Effectiveness Of Science Text Cards To The Test Performance Of Grade 8 Students In Science & Technology

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Abstract — This study aimed to determine the Effectiveness of Science Text Cards to the performance of the Grade 8 learners in Science and Technology. The findings of the study served as a basis of a proposed intervention plan. This study used the Quasi- Experimental method of research to determine the significant difference of the aforementioned variables. The researcher utilized Universal Sampling in identifying the respondents of the study. The test of difference between the scores in the post-test of Grade 8 learners for control and experimental group in Science and Technology after the integration of Science Text cards in the delivery of the different learning competencies in Science and Technology that covered 1 month of the implementation.

Based on the table 4, showing the Grade 4 learners' performances in the test scores particularly in the control and experimental groups it can be gleaned, that the posttest performance of the aforementioned group is effective considering that the results in table 4 for control group in the posttest is 6.50 which is lowered compared to the posttest gained by the experimental group. The results have resulted to the computed t value and considered highest compared to the critical t value. Based from the given data, the hypothesis which states that there is no significant difference between the post-test performances of the Grade 8 learners both the control and experimental group in Mathematics after the integration of Science Text Card is rejected.

The results in table 4 implied that the utilization of the Science Text Cards in Teaching Science is significantly effective in improving the test performance of the Grade 8 learners considering that learning Science is not really an easy task on the part of the learners as well to the teachers. It really needs perseverance and dedication in making different learning materials that could augment the learning gap of the learners .The use of traditional teaching techniques should only be used if the subject matter is not particularly challenging. This is because the use of the aforementioned strategy has the potential to cause students to become confused, which could lower their test scores. Additionally, in order for the students to perform better in Science, the teacher needs to keep up with new approaches to the subject, such as identifying powerful techniques that could close the achievement gap.

I. Introduction

Incorporating group activity in teaching science and technology will create a positive environment. Teaching would be more interactive and interesting that students can learn to work together and interact with each other. Choosing STC as an innovation in teaching is believed to be more effective in terms of increasing the students' performance inside the classroom. Incorporating STC in classroom instruction enhances the learning among students and they are more motivated that results an active and well-participated discussion.

In my personal point of view, finding other alternatives to capture the interest among students for them to acquire knowledge should be emphasized. Science Text cards (STC) for me, creates an environment that is more conducive to learning in terms of student-student and student-teacher interaction.

Giving them new and interactive way of learning (ex. Science Text cards/STC) is a good strategy to help students understand not just the basics but all the necessary concepts. I think that in this manner, it will be beneficial for them to know the difficult terminologies and it will enhance their vocabulary skills most especially in science and technology.

Using Science Text cards (STC) is not also as easy as expected, there are some challenges that come along the way. There can be words which are unfamiliar with meanings which are also difficult to understand. Students find it hard to read terms and mispronounced these terms because of its origin. Most of the students are also passive readers that at the end of the day forgets the word and retention is not prioritized.

This study evaluated the effectiveness of Science Text Cards to the Test performance of Grade 8 learners in Science & Technology in Muertegui National High School. The findings were the bases for a proposed Enhancement plan.

Specifically, the study sought to answer the following questions:

1. What is the test performance of the Grade 8 students in Science and Technology before the integration of Science Text Cards and Multimedia Approach;

2. What is the test performance of the Grade 8 students in Science and Technology before the integration of Science Text Cards and Multimedia Approach;

3. Is there a significant difference in the test performances before and after the integration of Video-based learning materials in the delivery of the Most Essential Learning Competencies in Science based on the aforementioned groups?

4. What Enhancement Plan can be proposed based on the findings of the study?

HYPOTHESIS

Ho: There is no significant difference in the test performances before and after the integration of Video-based learning materials in the delivery of the Most Essential Learning Competencies in Science.

II.   Methodology

Design. This study used the quasi-experimental method of research to evaluate the Effectiveness of Science Text Cards with the integration of Multimedia Approach to the test performance of the Grade 8 learners in Science and Technology in Muertegui National School in San Isidro District in the Division of Leyte based from the different most essential learning competencies in first grading period delivered in Science subject which purely focused on the different competencies in Science and Technology. The main local of the study is in the Muertegui National High School which is located under the in the Division of Leyte. Based from the aforementioned locale, the main respondents that were chosen by the teacher-researcher was the Grade 8 learners which was identified based on their academic performances prior to the integration in the delivery of the different learning competencies integrating the Science Text Cards with the integration of Multi-media Approach in the delivery of the most essential learning competencies and after the aforesaid intervention were done. The assessment given to the respondents was carefully validated by the teacher-researcher herself which are the pretest and posttest test performances of the Grade 8 learners, the different steps in conducting the identified approach were undertaken in order to validate their performances before and after the implementation of Science Text Cards with the integration of Multimedia Approach performances of the respondents. This study is mainly focus on the results of the different test validation to gather data: The pretest scores performance of the Grade 8 learners before the implementation of the Science Text Cards with the integration of Multimedia Approach in identifying the performance of the respondents, The Posttest scores performance of the Grade 8 learners after the implementation of the Science Text Cards with the integration of Multimedia Approach, as well as the significant difference of the pretest and posttest performances before and after the implementation of the Science Text Cards with the integration of Multimedia Approach in the delivery of the most essential learning competencies in teaching for the first Grading Period. In the Quasi- experimental research design, the researcher prepared the different materials which integrating the Science Text Cards with the integration of Multimedia Approach. The focus of this study was the Grade 8 learners and those readers who are in the fair and good level of performance in order to improve their performance those on the average level of performance as well as those learners who were independent learners as well as facilitating in the giving of pretest and posttest to the identified respondents in order to gather necessary data that will be significant in the study; The proposed Enhancement Plan was taken based on the findings of the study.

Sampling. There are 30 who are included in the study. The respondents or the grade 8 learners were being identified based on the performance of learners, and the primary means of reach is during the actual conduct of the study as well as during the gathering of data in the school where the study was conducted.. Another way of contacting them are through cell phones of their respective parents.

Research Procedure. The researcher prepared the research design which is the quasi-experimental research design and tools which are the different learning materials embedding the Science Text Cards with the integration of Multimedia Approach based from the Diagnostic test validation. The researcher formulated the following steps or procedures to be guided during the gathering of data. The steps are the following:

The researcher sent a letter to the Schools Division Superintendent of Leyte Division for approval in conducting the study to the said school, After which, the approved letter coming from the Schools Division Office was given to the Public School District Supervisor (PSDS) of San Isidro District for his awareness.

The researcher conducted the pretest before the integration of the Science Text Cards and Multimedia Approach in teaching Science and Technology subject. After conducting the pretest, the researcher now integrating the Science Text Cards and Multimedia Approach   to the different most essential learning competencies (MELCs) in Science and Technology for 4 weeks. After 4 weeks of integrating the Science Text Cards and Multimedia Approach to the lesson, the posttest was conducted to validate the learning of the Grade 8 students.

The results were analyzed and interpreted in order to find out if there were increased on the performance level from the pretest to the posttest. Then after the posttest and pretest were analyzed, the posttest result was treated statistically using the test for mean difference. The Approval and recommendation from the Office of the Schools Division Superintendent, as well as to the Assistant Schools Division Superintendent being the Chairman of the Schools Division Research Committee through the Senior Education Program Specialist in Planning and Research. After the Approval of the Schools Division Research Committee, the Approved or endorsement letter from the body together with the approved letter of intent were forwarded to the Office of the Public School District Supervisor as well as to the office of the School principal in order to get full support on the conduct of the study as well as to get also approval from their end. The proposed title and design was submitted to the School Division Office for approval. Upon approval, the Division released endorsement to the District Office where the school is located. When the research was approved by the Schools Division Office and District Office, the researcher began the process of data gathering. Validation of the instruments through Experts such as the Master Teacher and in coordination with the school head and lastly to the Education Program Supervisor in Learning Resource was sought. Orientation of the participants was done. Answering and retrieval of the research tool followed. Tallying of results and treatment of data. Analysis and Interpretation of Data. Making of Proposed Enhancement Plan.

Ethical Issues. The right to conduct the study was strictly adhered through the approval of the principal, approval of the Superintendent of the Division. Orientation of the respondents both the learners and the teachers including the School Principal was done.

Treatment of Data. The following statistical formulas were used in this study:

The quantitative responses were tallied and tabulated. The responses to the Pre-test and Post-Test were tabulated using the Microsoft Excel. Descriptive statistical tool was used in analyzing the data.

A. Mean Percentage Scores (MPS). This tool was used to determine the performance level of the Grade 8 students in Science and Technology .

B. T-Test for mean difference. This method was used to calculate the significant difference between the pretest and posttest performance of the Grade 8 students in Science and Technology .

III. Results and Discussion

Table 1
PRE-TEST READING PERFORMANCE OF THE GRADE 8 LAERNERS IN SCIENCE AND TECHNOLOGY

Score Range	Description	PRETEST CONTROL		PRETEST EXPERIMENTAL	
		Frequency	%	Frequency	%
13-15	Excellent	0	0	0	0
10-12	Very Good	0	0	0	0
7-9	Good	6	30	9	45
4-6	Fair	14	70	11	55
1-3	Poor	0	0	0	0
Total		20	100	20	100
Weighted Mean		**5.90**	**Fair**	**6.1**	**Fair**

Table 1 presents the pre-test performance of Grade 8 learners in Science and Technology that was focused on the different learning competencies that covered for 1 month or 4 weeks before the integration of the Science Text Cards in the delivery of the most essential learning competencies in Science and technology. The results were the bases for the learnings of both the control and experimental group during their studies in the lower grades specifically in the Grade 7 period or even in the key stage 2 which particularly on the numeracy performance of the learners.

The validation of the learning performance of the learners was done by the teacher-researcher before the implementation of the different learning competencies. The assessment done in this time of validation of the numeracy performance of the Grade 8 learners are purely the things that they have from the past. The teacher-researcher is now determining the different types of possibilities which could help the learners to become independent learners.

Based from the results on table 1, it was revealed that among the 20 total number of learners in the control group that was being validated based on their level of learning or capacity in grasping the idea of the different topics in Science which covers the entire 4 weeks or 1 month of the implementation before the integration of the Science text cards to be integrated during the delivery of the most essential learning competencies in Science. Based from the results of the control group, it was revealed that nobody from the excellent level of performance having the scores ranging to 13-15 from the 20 total number respondents being tested or it has an equivalent percentage of zero percent out of the 20 total number of respondents being tested or 100 percent of learners. On the other hand, on the very good level of performance having scores ranging from 10-12, it was again found out that just like in the excellent level of performance, no grade 8 learners re belong to this level of performance. In the good level of performance in the control group, with the scores ranging from 7-9, it was found out that there were 6 total number of respondents having an equivalent percentage of 30 percent out of the 20 total number of respondents being tested. On the other hand, in the fair level of performance having a scores ranging from 4-6 it was revealed that that out of the 20 total number of respondents being tested, there were 14 total number of respondents belong to this level which has an equivalent percent of 70 percent which dominantly leading the different level of learning competencies of the learners. Lastly, on the poor level of performance, having the scores ranging from 1-3, it was found out that none from the 20 learners gained a poor level of performance.

In the experimental group of the grade 8 learners which at the same time the respondents of the study on the integration of science text cards having the same number of respondents being validated before the integration of the aforementioned intervention in the delivery of the most essential learning competencies in Science and Technology subject. Based from the results of the experimental group, It was revealed that nobody is belong in the excellent level of performance having the scores ranging to 13-15 from the 20 total number respondents being tested or zero percent out of the 100 percent of learners being tested while in the very good level of performance having a score ranging to 10-12, there was again no respondents belong to this level of performance out of the 20 total number of respondents or zero percent. In the good level of performance, with the scores ranging from 7-9, it was found out that there were 19 total number of respondents and it has an equivalent percentage oof 45 percent out of the 20 total number of respondents being tested. In the fair level of performance with the scores ranging from 4-6 it was revealed that that out of the 20 total number of respondents being tested, there were 11 total number of respondents belong to this level which has an equivalent percent of 55 percent and this level is said to be dominant among all the 5 level of performance. Lastly, on the poor level of performance, having

the scores ranging from 1-3, it was found out that none from the 20 total of respondents are belong to this level.

Based from the results given in table 1 it particularly on the control group set of respondents, they really need to have innovation that could up lift their motivation of learning as they move towards the middle of finishing their junior high life considering that learning Science and technology is not that easy. Moreover, it really needs for time to learn the subjects as they move forward to learn the different learning competencies considering that the result of te weighted mean is 5.90 and is said to be on the fair level of performance. On the experimental group of learners test performance in table 1, it was implied that even though there are learners who are belong to the good level of performance, we cannot still deny the fact that they still need innovation in order to improve their learning performances considering that the weighted mean is only 6.1 and has an equivalent description of performance equal to Fair level. Before the intervention, the vast majority of students in both groups showed that they had a fair understanding of the scientific concepts. No learners received a score in the "Excellent," "Very Good," or "Poor" categories, indicating that the pre-test knowledge level was fairly uniform.

Table 2
POST TEST READING PERFORMANCE OF GRADE 8 LERNERS   IN SCIENCE AND TECHNOLOGY

Score Range	Description	PRETEST COTNROL		PRETEST EXPERIMENTAL	
		Frequency	**%**	**Frequency**	**%**
13-15	Excellent	0	0	7	35
10-12	Very Good	0	0	13	65
7-9	Good	11	55	0	0
4-6	Fair	9	45	0	0
1-3	Poor	0	0	0	0
Total		20	100	20	100
Weighted Mean		**6.50**	**Good**	**12.25**	**Very Good**

Table 2 presents the posttest performance of Grade 8 learners in Science and Technology that was focused on the different learning competencies that covered for 1 month or 4 weeks after the integration of the Science Text Cards in the delivery of the most essential learning competencies in Science and technology. The results were the bases for the learnings of both the control and experimental group after the integration of the identified innovations or intervention was being applied by the teacher during the delivery of the most essential learning competencies in Science and Technology. The assessment done in this time of validation of the numeracy performance of the Grade 8 learners are purely the things that they have from the actual discussions

based from the different learning competencies identified in the first grading period. This table will show also whether the integration of the Science Text cards is effective or not.

Based from the results on table 2, it was revealed that among the 20 total number of learners in the control group that was being validated after the integration of the innovation to the different topics in Science which covers the entire 4 weeks or 1 month of the implementation. Based from the results of the control group, it was revealed that nobody from the excellent level of performance having the scores ranging to 13-15 from the 20 total number respondents being tested or it has an equivalent percentage of zero percent out of the 20 total number of respondents being tested or 100 percent of learners. On the other hand, on the very good level of performance having scores ranging from 10-12, it was again found out that just like in the excellent level of performance, no grade 8 learners re belong to this level of performance. In the good level of performance in the control group, with the scores ranging from 7-9, it was found out that there were 11 total number of respondents having an equivalent percentage of 55 percent out of the 20 total number of respondents being tested and it happens to be the dominant level of performance because this level of performance has contain the greatest number of respondents compared to other level of performances. On the other hand, in the fair level of performance having a scores ranging from 4-6 it was revealed that that out of the 20 total number of respondents being tested, there were 9 total number of respondents belong to this level which has an equivalent percent of 45 percent which dominantly leading the different level of learning competencies of the learners. Lastly, on the poor level of performance, having the scores ranging from 1-3, it was found out that none from the 20 learners gained a poor level of performance.

In the experimental group of the grade 8 learners which at the same time the respondents of the study on the integration of science text cards having the same number of respondents being validated after the learners have learned and experience the integration of the aforementioned intervention in the delivery of the most essential learning competencies in Science and Technology subject. Based from the results of the experimental group, It was revealed that there were 7 total number of respondents who are belong in the excellent level of performance having the scores ranging to 13-15 from the 20 total number respondents being tested or zero percent out of the 100 percent of learners being tested while in the very good level of performance having a score ranging to 10-12, there were 13 total number of respondents belong to this level of performance out of the 20 total number of respondents or zero percent. In the good level of performance, with the scores ranging from 7-9, it was found out that there was no respondents beong to this level out of the 20 total number of respondents being tested. In the fair level of performance with the scores ranging from 4-6 it it was the same results of the poor level of performance, having the scores ranging from 1-3, it was found out that none from the 20 total of respondents are belong to this level.

Based from the results given in table 2 it particularly on the control group set of respondents it can be gleaned that tey really need a concrete approach that could help them to learn the different learning competencies in Science considering that science is one of the foundation subject in

learning the different life science that could also help make a world a better place to lived in . Furthermore, they really needs enough time to learn the subjects as they move forward to learn the different learning competencies considering that the result of the weighted mean is 6.50 and is said to be on the good level of performance. On the experimental group of learners test performance in table 2, it was implied that majority of the learners really improve their performance, meaning the integration of the Science text cards in the delivery of the different topics in science based on the different learning competencies in science is quite effective that could augment the learning gap of the learners based from the past experiences.

TABLE 3
Test of Difference Between the Scores in the Pre-test and Post-test of Grade 8 Learners in Science in Control and Experimental Groups

Aspects	Test Scores		Computed T	Critical T	Decision	Interpretation
GRADE 8 in Control	Pre	5.90	0.224	0.365	Accept H$_o$	Not Significant
	Post	6.50				
Grade 8 in Experimental	Pre	6.10	1.746	0.365	Reject H$_o$	Significant
	Post	12.25				

Table 3 shows the test of difference between the scores in the pre-test and post-test of Grade 8 Learners in Science and Technology   before and after the integration of Science Text Cards in teaching Science and Technology topics which covers for 4 weeks of the delivery of the different learning competencies for both control and experimental group. Based on the table 3, showing the Grade 8 learners' performances in Science and Technology particularly in the control group, it was shown that in the pre-test performance of the aforementioned group, is equal to 5.90 which is less lower compared to the post-test performance of 6.50. The results in table 1 for control group on the pretest and posttest produced a computed t value which is equal to 0.0224 and happens to be lowest compared to the critical t value of 0.365. Based from the given data in the control group, the hypothesis which states that there is no significant difference between the pre-test and post-test performance of the Grade 8 learners in Science and Technology before and after the integration of Science and Technology in teaching Science is accepted.

On the other hand, the results on the test of difference in the pretest and posttest performance of the Experimental group in teaching Science and Technology, it was found out that the pretest performance of the Experimental group is equal to 6.10 and found out to be lowest compared to the posttest performance gained by the group having the posttest equal to 12.25 So the hypothesis which states that there was no significant difference in the pretest and posttest performances of the Grade 8 learners before and after the integration of the Science and Technology is rejected. Furthermore, the integration of the aforementioned strategy is significantly effective.

The results in table 3 implied that the utilization of the traditional method in teaching Science and Technology such as using the chalk and talk technique and other old ways of teaching the learners which leads to improvement of the performance of the learners and also address the learning gap of the learners to the different learning competencies in Mathematics but the results in the control group is not quite good, thus teachers should make interesting activities in science to improve the test scores of the learners other than the traditional way of teaching. Furthermore, utilization of the Science Text Cards really helps in the improvement of the learning performance of the Grade 8 learners knowing the fact that all of the respondents are in the very good and excellent level of performances. IN this case, the intervention really helps in addressing the difficulties of learners in learning the different learning competencies in Science.

Table 4
Test of Difference Between the Scores in the Post-tests of Grade 8 Learners in Science in Control and Experimental

Aspects	Test Scores		Computed T	Critical T	Decision	Interpretation
GRADE 8	Control	6.50	1.997	0.365	Accept H$_o$	Not Significant
	Experimental	12.25				

Table 4 shows the test of difference between the scores in the post-test of Grade 8 learners for control and experimental group in Science and Technology after the integration of Science Text cards in the delivery of the different learning competencies in Science and Technology that covered 1 month of the implementation.

Based on the table 4, showing the Grade 4 learners' performances in the test scores particularly in the control and experimental groups it can be gleaned, that the posttest performance of the aforementioned group is effective considering that the results in table 4 for control group in the posttest is 6.50 which is lowered compared to the posttest gained by the experimental group which is equal to 12.25. The results have resulted to the computed t value which is equal to 1.997 and considered highest compared to the critical t value of 0.365. Based from the given data, the hypothesis which states that there is no significant difference between the post-test performances of the Grade 8 learners both the control and experimental group in Mathematics after the integration of Science Text Card is rejected.

The results in table 4 implied that the utilization of the Science Text Cards in Teaching Science is significantly effective in improving the test performance of the Grade 8 learners considering that learning Science is not really an easy task on the part of the learners as well to the teachers. It really needs perseverance and dedication in making different learning materials that could augment the learning gap of the learners .The use of traditional teaching techniques should only be used if the subject matter is not particularly challenging. This is because the use of the aforementioned strategy has the potential to cause students to become confused, which could lower

their test scores. Additionally, in order for the students to perform better in Science, the teacher needs to keep up with new approaches to the subject, such as identifying powerful techniques that could close the achievement gap.

IV. Conclusion

Based from the findings of this research, utilization of the Science Text Cards really helps in the improvement of the learning performance of the Grade 8 learners knowing the fact that all of the respondents are in the very good and excellent level of performances and their performances were increased. Furthermore, utilization of the traditional method in teaching Science and Technology is not really that effective such as using the chalk and talk technique and other old ways of teaching the learners which leads to improvement of the performance of the learners and also address the learning gap of the learners to the different learning competencies in Mathematics, thus teachers should make interesting activities in science to improve the test scores of the learners other than the traditional way of teaching.

V. Recommendations

1. The proposed intervention plan should be utilized by the Grade 8 teachers in order for them to be guided on what to do when they will be conducting the same study.

2. Teachers ought to look into innovative strategies for integrating Science Text Cards into their lessons. The cards can be used for engaging lectures, lively discussions, and practical exercises to increase students' comprehension.

3. Teachers should Use Science Text Cards to tailor instruction to each student's needs. To help students understand concepts they are having trouble with, create special decks of cards for those areas.

4. School Heads should Support Teacher Training: Hold workshops for teachers on how to use Science Text Cards effectively in the classroom. Give teachers the knowledge and abilities they need to make the most of this teaching tool. Make Sure You Have Enough Resources: Set aside money in your budget to buy enough science text cards to fill all of your classrooms. To maintain quality, inspect the cards frequently and replace any that are damaged.

5. School Head should closely monitored the Impact of the intervention. Keep an eye on how Science Text Cards are affecting student learning outcomes. In order to decide whether the program is effective, collect feedback from both teachers and students.

6. School Heads and Teachers should Encourage Parents and Guardians to Use at Home: Encourage parents and guardians to use science text cards at home. Parents should talk about the subjects with their kids, ask them questions, and create a welcoming environment for learning.

7. School Heads Promote the accessibility of community resources, such as Science Text Cards. Work together with local government and schools to make sure that all students can access educational resources.

8. Furthermore, the author encourages future researchers to conduct the same study in order to test the effectiveness of the result of the study.

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AUTHOR'S PROFILE

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The author is born on October 12, 1991 at Brgy. Cabunga-an, Villaba Leyte, Philippines. She finished her Bachelor's degree in Secondary Education at Visayas State University – Villaba Campus major in Biological Science. In her high school and college days, she was really into the supervision field. She was a leader in different organizations when she was a student and that helped her decide to take administration and supervision as her field of specialization for her master's degree. She is currently finishing her Master's degree of Arts in Education major in Administration and Supervision at Western Leyte College of Ormoc City.

She is currently a Teacher I in the Department of Education and teaches not just on her field of specialization but also a MAPEH,Filipino and a Social Science Teacher at Muertegui National High School at Brgy. Daja Diot, San Isidro, Leyte, Philippines. She believes that supervising the young is the foundation of understanding how to supervise the old.