The Effectiveness of Technology-Based Instructional Strategy in Teaching Araling Panlipunan to Grade 5 Learners

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Abstract: This This study on technology-based instructional strategy in teaching Araling Panlipunan to Grade 5 learners was grounded in the theory of constructivism, with which students actively create their knowledge and understanding to promote active learning in a more personalized and dynamic way. This mainly aimed to find out the effectiveness of a technology-based instructional strategy in teaching Araling Panlipunan to Grade 5 learners. Specifically, it investigated the impact on academic performance and attitudes towards the subject, comparing pre-test and post-test results between control and experimental groups. Additionally, it sought to understand the implications of the findings for improving teaching strategies in Araling Panlipunan.

The respondents were the two Grade Five sections of namely, Grade 5 Loyal being the control group and Grade 5 Generous as the experimental group, with 84 learners in total.

This study employed a quasi-experimental research method. It utilized a 50-item standardized test as the pre- and posttest of the study, to test the effectiveness of the implemented instructional strategy. The researcher also used the 15-item researcher-made survey questionnaire which determined the attitude of both the control and experimental group towards the teaching of Araling Panlipunan subject. The T-test and F-test was used to determine the significant difference between the learners' performance in the pretest and posttest of the control and experimental groups.

The salient findings from the study had significant implications for teaching Araling Panlipunan to Grade 5 learners, emphasizing the necessity to strike a balance between the enthusiasm of traditional methods and innovative approaches like technology-based learning. Traditional teaching approaches may arouse enthusiasm, but they could not adequately develop critical thinking or prepare students for real-world applications.

The study concluded that integrating technology-based instructional strategies in teaching Araling Panlipunan significantly enhanced academic performance and positive attitudes towards the subject. While traditional methods may foster enthusiasm, they fall short in developing critical thinking and real-world application skills, underscoring the need for innovative approaches.

Consequently, the study presented key recommendations to maximize the impact of technology-based instruction in Araling Panlipunan for Grade 5 learners, this included strengthening the integration of these strategies in the curriculum by, providing comprehensive training and resources to teachers, and ensuring equal access to technology and digital resources by school administrators to promote inclusive education and bridge the digital gap.

Keywords - **Araling Panlipunan, Technology-based Instructional Strategy, Academic Performance**

I. INTRODUCTION

The Education was profoundly transforming in a period characterized by rapid technological developments and an ever-expanding digital landscape. In the Philippines, a nation with a rich culture, history, and societal complexities, the field of education was not exempted from this transformative wave.

Technology was the application of methods and scientific understanding to make tools or construct useful solutions for various aspects of daily life. Technology in education refers to the application of technical tools and procedures to enhance performance and promote learning. This enhanced the learning experience of the students dramatically. It can either be low or high technology. Low technology includes traditional classroom tools like chalkboards, textbooks, paper-based assessments, and basic audiovisual aids like posters and all its like. At the same time, high technology encompassed a wide range of digital tools and technologies, including computers, tablets, interactive whiteboards, educational software, virtual reality and online learning platforms (Sahana,2023).

Using technological tools and resources to improve and facilitate teaching and learning is known as a technology-based instructional technique. This methodology leverages many technology tools, software programs, web-based platforms, and multimedia materials to generate more captivating, interactive, and productive educational encounters. The objective is to intentionally incorporate technology into education to support knowledge and skill acquisition, making the learning process more dynamic and pertinent to the demands of contemporary students (Singh, 2020).

The Philippine K to 12 curriculum includes Araling Panlipunan, history, geography, civics, and culture. Its goal is a better grasp of Filipino society, culture, and history. It is crucial in developing students' social awareness, critical thinking, and citizenship skills. It connects them to their cultural heritage and helps them appreciate their place in the global community.

Furthermore, the Philippine government has recognized the importance of integrating technology in education. Initiatives like the DepEd Computerization Program (DCP) aim to provide schools with computer labs and internet access. In fact, in Vicente N. Chaves Memorial Central School, some of its classes already have television that teachers and students can use in teaching and learning.

The researcher has been an Araling Panlipunan Coordinator for almost six (6) years now and has been teaching the subject to Grade 5 for the same number of years. Being attached to the subject for quite a long period of time already, the researcher has observed how students really find the subject boring and monotonous in nature, referring particularly to the content that it has. With that, personal innovations in technology integration have been injected into the new set of learners which has already been used recently and has significantly increased a little if not much on the performance of the learners.

However, since there are several teachers who are teaching the subject at the grade five level, the result still impacts the overall performance of the Grade 5 learners in AP. The learners are still at their plateau of learning as shown in the previous CMSS result from 73% or 335 learners out of 456 got 84-below on their average in the Araling Panlipunan compared to the other academic subjects when it should have been the other way around considering that it uses Filipino as its medium of instruction which is very understandable to the learners. So, definitely, it might have something to do with how the subject was being delivered to them. Possibly, students find it hard to grasp the lesson and find it boring with pictures, books, and texts alone. With the kind of learners nowadays, tactile learners, in particular, are more technologically driven, considering that technology today is no longer a luxury but is already a trend. As teachers teaching history, culture, and all it is like, teachers have to follow the trend even if it means learning the most complex stuff.

Moreover, this was what the researchers delved into to prove other teachers in Araling Panlipunan to somehow do something with the subject, regardless of age since they still are part of the system. By having studied these impacts, educators can refine their teaching methods, ensuring that technology enhances rather than hinders the learning experience. It is one way to stay relevant and effective in an ever-evolving educational landscape. It has utilized high technology types, incorporating advanced digital tools and methodologies to enhance the teaching and learning experience. This study was conducted to verify that the use of high technology in teaching subjects like Araling Panlipunan made its content more engaging and interactive, especially for younger students who are now very exposed to the use of technology. Complex historical events, geographic features, and cultural practices can be better understood through video presentations, which would probably ignite students to learn to love the subject and perhaps garner better grades at the end of the grading period.

Thus, this study aimed to find out the effectiveness of a technology-based instructional strategy in teaching Araling Panlipunan, a subject that was of less interest to the learners of Vicente N. Chaves Memorial Central School for the School Year of 2023-2024, specifically the selected Grade 5 classes. Consequently, the result of this study might encourage teachers to make use of technology-based instruction in teaching Araling Panlipunan to heighten the interest of the learners to learn about cultures and histories.

II. RESEARCH METHODOLOGY

This research employed a quasi-experimental research method. This strategy enabled the researcher to demonstrate the relationship between an intervention and an outcome. Basically, it involved two groups from the Grade 5 sections: the experimental group and the control group with information from the pre-test and post-test. The control group received the treatment using a standard procedure, and the experimental group received the treatment being studied and anticipated to benefit.

To have thoroughly examined the effects of adopting technology-based training to teach Araling Panlipunan this study used the quasi-experimental in character. It was an investigation of the causal links between variables, which lacked complete control over the independent variable that characterizes a real experimental design (Hassan, 2023).

2.1 Population and Sample

The study respondents were eighty-five (84) Grade 5 learners from the two selected sections of Vicente N. Chaves Memorial Central School in this School Year 2023-2024. There were eleven (11) Grade 5 heterogeneous sections, but only two(2) sections were selected where the researcher taught Araling Panlipunan, respectively based on the subject load of the researcher. The control group was the Grade 5 Loyal section, consisting of forty-two (42) students who were taught using the traditional teaching method. The experimental group was the Grade 5 Generous class taught using technology-based instruction. The two sections were distinguished as to what group they belong   based on the availability of the technology equipment in its class. The researcher facilitated the research throughout the prescribed grading period.

2.2 Data and Sources of Data

A standard periodic evaluation of Araling Panlipunan for a second grading period was used as the research instrument of this study. It was a unified periodical test provided by the Division of Misamis Oriental to all the schools within its jurisdiction. It served as the pre-test and post-test of the students. It was a fifty (50) item test questionnaire covering the competencies of the Second Grading of Araling Panlipunan.

The researcher also used the researcher-made survey questionnaire which determined the attitude of both the control and experimental group towards the teaching of Araling Panlipunan Subject. The questionnaire consisted of fifteen (15) questions designed to gauge various aspects of the learners' perceptions and experiences in the subject.

2.3 Theoretical framework

The theoretical framework for this study was anchored in multiple educational and theoretical perspectives that collectively inform the examination of the impact of technology-based instruction on the teaching of Araling Panlipunan. Firstly, the constructivist theory of Jean Piaget suggested that learners actively build their knowledge by interacting with the content. Technology-based instruction, through its interactive and engaging nature, may enhance students' ability to construct their understanding of social studies concepts. The constructivist approach is predicated on the notion that students actively participate

in their educational process and that knowledge is created through experiences. Each person considers their experience and combines new ideas with their past knowledge as events unfold. Students create schemas to arrange their newly acquired knowledge (Kurt, 2021). The Social Cognitive Theory of Albert Bandura was also pertinent because it emphasizes the value of modeling and observational learning. The theory suggests that learning occurs because people observe the consequences of other people's behaviors. Bandura's theory goes beyond cognitive theories, which consider psychological factors like attention and memory, and behavioral theories, which contend that all behaviors are learned through conditioning (Cherry, 2022).

2.4 Statistical tools and econometric models

After having administered the pre-test/post-test, the researcher gathered the data, tabulated and underwent statistical treatments. The data gathered from the study was analyzed using the appropriate statistical procedures. Mean was used to describe the level of academic performance both in the pre-test and post-test of the experimental and control groups.

On the other hand, the T-test and F-test were employed to ascertain whether there was a statistically significant difference between the control and experimental groups' learners' performance on the pre-test and post-test. The T-test evaluated if there was a statistically significant difference between the means of the two groups and offered a generalization for the total population under investigation. However, to ascertain whether the variance in two populations is equivalent, the F-test was employed.

III. RESULTS AND DISCUSSION

3.1. Table 1. Distribution of Respondents in terms of Academic Performance in the Pre-test

Group	Equivalent Rating	Description
Control	31%	Did Not Meet Expectations
Experimental	35%	Did Not Meet Expectations

Table 1 shows the distribution of respondents in terms of academic performance in the pre-test of both control and experimental group. The control group, which received traditional instruction, had 42 learners who scored an equivalent rating of 31%, meaning they Did Not Meet Expectations. In contrast, the experimental group, which received technology-based instruction got a score of 35% still did not meet expectations.

The results indicated that both groups did not meet expectations which implicated that their baseline understanding of Araling Panlipunan concepts was below the desired level. Since these are scores gained on the pre-test it was understood that both groups have not received yet any innovation like that of technology-based instruction, and probably have been taught through any instructional strategy which could have been merely traditional method.

In this regard, perhaps traditional instruction followed a one-size-fits-all approach, which did not cater to the diverse learning styles and preferences of all students in the class. Some students may even struggle to grasp concepts effectively through traditional methods alone. It might have been that students have faced challenges in retaining and comprehending the lesson presented through traditional instruction methods. The passive nature of traditional teaching may have limited students' ability to retain information. However, the experimental group who did not perform well initially, the technology-based instructional strategy may still hold promise for enhancing the learning outcomes once fully implemented and optimized.

Based on the study of El-Sabagh (2021), using adaptive technology let students learn at their own pace, which improves their academic achievement and that technology enables individualized learning experiences that accommodate various learning styles.

Therefore, while the pre-test results highlight initial challenges, they also point towards the potential benefits of adopting innovative instructional approaches to enhance academic achievement and foster a more inclusive learning environment.

3.2. Table 2. Distribution of Respondents in terms of Academic Performance in the Post-test

Group	Equivalent Rating	Description
Control	**40%**	Did not Meet Expectation
Experimental	**59%**	Did not Meet Expectation

Table 2 shows the distribution of respondents in terms of academic performance in the post-test of both the control and experimental group. In the control group who did not receive any intervention, the learners only got 40% which means they Did not Meet Expectations. Their post-test results were likely to reflect a similar level of performance or improvement that may not be significant. It suggested that traditional instruction alone may not have been effective in addressing the learning gaps identified in the pre-test. On the other hand, in the experimental group, despite the innovative instructional approach involving technology, a majority of students in this group also fell short of the expected level of academic performance in the post-test although, the score was more favorable but still did not meet the expectations, with an equivalent rating of 59%.

This suggests that while both groups had a majority of students who did not meet expectations, the extent of this outcome in each group can indicate whether one instructional approach had a more significant impact on student performance than the other. Moreover, while the control group's performance may have remained stagnant or improved minimally with traditional instruction, the experimental group benefited significantly from the technology-based instructional strategy, with its significant increase of 24% from the pre-test result. This supported the effectiveness and relevance of incorporating technology into teaching practices for Grade 5 students in Araling Panlipunan. The minimal increase of scores, despite the innovation of technology-based instructional strategy, perhaps might have been affected with factors such as student engagement, teacher training, and access to technology may also have influenced the outcomes and should be considered in future implementations of technology-based instructional strategies.

Overall, the table underscores the potential of technology to enhance teaching and learning outcomes but also emphasizes the importance of ongoing assessment and adaptation to ensure meaningful impact on student achievement. The significant support

study conducted by Subaidi bin Abdul Samat and Aziz (2020) provided evidence for the positive impact of technology-based instructional strategies on learners ' learning interests and motivation, reinforcing the findings of increased academic performance observed in the experimental group compared to the control group.

Moreover, the result also adheres to the study by Ofiaza (2023), which demonstrated that multimedia tools and educational software in Araling Panlipunan increased student engagement and comprehension. Consequently, this underscored the ongoing importance of research-driven, adaptable teaching practices to meet the evolving needs of learners and ensure meaningful educational outcomes.

3.3. Table 3. Distribution of Respondents in Terms of their Attitude Towards the Subject of the Control Group

Indicators	Mean	SD	Description
The learners describe Araling Panlipunan subject as "boring and irrelevant"	2.00	0.86	Disagree
The learners express a lack of interest or motivation toward the Araling Panlipunan subject	2.14	0.72	Disagree
The learners perceive Araling Panlipunan subject to be less important than other subjects.	1.93	0.89	Disagree
The learners perceive Araling Panlipunan to be marginalized in the curriculum.	2.40	0.77	Disagree
The learners strongly feel one way or the other about Araling Panlipunan, suggesting indifferences among people.	3.02	1.00	Agree
The learners see the relevance of Araling Panlipunan to their future careers.	2.48	1.02	Disagree
The learners have negative attitudes toward social policies, government institutions, and the quality of public services, which can affect their attitudes toward the Araling Panlipunan subject.	1.64	0.85	Strongly Disagree
The learners find the methods of teaching social studies to be boring and uncertain.	1.76	0.93	Disagree
The learners perceive Araling Panlipunan to be too focused on memorization and not enough on critical thinking.	2.43	0.86	Disagree
The learners perceive Araling Panlipunan to be too focused on facts and not enough on real-world application.	2.43	0.94	Disagree
The learners perceive the subject to be too focused on the past and not enough on the present or future.	2.81	0.80	Agree
The learners perceive Araling Panlipunan to be too focused on the United States and not enough on other countries or cultures.	2.05	1.06	Disagree
The learners perceive Araling Panlipunan to be too focused on politics and not enough on social issues.	2.12	0.99	Disagree
The learners perceive Araling Panlipunan to be too focused on controversy and not enough on consensus-building.	2.19	1.11	Disagree
The learners perceive Araling Panlipunan to be too focused on memorizing dates and events and not enough to understand the broader context and significance of historical events.	2.10	1.16	Disagree
Overall	**2.23**	**0.93**	**Disagree**

Table 3 presents the distribution of respondents in terms of attitude towards the subject of control group with an overall mean of 2.23 (SD=0.93) described as Disagree. This indicates that, on average, the learners disagreed with statements expressing negative attitudes towards the subject. This suggests that most learners in the control group did not find Araling Panlipunan boring, irrelevant, or less important compared to other subjects. However, there were areas where improvements could be made, such as enhancing the perception of the subject's relevance to future careers and promoting critical thinking over memorization. This study's results were supported by research conducted by Fernandez (2018), which illustrated how technology integration improves academic achievement and critical thinking abilities.

The indicator 'The learners strongly felt one way or the other about Araling Panlipunan, suggesting indifferences among people', obtained with the highest mean of 3.02 (SD=1.00), described as Agree. This means that some students may have had strong beliefs or emotions regarding the topic, which might have had an impact on their involvement and engagement in class. To address these strong opinions, it was crucial to establish a welcoming and inclusive learning atmosphere where different viewpoints were respected and debated. These observations were in line with Fernandez's (2018) study, which emphasized the need to foster a supportive learning environment in the classroom in order to achieve effective learning outcomes.

In contrast, indicator 'The learners had negative attitudes toward social policies, government institutions, and the quality of public services, which could affect their attitudes toward the Araling Panlipunan subject', obtained the lowest mean of 1.64 (SD= 0.85), described as Strongly Disagree. This means that most learners strongly disagreed with this statement. Despite any negative attitudes towards external factors, it was encouraging to see that these attitudes did not necessarily translate into negative perceptions of the subject itself. This suggested that there was an opportunity to build upon the existing positive attitudes towards Araling Panlipunan and further engage learners in meaningful learning experiences.

This observation was consistent with the findings of research conducted by Ofiaza (2023), which emphasized the need to encourage favorable attitudes toward the subject through efficient teaching techniques. These findings emphasized the importance of tailored instructional approaches and a positive classroom atmosphere in enhancing student engagement and fostering a more positive attitude towards subjects like Araling Panlipunan.

Overall, these results highlighted how important it was to use customized teaching strategies and foster a supportive learning environment in the classroom in order to increase student engagement and foster a more positive attitude toward courses like Araling Panlipunan. A more inclusive and encouraging learning environment can be created by teachers who modify their pedagogy to accommodate the different requirements and learning preferences of their pupils

Additionally, fostering a positive classroom atmosphere—characterized by mutual respect, encouragement, and a sense of community—can significantly impact students' attitudes towards their studies. When students feel safe, valued, and supported, they are more likely to participate actively in class, take intellectual risks, and develop a genuine interest in the subject matter.

3.4. Table 4. Distribution of Respondents in Terms of Attitude Towards the Subject of Experimental Group

Indicators	Mean	SD	Description
The learners describe Araling Panlipunan subject as "boring and irrelevant"	1.45	0.62	Strongly Disagree
The learners express a lack of interest or motivation toward the Araling Panlipunan subject	1.50	0.76	Strongly Disagree
The learners perceive Araling Panlipunan subject to be less important than other subjects.	1.79	0.77	Disagree
The learners perceive Araling Panlipunan to be marginalized in the curriculum.	1.79	0.98	Disagree
The learners strongly feel one way or the other about Araling Panlipunan, suggesting indifferences among people.	3.64	0.68	Strongly Agree
The learners see the relevance of Araling Panlipunan to their future careers.	3.43	0.93	Strongly Agree
The learners have negative attitudes toward social policies, government institutions, and the quality of public services, which can affect their attitudes toward the Araling Panlipunan subject.	1.88	0.83	Disagree
The learners find the methods of teaching social studies to be boring and uncertain.	1.38	0.72	Strongly Disagree
The learners perceive Araling Panlipunan to be too focused on memorization and not enough on critical thinking.	1.57	0.79	Strongly Disagree
The learners perceive Araling Panlipunan to be too focused on facts and not enough on real-world application.	2.38	1.02	Disagree
The learners perceive the subject to be too focused on the past and not enough on the present or future.	1.79	0.51	Disagree
The learners perceive Araling Panlipunan to be too focused on the United States and not enough on other countries or cultures.	1.33	0.52	Strongly Disagree
The learners perceive Araling Panlipunan to be too focused on politics and not enough on social issues.	1.31	0.51	Strongly Disagree
The learners perceive Araling Panlipunan to be too focused on controversy and not enough on consensus-building.	1.52	0.91	Strongly Disagree
The learners perceive Araling Panlipunan to be too focused on memorizing dates and events and not enough to understand the broader context and significance of historical events.	1.55	0.91	Strongly Disagree
Overall	**1.89**	**0.77**	**Disagree**

Table 4 presents the distribution of respondents in terms of attitude towards the subject of experimental group with an overall mean of 1.89 (SD=0.77), described as Disagree. This means that on average, learners had a positive attitude towards the subject after experiencing the technology-based instructional strategy. The results shows that the strategy had been effective in improving learners' perceptions and engagement with the subject matter. It reflects positively on the effectiveness of incorporating technology into instruction to enhance learners' attitudes and learning experiences. This study was supported by research conducted by Fernandez (2018), which demonstrated the positive impact of technology integration on academic performance and critical thinking skills among learners.

The indicator 'The learners strongly felt one way or the other about Araling Panlipunan, suggesting indifferences among people', obtained the highest mean of 3.64 (SD=0.68), described as Strongly Agree. This means that after the technology-based instructional strategy, learners become more decisive or opinionated about the subject matter. It suggests that the strategy helped learners develop stronger feelings or opinions about the subject, which could contribute to increased engagement and interest. This finding was in line with the research by Ofiaza (2023), which demonstrated that multimedia tools and educational software in Araling Panlipunan increased student engagement and comprehension.

Conversely, the indicator 'The learners perceived Araling Panlipunan to be too focused on politics and not enough on social issues', obtained the lowest mean of 1.31 (SD=0.51), described as Strongly Disagree. This means that learners did not think the study focused too much on these areas. This suggests that the technology-based instructional strategy had effectively broadened learners' perspectives and helped them see the subject in a more balanced and comprehensive manner, beyond narrow focuses on specific topics.

Overall, these results highlighted the positive impact of technology-based instruction on learners' attitudes towards the Araling Panlipunan subject. It has been shown that using technology in the classroom increases relevance, interaction, and student engagement. Educators can use instructional software, digital resources, and multimedia technology to present content in ways that engage students and accommodate a variety of learning styles.

These findings were further supported by a study conducted by El-Sabagh (2021), which demonstrated the effectiveness of adaptive technology in improving student achievement. Accordingly, technology can offer a more customized learning experience by adjusting to each student's unique needs and learning style. Because of this flexibility, students may go through the content at their own speed and make sure they get each subject completely before going on to the next.

Moreover, the use of technology in instruction can provide immediate feedback, interactive simulations, and access to a wealth of online resources, all of which contribute to a deeper understanding of the subject matter. This not only enhances students' knowledge and skills but also positively influences their attitudes towards learning. When students experience success and enjoy the learning process, they were more likely to develop a positive attitude towards the subject.

Consequently, with the used of interactive timelines, multimedia presentations, and virtual field trips, students can become more involved and linked to historical events and cultural practices. By utilizing technology, educators may create a more captivating and active learning environment that motivates students to engage with the content more thoroughly and gain a deeper comprehension of the subject.

3.5. Table 5. Test Statistics on the Comparison of Grade 5 Learners' Academic Performance in the Pre-test of the Control and Experimental Group

Group	N	Pre-test	SD	df	p-value	Interpretation
Control	42	15.310	4.956	82	0.019	Significant
Experimental	42	17.714	4.239			

Table 5 presents the test statistics on the comparison of Grade 5 learners' academic performance in the pre-test of the control and experimental group. The control group had pre-test score mean of 15.310 (SD=4.956), while the experimental group, demonstrated a higher mean pre-test score mean of 17.714 (SD=4.239). The p-value of 0.019 suggests that this disparity was statistically significant. This outcome implies that the use of technology-based instructional strategies might have positively influenced the academic performance of the experimental group compared to the traditional methods employed in the control group. These findings offered valuable insights into the potential efficacy of integrating technology into educational practices. The significant difference in pre-test scores suggested that technology-based instructional strategies could be advantageous in enhancing students' academic performance.

These findings aligned with previous research highlighting the positive impact of technology-based instruction on student learning interests and motivation. For instance, Subaidi bin Abdul Samat and Aziz (2020) emphasized the strengthening of student engagement through technology-based instruction, which leads to increased interest and motivation in learning. Their study demonstrated that when technology is integrated into educational practices, it can transform the learning environment, making it more interactive and engaging.

Additionally, it also has been found that technology-based instruction captures students' attention more effectively than traditional teaching methods. Interactive tools such as educational games, simulations, and multimedia presentations provide diverse ways for students to engage with the content, catering to different learning preferences. This variety not only keeps students interested but also allows them to explore subjects in a more hands-on and immersive manner, deepening their understanding and retention of the material.

Technology may additionally be utilized to tailor learning opportunities. For example, adaptive learning platforms modify the level of difficulty and kind of material according to each student's performance, guaranteeing that every student receives education that is specific to their needs. Because they are not disinterested by too easy or deterred by too challenging material, students' motivation is maintained by this personalization.

Moreover, its integration can greatly improve the educational experience in the setting of Araling Panlipunan. Virtual reality technology provides students with the opportunity to virtually tour historical sites, and interactive maps can help students understand geographical concepts. These advances in technology give the material greater life and relatability, which encourages students to approach learning with greater vigor and motivation.

Overall, these results demonstrate the advances that technology-based education may be. Technology may significantly improve student motivation, engagement, and academic achievement in a variety of courses, including Araling Panlipunan, by personalizing and energizing the learning process.

3.6. Table 6. Test Statistics on the Comparison of Grade 5 Learners' Academic Performance in the Post-test of the Control and Experimental Group

Group	N	Post-test	SD	df	p-value	Interpretation
Control	42	19.786	4.263	82	0.001	Significant
Experimental	42	29.690	7.625	82		

Table 6 presents test statistics on the comparison of grade 5 learners' academic performance in the post-test of the control and experimental group. The control group, achieved a mean post-test score of mean of 19.786 (SD=4.263) interpreted as Significant. In contrast, the experimental group obtained a substantially higher mean post-test score of a mean of 29.690 (SD=7.625), interpreted as Significant. The p-value calculated for this comparison was 0.001, indicating a highly significant difference between the two groups. This outcome implies that the implementation of technology-based instructional strategies had a profound impact on academic performance, leading to significantly higher scores compared to traditional methods. It suggests that incorporating technology into teaching methodologies could be an effective approach to enhancing learning outcomes among Grade 5 learners.

The significant difference between the control and experimental groups underscored the potential of technology-based instructional strategies to positively influence academic achievement. The considerable increase in post-test scores among

students in the experimental group implied that leveraging technology in education could foster greater engagement, comprehension, and retention of learning material.

This insight suggested that educators and policymakers should consider integrating technology into teaching practices to optimize student learning experiences and outcomes. Moreover, the study conducted by R. Flores & H. Flores (2023) offered empirical proof of the efficiency of technology-based training in raising students' motivation and interest in learning Araling Panlipunan and in strengthening their comprehension and ability to retain information.

3.7. Implications to Araling Panlipunan

The findings of the study had significant implications for teaching Araling Panlipunan to Grade 5 learners. It was clear that traditional instructional methods could lead to positive attitudes towards the subject. However, the study has identified areas that traditional methods may not fully addressed. These areas include enhancing the perception of Araling Panlipunan relevance to future careers and promoting critical thinking over memorization. The implication here is that while traditional methods can lay a foundation for enthusiasm, they may not sufficiently prepare students for the practical applications of the subject in their future endeavors or encourage deeper analytical thinking, problem-solving, and decision-making skills.

This implies that teachers should constantly modify their methods of instruction to accommodate pupils' changing needs and interests. The inference, taken as a whole, emphasized the significance of teaching Araling Panlipunan in a balanced manner that emphasizes the benefits of conventional techniques while also welcoming cutting-edge approaches like technology-based instructional strategies that target areas in need of development. For Grade 5 students studying Araling Panlipunan, teachers can create a more interesting, relevant, and productive learning environment by implementing ongoing changes to their teaching practices, boosting relevance to future occupations, and encouraging critical thinking.

3.7.1. Attainment of Goals in Teaching Araling Panlipunan

The technology-based instructional strategy likely played a crucial role in helping attain the goals in teaching Araling Panlipunan to the learners. Learning Araling Panlipunan became more interesting and pleasurable mainly because of the interactive learning experiences provided by technology, which included social media platforms, virtual tours, and multimedia presentations. As relevance and applicability in real-life scenarios were evident during the process, students who actively participated in interactive activities were more likely to develop positive attitudes toward the subject.

Additionally, the technology-based instructional strategy gave students access to a wealth of resources that offered diverse perspectives and information related to Araling Panlipunan, which caught their curiosity, encouraged exploration, and deepened their understanding of the subject, all of which contributed to the development of more positive perceptions. Research by El-Sabagh (2021) showed that using adaptive technology let students learn at their own pace, improving their academic achievement. Overall, because of its ability to provide individualized or differentiated instruction considering students' interests, learning styles, and pace, technology-based instructional strategies have helped attain Araling Panlipunan goals.

3.7.2. Modification of Teaching Methods

The modification of teaching methods has profound implications for learners' academic performance, including improved learning outcomes and positive attitudes toward Araling Panlipunan subject. The use of multimedia tools and presentations has helped increase student engagement and comprehension, as evidenced by the positive shift in attitudes observed after the implementation of technology-based instruction. This underscored the importance of integrating technology into the curriculum to enhance learning experiences and foster a more dynamic and interactive classroom environment. Ofiaza's (2023) research demonstrated that multimedia tools and educational software in Araling Panlipunan increased student engagement and comprehension.

Consequently, the study highlighted the importance of innovation and adaptation in education to meet the diverse needs of learners and promote positive attitudes towards learning. This was further supported by the research of Dela Cruz and Mateo (2018), who found encouraging trends regarding the effect of technology on students' potential for future employment and education.

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