructional framework.

The significant posttest difference is also aligned with Philippine-based research on game-based and gamified instruction. Daquiado (2026) reported that an Interactive Game-Based Learning Environment using Wordwall improved Grade 7 learners’ achievement, active learning, and engagement in Araling Panlipunan. Florese (2025) likewise found that digital game-based learning enhanced engagement, motivation, autonomy, and academic performance among Grade 8 learners in Araling Panlipunan. These findings strengthen the contextual relevance of the present study by showing that digital game-based approaches may be applicable to Philippine Araling Panlipunan classrooms and may support academic performance in content-heavy lessons.

The present investigation is similar to Daquiado (2026) and Florese (2025) in reporting favorable outcomes from digital game-based approaches. Collectively, these studies suggest that game-based strategies may apply across grade levels and local instructional settings. The present study differs, however, by comparing experimental and comparison groups across formative assessment, posttest, and learner-level gain-score outcomes. It also used multiple GBLQ platforms rather than investigating only one application. Its findings may therefore reflect the shared instructional characteristics of the implemented GBLQ package, including active retrieval, immediate feedback, repetition, challenge, and

interactivity, rather than the unique effect of a single platform.

At the same time, using multiple platforms limits the extent to which the results can be attributed individually to Kahoot!, Wayground, Wordwall, or the researcher-developed quiz games. The study demonstrates the effectiveness of the combined GBLQ intervention as implemented, but it does not establish which platform, question format, feedback mechanism, or game element produced the strongest effect. This difference from platform-specific investigations identifies an important direction for future comparative research.

The direct between-group analysis of gain scores provides particularly important evidence concerning the relative effectiveness of the two instructional conditions. Separate pretest-posttest comparisons can determine whether each group improved, but they cannot by themselves establish whether one group improved significantly more than the other. The gain-score analysis directly addressed this issue by comparing each learner's posttest-minus-pretest score across the two groups. The experimental group obtained a mean gain of 8.97, while the comparison group obtained a mean gain of 4.70. The 4.27-point difference was statistically significant, $t(72) = 3.72$, $p < .001$, with a large effect size of $d = 0.86$. Ho3 was consequently rejected.

This finding supports and extends previous Philippine studies reporting improved academic performance after game-based instruction. Its contribution is demonstrating that learners exposed to curriculum-aligned GBLQs improved not only relative to their own baseline performance. They improved significantly more than learners who received conventional lecture-discussion instruction. The large effect size indicates that the gain-score difference was not only statistically significant but also educationally meaningful within the context of the four-week intervention.

The gain-score result is consistent with Torres (2026), who found that digital game-based learning improved the academic performance of Grade 6 learners in Araling Panlipunan. It is also compatible with Panga et al. (2025), who reported favorable engagement outcomes associated with gamification. However, the present study differs by distinguishing measured academic achievement from outcomes that were not directly assessed. The formative assessment, posttest, and gain scores support conclusions about learners' performance on the assessed competencies, but they do not independently confirm higher motivation, engagement, retention, historical reasoning, or analytical thinking.

The gain-score analysis further demonstrates that conventional instruction still contributed to learning, as reflected in the comparison group's improvement from pretest to posttest. The experimental group's larger gain indicates that GBLQs provided an additional instructional advantage under the implemented conditions. This advantage may have resulted from more frequent retrieval practice, immediate feedback, repeated exposure to target concepts, and opportunities to correct misconceptions. These mechanisms are consistent with the principles of formative assessment and active learning. However, because these mechanisms were not separately tested, they should be treated as plausible explanations rather than independently verified mediators of the observed achievement effect.

Taken together, the similarities between the present findings and the reviewed literature indicate a generally consistent positive relationship between carefully designed game-based instruction and academic performance. Across the studies, immediate feedback, active participation, repeated practice, clear goals, and alignment with learning outcomes emerge as common instructional features. The findings therefore support the view that GBLQs can be more than recreational classroom activities when their content and mechanics are deliberately connected to curriculum competencies and meaningful feedback.

The differences across the literature concern the subject areas, grade levels, intervention duration, digital platforms, research designs, and outcome measures employed. Some

studies examined motivation or engagement, while others focused on achievement, attitudes, active learning, or learner perceptions. Some investigated contextual educational games, while others used quiz platforms or individual applications such as Wordwall. These variations suggest that game-based learning effectiveness does not come from points, rankings, timers, competition, or rewards alone. Its effectiveness depends on how such elements are combined with curriculum content, assessment design, teacher facilitation, corrective feedback, and learner reflection.

The present study contributes both contextually and methodologically. Contextually, it provides evidence from Grade 8 learners in a Philippine public-school Araling Panlipunan classroom studying competencies related to imperialism, the Enlightenment, revolutions, nationalism, and the emergence of nation-states. Methodologically, it demonstrates significant differences in total formative assessment performance, posttest achievement, and directly compared learner-level gain scores. These results indicate that the experimental group's advantage was evident during instruction, immediately after instruction, and in the magnitude of improvement from baseline.

However, the study's contribution remains appropriately bounded. It establishes that the implemented GBLQ package produced an advantage in measured academic performance under the conditions of the four-week intervention. It does not establish the superiority of one quiz platform, the long-term retention of knowledge, or the transfer of learning to broader forms of historical reasoning and civic analysis. It also does not independently demonstrate improved engagement, motivation, or analytical thinking because it did not measure these constructs separately through validated instruments, observations, performance tasks, or delayed assessments.

The findings have several implications for Araling Panlipunan instruction. First, GBLQs can make content-heavy lessons more interactive by requiring learners to respond actively to questions rather than passively receive information. Second, they can support formative assessment by providing immediate feedback and helping teachers identify misconceptions before a unit ends. Third, they can strengthen performance on historical and civic competencies through repeated retrieval and reinforcement. Fourth, they can provide teachers with timely evidence that may guide remediation, enrichment, and subsequent classroom discussion.

Based on the significantly higher formative, posttest, and gain scores of the experimental group, Araling Panlipunan teachers may integrate GBLQs into regular instruction, particularly during formative assessment, review sessions, remediation, concept reinforcement, and post-lesson evaluation. However, their use should be carefully planned. Questions must be aligned with the Most Essential Learning Competencies or MATATAG Curriculum standards and should include an appropriate balance of factual, interpretive, application-based, and analytical items. Teachers should also conduct post-quiz discussions so that learners understand why particular answers are correct or incorrect. In this manner, competition and scoring remain secondary to conceptual understanding and instructional feedback.

For school administrators, the findings indicate the importance of supporting teachers through professional development in the design and implementation of game-based formative assessments. Such support may include training in using platforms such as Wordwall, Kahoot!, Wayground, ClassPoint, and other accessible tools, as well as assistance in developing competency-aligned questions and meaningful feedback. Schools may also provide technical support, shared devices, dependable connectivity, and communities of practice through which teachers can develop, validate, and share localized Araling Panlipunan quiz banks. Low-technology and offline alternatives should be prepared to ensure that learners can participate equitably when devices or internet access are limited.

For curriculum planners and instructional leaders, GBLQs may be incorporated into instructional guides as optional enrichment, remediation, formative assessment, or review

activities. Their inclusion should emphasize curriculum alignment, diagnostic feedback, accessibility, and instructional purpose rather than competition, rankings, or rewards alone. GBLQs should also be positioned as complements to source analysis, written argumentation, classroom discussion, collaborative inquiry, and performance-based assessment.

Interpreting and applying the findings must also consider the study's limitations. Participants were drawn from only two intact sections in one school, limiting the generalizability of the findings to other schools, grade levels, teachers, and learner populations. The four-week intervention may not reflect the outcomes of sustained implementation across an entire grading period or school year. Using multiple quiz platforms also prevents conclusions about the comparative effectiveness of individual applications. In addition, possible teacher, classroom, technology-access, novelty, and section-level effects may have influenced learner performance. These limitations do not invalidate the observed differences, but they define the conditions within which the findings should be understood.

Future researchers should replicate the investigation across multiple schools, grade levels, teachers, and sections to determine whether the findings remain consistent in other contexts. Where administratively and ethically feasible, cluster randomization or baseline-adjusted analyses, such as analysis of covariance, may be used to strengthen causal interpretation. Future reports should also present relevant statistical assumption checks, confidence intervals, exact probability values, and effect sizes.

Further studies should include delayed posttests to determine whether the observed achievement advantage is maintained over time. Researchers should also use validated questionnaires, observation protocols, interviews, document-based questions, performance tasks, and analytical rubrics before drawing conclusions about engagement, motivation, long-term retention, historical reasoning, civic awareness, source-analysis skills, or analytical thinking. Moreover, comparative studies may investigate the relative effectiveness of Kahoot!, Wayground, Wordwall, and teacher-developed quiz games to determine which platforms, game mechanics, feedback formats, and question types best support specific Araling Panlipunan competencies.

The present findings indicate that GBLQs are not merely supplementary classroom games. When carefully designed, aligned with curriculum competencies, accompanied by explanatory feedback, and integrated with broader instructional practices, they can serve as meaningful formative assessment and review tools. Under the conditions of the present study, the experimental group achieved significantly higher formative assessment and posttest scores and significantly greater learning gains than the comparison group. The findings therefore provide local empirical evidence that curriculum-aligned GBLQs can produce a statistically significant and educationally meaningful advantage in the measured academic performance of Grade 8 learners in Araling Panlipunan, while conclusions concerning engagement, long-term retention, and analytical thinking remain areas for further investigation.

Conclusions

The experimental and comparison groups obtained identical mean pretest scores, indicating comparable baseline performance in the measured Araling Panlipunan competencies. Both groups improved after instruction, suggesting that conventional lecture-discussion instruction and the GBLQ-supported approach both contributed to learning. However, the experimental group obtained significantly higher total formative assessment scores than the comparison group, with a very large effect size. Accordingly, the first null hypothesis (Ho1) was rejected. This finding indicates that curriculum-aligned Game-Based Learning Quizzes substantially improved learners' performance during the formative phase of instruction.

The experimental group also obtained significantly higher posttest scores than the comparison group, with a very large between-group effect size. Consequently, the second

null hypothesis (Ho2) was rejected. This result demonstrates that learners who received GBLQ-supported instruction achieved stronger immediate post-intervention performance in the assessed Araling Panlipunan competencies than learners who received conventional lecture-discussion instruction.

More importantly, the direct between-group comparison of learner-level gain scores showed that the experimental group improved significantly more than the comparison group, $t(72) = 3.72$, $p < .001$, $d = 0.86$. Thus, the third null hypothesis (Ho3) was rejected. This finding confirms that the difference between the two instructional conditions was evident not only in the learners' final scores but also in the magnitude of their improvement from pretest to posttest. In this four-week quasi-experimental study, curriculum-aligned GBLQs produced a statistically significant and educationally meaningful advantage in the measured academic performance of Grade 8 learners in Araling Panlipunan.

Overall, the findings support using GBLQs as structured formative assessment, review, and concept-reinforcement tools in Grade 8 Araling Panlipunan. Their instructional value may stem from repeated retrieval practice, immediate feedback, opportunities to identify and correct misconceptions, and sustained interaction with curriculum-aligned content. Nevertheless, the findings do not establish that GBLQs improved learner engagement, motivation, long-term retention, historical reasoning, or analytical thinking because the study did not separately assess these constructs using validated instruments, performance-based measures, or delayed posttests. Therefore, the conclusions of the conclusions are limited to the measured formative assessment, posttest, and gain-score outcomes of the participating intact sections.

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Declaration of AI Use: Generative AI and AI-assisted technologies were used only to support language refinement, grammar checking, organization of ideas, and improvement of academic tone during manuscript preparation. The author reviewed, edited, and verified all AI-assisted outputs and takes full responsibility for the content, accuracy, analysis, interpretation, and final version of the manuscript.