INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH

2023, Vol. 4, No. 5, 1716 – 1725
http://dx.doi.org/10.11594/ijmaber.04.05.32

Research Article

Differentiated Instruction in In-Person Classes and the Enhancement of Analytical Thinking Skills of Grade 7 Students in Araling Panlipunan

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Article history:
Submission May 2023
Revised May 2023
Accepted May 2023

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ABSTRACT

Differentiated instruction aims to meet the individual differences and learning styles of students through different classroom management strategies. This research study investigated the utilization of differentiated instruction and the enhancement of analytical thinking skills of Grade 7 students in Araling Panlipunan in Col. Lauro D. Dizon Memorial Integrated High School. This research study employed a quasi-experimental research design specifically a Pretest-Posttest Nonequivalent Groups Design. Two regular sections consisting of eighty (80) heterogeneously-grouped learners comprised the experimental group and control group. This study utilized a homogenous convenience sampling wherein two (2) equal groups of learners from two heterogenous sections were identified. The researcher constructed three self-made semi-detailed lesson plans to cover the first three weeks of third grading period incorporated with differentiated instruction approach. Survey questionnaire and pre-test and post-test were utilized. Frequency and percentage were utilized. Mean and standard deviation was also utilized. Pearson-moment correlation was used in measuring the perception of the respondents. Furthermore, Paired Samples T-test were utilized for the pre-test and post-test instrument. Findings of the study revealed that the students perceived the use of differentiated instruction as to content, process, product, and affect/environment as "observed". The experimental group performed better compared to the control group. There is a significant difference between the pre-test and post-test scores of both the control and experimental groups. There is no significant relationship between the perception on the use of differentiated instruction and the analytical thinking skills of students in Araling Panlipunan.

Keywords*: Analytical Thinking Skills, Araling Panlipunan, Differentiated Instruction, In-Person Classes*

How to cite:
Emralino, M. P. I. (2023). Differentiated Instruction in In-Person Classes and the Enhancement of Analytical Thinking Skills of Grade 7 Students in Araling Panlipunan. *International Journal of Multidisciplinary: Applied Business and Education Research*. *4*(5), 1716 – 1725. doi: 10.11594/ijmaber.04.05.32

Introduction

The introduction of K to 12 Curriculum through the passage of Republic Act 10533 or the "Enhanced Basic Education Act of 2013" in the Philippine education setting has paved way for the overall development and implementation of basic quality education to produce 21st century learners who are globally competent and competitive. Wide range of pedagogical approaches and teaching strategies were brought by the implementation of this enhanced basic education curriculum. With the new advent of technology and vast studies for the development of teaching and learning process, education has continually improved for the last decades. Education has been more inclusive than ever due to the implementation of the principles of Inclusive Education which considers the individual differences among learners in the delivery of basic education all over the archipelago. (DepEd Order No. 21, s. 2019). According to Tomlinson (2005), Differentiated Instruction allows teachers to address to students' varying needs by recognizing the range of differences or uniqueness among students and allowing teachers to cater to each student's unique learning style by adjusting what they teach and how they teach it. Teachers can differentiate instruction through content, process, product, affect and environment. The development of student's Higher Order Thinking Skills have been the primary focus of today's education as pedagogy transforms from passive to active learning. Krathwol (2002) indicated that analytical thinking skills has three components which are the ability to differentiate, organizer, and attribute. Enhancing analytical thinking skills must also be included as the focus of today's education beside critical and creative thinking skills since it is one of the HOTS. World Economic Forum even listed analytical thinking and innovation as one of the top 10 skills of 2025 based on Future of Jobs Report 2020. In this regard, continuous improvement and delivery of quality instruction has been the consistent goal of the Department of Education. Providing quality basic education in Araling Panlipunan with the use of innovative and inclusive teaching strategy such as differentiated instruction may elevate the overall analytical thinking skills of Filipino students.

Methods

Research Design

This research study employed a quasi-experimental research design during the third grading period in Araling Panlipunan 7 to determine the perception of the respondents towards the utilization of differentiated instruction in in-person classes and investigated how Differentiated Instruction influences the analytical thinking skills of the Grade 7 learners in Araling Panlipunan. Quasi-experimental research design as defined by Cook and Campbell (1979) and mentioned by Jhangiani et al. (2019) resembles a kind of experimental research but is not a true experimental research since this design is characterized by the manipulation of the independent variables before the dependent variables (Jhangiani et al., 2019). Specifically, this study utilized a Pretest-Posttest Nonequivalent Groups Design. This is a kind of quasi-experimental research design which involved two intact groups of respondents. The first group was called the control group that will receive a pre-test and a post-test only, hence the first group will not receive any treatment. The second group was called the experimental group which will receive a pre-test, a treatment, and post-test. The point of employing this type of quasi-experimental research design is to prove that the experimental group performs better compared to the control group or that the experimental group improves more than the participants of a group that does not receive any treatment (Jhangiani et al., 2019).

Sampling and Ethical Considerations

This study utilized a homogenous convenience sampling wherein two (2) equal groups of learners from two heterogenous sections with same class standing were identified and assigned. Random selection of subjects is impossible since the researcher teaches only seven out of twenty-four sections in Grade 7 and each section has a unique time schedule for Araling Panlipunan classes. Lack of available classroom and time conflict are the difficulties faced by the researcher in incorporating random sampling. According to Bornstein et al. (2013), homogenous convenience sampling is a type of sampling technique where the researcher

intentionally selects the samples with respect to their pre-existing sociodemographic factors, thus the target population is a specific sociodemographic group. The researcher selected the subjects based on their section. The first group consisting of forty (40) learners was the experimental group which receive pre-test, treatment, and post-test while the second group consisting of forty (40) learners received pre-test and post-test only and this group was the control group. The researcher secured a letter to conduct addressed to the head teacher and school heads. The parents of students were also informed through parental consent to ensure the anonymity and confidentiality of data.

Research Instruments

In order to gather the relevant data of the study, a researcher-made survey questionnaire was prepared by the researcher. This survey questionnaire consisted of four (4) parts corresponding to the four components of differentiated instruction namely; content, process, product, affect and environment. Each component has ten (10) statements rated by the respondents in a Likert scale of 1 to 4 from Strongly Disagree, Disagree, Agree and Strongly Agree respectively. These ratings were interpreted verbally as Not Observed at All, Less Observed, Observed, and Highly Observed respectively. In addition, the researcher utilized a standardized pre-test and posttest assessment tool to determine student performance in terms of the learner's analytical thinking skills. The researcher-made questionnaire was evaluated by the master teachers and head teacher of Araling Panlipunan while the English master teacher evaluated the grammar and technical aspects of the survey questionnaire. The survey questionnaire also undergone Cronbach's alpha to determine the internal consistency of the instrument. It yielded a value of 0.789 interpreted as acceptable consistency. In addition, the researcher utilized a standardized pre-test and posttest assessment tool to determine student performance in terms of the learner's analytical thinking skills.

Data Analysis

In determining the perception of the respondents through the use of a survey questionnaire, descriptive statistics such as frequency and percentage were utilized. Mean and standard deviation were used to determine the pre-test and posttest scores of the respondents. Paired Samples T-test was also utilized for the pre-test and posttest instrument, this allowed the researcher to compare the mean scores of the respondents on their pre-test and posttest assessment and also to find out whether there is a significant difference between the means of the pre-test and posttest scores of the experimental and control groups. Pearson-moment correlation was used in determining the perception of the respondents, the data undergone the test of correlation to determine if there is a significant relationship between the respondents' perception and the posttest scores in terms of the respondents' analytical thinking skills.

Result and Discussion

Perceived Use of Differentiated Instruction as to Content, Process, Product, Affect and Environment

Table 1 presents the learners' perception on the researcher's use of differentiated instruction as to content. As shown in the table, the students highly observed the researcher's practice of explaining to the class unfamiliar words being encountered in the lesson ($\bar{x}$=3.60) and explaining steps on how to do a particular task in class ($\bar{x}$=3.55) respectively. Furthermore, providing reading materials to the class as part of the instruction ($\bar{x}$=3.53) as well as enrichment activities to further support learning are highly observed by the students. The overall mean value of 3.46 for the perception on the use of differentiated instruction as to content yielded with a verbal interpretation as "observed". This implies that learners observed well the utilization of differentiated instruction in terms of providing various ways by which contents of the lesson may be provided to the students and varied avenues from which the learners can gain knowledge about the lesson at hand. Teachers may utilize various sources and media from which the lesson and content can be presented. Reading text, pictures, graphic organizers, PowerPoint presen-

tation, and audio and video lessons among others are the ways how the teacher may present the topic in class.

The table also shows the perception of the respondents on the use of differentiated instruction as to process. The students highly observed the researcher's use of many examples about the topic as well as requiring the learners to write a journal for reflection about what has learned in the class and the simplified use of graphic organizer for the learners ($\bar{x}$=3.50) to understand well the lesson. Moreover, the learners observed that the researcher has provided the class with activities in varying level of difficulties ($\bar{x}$=3,48) which challenges advanced learners while opportunity learners are being supported. The overall mean value of 3.43 revealed that the researcher's classroom practices of utilizing differentiated instruction through process is "observed" by the learners. This implies that learners are immersed to various strategies in the teaching and learning process that provides learning experiences which may develop knowledge, values and skills depending on the learning style of the students which can help the teacher through the utilization of differentiated instruction as to process.

The table also illustrates the perception of the learners on the researcher's use of differentiated instruction as to product. The students highly observed that tasks given by the researcher which are challenging enough yet can be finished within the given time ($\bar{x}$=3.63) while giving the learners with many options on how the learners will make their output as well as providing clear directions regarding the output to be made and creating tasks which are related to real-world applications are observed by the learners ($\bar{x}$=3.48). This implies that students can determine when the teacher gave them challenging tasks that enables creativity and directions that guides the learners. The overall mean value of 3.46 interpreted verbally as "observed" by the learners indicated that the researcher utilized differentiated instruction as to product. This is proven when the teacher provides wide selections of output wherein the students can choose and select how they will present it. One way to implement differentiated instruction is through the use of product differentiation, where students are given different tasks or assignments that cater to their individual learning styles, interests, and abilities. Moreover, students can share their interests to the class while showcasing their innate talent and skills through their preferred medium of output.

The table also reveals the learners' perception on the teacher's utilization of differentiated instruction as to affect or environment. It can be noted that the students have highly observed when the teacher encourages the class to help each other and collaborate to finish tasks ($\bar{x}$=3.55). The learners observed when the teacher is providing learning spaces where groups can discuss and present; ensuring that the classroom is well-lighted at all times; ensuring that the classroom is clean and well-ventilated all the time; and promoting a non-threatening learning environment for all ($\bar{x}$=3.45). The overall mean value of 3.40 shows that the utilization of differentiated instruction as to affect or environment is observed by the learners. The learning environment does not only refer to the physical setting where the teaching and learning process takes place but most especially the social climate that exist inside the classroom. The rapport of the teacher to the class, the exchange of ideas encouraged by the teacher and the non-threatening atmosphere in a child-friendly classroom may help every learner to succeed in class.

Table 1. Perceived Use of Differentiated Instruction as to Content, Process, Product, Affect and Environment

Content	Mean	SD	Verbal Interpretation
1. provides reading materials for the class.	3.53	0.55	Highly Observed
2. presents materials in video/PowerPoint forms.	3.33	0.69	Observed
3. uses pictures and diagrams to serve as examples.	3.48	0.60	Observed

Content	Mean	SD	Verbal Interpretation
4. supports and assists the class as the lesson goes on.	3.48	0.51	Observed
5. explains words which are not familiar to the class.	3.60	0.50	Highly Observed
6. explains steps on how to do a particular task.	3.55	0.50	Highly Observed
7. sets the time and schedule to which activities must be accomplished.	3.45	0.50	Observed
8. provides enrichment activities.	3.53	0.51	Highly Observed
9. gives activities with varying difficulties.	3.43	0.71	Observed
10. provides various resources and materials the class used.	3.30	0.82	Observed
Overall	3.46	0.25	Observed
Process			
1. offers support and help to struggling learners.	3.43	0.68	Observed
2. allows the class to choose topics being studied based on their interest.	3.28	0.78	Observed
3. provides activities for different learners in varying difficulty.	3.48	0.55	Observed
4. gives activities which are challenging and engaging	3.35	0.58	Observed
5. provides many examples about the topic	3.50	0.64	Highly Observed
6. allows learners to view and search resources on the internet	3.45	0.64	Observed
7. requires learners to write on a journal for reflection	3.50	0.55	Highly Observed
8. uses graphic organizers in presenting the lessons and concepts	3.35	0.62	Observed
9. makes sure that the graphic organizer used is simple and easy to understand.	3.50	0.55	Highly Observed
10. creates small groups where members collaborate	3.45	0.60	Observed
Overall	3.43	0.29	Observed
Product			
1. gives learners many options on how to make their output.	3.48	0.51	Observed
2. provides rubrics as a basis in grading the outputs each learner.	3.43	0.68	Observed
3. allows learners to work alone or in group in making an output.	3.40	0.71	Observed
4. allows learners to decorate or design their own output.	3.43	0.68	Observed
5. gives tasks which are challenging yet can be finished within the given time.	3.63	0.49	Highly Observed
6. provides clear directions regarding the output that will be made by the learners.	3.48	0.68	Observed
7. creates tasks which are related to real-world applications.	3.48	0.72	Observed
8. provides list of possible output that can be made by the learners.	3.38	0.63	Observed

Content	Mean	SD	Verbal Interpretation
9. explains how learners can accomplish a specific output presented on the list.	3.45	0.64	Observed
10. provides rubrics in grading the output of the learners.	3.43	0.50	Observed
Overall	3.46	0.27	Observed
Affect and Environment			
1. arranges the class into different groups for collaborative work.	3.38	0.59	Observed
2. allows the class to rearrange the chairs for group activities.	3.30	0.76	Observed
3. encourages the class to help each other and collaborate to finish tasks.	3.55	0.64	Highly Observed
4. creates new groups in the class for every activity.	3.30	0.82	Observed
5. gives praises to student who does well in the class.	3.33	0.66	Observed
6. provides learning spaces where groups can discuss and present.	3.45	0.60	Observed
7. allows the class to move around the classroom to plan with their classmates, discuss, and presents their work.	3.35	0.70	Observed
8. ensures that the classroom is well-lighted at all times.	3.45	0.55	Observed
9. ensures that the classroom is clean and well-ventilated at all times.	3.45	0.60	Observed
10. promotes a non-threatening learning environment for all.	3.45	0.60	Observed
Overall	3.40	0.28	Observed

Legend: *3.50-4.00 (Highly Observed), 2.50-3.49 (Observed), 1.50-2.49 (Less Observed), 1.00-1.49 (Not Observed at All)*

Difference between the Pre-Test and Posttest Scores in the Control Group and Experimental Group

The data on Table 2 reveals the test of difference between the mean pre-test scores and posttest scores of the control group in terms of their analytical thinking skills specifically the ability to differentiate, organize, and attribute at 0.05 level of significance. The table shows that there is a significant difference between the mean pre-test scores and posttest scores of the students in control group on their analytical thinking skills such as ability to differentiate ($t = 4.982$; $p < 0.05$), ability to organize ($t = 4.114$; $p < 0.05$), and ability to attribute ($t = 3.623$; $p < 0.05$). This reveals that students have performed well on their posttest compared to their pre-test since the topics were discussed and explained by the teacher. There is a noticeable improvement of scores on the ability of students to differentiate followed by the students' ability to organize and finally the students' ability to attribute. The result shows that students have developed their ability to differentiate more compared to the other two subskills in their analytical thinking skills. It is also expected that students will be able to answer better on their second try most especially when materials and lessons are presented to them. The mean scores in the posttest is significantly higher compared to the mean scores in pre-test. This may be the result of the exposure of students to the topics being presented by the teacher. It can be noted that the scores have improved by 1 to 2 points on the three subskills of analytical thinking. This is because the pre-test is designed to assess the student's prior knowledge and understanding of the material

before the teaching intervention, whereas the post-test measures the student's knowledge and understanding after the intervention. With effective teaching strategies, students are likely to have a better understanding of the material after the intervention, which would result in higher post-test scores.

Table 2. Test of Difference in the Control Group

Analytical Thinking Skills	Pre-test		Posttest		t	df	Sig. (2-tailed)
	Mean	SD	Mean	SD			
Differentiate	3.88	1.52	5.53	2.18	4.982	39	.000
Organize	4.03	2.04	5.65	2.07	4.114	39	.000
Attribute	4.53	2.37	5.98	1.83	3.623	39	.001

Legend: N=40, M=Mean; SD= Standard Deviation; p <0.05-Significant; p ≥0.05 Not Significant

Table 3 below shows the test of difference between the pre-test scores and posttest scores of the students in experimental group as to their analytical thinking skills such as the ability to differentiate, organize, and attribute at 0.05 level of significance. It can be gleaned from the data that there is a significant difference between the mean pre-test and posttest scores of the students in experimental group on their analytical thinking skills such as the ability to differentiate (t =11.983; p <0.05), ability to organize (t =11.213; p <0.05), and ability to attribute (t =15.623; p <0.05). this data implies that students performed better after being exposed to differentiated instructions. The students' ability to attribute improved the most among the three subskills followed by the ability to differentiate and ability to organize. Posttest scores improved significantly in the experimental group since the lessons are presented to them and that they have achieved the learning competencies as the teacher facilitates how students may have the access to the learning competencies (content); how the teacher facilitates sets of activities or learning tasks that enable students to make sense about the content (process); how the teacher leads the students in presenting their output to demonstrate learning of the content (product); and how the teacher organizes the class in the classroom environment which involves the setting of rules and expectations, providing of procedures or groupings, rapport between the teacher and the students, and the overall climate in the teaching and learning process. Garcia Herrero (2019) found out that by implementing differentiated instruction, educators can provide individualized support to students with varying levels of academic ability and help them to develop these important skills. This can help to create a more equitable learning environment where all students have the opportunity to succeed. Rosenzweig and others (2020) reported in a study published in the Journal of Educational Psychology, researchers found that students who received differentiated instruction showed greater gains in analytical thinking skills than those who received traditional instruction. The study suggests that differentiation may be an effective strategy for promoting analytical thinking skills among students.

Table 3. Test of Difference in the Experimental Group

Analytical Thinking Skills	Pre-test		Posttest		t	df	Sig. (2-tailed)
	Mean	SD	Mean	SD			
Differentiate	3.90	1.57	8.05	1.85	11.983	39	.000
Organize	4.78	2.33	8.28	1.95	11.213	39	.000
Attribute	4.53	1.95	11.20	2.07	15.623	39	.000

Legend: N=40, M=Mean; SD= Standard Deviation; p <0.05-Significant; p ≥0.05 Not Significant

Relationship between the Analytical Thinking Skills and Student Perception towards the use of Differentiated Instruction

Table 4 reveals the obtained r values reveal a very low correlation in the use of differentiated instruction as to content in terms of the analytical thinking skills of the students such as the ability to differentiate (r =0.004), ability to organize (r =0.150), and ability to attribute (r =-0.030) at p <0.05 level of significance. It can be noted that student's posttest scores do not significantly correlates to the students' perception on the teacher's use of differentiated instruction as to content. An improved score is not related to whether the students have observed or not the teacher's utilization of differentiated instruction by means of providing strategies to differentiate content. Even when the teacher has explicitly demonstrated procedures in incorporating differentiated instruction such as providing varied texts, different media of instruction, and multiple sources of information, this does not correlate to the results of posttest scores in terms of analytical thinking skills.

For the process, the obtained r values show a very low correlation to low correlation between the use of differentiated instruction as to process and the ability of the students to differentiate (r = 0.184), ability to organize (r = 0.278), and ability to attribute (r =0.240) at p <0.05 level of significance which means that posttest scores of the students does not significantly correlates on the teacher's use of differentiated instruction as to process. In other words, even the students perceived the teacher to incorporate varied ways to which the students may process the lesson at hand, it does not associate the perception on the posttest scores of the students. The observation of the students whether they are aware of the indicators of differentiated instruction or not, does not significantly relates to their posttest scores in terms of their analytical thinking skills.

It can be gleaned for the product as one of the components of differentiated instruction, there is a very low correlation to low correlation as to students' ability to differentiate (r =0.067), ability to organize (r =0.283), and ability to attribute (r =0.240) at p <0.05 level of significance. The posttest scores in terms of their analytical thinking does not correlated to their observation on teacher's use of differentiated instruction as to products. This means that even though students have observed the teacher's implementation of different ways the students can present their output, this does not significantly correlate to the results of the students' posttest scores.

Moreover, the use of differentiated instruction as to affect or environment has a very low to low correlation to the analytical thinking skills of the students such as the ability to differentiate (r =0.133), ability to organize (r= 2.72), and ability to attribute (r= 0.106) at p <0.05 level of significance. The ability of the students to differentiate on the lessons presented to them has a very low correlation to their perception whether they have observed the teacher's procedures in creating groups in class, arranging the chairs, promoting non-threatening environment and encouraging and promoting cooperation and collaboration.

Ash and others (2018) aimed to investigate learners' perceptions of their thinking skills development. The findings revealed that learners had a positive perception of their thinking skills development, particularly in the areas of critical thinking, problem-solving, and creativity. However, learners' perceptions of their thinking skills development were not always aligned with their actual development. The study suggests that educators need to consider learners' perceptions of their thinking skills development and provide opportunities for learners to reflect on their thinking processes in order to enhance their development. On the other hand, Eren (2017) found a positive and significant correlation between students' perceptions of their own learning and their analytical thinking skills. The authors suggest that teachers should focus on enhancing students' perceptions of their own learning to improve their analytical thinking skills.

Woraprom (2019) found out in his study that students had moderate perceptions of their analytical thinking skills. Additionally, the study found that the students' gender, academic discipline, and participation in extracurricular activities were associated with their perceptions of analytical thinking skills.

The data revealed that there is no significant relationship between the students' perception on the teacher's use of differentiated instruction to the students' analytical thinking skills. The posttest scores of the respondents may be associated to different factors such as their understanding and comprehension of the lessons, their prior knowledge, their learning styles, interests, exposure to sources of information among others.

Table 4. Test of Relationship of Analytical Thinking Skills and Student Perception

Use of Differentiated Instruction	Analytical Thinking Skills		
	Differentiate	Organize	Attribute
Content	.004	.150	-.030
Process	.184	.278	.240
Product	.067	.283	.031
Affect/Environment	.133	.272	.106

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Conclusion

The students perceived the use of differentiated instruction as to content, process, product, and affect/environment as "observed". Majority of students in the control group and experimental group obtained pre-test scores under "Fairly Satisfactorily" level of progress for the analytical thinking skills as to differentiate. For the analytical thinking skills as to organize, majority of students under control group obtained pre-test scores under "Fairly Satisfactorily" while majority of students under the experimental group obtained scores under "Very Satisfactorily" and "Satisfactorily" level of progress. Lastly, for the analytical thinking skills as to attribute, majority of students from both control group and experimental group obtained pre-test scores under "Fairly Satisfactorily" level of progress. For analytical thinking skills as to differentiate, majority of students in the control group obtained posttest scores under "Fairly Satisfactorily" level of progress. On the other hand, most of the students in experimental group obtained posttest scores under "Very Satisfactorily" level of progress. For analytical thinking skills as to organize, most of the students in control group obtained posttest scores under "Fairly Satisfactorily" level of progress while students in experimental group obtained posttest scores under "Very Satisfactorily and Satisfactorily" level of progress. Lastly, for the analytical thinking skills as to attribute, majority of the students in control group obtained pre-test scores under "Satisfactorily" level of progress while the students in experimental group obtained scores under "Outstanding" level of progress. There were significant differences between the pre-test and posttest scores of the students in control group in all the sub skills of analytical thinking skills such as the ability to differentiate, organize, and attribute. Similarly, there were significant differences between the pre-test and posttest scores of students in experimental group in the three sub skills of analytical thinking skills.

While perception can play a role in analytical thinking, the two may not directly correlated. Students can have excellent perceptual abilities but lack analytical thinking skills, or vice versa. For example, a student with strong perceptual abilities might be able to pick up on subtle details in a visual image, but struggle to use that information to make a logical argument. Conversely, a student with strong analytical thinking skills might be able to break down complex ideas and make logical connections, but struggle to perceive subtle nuances in sensory information. Overall, both perception and analytical thinking are important skills for students to develop. By honing their perceptual abilities, students can become more adept at noticing details and making connections between seemingly disparate pieces of information. By developing their analytical thinking skills, students can better understand complex ideas and develop logical arguments based on evidence.

Acknowledgement

First and foremost, the researcher would like to thank God Almighty for His guidance and blessings in the success of this study. The researcher would also like to thank his family who provided utmost moral and financial support to make this research journey possible. The researcher wishes to extend his gratitude to his very supportive partner, Heydee Ann M. Perez. To the researcher's adviser, Mr. Jherwin P. Hermosa, for the insurmountable advice, guidance and willingness to share his time and expertise in making this thesis possible. To the respectable panel of examiners, colleagues, classmates, friends, and students, a warm thank you and appreciation for your gracious time and effort. To the Laguna State Polytechnic University San Pablo City Campus and the top management, for the dedication in producing competent and competitive educators and the invaluable support in attaining the university's mission and vision, thank you very much. May this research study leave an impact in the education arena and ultimately contribute to the existing body of human knowledge for the betterment of the human civilization.

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