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Gallery Walk: The Strategy in Improving Mathematics Performance of the SHS in Different Strands of K to 12

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Abstract
Students' representations in understanding abstractions in Mathematics help the learners' long-term retention. An exhibit in the four corners of the classroom through the simple creative artwork, be assigned as the curator of outputs, a listener, and visitor of the exhibit when combined helped the students' long-term retention and desirable understanding of the applications in Mathematics. This study aimed to determine the profile of senior high school students (SHS) in terms of sex and strand chosen. Also, it identified the level of performance in the pre-test, post-test, formative assessments in operations of functions, and properties of the logarithm. The significant difference between the pre-test and post-test of the students are tested to determine if there is an improvement in the application of the gallery walk. A randomized block pre-test post-test design was used in the 250 SHS of the Morong NHS in determining if a significant difference exists in the performances when grouped according to sex and strand chose where association on these variables were also tested to determine which one is the best factor in reaching the advance proficiency level. Findings uplifted a notable performance gain in learning the subject. After testing the hypotheses, improving performance through gallery walk was received differently by different strands (i.e. Accounting, Business and Management (ABM), Science, Technology and Engineering Mathematics (STEM), and General Academic Strand (GAS)) but equally used according to sex. Also, it was confirmed that the chosen academic strand is a factor of becoming an advanced proficient learner in the General Mathematics course. It can move the field of Mathematics Education forward since this strategy can be used in all disciplines because tested effective. Through consistent encouragement in projecting creative outputs makes learning Mathematics innovative by applying the action plan proposed in this study.

Keywords: Gallery Walk, General Mathematics, Academic Strand.

1. Introduction

Education is essential to individual and national growth. This empowers the mind to imagine positive ideas and equips you with the right mindset and abilities to withstand life's realities. Education is essential to personal and social development. Even so, it makes individuals socially efficient members (Nzewunwa, 2009) where 21st-century education stresses globalization and internationalization (2015, Boholano et.al.). It is indeed with the advancement of science and technology that globalization and the internalization of education are seen as challenges that every country has to face, and one of the focus of today's educational challenges is the promotion amongst students of 21st-century skills (Amadi & Segun, 2018). With this, significant effort needs to be made to expand the awareness and skills of the young people needed to meet these demands.

Now, mathematics is always a component of education that reveals hidden patterns that aid in our comprehension of the world. Today's mathematics is a sophisticated field that deals with science facts, measurements, and observations, as well as reasoning, deduction, and proof, as well as mathematical models of natural events, human behaviors, and social systems. It is much more than just arithmetic and geometry (National Academy Press, 1989). Arguably, the beauty of mathematics can be found in the way all definitions are interrelated

and interwoven to create a vast network of knowledge, and how it can be applied to all facets of life and technology (Preciado, 2016). Mathematical understanding is crucial to our life, public, and working lives for high performance. At home, we might want to take into account the findings of a medical investigation or revive our child's enthusiasm for math. For a significant project, we will need to forecast the number of employees, resources, and time required. As individuals, we would want to assess factors such as the environment's rising carbon dioxide levels or the amount of tax money that should be allocated to war, health care, and education. Finally, mathematics is the foundation of engineering, technology, and science (Mahajan, 2014).

Yet learning mathematics is said to be simpler than completed. Students are regarded as having difficult subjects to understand since the abstract existence makes the meaning impossible for them to understand. It offers major factors related to difficulties in understanding the subject matter and factors related to teaching or training (Gafoor & Kurukkan, 2015). The negative attitude of the students towards mathematics, fear of mathematics, inadequate qualified teachers, and insufficient teaching materials were some of the causes of poor mathematical success (Tata, 2013). Several factors influence the learning performance of students in mathematics, including the attitude of students towards the subject, the teachers ' instructional practices, and the school environment (Mazana et. al. 2019). Thus, different teaching and learning mathematics approaches are being tried and tested to help these students develop a detailed understanding of this subject.

This is when Gallery walks may take place since it is an engaging teaching technique that brings students out of their seats and travels around the classroom to various learning stations that display artifacts relevant to the class activities. A gallery walk is a good way to evaluate what students have heard about the topic being taught (Edzel-Malizia, 2015). Students are tasked to discuss and participate, as well as listen to the thoughts and ideas of other participants (Asmani, 2011). It promotes teamwork, encourages higher-order thinking abilities like analysis, evaluation, and synthesis, and reassures students that their opinions, ideas, and experiences are appreciated since they are more inclined to express their thoughts with others in a nonthreatening environment (Nwanekezi et.al., 2018). Teaching and learning in the 21st century is defined by the active participation of students in the learning process and the emphasis on the student.

Around the gallery, walk involves students in a more meaningful way. This urgently gets them going and thought. The gallery walk is one of the most flexible practices focused on learners. The gallery walks links learners to each other and learners with fun, engaging ways to the training subject (Bowman, 2005). Through studying Mathematics and developing communication and social skills at the same time, it can help create a more well-rounded person to meet the demands of globalization and internationalization.

In this light, the researchers have used the strategy in the senior high school students (SHS) in teaching and learning Trigonometry topics under the General Mathematics course among the students enrolled in K to 12 Senior High School Strands, i.e, General Academics Strands (GAS), Accounting, Business and Management (ABM) strand, Science, Technology, Engineering and Mathematics (STEM) strand. By this, the researchers intended to determine if the gallery may contribute to the improvement of their Mathematics skills as to the strand taken.

1.1 Research Objectives

The study's objective is to create a modified Gallery Strategy suited for every strand in the SHS of K to 12 curricula, specifically, it sought to (1) determine the profile of the SHS in terms of sex and the strand they have taken; (2) find out the performance level of the students in the pre-test and post-test; (3) find out the performance level along with the areas of addition and subtraction of functions multiplication and division of functions, and the properties of logarithmic functions. It also determined (4) if there is a significant difference in the pre-test and post-test scores of the students in the trigonometric area under the general mathematics course. Moreover, the action plan to be created will be based more on the results of the (5) significant difference of Mathematics performance when grouped according to profile for contextualization purposes as well as its (6) significance association based on the profile of the SHS.

1.2. Theoretical Perspective

The research is dominated by Lev Vygotsky on the theory of social growth, and Jerome S. Bruner 's theory of multiple representations. Vygotsky (1978) says, "Every role in the cultural development of the child occurs twice: first, on the social level, and later, on the individual level; first, between people (inner psychological) and then within the child (intrapsychological)." It applies similarly to voluntary attention, rational memory, and idea formation.

This theory played a major role in gallery walk since the process of the strategy revolves around interpersonal learning then eventually sinks within student's self-understanding and comprehension. Moreover, Jerome Bruner's (2014) Multiple-Based Representation students to be creative enough with regards to how they understand the lesson. A representation 's power can be defined as its ability in a learner 's hands to link matters which seem very separate on the surface. This is important in Mathematics in particular. The students need to formulate a representation consistent with the subject discussed, as expected in the present study. They need to create representation in the form of drawing, painting, arts and crafts, models, etc., that directly fit the presented subject. Bruner conducted experiments that included children in teaching situations. He studied children's cognitive systems, and how children psychologically understood the concepts. This is the sole responsibility of the gallery walk strategy since it revolves around the output that is being created by the students out of their understanding by presenting in an art gallery in the four corners of the classroom.

1.3. Scope and Limitations

The study did not create some controlled and experimental groups since it is not comparing any other strategy aside from the gallery walk. It used multiple groups in the intervention of the gallery walk strategy for a single grading period in the General mathematics course of Grade 11. The only students who experienced the gallery walk strategy belong only to three limited strands, i.e. GAS, ABM, and STEM. Also, the topics covered were limited to

operations of functions namely addition and subtraction, and multiplication and division. More so, the logarithmic properties dealt with expressions using its properties in converting single expressions from multiple numbers of logarithmic terms and vice versa.

2. Research Methodology

2.1. Research Design

A Randomized Complete Block Design (RCBD) was employed for the investigation; this experimental study had no designated control groups. According to Blay (2007), this design is a style of study intended to allow the researcher to acquire data regarding the current situation. Its main goal is to describe the nature of a situation as it exists at the time of the study and to explore the causes of some phenomena, the comparative nature is the experiment where the ability to analyze, compare and contrast subjects or concepts is demonstrated. It shows how similar are two subjects, or shows how different are two subjects, the posttest is the only measure of improvement The RCBD was used in this study because it studied students' performance using a gallery walk from a different group of students, i.e. from three different SHS academic strands. At the same time, it is comparison since it follows the design and comparison of the pre-posttest of performances when grouped according to SHS strand in K to 12 curricula as well as its association based on its profile.

2.2. Respondents of the Study and Sampling Technique

The respondents in this study were the grade 11 SHS of the Morong Integrated School in the Province of Rizal. The project was implemented by the graduate school students for their quantitative research course while doing the action research submitted in the Department of Education (DepEd) Riza Division. Two-hundred fifty (250) students participated in the intervention of Gallery Walk for one periodical term of the S.Y. 2019-2020. The respondents were chosen through a purposive sampling technique since it has the purpose of getting the students handled by the teachers who have known the implementation of gallery walk for at least three years and hence not all strands in the senior high school were taken.

2.3. Instruments of the Study

The study used a teacher-made 30-item test paper. It was prepared along with the Learning Competency from DepEd's Daily Learning Log (DLL). The researchers crafted a table of specification (TOS) to give an even number of questions for the entire duration of the intervention. It was validated by the mathematics experts, one from the Senior High School institution and one expert from the tertiary institution. It was checked then by the school's Mathematics Head and approved by the principal. Before the test paper had been floated, it was pilot tested to ten (10) non-actual respondents enrolled in the same high school institution but taking a different Academic Strand, i.e from Humanities and Social Science (HUMSS) Strand to come up with a computed Cronbach alpha value at 0.82.

2.4. Data Gathering and Ethical Considerations

The researchers sent a formal request letter to the concerned personnel seeking permission to gather data needed for the study. Upon approval, the researchers also asked permission from the cooperating teacher to administer the research instruments and to use the said strategy. The administration of the questionnaire was done right after the letter was approved by the principal of Morong Integrated School (MIS)

The researchers used pre-test and post-test to analyze and identify the level of understanding of the participants in learning General Mathematics. The teacher teaches first; afterward, when the students already have prior knowledge regarding the topic, the teacher conducts the Gallery Walk strategy as a test if the students learned during the discussion. How Gallery walks takes place inside the classroom is through assigning 5 groups in the class, assigned a specific lesson in which the students created artworks on how they understood the lesson. Most of the groups created paintings and drawings for real-life applications. All artworks in the next session were exhibited to the corners of the classroom where one member of the group served as the curator. The teacher gave 5 minutes for every stop in the exhibit where assigned nongroup members were listening to the curator of the output. Each member from the group was given the chance of being the curator of the artwork for every rotation done after 5 minutes. The purpose is for the members of the group to be all ready and shared information with the output that had been created before the session. The data collected served as the basis for the level of performance since the teacher is taking notes and grading through the use of a rubric. After exposure to the treatment for two weeks, a post-test was administered using the same instrument during the pre-test. The post-test result serves as the end line of the data.

2.5. Data Analysis

After all necessary floating, checking of test papers, and gathering the data needed, the generated scores were tallied, tabulated, and analyze using a statistical software version 23 of Statistical Package for Social Sciences (SPSS). The formula used was the frequency count and percentage, arithmetic means with DepEd's Level of Proficiency Scale, paired t-test, ANOVA, and Chi-Square test of Independence.

3. Results & Discussion

Each result is presented chronologically based on the objectives of the study.

3.1. The profile of the SHS in terms of sex and the strand they have taken

3.1.1. Sex.

The figure shows the pie chart on the sex distribution.

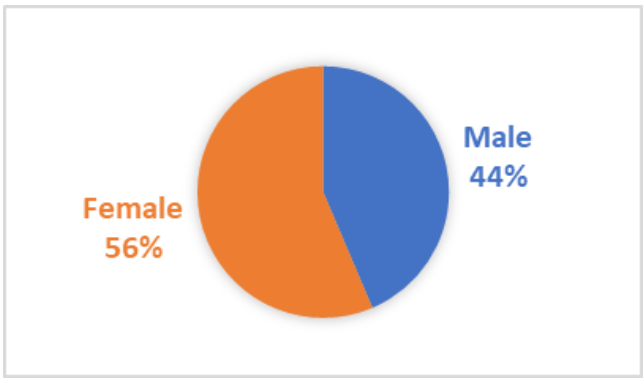

Fig. 1: The Profile of the Respondents in terms of Sex.

From the profile of the SHS students in figure 1, it is dominated by females (56%) with 46% males. This is not only true to the MIS since according to UNESCO's (United Nations, Educational Scientific and Cultural Organization's) 2007 figures, the proportion of women in tertiary education now exceeds 50 percent in nearly all OECD (Organization for Economic Co-operation and Development) member countries, reaching as high as 64 percent in Iceland. They may belong to the Senior high school; their age groups fall under the average tertiary students which is congruent to the profile exhibited in the conducted study by Lanuza, Rizal, Aligam, & Uy (2020). Freshmen students across any degree programs in the provinces of Rizal and Laguna were both subjugated by females.

3.1.2. Strand.

The figure shows the pie chart on the strand distribution.

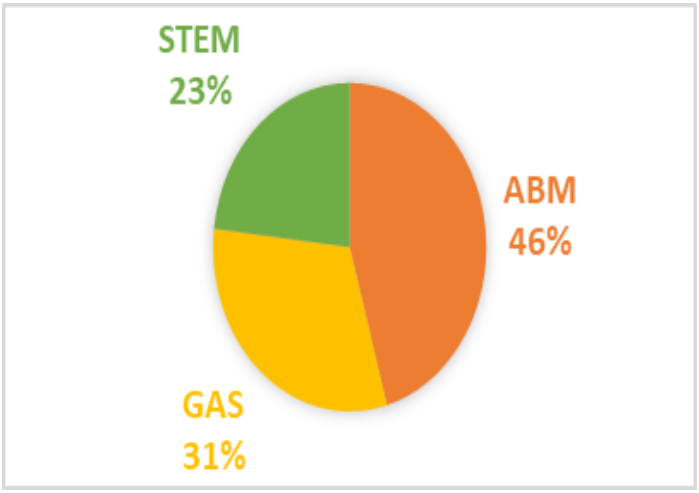

Fig. 2: The Profile of the Respondents in terms of SHS Strand.

Most of the SHS (the 46%) preferred to enroll in ABM Strand followed by GAS at 31%. The least strand chosen is STEM at 23%. This is a unique feature of the MIS since based on the study about the review on the SHS curriculum in the US, Japan, and the Philippines, the most preferred track is academic track however the most chosen one is the STEM (Sarmiento & Orale, 2016). It is maybe based on the context of Rizal with many businesses that can be offered once they graduate which gave them perhaps the idea of taking the ABM strand. But it is coinciding to the Manila Times (2017) report that ABM is consistently listed as the top preference of high school students in the senior high school education.

3.2. The performance level of the students in the pre-test and post-test;

3.2.1. Pre-test

The succeeding table presents the distribution of frequencies of scores based on the General mathematics pretest.

Table 1: The Frequency Distribution on the Pre-Test of the Students in General Mathematics.

Proficiency Level	Pre-Test Performance					
	ABM		GAS		STEM	
Beginning (B) (74 and below)	64	56.1	39	50	43	74.1
Developing (D) (75 to 79)	47	41.2	37	47.4	10	17.2
Approaching Proficiency (AP) (80 to 84)	3	2.6	2	2.6	5	8.6
Proficiency (P) (85 to 89)	64	56.1	39	50	43	74.1
Advanced (A) (90 to 100)	0	0.0	0	0.0	0	0.0
Mean	73.61		74.35		72.79	
Proficiency Level	Beginning		Beginning		Beginning	

Table 1 showed that all SHS students from the different strands were in the Beginning Level, they only have a very small knowledge in regards to the topic of function operations including addition, subtraction, multiplication, and division. Also, a little schema retained in dealing with logarithmic property in which they were not good at converting single logarithmic expression from multiple terms of logarithms and vice versa. Now, in alignment with the study of (Penggunaan, Gallery, & Dalam, 2012), they observed that students had the same accuracy in the performance in the pretest. The pretest was given to the respondents to measure their level of performance and proficiency before the execution.

3.2.2. Post-test

The succeeding table presents the distribution of frequencies of scores based on the General mathematics post-test.

Table 2: The Frequency Distribution on the Post-Test of the Students in General Mathematics.

Proficiency Level	Pre-Test Performance					
	ABM		GAS		STEM	
Beginning (B) (74 and below)	0	0.0	0	0.0	0	0.0
Developing (D) (75 to 79)	0	0.0	0	0.0	0	0.0
Approaching Proficiency (AP) (80 to 84)	10	8.8	0	0	8	13.8
Proficiency (P) (85 to 89)	51	44.7	15	19.2	26	44.8
Advanced (A) (90 to 100)	53	46.5	63	80.8	24	41.4
Mean	89.18		91.29		88.36	
Proficiency Level	Proficient		Advanced		Advanced	

It is a good thing to note in Table 2 that after two weeks of intervention, the SHS students in all three strands scored higher in their post-test. It is observed that they can perform function operations and can simplify multiple term logarithmic expressions to a single term and vice versa. The ABM SHS students became proficient in the mentioned topics while the GAS students and STEM students were both advanced levels.

3.3. The performance level along with the areas of addition and subtraction of functions multiplication and division of functions, and the properties of logarithmic functions

3.3.1. Addition and Subtraction of Functions

The succeeding table presents the distribution of frequencies of scores based on short quiz about addition and subtraction of functions.

Table 3: The Frequency Distribution on the Students in General Mathematics' Addition and Subtraction of Functions.

Proficiency Level	Pre-Test Performance					
	ABM		GAS		STEM	
Beginning (B) (74 and below)	0	0.0	0	0.0	0	0.0
Developing (D) (75 to 79)	16	14	20	25.6	0	0
Approaching Proficiency (AP) (80 to 84)	98	86	58	74.4	58	100
Proficiency (P) (85 to 89)	0	0.0	0	0.0	0	0.0
Advanced (A) (90 to 100)	0	0.0	0	0.0	0	0.0
Mean	79.65		79.36		80.0	
Proficiency Level	Approaching Proficiency		Developing		Approaching Proficiency	

Gallery walk gave a good start in the teaching and learning of the addition and subtraction of functions as reflected in Table 3 students in ABM and STEM strands reached the approaching proficiency level, while the GAS students were in the boundary of developing and approaching proficiency In the intervention, the students presented creative presentation not by merely writing the solution on a piece of manila paper but instead, created a story on presenting it. Although it may still be abstract by nature, the idea is that the students tend to create an improved version of presenting lessons.

3.3.2. Multiplication and Division of Functions

The succeeding table presents the distribution of frequencies of scores based on short quiz about multiplication and division of functions.

Table 4: The Frequency Distribution on the Students in General Mathematics' Multiplication and Division of Functions.

Proficiency Level	Pre-Test Performance					
	ABM		GAS		STEM	
Beginning (B) (74 and below)	0	0.0	0	0.0	0	0.0
Developing (D) (75 to 79)	16	14	15	19.2	0	0
Approaching Proficiency (AP) (80 to 84)	98	86	63	80.8	58	100
Proficiency (P) (85 to 89)	0	0.0	0	0.0	0	0.0
Advanced (A) (90 to 100)	0	0.0	0	0.0	0	0.0
Mean	79.65		79.56		80.0	
Proficiency Level	Approaching Proficiency		Approaching Proficiency		Approaching Proficiency	

In the same manner, Table 4 elucidated all approaching proficiency levels of the students who belong to the ABM, GAS, and STEM strand. Gallery walks strategy helps the students to maintain their proficiency level even shifted to the next lesson of function operations. In the class intervention, what is noted in the outputs became simpler unlike in the first days of its implementation but there is a surprising note from the grading sheet of the teachers, the students' communication skills used in the rotation scheme of the strategy became the highlight of the session since the way the curators explained the solutions became commendable.

3.3.3. Logarithmic Properties

The succeeding table presents the distribution of frequencies of scores based on short quiz about logarithmic properties.

Table 5: The Frequency Distribution on the Students in General Mathematics' Logarithmic Properties.

Proficiency Level	Pre-Test Performance					
	ABM		GAS		STEM	
Beginning (B) (74 and below)	0	0.0	0	0.0	0	0.0
Developing (D) (75 to 79)	0	0.0	0	0.0	0	0.0
Approaching Proficiency (AP) (80 to 84)	0	0.0	0	0.0	0	0.0
Proficiency (P) (85 to 89)	20	17.5	0	0	0	0
Advanced (A) (90 to 100)	94	82.5	78	100	58	100
Mean	92.58		95.53		95.0	
Proficiency Level	Advanced		Advanced		Advanced	

Table 5 presented that the gallery walk applies best in the logarithmic property General Mathematics lesson. The claim was based on the reflected proficiency level of the students in all three strands. All of them belong to the advanced level. It can be described that the use of gallery-walk in the remaining days of two-long weeks of the intervention shown at ease to the students. They find the strategy helpful in the retention of logarithmic properties which intended them to convert multiple terms of logarithmic expression to single expression and vice versa.

3.3.4. All Three Subtopics in General Mathematics

The succeeding table presents the distribution of consolidated average scores based on the three subtopics covered in General mathematics.

Table 6: The Composite Mean Distribution on the Performance of the SHS students in General Mathematics based on the three Subtopics.

Strand	Addition and Subtraction		Multiplication and Division		Properties of Logarithmic Expression		Post- Test Result	
ABM	80	AP	80	AP	93	A	89	P
GAS	79	D	80	AP	96	A	91	A
STEM	80	AP	80	AP	95	A	88	P

Table 6 presented the summary table of the students' performance in the General Mathematics course in the Grade 11 curriculum. It is commendable to note that the gallery walk helped them gradually meeting the proficient and advanced level required by the course. As confirmed by the theories of Vygotsy (1978) and Bruner (2012) that learning takes place in the two-way round. First in interpersonal learning from the member's brainstorming and collaboration., down to intrapersonal learning in which oneself processed the knowledge and skills that are being experienced in the classroom. Also, the multiple representations helped the students to convert their understanding based on not how the concepts and theories were given but on how it is understood according to their contexts based on their everyday living. Also, a gradual approach to lessons will help not only the retention of the lessons but also how lessons are making meaning in learning the next variables prerequisite to the topics in the next sessions (Aniban & Elipane, 2014)

3.4. The significant difference in the pre-test and post-test scores of the students in the trigonometric area under the general mathematics course.

The succeeding table presents the average mean distribution and the comparison inference values whether the test performance has significant increase or none in the pre-test and posttest performance.

Table 7: The Mean Distribution on the Comparison of Pre-Test and Post-Test Scores of the Students in General Mathematics.

TESTS	MEAN	LEVEL	T-CRITICAL	T-COMPUTED	DECISION	REMARKS
ABM						
Pre-test	73.61	Beginning	1.981	-36.865	Reject the Null Hypothesis	Significant
Post-test	89.18	Proficient				
GAS						
Pre-test	74.35	Beginning	1.991	-45.326	Reject the Null Hypothesis	Significant
Post-test	91.29	Advanced				
STEM						
Pre-test	72.79	Beginning	2.002	-30.557	Failed to accept the Null Hypothesis	Significant
Post-test	88.36	Advanced				

Table 7 displayed a significant difference in the performance of the SHS students in the use of Gallery Walk. The strategy helped the students in significantly improving their Mathematics proficiency level in the topics of Trigonometry under the General Mathematics course. Gallery walk was tested effective in the learning of function operations including addition and subtraction as well as multiplication and division. Meanwhile, the gallery walks also helped the students in performing multiple term logarithmic expressions and vice versa. The use of gallery-walk as recommended in the findings of Lanuza (2017) that representations on the applications through creative artworks may improve learning especially when using authentic assessments. Students can learn best if they can represent the mathematics abstractions into something related to their everyday living such as real-life applications through arts. The significance implies that the performances of the pre-test and post-test are not equal just like what Alcantara (2017) stated, post-test was given after implementing any methods of teaching. Obviously different in the proficiency, post-test performed way better than the pretest through the help of Gallery Walk strategy.

3.4.2. when grouped according to strand

The succeeding table presents the average mean distribution and the comparison inference values whether the test performance has significant increase or none in the pre-test and posttest performance when grouped according to sex.

3.5. The significant difference of Mathematics performance when grouped according to profile

3.5.1. when grouped according to sex

The succeeding table presents the average mean distribution and the comparison inference values whether the test performance of male and female has significant difference or none in the posttest performance.

Table 8: The Mean Distribution on the Comparison of General Mathematics Performance when grouped according to Sex.

Sex	Mean	Level	F-Computed	P-Value	Decision	Remarks
Male	90	A	0.711	0.4	Failed to Reject the Null Hypothesis	Not significant
Female	89	P				

Table 8 can only mean that although males performed better as to females in the General Mathematics course, with f-value computed of 0.711 which generated a p-value of 0.4. It is quite larger than the alpha level at 0.05. The decision of accepting the null hypothesis was concluded. It implied that the use of gallery walk was equally manifested in male and female students of the Grade 11. The equal implementation of teaching strategies manifested in many studies in education. One study applied an output-based orientation to students similar to gallery walk and found no difference with regards to sex (Lanuza, 2020). Also, consistent to Boardman, Blalock, & Button (2008) that sex should not be a lens in differentiating teacher's instructions since every learner must be treated equal regardless of sex, race and culture.

3.5.1. when grouped according to strand

The succeeding table presents the average mean distribution and the comparison inference values whether the test performance of GAS, STEM or ABM has significant difference or none in the posttest performance.

Table 9: The Mean Distribution on the Comparison of General Mathematics Performance when grouped according to Strand.

Strand	Mean	Level	f-computed	p-value	decision	remarks
ABM	89	P	16.354	0.00	Reject the Null hypothesis	significant
GAS	91	A				
STEM	88	P				

In table 9, it can be concluded that the use of a gallery walk helps the students in the GAS strand as compared to the other two academic strands. This can be supported with the f-value of 16.354 in which a flat p-value of 0.00 was generated. By using the decision rule that if the p-value is lesser than the 0.05 alpha value. The null hypothesis must be false. It implied that although all students used the same strategy, it is most effective ins students enrolled in GAS. Perhaps, the contextualization of the artwork is limited to ABM and STEM since there is a focus on their line of specialization unlike in GAS that they can use anything related to them. Along with the study of (Lanuza, 2017) that there is a significant difference on the implementation of Outcomes-based Education (OBE) according to the grouping variables in terms of the degree program (BSE, BSA, BSIT, BSCS) and the nature of the mathematics course (abstract Math or applied Math) similar to the academic strand in the K to 12 curriculums with different difficulty, Mathematics performance of the students were varied and received differently.

3.6. The significant association of Mathematics performance based on profile

3.6.1. association to sex

The succeeding table presents the average mean distribution and the association inference values whether the test performance of male and female has does matter in the posttest performance

Table 10: The Mean Distribution on the Association of General Mathematics Performance according to Sex.

Sex	Mean	Level	Chi-square computed	p-value	decision	remarks
Male	90	A	2.201	0.33	Failed to Reject the Null Hypothesis	Not significant
Female	89	P				

Table 10 supported the findings that there is the same use of gallery walk according to sex hence concluded to have no association with regards to its performance level. This claim was based on the greater p-value of 0.333 when compared to the alpha value at 0.05. It implied that sex is not a factor in attaining whether to become a proficient and

advanced level in the General Mathematics course, it is anchored with the Sustainable Development Goals No.5 that promotion of gender equality must manifests at all levels.

3.6.2. association to Strand

The succeeding table presents the average mean distribution and the association inference values whether the test performance of ABM, GAS, and STEM students has a significant factor in the posttest performance

Table 11: The Mean Distribution on the Association of General Mathematics Performance according to Strand.

Strand	Mean	Level	Chi-square computed	p-value	decision	remarks
ABM	89	P	31.619	0.00	Reject the Null Hypothesis	significant
GAS	91	A				
STEM	88	P				

In the same manner, a chi-square computed of 31.6 which generated a p-value of 0.00 leads to the decision of not accepting the null hypothesis. Table 11 also confirmed the findings that there is a different way of the use of gallery walk to each student coming from different strands. It can be concluded that the academic strand taken by a senior high school is a factor in reaching an advanced level in the General Mathematics course. This is true to GAS students maybe because the approach to these students was general since it is the gateway for students with an undecided degree in college unlike in ABM and STEM in which the approach is more focused and with higher expectations

4. Conclusion

In light of the findings of this study, SHS can achieve gradual progress in learning Mathematics. It may not be an immediate high level at the start, eventually, educators have to believe that students can achieve the highest level of proficiency. This will be feasible if educators may continue exposing the students to an innovative teaching strategy like the use of a gallery walk since proven effective in improving Mathematics performance. The strategy not only develops the mental skill in learning the course but also developing the learners holistically. Gallery walk may offer interpersonal skills from the cooperative brainstorming and creation of creative outputs. Communication skills in dealing with the explanator of the exhibit per corner, an equal chance of being exposed in the class, and the skill of listening to others. Eventually, the knowledge will go deep within self in which the main goal of the study is to have meaningful learning of the course through varied learning experiences. More so in the findings, the educators and teachers may continue to be unbias in dealing with the sex of the students. The gender orientation of the SHS students may always be not a factor to their success in learning the topics in every Grade 11 course. However, the students should be careful in choosing the academic strand in their senior high school level so that the strand chose will enough to the track they will be applying for in college. The academic path they will be walking will dictate their performance in Mathematics.

5. Recommendations

Based on the generated conclusions, teachers may continue to expose students to different teaching strategies such as gallery walk. While students may continue to be participative so that they can sustain and improve Mathematics performance in the SHS. Students from different strands must exert more effort in learning the operations of functions since it is one of the baseline topics in most of the mathematics not only in the GAS, ABM, and STEM strands but also in Mathematics in the college education. Teachers and educators may continue to keep sex equality so that different gender orientation will always be not a factor in any school institutions. Since the chose K to 12 strands may dictate to what will be the mathematics performance level, students may carefully choose their paths so that their career when they reach college will not be sacrificed. Lastly, teachers and students not only in mathematics may use the proposed action plan about the improved version of the gallery walk implementation in the classroom. However, a "new normal" classroom gallery walk is recommended for further studies.

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