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Chronoquest and Causalink: Innovative Game-Based Manipulative Strategies in Teaching Araling Panlipunan 8

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I. Introduction

One of the core subjects being taught in secondary education is Araling Panlipunan (AP). It plays a pivotal role in helping learners connect the reality of life through digging into the past. It is designed to help learners understand historical events, analyze social issues, and develop critical thinking skills. Globally, educators express the need to apply pedagogies in Araling Panlipunan that encourage learners to participate actively and collaborate with others in the learning process. This standpoint aligns with the view of UNESCO (2021), emphasizing the need for strong connections between higher education and primary education to renew its educational mission, as well as the use of pedagogical strategies that move beyond traditional lecture-based instruction that promote cooperation, collaboration, and active participation of learners.

One of the pressing concerns for AP teachers revolves around the confusion on how to effectively teach the subject to better benefit the student, especially in Kasaysayan ng Daigdig (World History). AP is considered one of the most content-loaded areas comprising the histories of the major civilizations and countries around the globe (Ramos & Inocian, 2022). In the Philippine context, Araling Panlipunan highlights the need for learners to cultivate understanding, social awareness, and critical judgment as future active citizens. However, data show persistent learning difficulties.

According to Mandarang (2021), Junior High School learners obtained only a 10% proficiency rating in Araling Panlipunan, indicating serious challenges in content mastery. Furthermore, national data on the National Achievement Test (NAT) indicate that Filipino learners often achieve Nearly Proficient to Low Proficient levels in core subjects, with Araling Panlipunan scores low in the 2023–2024 assessments, highlighting persistent gaps in mastery of Social Studies competencies (Baculad et al., 2025). These results remain a pressing issue regarding students' academic performance and engagement in the subject.

At the school level, Cariaga (2023) mentioned that many learners perceive Araling Panlipunan as uninteresting and less important compared to other subjects, often treating it as a minor course requirement. This observation highlights learners' passivity, manifested through inattentiveness during discussions, lack of interest in continuing learning tasks, and difficulty in retaining historical events and concepts. One major factor identified is the continued use of traditional teaching strategies bombarded with facts and content, due to the highly oriented content of Kasaysayan ng Daigdig (World History). Feedback from learners proves to be an additional problem because they think that it is uninteresting (Ramos & Inocian, 2022).

Although research shows that game-based learning can enhance engagement, motivation, and higher-order thinking in social studies (Lai & Hu, 2025), few studies examine specific game-based strategies that develop chronological understanding and cause-and-effect reasoning in classrooms. This gap highlights the need to evaluate how curriculum-aligned game strategies can support meaningful learning and critical historical reasoning in Filipino secondary classrooms.

Thus, this study aims to help not just the teachers but most importantly to students, in exploring interactive

game-based strategies, ChronoQuest and Causa Link by examining their effectiveness in improving students' performance in Araling Panlipunan and proposing a lesson plan that supports meaningful, engaging, and learner-centered instruction. Ultimately, this study responds directly to the broader problem of low achievement and disengagement among students in the Araling Panlipunan subject.

II. Statement of the Problem

This study assessed the Effectiveness of the ChronoQuest and CausaLink Game-Based Manipulative Strategies in Araling Panlipunan 8 at Arcelo Memorial National High School, Cebu Province, District of Liloan, during the school year 2025-2026 as a basis for Innovative Game-Based Plan.

Specifically, this study sought to answer the following questions:

1. What is the level of academic achievement in Araling Panlipunan 8 during the pretest of the group exposed to:

    1.1 ChronoQuest, and

    1.2 Causalink?

2. What is the level of academic achievement in Araling Panlipunan 8 during the posttest of the group exposed to:

    2.1 ChronoQuest, and

    2.2 Causalink?

3. Is there a significant difference between the pretest and posttest scores of the group exposed to:

    3.1 ChronoQuest, and

    3.2 Causalink?

4. Is there a significant mean gain difference on the pre-test and post-test scores between the group exposed to ChronoQuest and Causalink?

5. What is the respondents' level of satisfaction on ChronoQuest and CausaLink in teaching Araling Panlipunan 8 in terms of:

    5.1 motivation as to content;

    5.2 user experience as to materials; and

    5.3 knowledge as to process?

6. Is there a significant difference on the satisfaction between respondents who are exposed to ChronoQuest and CausaLink?

III. RESEARCH METHODOLOGY

This section describes the methods and procedures used in conducting the study. It presents the overall research design, the flow of the study, and the setting where it was carried out. The participants and sampling

techniques used are also discussed. In addition, this section explains the research instruments employed to gather the necessary data and outlines the step-by-step process of data collection.

Design

The researcher employed a quasi-experimental research design, specifically the pretest–posttest design and a descriptive quantitative research design using a survey questionnaire to determine the effectiveness of ChronoQuest and CausaLink in teaching Araling Panlipunan 8. A quasi- experimental research design is a type of experimental approach that help researcher examines the effect of an intervention on a dependent variable without random assignment of participants to groups (Creswell, 2014). This design is appropriate in educational settings where intact classes are used and randomization is not feasible. Quasi-experimental design lies in its ability to compare learning outcomes before and after the implementation of instructional strategies, allowing the researcher to determine whether significant changes in students' performance can be attributed to the interventions.

In this study, the effectiveness of ChronoQuest and CausaLink was measured based on the differences between the pretest and posttest scores of the participants. The study involved two groups: the first group is exposed to ChronoQuest, while the second group is exposed to CausaLink in teaching Araling Panlipunan 8 over the same period of time. Both groups are administered the same types of tests, namely the pretest and posttest, to ensure consistency and comparability of results. In addition, a descriptive quantitative research design was utilized through a survey questionnaire to gather data on students' perceptions of the usefulness of the instructional strategies. Utilized through a survey questionnaire to gather data on students' perceptions of the usefulness of the instructional strategies.

Flow of the Study

The primary purpose of this study was to determine the effectiveness of ChronoQuest and CausaLink as innovative game-based manipulative strategies in teaching Araling Panlipunan 8.

Input. The input includes the students' academic achievement in Araling Panlipunan 8 as reflected in their pretest and posttest scores after being exposed to the game-based manipulative strategies ChronoQuest and CausaLink. It also includes significant difference between the pretest-posttest scores of the group exposed to chronoquest and causalink, significant mean gain difference on the pretest-posttest scores between the group exposed in chronoquest and causalink. Moreover, Level of satisfaction and significant difference on the satisfaction exposed in chronoquest and causalink are also included.

Process. This pertains to the procedures undertaken in conducting the study, which include the preliminary stage, data gathering stage, and post–data gathering stage. It involves securing the necessary permissions, administering the pretest and posttest, implementing the game-based manipulative strategies ChronoQuest and CausaLink, collecting the satisfaction responses, as well as tabulating, analyzing, and interpreting the data to generate the findings, conclusions, and recommendations of the study.

Output. Finally, the output of the study was the development of a Lesson Plan integrating ChronoQuest and CausaLink: Innovative Game-Based Manipulative Strategies in Teaching Araling Panlipunan 8. This lesson plan was developed based on the evaluation of the students' performance in the pretest and posttest, their level of satisfaction in terms of content, materials, and process, as well as the analysis of significant differences and relationships from the findings. The lesson design served as a practical reference for teachers to effectively apply these strategies in classroom instruction, providing engaging, student-centered activities that promote deeper understanding, active participation, and improved academic performance in Araling Panlipunan 8.

Environment

This study was conducted at **Arcelo Memorial National High School,** located in Barangay San Vicente, Liloan, Cebu. The school is a government-run secondary institution under the Department of Education–Region VII and serves both junior and senior high school students through academic and technical-vocational programs aligned with the K to 12 Basic Education Curriculum.

Respondents

The respondents of the study were two sections of Grade 8 students at Arcelo Memorial National High School, Section Carnation and Section Daffodil, for the School Year 2025–2026, with forty students in each section, totaling eighty participants. To ensure comparability, the researcher used a matched–pair sampling technique, pairing students based on their pretest scores and first grading period grades. From each section, 20 students were selected to form two comparable groups.

A simple random sampling method, using a coin toss, was then applied to assign one group to ChronoQuest and the other to CausaLink as innovative game- based manipulative strategies in teaching Araling Panlipunan 8. This process ensured fairness in the assignment and allowed the researcher to examine the effectiveness of each strategy on learners' academic performance.

Instruments

In this study, the researcher used two research instruments. First was an adapted survey questionnaire developed by de Carvalho et al. (2018). This instrument assessed the respondents' level of satisfaction with the use of ChronoQuest and CausaLink as innovative game-based manipulative strategies in teaching Araling Panlipunan 8. The questionnaire covered three domains: motivation as to content, user experience as to materials, and knowledge as to process.

The second instrument was a researcher-made pretest–posttest questionnaire designed to measure the learners' academic achievement. The test consisted of 48 items aligned with the MELCs Curriculum Guide for Grade 8 Araling Panlipunan and was developed based on the recommendations of the cooperating teacher and the Table of Specifications to ensure content validity. The instrument underwent pilot testing among Grade 9 students who had already completed the Grade 8 curriculum.

IV. Results and Discussion

This section presents, analyzes, and interprets the data gathered to assess the effectiveness of ChronoQuest and CausaLink as game-based manipulative strategies in enhancing the academic achievement of students in Araling Panlipunan 8 at Arcelo National High School, Cebu Province, District of Liloan, during the School Year 2025–2026. The data were obtained from the results of the pretest and posttest administered to the groups exposed to ChronoQuest and CausaLink, as well as from a structured satisfaction survey.

LEVEL OF ACADEMIC ACHIEVEMENT DURING PRETEST

Table 1

PRETEST

Level	Ranges of Scores	ChronoQuest		Causalink	
		f	%	f	%
Outstanding	40-48	0	0.00	1	2.63
Very Satisfactory	37-39	1	2.50	1	2.63
Satisfactory	33-36	2	5.00	10	26.32
Fairly Satisfactory	29-32	0	0.00	5	13.16
Did not meet the Expectations	28 and below	37	92.50	21	55.26
Total		**40**	**100.00**	**38**	**100.00**

Average		**22.68**	**24.79**	
St. Dev.		**5.12**	**9.67**	

Table 2 shows the Chrono Quest and Causa Link results, reveals that both groups started with low levels of academic achievement before the intervention. Data shows that the ChronoQuest group had a significantly larger proportion of

learners (92.50%) who did not meet expectations compared to the CausaLink group (55.26%). This means that the Chrono Quest group had a lower baseline performance at the outset of the study.

In contrast, the Causa Link group showed better distribution across performance levels. While more than half still did not meet expectations, a considerable number of students reached Satisfactory (26.32%) and Fairly Satisfactory (13.16%) levels. This means that, although both groups got low-performing, the CausaLink group possessed a slightly higher understanding of the subject matter. The difference in mean scores further supports this observation. The CausaLink group obtained a higher average score (M = 24.79) compared to the ChronoQuest group (M = 22.68). However, both mean scores still fall within the "Did Not Meet Expectations" range, confirming that neither group had achieved adequate mastery of the competencies before the intervention.

Moreover, the standard deviation of the CausaLink group (SD = 9.67) is noticeably higher than that of the Chrono Quest group (SD = 5.12), indicating greater variability in student performance. This implies that the CausaLink group consisted of both low- and relatively higher-performing students, while the ChronoQuest group's scores were more clustered at the lower end. Such variability suggests that learners in the CausaLink group had more diverse levels.

LEVEL OF ACADEMIC ACHIEVEMENT DURING POST TEST
Table 2

Posttest

Level	Ranges of Scores	ChronoQuest		Link ausal	
		f	%	f	%
Outstanding	40-48	7	17.50	6	15.79
Very Satisfactory	37-39	15	37.50	17	44.74
Satisfactory	33-36	11	27.50	13	34.21
Fairly Satisfactory	29-32	1	2.50	0	0.00
Did not Meet the Expectations	28 and below	6	15.00	2	5.26
Total		**40**	**100**	**38**	**100**
Average		**35.43**		**36.58**	
St. Dev.		**4.99**		**3.28**	

Table 2 shows the ChronoQuest and CausaLink results after the implementation of the intervention. The data reveal a significant improvement in the academic achievement of learners in both groups; the results show a sudden shift of their performance from lower levels in the pretest to higher achievement categories in the posttest.

Data reveal that the majority of learners in both groups moved into the Very Satisfactory and Satisfactory levels. In the ChronoQuest group, 37.50% of learners achieved a Very Satisfactory rating, followed by 27.50% in the Satisfactory level and 17.50% reaching Outstanding performance. This means that a large proportion of students were able to attain a

satisfactory level of mastery, with several demonstrating high academic performance.

In comparison, the CausaLink group demonstrated a slightly higher level of academic performance, with 44.74% of learners reaching the Very Satisfactory level and 34.21% attaining a Satisfactory rating. Moreover, 15.79% of the learners achieved an Outstanding level, while only a small percentage (5.26%) did not meet expectations. Results reveal that the majority of students were able to achieve a higher level of mastery after the intervention in the CausaLink group. This means that the game-based strategy is effective in enhancing learners' understanding of the subject matter.

Furthermore, the computed mean scores and standard deviations support the observed improvements in both groups. The CausaLink group obtained a higher mean score (M = 36.58) compared to the ChronoQuest group (M = 35.43), indicating slightly higher overall performance. Additionally, the lower standard deviation of the CausaLink group (SD = 3.28) compared to the ChronoQuest group (SD = 4.99) suggests more consistent performance among learners. Overall, the posttest results indicate that both interventions were effective in improving academic achievement, with CausaLink showing an advantage in terms of performance and consistency.

Similarly, the CausaLink group exhibited strong performance, with the highest percentage of learners (44.74%) attaining a Very Satisfactory level. A significant number also achieved Satisfactory (34.21%) and Outstanding (15.79%) ratings. Notably, only 5.26% of learners remained in the Did Not Meet Expectations category, compared to 15.00% in the ChronoQuest group. This suggests that the CausaLink strategy may have been slightly more effective in reducing the number of low-performing students.

SIGNIFICANT DIFFERENCE BETWEEN PRETEST AND POSTTEST

Table 3

Significant Difference between the Pretest and Posttest Scores of the group exposed to ChronoQuest.

Source of Difference	Mean	Standard Deviation	Mean Difference	t- value	p- value	Decision	Result
Pretest	22.68	5.12					
			12.75	23.544*	0.000	Reject Ho	Significant
Posttest	35.43	4.99					

significant at $p < 0.05$ (two-tailed); df=39

This shows a significant increase in posttest scores of learners exposed to ChronoQuest, from a pretest mean of 22.68 to a posttest mean of 35.43 ($t = 23.544$, $p = 0.000$), demonstrating that the game-based intervention enhanced academic achievement in Araling Panlipunan. This result reveals that ChronoQuest effectively promoted active engagement, collaborative problem- solving, and reflective thinking, allowing learners to construct historical knowledge through shared experiences and peer feedback (Vygotsky, 1934; Andreev, 2022). According to Şener (2021), Lai and Hu (2025), and Ashfaq (2025), integrating sequencing and cause-and-effect reasoning tasks enhanced critical thinking and analytical skills beyond rote memorization. Empirical studies in both international and Philippine contexts further support these findings, showing that game-based strategies improve mastery, engagement, and motivation (Hwang et al., 2015; Karakoç et al., 2020; Nadeem, 2023; Najuah et al., 2023; Bayrante, 2021; Florese, 2025; Panga et al.,2025; Wordu & Atabang, 2024).

Moreover, other studies reveal that game-based interventions enhance engagement; in terms of cognitive achievement, results may vary depending on learners' prior knowledge, self-regulation, or the degree of teacher

scaffolding (Madigan & Curran, 2021; Liu et al., 2025). This highlights the effectiveness of ChronoQuest, a well-designed games-based manipulative that incorporates interactive, manipulative, and reflective tasks. As seen in CausaLink and ChronoQuest, they have been consistently shown to foster higher-order thinking, chronological reasoning, and meaningful participation (Abrahan et al., 2025; Abellada et al., 2025; Malto & San Juan, 2025). These findings align with ChronoQuest, learner-centered game-based strategies.

SIGNIFICANT DIFFERENCE BETWEEN PRETEST AND POSTTEST

Table 4
Significant Difference between the Pretest and Posttest Scores of the group exposed to CausaLink

Source of Difference	Mean	Standard Deviation	Mean Difference	t- value	p-value	Decision	Result
Pretest	24.79	9.67					
			11.79	7.207*	0.000	Reject Ho	Significant
Posttest	36.58	3.28					

significant at $p < 0.05$ (two-tailed); df=37

significant at $p < 0.05$ (two-tailed); df=37

The results presented in Table 5 indicate a significant increase in the academic performance of learners exposed to CausaLink. The pretest mean score of 24.79 increased to a posttest mean of 36.58, reflecting a mean difference of 11.79. This improvement was statistically significant, with a t-value of 7.207 and a p-value of 0.000, leading to the rejection of the null hypothesis. These findings reveal that the CausaLink game-based manipulative strategy effectively enhanced learners' mastery of Araling Panlipunan concepts.

The notable reduction in standard deviation from 9.67 in the pretest to 3.28 in the posttest indicates that the game helped learners achieve a more consistent understanding of the concepts. Moreover, Panga et al. (2025) reported that gamification increased learner engagement from 44.44% in the pretest to 86.88% in the posttest, closely reflecting the present study's findings, Chrono- Quest improved from a mean of 22.68 to 35.43 and CausaLink from 24.79 to 36.58, both with p-values of 0.000. Similarly, Bayrante (2021), Florese (2025), and Wordu and Atabang (2024) observed significant gains in academic performance, motivation, and engagement through game-based approaches. Other studies present game-based manipulatives strategies as effective for developing critical thinking, chronological reasoning, and cause-and-effect analysis (Abrahan et al., 2025; Abellada et al., 2025; Teaching Made Practical, 2016; Cause and Effect Dominoes, 2014). These findings support the present study and reveal that well-designed, teacher-led game-based interventions can significantly enhance both learner engagement and academic achievement

SIGNIFICANT DIFFERENCE IN MEAN GAIN BETWEEN GROUP

Table 5
Test of Significant Mean Gain Difference on the Pre-test and Post-test scores between the two groups

Source of Difference	Mean Gain	Standard Deviation	Mean Gain Difference	t- value	p-value	Decision	Result

Chronoquest	12.75	3.43					
			0.96	0.569	0.571	Do not reject Ho	Not Significant
Causalink	11.79	10.08					

This table presents the test of significant mean gain differences between the two groups exposed to ChronoQuest and CausaLink. The mean gain for learners using ChronoQuest was 12.75 (SD = 3.43), while the mean gain for those using CausaLink was 11.79 (SD = 10.08), resulting in a mean gain difference of 0.96. The t-value of 0.569 and a p-value of 0.571 indicate that the difference between the two groups is not statistically significant at the 0.05 level. Consequently, the null hypothesis is not rejected, suggesting that both ChronoQuest and CausaLink were similarly effective in improving the academic performance of learners in Araling Panlipunan.

Despite the numerical difference in mean gains, the lack of statistical significance implies that neither game-based strategy demonstrated a clear advantage over the other. Both game-based strategies appear to support learners' understanding and engagement effectively. This finding aligns with the Philippine studies highlighting the benefits of game-based instructional strategies in promoting critical thinking, cause-and-effect reasoning, and learner engagement (Panga et al., 2025; Bayrante, 2021; Florese, 2025; Wordu & Atabang, 2024). Therefore, while the two strategies may differ in design and flow of the activities, both ChronoQuest and CausaLink effectively enhance academic achievement and provide engaging, interactive learning experiences in Araling Panlipunan. This means that both strategies can be considered equally practicable options in integrating into the lesson for classroom implementation, depending on teacher preference and learning context.

LEVEL OF SATISFACTION ON CHRONOQUEST AND CAUSALINK

Table 6
Motivation as to Content

		ChronoQuest			CausaLink		
S/N	**Indicators**	**WM**	**SD**	**VD**	**WM**	**SD**	**VD**
1	Nakapupukaw ng aking atensyon.	3.38	0.49	VH	3.24	0.59	H
2	Malinaw at madaling maunawaan.	3.45	0.50	VH	3.24	0.82	H
3	Nakatutulong sa akin na mas maunawaan ko ang mga konsepto ng Araling Panlipuan.	3.43	0.50	VH	3.45	0.69	VH
4	Angkop sa mga konsepto sa Araling Panlipunan.	3.50	0.51	VH	2.79	0.93	H
5	Nakatutulong sa akin na mas maalala ang impormasyon kumpara sa tradisyonal na mga libro	3.38	0.49	VH	3.03	0.75	H
	Aggregate Weighted Mean	**3.43**		**VH**	**3.15**		**H**
	Aggregate Standard Deviation		**0.50**			**0.76**	

Legend: 3.25-4.00-Very High(VH); 2.50-3.24-High (H); 1.75-2.49-Low (L);1.00-1.74-Very Low (VL)

This table presents the respondents' level of satisfaction with ChronoQuest and CausaLink in teaching Araling Panlipunan 8 in terms of motivation as to content. The results show that learners had positive perceptions of both game-based strategies, with ChronoQuest obtaining higher and more consistent ratings compared to CausaLink.

Data shows that ChronoQuest consistently received Very High ratings across all items. The highest-rated indicator, "Angkop sa mga konsepto sa Araling Panlipunan," obtained a weighted mean of 3.50, suggesting that learners strongly perceived the content as relevant and aligned with the subject matter.

Other indicators, such as clarity and ability to enhance understanding, also received high ratings, indicating that the content presentation was effective in supporting comprehension. Having a weighted mean of 3.43 (Very High) reveals that learners were highly satisfied with the content of ChronoQuest.

In addition, the relatively low standard deviation (SD = 0.50) indicates that learners' responses were closely clustered around the mean, reflecting a high level of agreement in their perceptions. This suggests that the effectiveness of ChronoQuest's content was consistently experienced across most learners, with minimal variation in their responses.

Furthermore, the higher satisfaction rating of ChronoQuest compared to CausaLink may be attributed to the engaging activity of timeline-based learning tasks in the subject. A timeline game makes it easier for students to build a mental framework of "what happened, when, and how events are connected over time" by allowing them to visualize historical events sequentially and coherently. This kind of activity fits with students' innate tendency to view history as a narrative, which makes learning more meaningful and intrinsically motivating. Learners get a sense of progression and discovery when activities are organized chronologically, which can pique their interest and keep them focused throughout the exercise.

In contrast, while cause-and-effect matching tasks such as those used in CausaLink promote higher-order thinking, they may also require more abstract reasoning and need deeper cognitive understanding, which can be challenging for some learners. The process of identifying causal relationships demands prior understanding of events and the ability to analyze complex connections may reduce immediate engagement, especially for students who are less motivated in analytical skills. As a result, although CausaLink was effective in enhancing conceptual understanding, it may not have been as immediately motivating or enjoyable as the more structured and visually guided timeline activity.

Table 7
User Experience as to Materials

		ChronoQuest			CausaLink		
S/N	**Indicators**	**WM**	**SD**	**VD**	**WM**	**SD**	**VD**
1	Angkop para sa mag-aaral.	3.68	0.47	VH	3.29	0.80	VH
2	Kompleto kaya madaling gamitin sa Asignaturang Araling Panlipunan.	3.48	0.51	VH	3.24	0.88	H
3	Mayroong magandang kulay at kaakit-akit na disenyo na nakaengganyo sa mga mag-aaral	3.73	0.45	VH	3.00	0.77	H
4	Nagpabubuti sa aking karanasan sa pag-aaral.	3.60	0.50	VH	3.29	0.80	VH
5	Gawa sa mga dekalidad na materyales na hindi madaling masira.	3.40	0.50	VH	3.00	0.96	H
	Aggregate Weighted Mean	**3.58**		**VH**	**3.16**		**H**
	Aggregate Standard Deviation		**0.48**			**0.84**	

Table 7 presents the respondents' level of satisfaction on ChronoQuest and CausaLink in teaching Araling Panlipunan 8 in terms of user experience as to materials. The results show that learners had positive perceptions of both instructional materials, with ChronoQuest receiving higher and more consistent ratings compared to CausaLink.

Data reveals that ChronoQuest got Very High ratings across all indicators, showing learners' strong positive response in terms of materials. The highest-rated indicator, "Mayroong magandang kulay at kaakit-akit na disenyo na nakaengganyo sa mga mag-aaral," achieved a weighted mean of 3.73, suggesting that the visual appeal and design of the material significantly contributed to learner engagement. Other indicators, such as appropriateness for learners (WM = 3.68) and enhancement of learning experience (WM = 3.60), illustrate that the materials being used were not only useful in terms of function but also pleasing to the eyes of the learners.

Table 8
Knowledge as to Process

		ChronoQuest			CausaLink		
S/N	**Indicators**	**WM**	**SD**	**VD**	**WM**	**SD**	**VD**
1	Maayos, malinaw at organisado.	3.53	0.51	VH	3.53	0.60	VH
2	Ang mga direksiyon ay malinaw at madaling maunawaan.	3.63	0.49	VH	3.61	0.75	VH
3	Sapat para sa itinakdang oras.	3.45	0.50	VH	2.87	1.02	H
4	Nagbigay saya sa aking pakikilahok sa aktibidad.	3.58	0.50	VH	3.24	1.00	H
5	Hindi ko makalilimutan.	3.63	0.49	VH	2.87	0.99	H
	Aggregate Weighted Mean	**3.56**		**VH**	**3.22**		**H**
	Aggregate Standard Deviation		**0.50**			**0.87**	

Table 8 presents the respondents' level of satisfaction on ChronoQuest and CausaLink in teaching Araling Panlipunan 8 in terms of knowledge as to process. The results indicate that both strategies were perceived positively in terms of procedural clarity and organization, with ChronoQuest demonstrating a higher and more consistent level of satisfaction compared to CausaLink. Data shows that ChronoQuest has very high ratings across all indicators, indicating that learners strongly agreed that the processes were clear, organized, and easy to follow. Indicators such as "Ang mga direksiyon ay malinaw at madaling maunawaan" and "Hindi ko makalilimutan" both obtained weighted means of 3.63, highlighting that the procedures were not only understandable but also memorable for learners. Additionally, "Maayos, malinaw at organisado" (WM = 3.53) and "Nagbigay saya sa aking pakikilahok sa aktibidad" (WM = 3.58) indicate that the structured process contributed to both clarity and enjoyment. The aggregate weighted mean of 3.56 (Very High) consistently perceived the ChronoQuest process as effective and supportive of learning. The low standard deviation (SD = 0.50) further suggests a high level of agreement among learners, reflecting consistency in their positive experiences.

Overall, the results indicate that while both ChronoQuest and CausaLink delivered organized and well-structured learning processes, ChronoQuest provided a more reliable, interesting, and memorable procedural experience. Higher ratings for clarity, organization, and retention show that well-designed procedures are essential for assisting students.

The concepts of scaffolding and guided learning provide learners with precise instructions and organized processes to help them finish tasks successfully, which can be used to explain these results. Lev Vygotsky (1934) asserts that students gain from guided assistance that allows them to complete tasks in their zone of proximal development. ChronoQuest's excellent satisfaction ratings indicate that its procedural approach offered this assistance, enabling students to participate in the activities with greater assurance and significance.

Furthermore, empirical studies support the importance of well-organized learning processes in enhancing academic engagement and retention. According to Hwang et al. (2015) and Karakoç et al. (2020), instructional strategies with clear directions, appropriate pacing, and engaging procedures improve learners' participation and understanding. In the Philippine context, studies have also found that structured and interactive learning processes contribute to improved comprehension and sustained engagement in Araling Panlipunan (Florese, 2025; Panga et al., 2025; Wordu & Atabang, 2024). These findings support the results of the present study; ChronoQuest and CausaLink were effective in providing structured learning processes, with ChronoQuest demonstrating greater consistency and impact.

Table 9

Summary on Respondents' Level of Satisfaction on ChronoQuest and CausaLink in teaching Araling Panlipunan 8

	ChronoQuest			CausaLink		
Indicators	**WM**	**SD**	**VD**	**WM**	**SD**	**VD**
Motivation as to content	3.43	0.50	VH	3.15	0.76	H
User experience as to materials	3.58	0.48	VH	3.16	0.84	H
Knowledge as to process	3.56	0.50	VH	3.22	0.87	H
Grand Mean	**3.52**		**VH**	**3.18**		**H**
Grand Standard Deviation		**0.49**			**0.82**	

SIGNIFICANT DIFFERENCE IN SATISFACTION BETWEEN GROUPS

Table 10

Test of Difference on the Satisfaction between the Respondents who are exposed to ChronoQuest and CausaLink

Variables	Source of Difference	$\bar{x}$	sd	Mean Diff.	t-value	p-value	Decision	Result
Motivation as to content	Chronoquest	3.43	0.36	0.28	3.25*	0.002	Reject Ho	S
	Causalink	3.15	0.39					
User experience as to materials	Chronoquest	3.57	0.31	0.41	4.10*	0.000	Reject Ho	S
	Causalink	3.16	0.54					
Knowledge as to process	Chronoquest	3.56	0.27	0.34	2.94*	0.005	Reject Ho	S
	Causalink	3.22	0.66					

*significant at p<0.05; NS = Not Significant; S = Significant

Based on the test of difference in satisfaction between respondents exposed to ChronoQuest and CausaLink, the results in Table 11 reveal statistically significant differences across all three satisfaction dimensions: motivation as to content, user experience as to materials, and knowledge as to process. In all variables, learners exposed to ChronoQuest

consistently obtained higher mean ratings compared to those exposed to CausaLink.

The calculated t-value and a p-value below the 0.05 level demonstrated that the difference in mean scores between the two groups for motivation as to content was statistically significant. This finding implies that, in comparison to CausaLink, ChronoQuest was thought to be more successful at delivering content that held students' interest, promoted conceptual understanding, and aided in content memory.

Similarly, there was a noticeable difference in the materials' user experience, with ChronoQuest scoring higher. This result suggests that ChronoQuest was more appropriate, visually appealing, and helpful for learning tasks. The higher t-value and greater mean difference on this dimension highlight the learners' greater preference for the ChronoQuest materials' usability and design.

In terms of knowledge as to process, the results also show a statistically significant difference in favor of ChronoQuest. This suggests that learners perceived the procedures, instructions, and flow of activities in ChronoQuest as clearer, more organized, and more conducive to meaningful participation than those in CausaLink.

SUMMARY

This study assessed the effectiveness of ChronoQuest and CausaLink as game-based manipulative strategies in enhancing the academic achievement of Grade 8 learners in Araling Panlipunan at Arcelo Memorial National High School during the School Year 2025–2026. A quasi-experimental pretest–posttest design was used. Respondents were selected through matched-pair sampling, with 20 students per group, and assigned via coin toss. Data were gathered using an adapted satisfaction questionnaire and a 48-item researcher-made test aligned with MELCs. Statistical tools included frequency, percentage, mean, standard deviation, paired t-test, and independent samples t-test. Findings informed conclusions and recommendations for improved instructional practices.

FINDINGS

The following findings were obtained based on the sub-problems formulated in the study: In the pretest results, both ChronoQuest and CausaLink groups demonstrated low academic achievement. The majority of learners in the ChronoQuest group and more than half of the learners in the CausaLink group did not meet expectations. The mean scores of both groups also indicated low levels of mastery of Araling Panlipunan concepts before the intervention.

In the posttest result, both the ChronoQuest and CausaLink groups showed improvement in academic achievement. The majority of learners in both groups attained the Very Satisfactory level. The mean scores of both groups increased, with the CausaLink group obtaining a slightly higher mean and a lower standard deviation compared to the ChronoQuest group.

Based on the comparison of pretest and posttest scores, there was a significant difference between the pretest and posttest scores of both the ChronoQuest and CausaLink groups, indicating an improvement in academic achievement after the intervention.

Based on the comparison of mean gain differences between the two groups, there was no significant difference in the mean gain scores between the ChronoQuest and CausaLink groups. Although the CausaLink group obtained a slightly higher mean gain, the difference was not statistically significant.

Based on the results, the respondents reported a high to very high level of satisfaction with the use of ChronoQuest and CausaLink in teaching Araling Panlipunan 8 across motivation as to content, user experience as to materials, and knowledge as to process. ChronoQuest consistently received very high ratings, while CausaLink received high ratings.

Based on the results, there was a statistically significant difference in the level of satisfaction between respondents exposed to ChronoQuest and exposed to knowledge as to process. Learners who used ChronoQuest reported higher satisfaction in all three dimensions compared to those who used CausaLink.

V. CONCLUSIONS

Based on the findings, it is concluded that ChronoQuest and CausaLink game-based manipulative strategies in enhancing the academic achievement of Grade 8 learners in Araling Panlipunan are effective. Before the intervention, both groups scored low in terms of mastery of content, but showed significant improvement after the interventions, showing that game-based learning is suitable for teaching Araling Panlipunan due to its nature, which is interactive, structured, and learner-centered activities that support collaboration, communication, creativity, and critical thinking. The mean gains between the two groups were comparable, indicating that both strategies are equally effective in improving academic performance.

In terms of satisfaction, findings revealed high to very high levels across motivation as to content, user experience as to materials, and knowledge as to process. ChronoQuest consistently generated higher satisfaction ratings, making learner engagement, clearer learning processes, and more favorable experiences with instructional materials. The significant differences in satisfaction highlight that the design of game-based strategies influences learners' experiences, confirming that well-designed, teacher-led games can effectively enhance both learning outcomes and learner satisfaction in Araling Panlipunan.

RECOMMENDATIONS

Based on the aforementioned conclusion and findings of the study, it is recommended to incorporate game-based strategies such as ChronoQuest and CausaLink in the lesson to enhance learner engagement, satisfaction, and mastery of Araling Panlipunan concepts. Teachers may incorporate ChronoQuest and CausaLink in their lesson plans to come up with interactive and learner-centered activities that promote critical thinking and understanding of historical events. Plans for lessons can build on these strategies to further support meaningful and engaging Social Studies instruction.

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