



Effectiveness of the Interactive Word Wall in Improving the Low Performance in Science of the Grade 5 Learners of Infanta Central School

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ABSTRACT

Learning of students is associated with teaching methodologies adopted by teachers during academic activities. This study explores the impact of the interactive Word Wall (WW) in Science competencies to improve the low performance of Grade 5 of Infanta Central Elementary School. It involves 41 students composing of only one (1) section. The study used the quasi experimental in order to gather the needed data. The study was conducted from April to mid-month of June 2023. The result of the study revealed that the pretest is 47.27%. The actual mean percentage score is low. The result shows that students have low level of knowledge in terms of learning competencies. The post-test result is 85.60%. This showed that the students improved in their performance. The results also revealed that the students' academic achievement scores were high when the teachers adopted the interactive word wall as a method of teaching in science. The students are more knowledgeable in the learning competencies for the lessons taken in the class. The t-test value of the students' pre-test and post-test result yielded at t-value of 20.72 and this is within the 0.05 level of significance set of analysis. The null hypothesis in the study is rejected. The level of acceptability of the instructional material had the weighted mean 4.18 and verbal description of much adoptable which shows that most of the students prefer to utilize the interactive Word Wall in dealing their lessons. The study recommends the introduction of new methodologies in teaching learning process in order to enhance the learning of students and provision of training to students regarding the retention of academic concepts.

PURPOSE: The study aimed to improve the Grade 5 learners' academic performance in science through the use interactive Word Wall

DESIGN/METHODOLOGY/APPROACH: This study utilized the quantitative method using non-descriptive statistics.

FINDINGS: The table shown, the comparison between the pretest and posttest Mean and MPS are quite distinctive. Table 3 showed that the result of the posttest is higher than in pretest. This is attributed to the fact that the students upon taking the pre- test may have retained basic knowledge of information regarding the competencies. Furthermore, the researcher may also cling to the fact that the students who took up the posttest were more focused on answering the questions.

It can be also gleaned from the table results that during the pre-test and post-test the learner-respondents have posted mean scores of 23.63 which was attributed to 47.27% Mean Percentage Score (MPS). The results of the pretest are an indication that the learners were having poor performance in science. This was because they failed to hit the mark of 75 percent. Thus, the researcher implemented the intervention used in the present study.

On the contrary the learners were able to display a mean score of 42.80 which was accounted to 85.60% Mean Percentage Score (MPS) in posttest. The sudden increase in the mean score and Mean Percentage Score of the learners was attributed to the intervention conducted in the study.

IMPLICATION/LIMITATION. This research was focused on enhancing the Grade 5 learner's performance in Science through Word Wall adoption at Infanta Central School.

ORIGINALITY/VALUE: The research is based on the low performance of learners in Science at Infanta Central School.

KEYWORDS: *Interactive Word Wall, Science Performance, Grade 5 Learners*

Introduction

The significance of science instruction for students, as a part of their daily lives and in their future career is undeniably important and is an invaluable source of information. In the school setting, science is one of the four core classes students need to be learned before students are able to grasp higher level concepts, making it important that students are successful at each grade level.

The consequences of low achievement in the science classroom can have far reaching negative effects on current educational performance as well as future impacts for students. In Infanta Central Elementary School, the initial problems that has been observed by the researcher being their adviser can include poor vocabulary development, low self-esteem, and finally behavior problems due to frustration. Poor achievement in science can be equally significant in the daily lives of students, outside of academic achievement if they are unable to meet the challenges of solving scientific issues in their lives, they might fell to cope with the challenges ahead of them.

It's a reality true that Infanta Central Elementary School Grade 5 level, that one of the vulnerable issues is the level of achievement of the learners when it comes to Assessment Test especially in Science. Looking back three- years ago the performance level of Science is described as having a decreasing fluctuating trend from school year, 2019-2020 (79.83%), 2020-2021 (76.61%), 2021-2022 (75.54). This alarming scenario in Infanta Central Elementary School alarms many teachers thus, motivates the researcher to adopt the Word Wall (WW) which helps the learners to enhance their performance in science.

With the large number of students in the class, the researcher found some reasons why science lessons were difficult to comprehend by some of the 41 students. The difficulties for some students are due to their specific learning disability and the way it affects their ability to be successful. Others with working memory issues can have difficulty performing an operation or manipulation with it and producing a result. A helpful solution for these students can be solved by working in groups and performing experiments to demonstrate the standard or skill. Students with comprehension difficulties can have trouble defining vocabulary words and assessing verbal knowledge. Some students are auditory learners while others are visual. Finally, students with reading difficulties can find a science textbook that is two years above grade level challenging when they are reading several years below grade level. If the student's disability is about fluency the textbook can be easily read to the student. If the disability is comprehension, understanding the material is more difficult for the student. In these situations, the researcher will study the impact of Word Walls as a strategy for learning and memorizing science vocabulary words.

Word walls are a common fixture seen in many elementary classrooms. They are designed to be an interactive tool for students and contain an array of words that can be used during writing and reading (Reading Rockets, 2018). Generally, the words are displayed alphabetically, with the words sectioned with the letter they fall under as a heading at the top of each list. The words may be displayed in a variety of ways, including index cards, magnets, or cardstock (Filkins, 2018). The students are able to visually see important words that they may need to use and for them to easily comprehend the words posted in the wall.

The words that make up a word wall vary depending on the teacher, subject, and even the grade. In early elementary classrooms, there is often at least one permanent word wall in the class consists of the spelling or sight words that are introduced throughout the school year (Pegrim 2018). As the year progresses and the students learn more words every week, the word wall is added to and expanded. Many teachers also choose to use word walls specific to a content that is being taught, often science. This word wall consists of a specific theme or unit and is often altered as the students enter new units. These word walls contain content-area terms from the unit and serve a specific purpose (Reading Rockets, 2018). The terms are important vocabulary that will be gone over in the unit. Some word walls also include a definition or picture to increase effectiveness.

Research Question

This study aims to measure the effectiveness of the Interactive Word Wall (WW) to improve the low performance in science of the Grade 5 learners of Infanta Central Elementary School.

1. What is the academic performance of the learners in science before and after the utilization of the interactive Word Wall?
2. Is there a significant difference in the pre-test and post-test performance of the learners?
3. What is the level of acceptability of the Interactive Word Wall in science as a tool to cater to the low performance of Grade 5 students?

Scope and Limitation

This research on the Effectiveness of the Interactive Word Wall in Improving the Low Performance in Science of the Grade 5 Learners of Infanta Central School using the qualitative method in analyzing and reporting the gathered data using the non- descriptive statistics in the treatment of the data. The research participants were grade 5 pupils of Infanta Central School, composed of twenty-one (21) male and twenty (20) female who participated in the research.

Methodology

The study used quantitative method in analyzing and reporting the gathered data using the non- descriptive statistics in the treatment of the data. The experimental research design is used in this study. Sugiyono (2019) says that experimental research aims to find the cause-and-effect relationship between variables under controlled conditions. The researcher found this method to be appropriate relative to the objectives of the study and research purposes.

Research Setting

Infanta Central School is located in Pob. 39 which is one of the three Poblacion in the town of Infanta, Quezon.

Research Participants

The research participants of the study were the twenty-one male and twenty female of Infanta Central School. They are grade 5 learners.

Research Instruments

The main instrument used in this research undertaking was a teacher made test with fifty (50) items that was developed with the help of experts and teachers teaching in grade 5 learners. The fifty (50) items on the fourth grading period examination cover the different learning competencies for that particular grading period. This teacher made test passed to a content validity by the expert in the district.

Data Gathering Procedures and Techniques

The data that was gathered was compiled, sorted out, organized, tabulated, and subjected to a statistical treatment to facilitate the presentation, analysis and interpretations of data. The pre-test and post- test used frequency distribution of data at certain levels of ratings. Further, on testing hypothesis N, the t-test was conducted.

Data Explication and Analysis

The researcher in this study employed a statistical data analysis technique to determine the difference in learner scores before and after the interactive Word Wall was used as a teaching tool. Data from an experiment with a pre- and post-test design were analyzed using the t-test. The learners' test results were also described using the mean and mean percentage score.

Results and Discussion

Academic Performance of the Grade 5 Learners in the Pre-test and Post-test

Table 3 reveals the academic performance of the Grade 5 Learners in the pretest and posttest.

Table 1

Academic Performance of the Grade 5 Learners in the Pretest and Posttest

	Pretest	Posttest
Mean	23.63	42.80
MPS	47.27	85.60

On the table above, the comparison between the pretest and posttest Mean and MPS are quite distinctive. Table 3 showed that the result of the posttest is higher than in pretest. This is attributed to the fact that the students upon taking the pre-test may have retained basic knowledge of information regarding the competencies. Furthermore, the researcher may also cling to the fact that the students who took up the post-test were more focused on answering the questions.

It can be also gleaned from the table results that during the pre-test and post-test the learner-respondents have posted mean scores of 23.63 which was attributed to 47.27% Mean Percentage Score (MPS). The results of the pretest are an indication that the learners were having poor performance in science. This was because they failed to hit the mark of 75 percent. Thus, the researcher implemented the intervention used in the present study.

On the contrary the learners were able to display a mean score of 42.80 which was accounted to 85.60% Mean Percentage Score (MPS) in posttest. The sudden increase in the mean score and Mean Percentage Score of the learners was attributed to the intervention conducted in the study.

Education is seen because the process that constitutes a person's life from the instant of birth, as we acquire knowledge, skills and behavior as a result of our interaction with the environment. As Cronin, et.al. (2017) suggests, education may be a science that involves the trouble to nurture and guide a replacement generation consistent with a given purpose and technology so as to bequeath science and methods to its leadership and development. This science is one among the foremost effective tools that enable individuals to hone their skills and contribute to socialization. Education aims to assist individuals develop positive behavior and increase their productivity.

Word walls serve as visual scaffolds and are a classroom strategy used to reinforce reading and language arts instruction. Research shows a strong relationship between student word knowledge and academic achievement (Ullah 2021). As a result, building academic content vocabulary is an important part of science instruction. To support vocabulary development in science, teachers use interactive science word walls that resemble graphic organizers, strategically target academic vocabulary, and are student generated. Interactive word walls are an effective instructional strategy because they present current academic vocabulary while providing visual representations that help students develop "an understanding of, and fluency in, key unit vocabulary. Additionally, word walls that include visuals differentiate instruction for English language learners (Reutrel, 2019).

The result of post-test scores was derived right after the employment of those interactive Word Wall as a tool in teaching a lesson in Science. The obvious point of post-test is to assess what students have learned after utilizing innovative and interactive instructional materials.

Analysis shows that the use of Word Wall has positive impact on the academic performance for science students. The concept of instructional materials revolves on the fact that, it does not only stimulate the learner, but enhances learning outcome generally, increased relationship and recall by involving the relevant senses and makes instruction clear, meaningful and in most cases real. Student participation in creating and maintaining interactive word walls is crucial. The Word Wall was used by the students to supply the items and assign finding objects or examples for the wall as homework.

Significant Difference in the Academic Performance of the Grade 5 Learners in Pre-test and Post-test

Table 4 displays the significant difference in the performance of the learners in Pre-test and Post-test.

Table 2

Significant Difference in the Performance of the Learners in Pre-test and Post-test

Performance	Mean	t-stat	t-crit. at @.05	Decision	
Post-test	42.80	23.63	20.72	2.021	significance
Pre-test					

It can be seen from the table that learners perform better during the post-test than in the pre-test. This statement can be attested in the results of the pre-test and post-test of the respondents wherein the learners posted a higher mean during the post-test over the pre-test.

Table 4 further reveals the value of t-statistics and t-critical. The t-statistics is 20.72 while the t-critical value is 2.021 thus the t-statistics is beyond the t-critical value this means that there is a significant difference in the performance of the learners in pre-test and post-test. This implies that interactive Word Wall was effective in teaching, and it improved the performance of the learners particularly in science.

Results of the t-test analysis revealed significant difference between the mean post-test scores and the pre-test scores. The analysis yielded at t- value of 20.72 at 0.05 level of significance value. This is within the 0.05 level of significance set of analysis. The null hypothesis in the study is rejected. Thus, there is a significant difference between the compared variables. The findings of the present study are indicative that the use of interactive Word Wall in science as an instructional material in the teaching of the different competencies (see appendix B) is more effective than those traditional method of teaching. The significant differences among the post-test results between the students subjected in the traditional and the students subjected in the interactive Word Wall posed in the discussion of the lesson on the different learning competencies. It was observed that student using the material enjoyed and is equally evident in the acceptability test (see table 5) the discussion of the said lesson which may have facilitated fast absorption, understanding and retention of the discussed lessons compared to mere oral discussion, done in the traditional instruction.

Parallel to the study of Kelly (2017), at every grade level, and in every discipline, teachers need to know what their students know and can do before beginning a new unit of study. One way to make this determination is to use a pre-test that assesses student proficiency in the skill(s) that will be taught in a unit. According to Valdez (2015), students experienced difficulties in answering pre-test since a teacher only wasted to assess their stock and background knowledge using such test. In addition, the students answered the pre-test in accord with their prior knowledge and with their best abilities. Meanwhile, Word Wall (WW) was not yet used before the administration of pre-test.

The present findings of the study were attributed to the statement of Ullah, (2021) as he stressed that instructional materials like the use of Word Wall was said to be as information carriers designed specifically to fulfil objectives in teaching learning situation thus, makes teaching more effective than traditional teaching method. It was shown in the present study that by using the interactive Word Wall students significantly performed better. He added that this kind of teaching material motivates students and gets them to take an active part in the learning process.

Word walls can be an important classroom tool to aid students with spelling and vocabulary. Within a classroom, there are a variety of groups of students, including students on grade level, students above grade level, students below grade level, and students with disabilities. While each group is impacted slightly through word wall, one component that remains universal throughout each of the groups is that word walls cannot be used in isolation. Simply displaying a wall of words in the classroom without any further instruction or guidance does not help students with spelling or vocabulary; instead, word walls must be accompanied with activities and explicit instruction of how they are to be used. When this is done, word walls have the ability to positively benefit students in the classroom (Filkins 2018).

Table 5. Descriptive rating of the acceptability of the interactive Word Wall Science

Indicators	Mean	Interpretation
Did instructional materials motivate you to pay attention to the teacher right at the start of the lesson?	4.25	Much
Did instructional materials help you grasp a better understanding of the concept to be learned?	4.15	Much

Did instructional materials encourage you to participate in the activities that were given in the class?	4.25	Much
Did instructional materials motivate other students in the learning activities?	4.25	Much
. Did instructional materials help you answer the questions raised by the teacher?	4.15	Much
Did instructional materials help you obtain high points on your quizzes?	4.15	Much
Did instructional materials make learning fun for you?	4.15	Much
Did instructional materials make learning fun for other students?	4.0	Much
Do you like the teacher to use the instructional materials again?	4.25	Much
Overall Weighted Mean	4.18	Much

Acceptability survey results of the study revealed that the instructional materials utilized in the delivery of the lessons in the different learning competencies are much more acceptable with a weighted mean of 4.18. This result is supported by Brown, Lewis, Richard and Harclerod, (2019) it implies that instructional materials and aids are an essential requirement for successful teaching. Thus, conceptualizing instructional materials is highly important in discussing topics. Furthermore, they are objects of study that act as stimuli for the learners that increased motivation, achievements and developed positive attitudes.

Insights from Research Study

The researcher deep understanding in the study is that interactive word wall in science classrooms could be a viable method for increasing the scientific performance of students by making vocabulary more approachable, allowing students to participate actively in hands-on learning experiences, and serving as a visual resource for reinforcing important facts on an ongoing basis.

Conclusions

From the findings of this study, the researcher concluded the following:

1. The students' score in the pre-test got a mean of 23.63 and the Mean percentage score (MPS) was 47.27%. This can be described having a fair level of interpretation. It is concluded that the basic knowledge of students was low. Thus, the result shows that students have low level of knowledge in terms of learning competencies.
2. The students' score in the post-test has a mean of 42.80 and the Mean Percentage Score (MPS) was 85.60%. This can be described having an outstanding level of interpretation. The expected learning competencies for students were attained in the post-test wherein post-test performance of the students having the instructional materials was higher and excellent. The students are more knowledgeable in the learning competencies for the lesson taken in the class.
3. There was a statistical relationship between the academic performance of the Grade 5 students at Infanta Central Elementary School and the use of Word Wall as instructional material in teaching science. The t-test value of the students' pre-test and post-test result yielded at t-value of 20.72 and critical-value 2.021. This is within the 0.05 level of significance set of analysis. The null hypothesis in the study is rejected. Therefore, with the use of Word Wall in science it significantly increased students' performance for that particular grading period.
4. The level of acceptability of the instructional materials had the weighted mean 4.18 and verbal description of much adoptable which shows that most of the students prefer to have instructional material like word wall in teaching the lessons.

Recommendation

Based on the findings and conclusions of this study, the following recommendations are given:

1. Science teachers are encouraged to upgrade themselves in educational opportunities geared toward learning new teaching strategies toward their professional growth and development in science. The teachers may consider the Word Wall in teaching, since it was proven in the study that the method is effective in developing the students' performance. Teachers modify the materials in word wall to enhance teaching instructions to be able to provide learning scaffolds to students.
2. The school administrators should support and guide the Science teachers in the introduction of new learning strategies to uplift their confidence and skills which would benefit further the learners.

3. Teachers of science subjects may look into the possibility of incorporating the use of the interactive word wall into their content courses. The use of visuals and illustrations posted on the wall to manipulate by the students during class discussion may also provide them with experiences that lead to learning. This may give way to providing an atmosphere which will encourage active exploration. However, since this study employed only one group of pretest-posttest experimental design, the researcher recommends the conduct of a replication of the study using two groups of respondents, an experimental and a control group.

4. Self-prepared interactive word wall can be used as supplementary tool for other teacher activities adopted by the teacher to discuss and explain the topics not just in science but also in other subject areas in learning.

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