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Examining Level of Competencies: A Metacognitive Learning, Brain-Based Learning and Social Learning Theory Approach in Teaching in Grade 9 Araling Panlipunan

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Abstract

This study targeted to assess the impact of Metacognitive Learning, Brain-based Learning and Social Learning Theory Approaches on the performance of Grade 9 students in Araling Panlipunan.

Research examined the level of performance of students on various competencies in Fourth Quarter. Researcher used a descriptive-comparative research design with a single group pre-test and post-test approach to assess the performance improvement of students. At the same time, it incorporated metacognitive learning approach strategies (concept mapping, peer teaching, and debate), brain-based learning strategies (chunked instruction, KWL charting, and explicit teaching), and social learning theory approach strategies (multimedia, gamification, and role-playing) into the teaching-learning process.

A pre-test and post-test were administered to a section of Grade 9 students at Manabo National High School. A teacher-made 50-item multiple-choice test was used for both assessments. Data were processed using statistical treatments such as mean scores, paired-sample t-tests, and independent t-tests.

After the implementation of different strategies of metacognitive, brain-based and social learning theory approaches, students exposed to these approaches performed significantly better than those taught using traditional methods. Experimental group showed significant improvement, consistently achieving "Satisfactory" ratings, while control group remained at the "Fairly Satisfactory" level. Finally, findings indicate learner-centered, interactive, and collaborative strategies lead to a higher academic performance than traditional teaching approach.

Keywords: *metacognitive learning approach, brain-based learning approach, social learning theory approach, academic performance, paired sample t-tests, independent t-tests*

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I. INTRODUCTION

Learning approaches play a crucial role in promoting high quality education as they have a direct impact on students' ability to acquire knowledge, retain essential information, and effectively apply it to real-world experiences. As highlighted by Sustainable Development Goal 4 (SDG 4), achieving high-quality education requires creative and practical approaches to teaching. One of the key targets of quality education (SDG 4) is to increase the amount of people and youth with technical and vocational skills that are necessary for employment, respectable careers, and entrepreneurship. These skills are important to the workforce. This key target is interconnected with SDG 8 (Decent Work and Economic Growth) which states that education equips individuals with the skills needed for decent jobs and economic growth.

There has been a widely known debate on the types of learning approaches students benefit the most from. The metacognitive learning approach, brain-based learning approach and the social learning theory approach are only some of the many approaches that have drawn a lot of attention because of their potential to improve learning outcomes. One might say they benefit more from a metacognitive learning approach because they are more inclined to have critical awareness and understanding of their performance in their tasks. Others may say they are more predisposed to a brain-based learning approach from which the brain's ability to change, remap, and organize itself adjusts while it absorbs new information. Some may find social learning theory approach more helpful to them as they tend to learn more from observing others and their environment.

The ability of people to recognize their cognitive processes, watch them while they happen, regulate, and adapt them to the demands of the learning process is known as metacognition. Use of metacognition in learning has been proved by studies. Research has demonstrated that the application of metacognitive methods enhances higher order cognitive functioning, attentional and memory management, self-assurance, and results in autonomous and significant learning. (Mitsea & Drigas, 2019). Various studies have examined the metacognitive learning approach. Stanton et. al. (2021) cited in their study that pupils with metacognitive skills perform better compared to their peers that are currently developing them. It was also highlighted that those who have well-developed metacognition are able to identify concepts and have an immediate register on how to understand these concepts.

Concept mapping is one of the metacognition tools that helps students visually through identifying one big concept and spreading them out into little pieces of information. The information can be presented in various formats, including graphs, tables, charts, diagrams, and other grapgic organizers. It tests one memory in making the concept map and aids in filling in gaps that may appear in the topics and at the same time connecting them to one another (Nguyen, H., & Pham, Q., 2018). Another metacognition tool is debate which can be used both as content delivery method and assessment tool. Incorporating debate as an active learning strategy in teaching is a powerful and engaging approach that fosters critical thinking, communication, and collaboration among students (Roger & Stewart-Lord, 2019). From the traditional teacher-centered to the learner-centered classroom approach, debate has been one of the effective instructional tools in developing 21st century learners. Debate requires learners to examine issues, evaluate evidences and articulate arguments, thus developing their critical thinking. It

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also encourages learners to be more confident in speaking publicly, while fostering empathy and open-mindedness. It is also a great avenue for collaborative learning as learners become more engaged in preparation and discussion. The last metacognition tool that this study utilized is peer teaching. Peer teaching is much like a teacher-student approach, but the difference is that students teach other students. This approach's belief is that it "teaches to learn twice", which means that by a student teaching, they learn, and when they are the one being taught, they also learn. It helps learners take charge of their learning by reviewing and organizing what they already know. They get a clearer understanding of the material, identify any missing parts, discover new insights, and reshape their knowledge into fresh ideas. (Dueck, 2019).

The term "Brain-Based Learning" refers to any instructional method that uses knowledge of the human brain to arrange the way that lessons are created and facilitated with a focus on the way the brain naturally picks up knowledge. This method's benefit is by communicating thoughts and hearing what others have to say: learners are able to modify their prior understanding and allow for new information and increase their awareness level (Uzezi & Jonah, 2017). Throughout the years, several research studies have tackled the brain-based learning approach as a more effective way in teaching. Funa et al. (2024) found out in their study that the use and integration of Brain-based Learning have a significant positive effect on the student conceptual understanding. Brain-based learning has the strongest applications of psychology and neuroscience in the development of a new framework for learning, teaching, training, and education. Its central focus is on the way students are motivated, the way attention works, the way memories are formed, and the way information is presented (Shukla, 2019).

According to the study of Rasmitadila et al. (2020), it is important that we take into consideration how the brains work in organizing teaching strategies, as backed up by studies over the year. One such example is explicit teaching, which has been known to be effective as well as aligned with how our brain naturally learns. It includes presenting learning content in a direct, clear and systematic manner, with the inclusion of appropriate and immediate feedback. Bouziane (2019) studied the effect of explicit instruction in critical thinking on higher-order thinking skills in reading comprehension and found out a significant improvement in the performance of the students.

According to brain-based learning theories, the brain thrives on structured, purposeful, and engaging instruction that reduces cognitive overload. When learners are aware of what they are expected to learn, and are guided through well-modeled examples with frequent practice and reinforcement, it mirrors how the brain processes, stores, and retrieves information effectively. Another brain-based learning tool is chunked instruction. This brain-based learning technique divides material into smaller, easier-to-understand "chunks" to enhance comprehension, memory, and recall. This method is in line with how information is normally processed and stored by the human brain, particularly in working memory. Since our brain can only hold a certain load of information at a time, chunked instruction reduces cognitive load, enabling learners to process information more efficiently (Putri et al., 2024). The last brain-based learning approach tool that this paper utilized is the KWL charting. This is utilized often by primary teachers. It is also referred to as a thinking routine. Charting helps a student organize new information because a three-column is used. K stands for know, W is wonder, and L is for learned. The column may

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reflect on the information that students have discovered and absorbed to organize it in a manner that they can understand and their thoughts arranged (Bilsborough, 2018).

The social learning theory approach is based on the Social Learning Theory (SLT) pioneered by Albert Bandura. It provides a framework for how learning takes place in a social context. This theory emphasizes that learning knowledge and behavior is not limited to direct instruction or personal experience but can also occur by observing, imitating, and modeling. In the educational setting, the classroom serves as a social learning environment where teachers, classmates, and even digital media serve as role models or influencers. Students tend to emulate behaviors that they observe from their classmates especially those that are given praise or rewards. Its application in educational setting includes utilizing role-playing, gamification and use of multimedia as teaching strategies which promotes participation, critical thinking and collaborative learning. These skills are all essential in learner-centered approach.

Using role-playing as a teaching strategy allows students to simulate real-life situations, where roles and scenario or situations are given by the teacher. It becomes an effective way of learning through imitating, observing and socializing (Suryadi & Subekti, 2020). Studies also showed that role-playing can enhance student engagement, increase their motivation and retain what they have learned better as students can relate their real-life experiences into the given situation (Houghton, 2020). In the study of Fu & Li (2025), they found out that role-play produced positive impact on the performance of the experimental students compared to the control group. Role-playing provides students an environment to socialize, imitate behaviors and receive feedback. Another strategy on STL is gamification. Gamified learning tasks includes game features like rewards, scores and levels which adds excitement, fun and engagement to students' learning. Paľová & Vejačka (2022) demonstrated how gamification brings enjoyment, motivation, and interaction in the classroom. Supporting Social Learning Theory principle, it promotes team work, friendly competition and setting good behaviour. Also, the feedback or reward system of gamification reinforces students desirable classroom habits.

Also, an STL strategy, multimedia integration, including audio, video, animation, and interactive information, has become a fundamental part of contemporary teaching and learning in the current digital era. Multimedia is being used by educators more and more to improve instruction and accommodate students' varied learning styles (Mayer, 2021). Multimedia becomes an effective tool for presenting knowledge and encouraging social interaction, imitation, and observational learning when it is based on Social Learning Theory (SLT). In addition to promoting the acquisition of knowledge, this also influences students' attitudes and convictions about their own skills, or what Bandura called self-efficacy. Additionally, collaborative learning and social engagement are improved by interactive multimedia technologies. These settings give students the chance to engage with the material and with one another, fostering a social setting where knowledge is jointly created.

Araling Panlipunan is one of the subjects that many people find boring or difficult to understand. Students often lack interest and are less attentive towards it because of the need to memorize concepts, history, and people. The dates and events and places in geography are additional things that make it difficult for a student to grasp the topics. In the Philippines, the

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Araling Panlipunan subject for Grade 9 in public schools is known as *Ekonomiks*, which centers on the primary concepts of economics as a whole, microeconomics, macroeconomics and the different economic sectors. It aims to equip learners with knowledge and skills primarily geared towards being a productive member of the economy as the topics are highly practical and applicable to everyday life. Nevertheless, learners lack enthusiasm in the subject because of different factors, and one is how learners carry out learning tasks. Hence, choosing learning approaches that cater to the students and the teachers needs is the key in holding the attention of the learners and making sure their performance remains excellent (Blegur et al., 2021).

Numerous studies have looked closely at how metacognitive and brain-based learning techniques affect students' learning outcomes, but there is limited research on the integration of brain-based learning approaches in the teaching of social sciences, particularly in the context of *'Araling Panlipunan'* in the Philippines. In addition, there is a need for comprehensive approach that integrates metacognitive, brain-based and social learning theory strategies to enhance how we teach *Araling Panlipunan*. Implementing these innovative approaches in teaching *Araling Panlipunan* offers not only improved learning outcomes but lifelong learning skill as well. *Araling Panlipunan* teachers can create a more engaging, effective and inclusive classroom environment by using these approaches. This study poses potential improvement in the educational practices and policies, and benefits for both teachers and students.

This research aimed to determine the effects of Metacognitive Learning, Brain-based Learning, and Social Learning Theory Approaches on the performance of Grade 9 students in *Araling Panlipunan*. Specifically, it sought to answer the following questions: What is the level of performance of Grade 9 students in their pre-test in the following topics: (a) *Palatandaan ng pambansang kaunlaran, (b) Gampanin ng mamamayang Pilipino upang makatulong sa pambansang kaunlaran, (c) Bahaging ginagampanan ng agrikultura, (d) Dahilan at epekto ng suliranin ng sektor ng agrikultura, (e) Patakarang pang-ekonomiya nakatutulong sa sektor ng agrikultura, (f) Gampanin ng sektor ng industriya at mga patakarang pang-ekonomiyang nakatutulong dito, (g) Gampanin ng sektor ng paglilingkod at mga patakarang pang-ekonomiyang nakatutulong dito, (h) Gampanin ng impormal na sektor at mga patakarang pang-ekonomiyang nakatutulong dito, and (i) Pang-ekonomikong ugnayan at patakarang panlabas na nakakatulong sa Pilipinas.* It also sought to determine the level of performance of Grade 9 students taught in the traditional method (control) and those exposed to Metacognitive Learning, Brain-based Learning and Social Learning Theory Approach (experimental) using the following strategies: Concept Mapping, Debate, and Peer Teaching for Metacognitive Learning Approach; Explicit Teaching, Chunked Instruction, and KWL Charting for the Brain-based Learning Approach; and for the Social Learning Theory Approach were the use of Multimedia, Gamification, and Role-playing.

Furthermore, it sought to find out if there is a significant difference between the pre-test and post-test of the Grade 9 students exposed to Metacognitive Learning Approach, Brain-based Learning, and Social Learning Theory Approach, and if there is a significant difference between the performance of students exposed to Metacognitive Learning Approach, Brain-based Learning Approach, and Social Learning Theory Approach.

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The study was guided by the following hypotheses: first, that there is significant difference exists between the pre-test and post-test results of the Grade 9 students; and second, there is significant difference in the performance of students when taught through the Metacognitive Learning Approach, the Brain-based Learning Approach, and the Social Learning Theory Approach.

II. MATERIALS and METHODS

Research Design

Researcher utilized descriptive-comparative method of research specifically the single group pre-test-post-test design. It is termed descriptive because it will describe the level of performance of students and comparative as it will determine the difference between pre-test and post-test of students and difference between the performances of students exposed to Metacognitive Learning Approach, Brain-based Learning Approach and Social Learning Theory Approach.

Participant

The respondents consisted of two sections of Grade 9 of Manabo National High School enrolled for school year 2024-2025 -- one section of students for experimental group and another section for control group.

Instrument

A teacher-made test was used for pre-test and post-test. It was a 50-item multiple choice type of test. To ensure the clarity, relevance and organization of the instrument, the test was validated by the school's master teacher in *Araling Panlipunan*, school's master teacher in English and SLRC Coordinator and Division LR evaluator, and master teacher of Sapdaan Elementary School who is also part of the technical working committee of *Araling Panlipunan* in SDO Abra. The validators used a 5-point Likert scale in assessing the instrument and after tabulation the instrument scored a mean validity score of 5.00 which reflects that the test to be used was clear, relevant and well-organized. The instrument also was deemed highly reliable scoring a reliability coefficient of 0.89, indicating that the test is suitable for data collection.

Procedure

A letter of permission to conduct the study was given to the school head of Manabo National High School and the learners involved in the study. Upon approval, the researcher also explained to the learners the purpose of the study, and that it will ensure confidentiality and their anonymity. Using an instrument which yielded high validity and reliability, the researcher then conducted a pre-test among Grade 9 students and data were gathered and treated to know their level of performance in *Araling Panlipunan*. Implementation of Metacognitive Learning, Brain-based Learning and Social Learning Theory Approaches followed next by integrating the strategies in the teaching learning process in the fourth quarter. At the end of the quarter, a post-test was conducted and gathered data were treated, analyzed and interpreted.

Data Analysis

To analyze the data gathered, several statistical treatments were employed. Mean was used to describe the performance of the Grade 9 students in both their pre-test and post-test. The

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paired-sample t-test was applied to determine the difference between the students' pre-test and post-test results. In addition, the t-test for independent groups was utilized to compare the performance of students exposed to the Metacognitive Learning, Brain-based Learning, and Social Learning Theory Approaches.

III. RESULTS

Table 1. The level of performance of Grade 9 students in their pre-test in terms of the following topics:

Learning Contents	Experimental Group		Control Group	
	Mean	DR	Mean	DR
a. Palatandaan ng pambansang kaunlaran.	69.68	DNME	69.63	DNME
b.Gampanin ng mamamayang Pilipino upang makatulong sa pambansang kaunlaran	67.56	DNME	68.55	DNME
c.Bahaging ginagampanan ng agrikultura	68.71	DNME	69.23	DNME
d.Dahilan at epekto ng suliranin ng sektor ng agrikultura	67.49	DNME	68.05	DNME
e. Patakarang pang- ekonomiya nakatutulong sa sektor ng agrikultura	69.24	DNME	68.48	DNME
f. Gampanin ng sektor ng industriya at mga patakarang pang-ekonomiyang nakatutulong dito	67.66	DNME	68.25	DNME
g. Gampanin ng sektor ng paglilingkod at mga patakarang pang-ekonomiyang nakatutulong dito	68.12	DNME	68.00	DNME
h. Gampanin ng impormal na sektor at mga patakarang pang-ekonomiyang nakatutulong dito	67.66	DNME	68.9	DNME
i. Pang-ekonomikong ugnayan at patakarang panlabas na nakakatulong sa Pilipinas	69.20	DNME	70.1	DNME
Overall	**68.05**	**DNME**	**68.5**	**DNME**

Legend:

Scale	DR
90-100	Outstanding (O)
85-89	Very Satisfactory (VS)
80-84	Satisfactory (S)
75-79	Fairly Satisfactory (FS)
Below 75	Did Not Meet Expectation (DNME)

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Table 2a. The level of performance of Grade 9 students taught in the traditional method (control) and those exposed to Metacognitive Learning Approach (experimental)

Teaching Strategies	Learning Competencies	Experimental Group Mean	DR	Control Group Mean	DR
Concept mapping	*Iba't ibang gampanin ng mamamayang Pilipino upang makatulong sa pambansang kaunlaran*	79.33	FS	77.93	FS
Peer teaching	*Bahaging ginagampanan ng agrikultura*	80.73	S	77.28	FS
Debate	*Dahilan at epekto ng suliranin ng sektor ng agrikultura,*	82.38	S	78.73	FS
	Composite Mean	**80.81**	**S**	**77.98**	**FS**

Legend:

Scale	DR
90-100	Outstanding (O)
85-89	Very Satisfactory (VS)
80-84	Satisfactory (S)
75-79	Fairly Satisfactory (FS)
Below 75	Did Not Meet Expectation (DNME)

Table 2b. The level of performance of Grade 9 students taught in the traditional method (control) and those exposed to Brain-based Learning Approach (experimental)

Teaching Strategies	Learning Competencies	Experimental Group Mean	DR	Control Group Mean	DR
Chunked instruction	*Palatandaan ng pambansang kaunlaran*	80.73	S	77.85	FS
KWL Charting	*Patakarang pang- ekonomiya nakatutulong sa sektor ng agrikultura*	82.73	S	77.68	FS
Explicit teaching	*Pang-ekonomikong ugnayan at patakarang panlabas na nakakatulong sa Pilipinas*	81.68	S	77.08	FS
	Composite Mean	**81.71**	**S**	**77.53**	**FS**

Legend:

Scale	DR
90-100	Outstanding (O)
85-89	Very Satisfactory (VS)
80-84	Satisfactory (S)
75-79	Fairly Satisfactory (FS)
Below 75	Did Not Meet Expectation (DNME)

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Table 2c. The level of performance of Grade 9 students taught in the traditional method (control) and those exposed to Social Learning Theory Approach (experimental)

Teaching Strategies	Learning Competencies	Experimental Group		Control Group	
		Mean	DR	Mean	DR
Use of multimedia	*Gampanin ng sektor ng industriya at mga patakarang pang-ekonomiyang nakatutulong dito*	83.15	S	78.98	FS
Gamification	*Gampanin ng sektor ng paglilingkod at mga patakarang pang-ekonomiyang nakatutulong dito*	85.08	VS	80.83	S
Role playing	*Gampanin ng impormal na sektor at mga patakarang pang-ekonomiyang nakatutulong dito*	84.10	S	80.03	S
	Composite Mean	**84.11**	**S**	**79.94**	**FS**

Legend:

Scale	DR
90-100	Outstanding (O)
85-89	Very Satisfactory (VS)
80-84	Satisfactory (S)
75-79	Fairly Satisfactory (FS)
Below 75	Did Not Meet Expectation (DNME)

Table 2d. Summary of the level of performance of Grade 9 students taught in the traditional method (control) and those exposed to Metacognitive Learning, Brain-based Learning, and Social Learning Theory Approach (experimental)

Approaches	Experimental Group		Control Group	
Metacognitive Learning	82.38	S	78.73	FS
Brain-based Learning	80.81	S	77.98	FS
Social Learning	81.71	S	77.53	FS
Overall	**81.30**	**S**	**77.23**	**FS**

Legend:

Scale	DR
90-100	Outstanding (O)
85-89	Very Satisfactory (VS)
80-84	Satisfactory (S)
75-79	Fairly Satisfactory (FS)
Below 75	Did Not Meet Expectation (DNME)

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Table 3. Comparison of the significant difference between in pre-test and post-test of Grade 9 students exposed to Metacognitive Learning, Brain-based, ad Social Learning (experimental)?

Approaches	Teaching Strategies	Pretest Mean	Posttest Mean	Mean Gain	t-value	t-prob
Metacognitive Learning	Concept mapping	67.63	79.33	11.70	8.42	<0.01
	Peer teaching	68.73	80.73	12.00	7.97	<0.01
	Debate	67.58	82.38	14.80	10.23	<0.01
	Composite Mean	67.98	80.81	12.83	12.93	<0.01
Brain-based Learning	Chunked instruction	69.55	80.73	11.18	7.13	<0.01
	KWL Charting	69.23	82.73	13.50	7.80	<0.01
	Explicit teaching	69.05	81.68	12.63	7.53	<0.01
	Composite Mean	69.28	81.71	12.43	11.78	<0.01
Social Learning	Use of multimedia	67.65	83.15	15.50	10.93	<0.01
	Gamification	68.13	85.08	16.95	11.03	<0.01
	Role playing	67.65	84.10	16.45	9.51	<0.01
	Composite Mean	67.81	84.11	16.30	14.30	<0.01
Overall		**68.03**	**81.3**	**13.27**	**15.20**	**<0.01**

Table 4. Comparison of the significant difference between the level of performance of Grade 9 students exposed to Metacognitive Learning, Brain-based Learning, and Social Learning Theory Approaches? (experimental) and the traditional approach (control)

Approaches	Teaching Strategies	Experimental Group	Control Group	Mean Difference	t-value	t-prob
Metacognitive Learning	Concept mapping	79.33	77.93	1.40	0.67	0.508
	Peer teaching	80.73	77.28	3.45	1.93	0.057
	Debate	82.38	78.73	3.65	1.85	0.067
	Composite Mean	80.81	77.98	2.83	2.26	0.027
Brain-based Learning	Chunked instruction	80.73	77.85	2.88	1.25	0.214
	KWL Charting	82.73	77.68	5.05	2.67	0.009
	Explicit teaching	81.68	77.08	4.60	2.21	0.030
	Composite Mean	81.71	77.53	4.18	3.21	0.002
Social Learning	Use of multimedia	83.15	78.98	4.17	2.25	0.028
	Gamification	85.08	80.83	4.25	1.69	0.096
	Role playing	84.10	80.03	4.07	1.77	0.080
	Composite Mean	84.11	79.94	4.17	2.50	0.014
Overall		**81.30**	**77.23**	**4.07**	**3.53**	**0.001**

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IV. DISCUSSION

Table 1 shows that both the experimental and control groups scored below expectations on their pre-tests. The experimental group's average scores were between 67.49 and 69.68, while the control group's average was from 68.00 to 70.10. The highest score, 70.10, was in the control group for the topic on economic relationships and foreign policy in the Philippines. The topic *"Dahilan at epekto ng suliranin sa agrikultura"* recorded the lowest score of 67.49 by the experimental group. Having the average mean scores of 68.05 and 68.50 for experimental and control groups, it is clear that both groups lack the foundational knowledge of the topics.

This result corroborates with the study of Espina (2018), which mentions that students often lack understanding and interest in economic topics, basically because students struggle to relate to the topics due to how teaching methods are delivered. Naval and Gonzales (2020) noted out that classes in *Araling Panlipunan* are more likely to rely on heavy memorization and lectures, hindering students to develop their higher order thinking skills, thus making them struggle to connect and apply their knowledge. Furthermore, Arandia et al. (2019) demonstrated how important is the use of different teaching methods in *Araling Panlipunan* that focus on student's higher engagement and deeper understanding of the topics. This was supported by the study of Francisco and Macandog (2018) which highlighted that after being exposed to teaching strategies that are student-centered, their performance significantly improved compared to their low pre-test scores. Therefore, it is necessary that teaching methods in *Araling Panlipunan* shift from teacher-centered and lecture-based into student-centered and differentiated instructions.

Additionally, the consistently low pre-test results in both groups suggest that students have varying levels of prior knowledge, and a single approach to teaching may not be effective. Teachers should identify and address misconceptions identified earlier by using diverse strategies suited to students' needs. The findings also highlighted the importance of connecting new concepts to real-life situations and activating prior knowledge to improve understanding. Providing discussions or giving activities that reflect students' day-to-day living or decision making will make the subject more meaningful and engaging. Teachers must not become mere lecturers, but serve as facilitators, guiding the students to take ownership of their own learning that will encourage students to become participative and actively engaged. To support this, professional development may be needed to help teachers apply more active, student-centered methods. In addition, involving parents and the community may enhance learning, especially in topics related to national development. Overall, the results point to the need for both instructional and systemic improvements to address learning gaps in economics.

Table 2a compares the performance of the experimental and control groups across three teaching strategies applied to different learning competencies. The experimental group utilized concept mapping, peer teaching, and debate, resulting in a composite mean of 80.81 with a descriptive rating of "Satisfactory" (S). In contrast, the control group, which used traditional methods, obtained a composite mean of 77.98, rated as "Fairly Satisfactory" (FS). Across all competencies, the experimental group consistently outperformed the control group, suggesting that the use of Metacognitive Learning Approach strategies had a positive effect on student learning outcomes. This result indicates that helping students become aware of their own learning contributes to their over-all academic performance.

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Specifically, results presented in Table 2a also indicate minimal difference in student performance between the experimental group exposed to concept mapping and the control group taught through traditional methods, with mean scores of 79.33 and 77.93 respectively, both falling under the "Fairly Satisfactory" category. Compared to traditional instruction, concept mapping did not significantly improve students' understanding of the assigned competency. This result may be associated to limited familiarity of students with concept mapping use, had not enough time to master it, or because the learning task was more factual than conceptual, creating misalignment between the strategy and the nature of the learning task. Also, concept mapping may be more beneficial for visual learners, disregarding the interest or perferences of the other types of learners. This is backed by the study of Amaniyan et al. (2020), wherein they observed that concept mapping had significant impact for the visual learners but found no significant impact for the other types of learners.

In contrast, the use of debate in the experimental group yielded a more notable improvement, with a mean score of 82.38 compared to 78.73 in the control group, indicating a shift from a "Fairly Satisfactory" to a "Satisfactory" performance level. This significant difference may be due to the nature of debate which involves analyzing, evaluating and expressing arguments, thus fostering students' engagement and more profound understanding as supported by the study of Naqia et al. (2020). It could also stem from the fact that debate can cater diverse learning styles, such as auditory, kinesthetic and interpersonal students. As confirmed by Kaya & Öztürk (2022), their research found out that debate enhanced different types of learners by integrating auditory, interpersonal, and kinesthetic modes of learning, resulting to greater participation and engagement. Basing from the general results, debate leads to a more immediate impact in improving the level of performance of students compared to concept mapping.

The results are also validated by the findings of Hayat & Shateri (2019) emphasizing that when students are confident to learn and to accomplish their tasks, they are more likely to utilize metacognitive strategies effectively. More studies like that of Zhou & Wang (2020) and Ohtani & Hisasaka (2018) also pointed out how comprehension and long-term memory retention can be excellently enhanced through concept mapping and other reflective learning tools. In addition, Kaur and Singh (2019) demonstrated how peer teaching fosters better understanding and engagement. On the other hand, debate transforms students to become critical thinkers as found out by International Journal of Research and Innovation in Social Science (2023). The study revealed boosted communication skills and independent learning. This was also corroborated by Dewangga et al. (2023). Their findings showed significant improvement in the students' communication skills and their increased capability as independent learners, evidenced by their improved ability to infer, evaluate evidence and identify misconceptions.

These findings on the use of strategies under metacognitive approach highlighted the need to integrate these strategies into teaching *Araling Panlipunan*. It will not only develop independent learners, it will also lead to a more successful and lasting academic achievement.

Table 2b illustrates the comparative performance of students exposed to brain-based learning approach strategies (chunked instruction, KWL charting, and explicit teaching) against

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those taught using traditional method. The experimental group demonstrated consistently higher mean scores across all three learning competencies, with a composite mean of 81.71 and a descriptive rating of "Satisfactory." Meanwhile, the control group lagged behind with a composite mean of 77.53, rated only "Fairly Satisfactory." This result suggests that the use of brain-based learning strategies significantly enhanced students' understanding and performance, as compared to the traditional approach. This is corroborated by the study of Mekarina & Ningsih (2017) that aligning teaching strategies with how the brain learns, like having a clear structure, staying actively involved, and taking time to reflect leads to better focus, understanding, and academic success over time. Jensen (2020) highlighted the benefits of breaking down information into smaller, manageable parts and using engaging activities, which enhance students' ability to remember and understand complex topics. By significantly reducing cognitive overload and aiding in working memory, chunking strategy enables students to process and retain multiple concepts more effectively.

The findings also revealed that among the implemented Brain-based Learning Approach strategies, KWL charting resulted to the highest mean with a score of 82.73. It also showed the most significant improvement with a notable performance gap of 5.05 points, with the control group obtaining only a mean score of 77.68. This notable difference in KWL charting surpassed chunked instruction (80.73) and explicit teaching (81.68) with point difference of 2.88 and 4.60 respectively, compared to the control group obtaining only 77.85 and 77.08 mean scores. All mean scores of the three brain-based learning strategies fell under the "Satisfactory" category while the control group landed only on the fairly "Satisfactory" category. The highest performance gap recorded under the KWL strategy can be linked to its core principles, which taps into the prior knowledge of the student, guides the student to goal-oriented learning, and leads student to reflect based on what has been learned. This nature of KWL charting allows reinforcement of cognitive processes and metacognitive awareness which engages students to identify what they know, what they want to know and what they have learned. Activating the prior knowledge of students before introducing new lessons will boost both their comprehension and retention as they will have a foundation from which they can build on new knowledge or information. Setting a purpose for learning is also essential as it will ignite their curiosity to learn and will increase their motivation and focus. Ultimately, having students to reflect on their learning will not only help in monitoring their own progress but will also beneficial in identifying learning gaps. On the other hand, chunked instruction and explicit teaching revealed less noticeable results, which can be attributed to their more structured and less student-centered nature. This comparison implies that utilizing brain-based learning strategies which are more student-centered strategies and promotes active engagement and self-regulated learning is more effective in enhancing academic achievement of students.

Studies have corroborated the effectivity of brain-based learning strategies in enhancing the academic performance of students. Turan and Ulutaş (2019) discussed in their study the effect of chunking method. It did not only enhance the student's academic progress but also made learning less overwhelming, which is beneficial to challenging subjects like *Araling Panlipunan* or Social Studies. In the study of Nasiri and Fayazi (2018), they demonstrated how KWL charting improved the reading comprehension of students by connecting their prior knowledge to their new learning, which fostered deeper understanding. Additionally, the study

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of DePorter et al. (2018) supported how explicit teaching can create stimulating and brain-compatible classroom environment. Also, a study conducted by Kruit et al. (2018) investigated how explicit teaching affects the development of science inquiry skills in Dutch fifth and sixth graders. The findings indicated that students who were taught explicitly performed better on unfamiliar science topics than those in implicit or baseline conditions. These studies collectively support that aligning teaching strategies with how the brain naturally learn leads to improved academic performance and confident learner.

Table 2c illustrates the impact of integrating multimedia, gamification, and role playing on student performance. The experimental group which utilized these methods achieved an average score of 84.11 falling under the "Satisfactory" level, while the control group scored 79.94 and fell under "Fairly Satisfactory". The control group was consistently outperformed by the experimental group, with gamification achieving the highest score of 85.08 (Very Satisfactory). This shows a 4.25-point improvement over the control group's mean (80.83), indicating a significant impact on student performance. The effectiveness of gamification can be attributed to how it actively engage students through interactive challenges, rewards, and collaborative tasks, aligning with the main principles of Social Learning Theory, like observational learning, reinforcement, and modelling. Multimedia and role-playing with mean scores of 83.15 and 84.10 also showed improved performance, but will less significance compared to gamification. This can be associated with the lower sustained engagement level of students or differentiation in collaboration among students. These findings highlight that gamification leads to most significant level of motivation, participation and learning outcomes in as compared to the other social learning strategies implemented.

As a whole, compared to traditional approach, results revealed that social learning theory approach is significantly more effective. The implemented social learning approach strategies in teaching like use of multimedia, gamification and role-playing led to better students' performance and more efficient learning environment. These findings corroborate with studies that highlight the significance of social learning strategies like multimedia, gamification and role-playing. For instance, gamification was shown to significantly boost motivation of students which led to better classroom performance, as revealed in the study of García-López et al. (2023). In the research conducted by Wulan (2024), it was revealed that students demonstrated higher level of engagement and comprehension when gamification was utilized as a strategy. Also, it was pointed out by the study of Amaya Díaz et al. (2023) how the students' engagement was increased and how their language skills development was enhanced when gamification combined with multimedia use was implemented.

The effective use of multimedia is also supported by the study of Kapi, et al. (2017) which highlights those students achieve better understanding of concepts and perform better in assessments. Also, incorporating role-playing into education has been shown to improve student learning in many ways. Bringing together theory and real-life examples through role-play helps students understand and remember what they learn better, boosting their skills and performance (Fu & Li, 2025). For example, Acharya et al. (2019) found that students in a graduate business program gained significant knowledge through role-playing. Likewise, Sayow and Marsevani (2022) reported that junior high students improved their English-speaking skills using role-play

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techniques. Moreover, Mastul and Universitas Muhammadiyah Buton (2021) documented better learning outcomes in social studies for fourth graders. At the university level, Siddiqui (2021) noticed advancements in English conversation skills. Lastly, Dorri et al. (2019) found that nursing education was enhanced by role-playing methods, which led to more knowledge and better patient satisfaction. These indicate how effective and flexible role-playing can be as a teaching strategy across different education levels and fields.

Table 2d compares the performance of students in the experimental group using metacognitive learning, brain-based learning, and social learning approaches against the control group, which followed traditional methods. The experimental group consistently outperformed the control group, with an overall average score of 81.30 (Satisfactory), compared to the control group's 77.23 (Fairly Satisfactory). Metacognitive learning garnered an over-all score of 82.38 for the experimental group compared to the lower 78.73 score of the control group. Similarly, the experimental group also gained higher under the brain-based learning with a mean score of 80.81 compared to the control group's 77.98 mean score. Social learning approach also yielded to higher result as illustrated by the experimental group's mean score of 81.71 versus 77.53 of the control group. The consistently higher mean scores in all of the implemented strategies indicate their effectiveness in enhancing the performance of students compared to the traditional approach.

The integration of metacognitive, brain-based, and social learning strategies has shown a strong positive impact on student performance. Recent research highlights that when students become more aware of their own thinking processes, they tend to learn more effectively and achieve better academic outcomes. For instance, Akcay et al. (2023) observed that brain-based learning approaches help students develop a clearer awareness of their existing knowledge, particularly when applying what they've learned to new situations. Similarly, brain-based methods have been linked to deeper comprehension and greater confidence in subjects such as mathematics (Funa et al., 2024; Riskiningtyas & Suryanto, 2018). Incorporating elements like multimedia, role-playing, and gamification has also been effective in boosting student engagement, critical thinking, and motivation, all of which contribute to improved academic performance. Duterte (2024) emphasized that gamification made learning feel more enjoyable and stimulating, which in turn led to better outcomes. This aligns with the findings of Hamari et al. (2019), who noted that gamified learning increases motivation, task engagement, and student satisfaction. When students are motivated and enjoy while they are learning, they tend to retain the content better. They have a fuller grasp of what is being taught because of being stimulated to reach other goals like having a reward or reaching the highest rank. Their research also stressed the importance of aligning game elements with clear educational goals to maximize their effectiveness. Additionally, using multimedia tools allows educators to cater to different learning styles, which enhances both understanding and retention. Role-playing, on the other hand, gives students a chance to actively engage with content, promoting stronger critical thinking and communication skills (Mata, 2023).

Also, the data presented in Table 2d indicate that among the three instructional approaches evaluated, the Metacognitive Learning Approach was the most effective in enhancing student performance, as evidenced by the highest mean score of 82.38 in the experimental group.

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This approach, which emphasizes self-regulation, critical thinking, and reflective learning, appears to significantly support deeper understanding and independent knowledge construction. Although the Social Learning Theory Approach produced a slightly lower mean score (81.71), it demonstrated the greatest performance improvement compared to the control group, with a gap of 4.18 points, suggesting that social interaction and peer engagement can be particularly powerful for fostering academic growth. The Brain-based Learning Approach, while still beneficial, had the lowest mean score (80.81) among the three and the smallest performance gap, indicating a more moderate impact. Overall, the findings support the effectiveness of all three approaches over traditional methods, with metacognitive strategies standing out for their consistent ability to elevate student performance to a higher level of achievement. In summary, combining these innovative teaching methods under the brain-based learning approach creates a more interactive and supportive environment that enhances both student performance and motivation compared to traditional teaching.

The data from table 3 highlights the significant improvement in the pre-test and post-test performance of Grade 9 students exposed to Metacognitive Learning, Brain-based Learning, and Social Learning strategies (experimental group). The mean gains for each strategy and the overall composite mean suggest a marked enhancement in student learning outcomes. For Metacognitive Learning, strategies such as concept mapping (mean gain = 11.70), peer teaching (mean gain = 12.00), and debate (mean gain = 14.80) produced significant results with t-values ranging from 7.97 to 10.23 ($p < 0.01$). The composite mean gain for Metacognitive Learning was 12.83, demonstrating a robust effect. Similarly, in *Brain-based Learning*, chunked instruction, KWL charting, and explicit teaching resulted in mean gains of 11.18, 13.50, and 12.63, respectively, with t-values ranging from 7.13 to 7.80. The composite mean gain for Brain-based Learning was 12.43. Among the strategies under the Social Learning approach, multimedia, gamification, and role-playing stood out with particularly strong results. Students exposed to gamification showed the highest average gain at 16.95, followed by role-playing at 16.45, and multimedia at 15.50. These methods contributed to a composite mean of 16.30 for the Social Learning group, the highest among the three categories studied, highlighting the powerful impact these techniques had on student performance. When looking across all strategies applied in the study, the overall mean gain was 13.27, with a t-value of 15.20, indicating that the improvement in learning outcomes was statistically significant.

These findings reinforce the effectiveness of Metacognitive, Brain-based, and Social Learning approaches in supporting student achievement. The consistent positive outcomes across all three suggest that these strategies not only improve academic performance but also encourage deeper engagement, critical thinking, and stronger retention of the topics. The particularly notable gains in the Social Learning group are consistent with recent researches emphasizing the value of active, collaborative learning experiences. Multimedia, for example, supports various learning preferences by blending visual, auditory, and interactive elements, making information easier to grasp and remember (Asigni et al., 2023). The use of varied multimedia caters to different types of learners, and also paves way for students to acquire 21st century skills like critical thinking, creativity and digital literacy. Role-playing allows learners to apply their knowledge in simulated real-life situations, which fosters not only critical thinking but also empathy and communication skills (Almara'beh et al., 2015). It also encourages

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students to be creative in problem solving and decision-making. Gamification brings energy and motivation into the classroom by turning lessons into interactive challenges, complete with rewards that sustain learner interest (Raju et al., 2021).

Metacognitive strategies such as concept mapping and peer teaching also proved effective, echoing the work of Crasta and Coutinho (2024), who found that students benefit from activities that develop their ability to reflect on and manage their own learning. Similarly, brain-based strategies—those that consider how the brain naturally learns—appear promising. Research by Koşar and Bedir (2018) supports the idea that learning environments designed in line with cognitive development can improve both understanding and long-term retention. Taken together, these results suggest that blending these teaching strategies can offer students richer, more engaging learning experiences. For educators, incorporating a mix of metacognitive, brain-based, and social approaches may be the key to enhancing student outcomes and fostering more meaningful, lasting learning.

Table 4 compares the performance of Grade 9 students exposed to Metacognitive Learning, Brain-based Learning, and Social Learning Theory Approach (experimental groups) versus the traditional teaching approach (control group). The results reveal that, in general, the experimental groups showed higher performance than the control group, with varying levels of statistical significance.

Metacognitive Learning Approach strategies demonstrated a modest advantage over the traditional approach. The mean difference between the experimental and control groups for concept mapping, peer teaching and debate were 1.40, 3.45, and 3.65, respectively. The composite mean for the experimental group in Metacognitive Learning (80.81) was 2.83 points higher than the control group (77.98), with a statistically significant t-value of 2.26 ($p = 0.027$). While there was a noticeable improvement in peer teaching and debate, the differences in concept mapping were not statistically significant ($t = 0.67$, $p = 0.508$), indicating that some strategies may have had more pronounced effects than others.

Brain-based Learning Approach strategies showed more consistent and statistically significant improvements. The experimental group outperformed the control group in all strategies, with the largest mean difference of 5.05 points for KWL Charting ($t = 2.67$, $p = 0.009$) and 4.60 points for explicit teaching ($t = 2.21$, $p = 0.030$). The overall composite mean difference was 4.18 points (81.71 vs. 77.53), with a highly significant t-value of 3.21 ($p = 0.002$). This suggests that Brain-based Learning strategies, such as chunked instruction and KWL charting, were particularly effective in enhancing student performance compared to traditional methods.

Social Learning Theory Approach strategies, including multimedia, gamification, and role playing, also produced higher scores in the experimental group. The mean differences in these strategies ranged from 4.07 to 4.25, with statistical significance found in multimedia ($t = 2.25$, $p = 0.028$) and the composite mean (4.17, $t = 2.50$, $p = 0.014$). However, gamification and role-playing showed less significant t-values (1.69 and 1.77, respectively), indicating that their impact was less strong than that of multimedia.

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In all strategies implemented, the experimental group performed significantly better than the control with as supported by the over-all composite mean difference of 4.07 (81.30 vs. 77.23), having a highly significant t-value of 3.53 ($p = 0.001$). These findings highlight that using innovative and engaging approaches such as metacognitive learning, brain-based learning and social learning theory results to improved learning outcomes versus the traditional method. These results are corroborated by Pandey & Mohan (2024), who revealed in their study that using metacognitive strategies foster deeper understanding and self-regulated learning. Similarly, Dwiprabowo et al. (2024) demonstrated that retention and memory are improved when teaching using brain-based learning, while Khan (2024) illustrated how beneficial social learning theory approach is in promoting greater engagement and motivation of students. This implies that integration of these approaches in teaching could effectively lead to a more impactful and stimulating learning experiences for the students.

V. CONCLUSION

The students' insufficient prior knowledge in economics indicates the crucial need for relevant instructional intervention such as innovative teaching approaches. Reliance on rote memorization and teacher-centered discussions in *Araling Panlipunan* hinder critical and other higher-order thinking skills for students. As backed by different studies, it is essential to address this issue by utilizing teaching strategies that enable students to think critically and be able to connect their learnings to real-life applications. Exposure to Metacognitive Learning, Brain-based Learning, and Social Learning Theory approaches in learning *Araling Panlipunan* results to improved academic performance. This implies that teaching strategies that cater to the metacognitive ability of students, considering how the brain naturally learns and how learning takes place in social environment foster deeper understanding and appreciation of *Araling Panlipunan* subject. It also promotes more engaging and student-centered learning environment. Utilizing strategies based on Metacognitive Learning, Brain-based Learning, and Social Learning Theory Approaches rather than traditional methods can significantly lead to better learning outcomes of students in *Araling Panlipunan.* Establishing classroom environment that particularly promotes collaboration and experiential learning is vital to produce independent, critical thinkers, and highly motivated learners. Incorporating Metacognitive, Brain-based, and Social Learning strategies can significantly improve the academic performance of students in *Araling Panlipunan*, particularly those that enhance the engagement of learners such as gamification, and those that provide an avenue for independent and monitored learning like KWL charting. This implies that the achievement of higher academic performance in *Araling Panlipunan* is the product of an interactive, student-centered and collaborative learning environment.

Based on findings and conclusions of the study, it is recommended *Araling Panlipunan* teachers especially the traditional ones may utilize Metacognitive Learning, Brain-based Learning and Social Learning Theory Approaches to improve the level of proficiency of students in *Araling Panlipunan.* Additional trainings/workshops may be offered to teachers handling *Araling Panlipunan* subjects, with a focus on how to incorporate more interactive and collaborative activities into the curriculum, with an emphasis on multimedia tools and

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gamification to further engage students. Studies on the use of Metacognitive Learning, Brain-based Learning and Social Learning Theory Approaches in other learning areas may also be conducted to confirm the wider applicability of these methods. Similar studies on the topic may be conducted and include other constructs such as factors affecting the learning skills in *Araling Panlipunan.*

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