CHEMISTORY: A PEDAGOGICAL APPROACH IN TEACHING CHEMISTRY USING STORY TELLING TECHNIQUE AMONG GRADE 10 STUDENTS

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ABSTRACT

This study determined the impact of using Chemistory as a pedagogical approach in teaching chemistry using story telling on the select Grade 10 students at Mamplasan National High School. The researcher utilized two – groups pretest and posttest research design for the controlled and experimental groups. Forty (40) Grade 10 students were randomly selected by the researcher to be the respondents of the study. Variables such as age, gender, course, grades and sectioning were considered in selection of the participants. The researcher taught the student following the format of the IDEA exemplar for the controlled group while in experimental group the researcher followed the IDEA lesson exemplar but in the development of the lesson a self-made short story was presented with the narration of the researcher. A paired T-test was used to determine whether there is a significant difference between the pretest and posttest scores of the students. The result of the study showed that there is a significant difference in the problem-solving skill of the students after using Chemistory. The researcher recommended that lessons in Chemistry which involve problem solving used Chemistory as an instructional intervention in improving the problem-solving skill among the Grade 10 students.

. **Keywords:** Problem solving, chemistry, academic performance, instructional intervention, skill

INTRODUCTION

Problem solving is now recognized as a central component of science proficiency. (Chinn & Malhotra, 2002; Duschl, 2008; National Research Council [NRC], 2006). Different sciences such as earth science, biology, chemistry, physics, and mathematics involves problem solving skills. The traditional approach in teaching problem solving usually consists of showing students the solutions of some example-problems and then asking students to practice individually on solving a certain number of related problems. This approach does not ensure that students learn to solve problems and above all to think about the solution process in a consistent manner.

Due to the continues widespread of COVID-19 virus the government placed the country to community quarantine limiting face to face interaction for school year 2021 – 2022 thus resulting to another pedagogical dilemma among the teachers, parents, and students. To make sure that learning continues despite the pandemic, the Department of Education issued DepEd Order No. 012 s. 2020 or which is commonly known as Adoption of the Basic Education Learning Continuity Plan (BE – LCP). This research is anchored on its key dimension to reach the most marginalized students. With that, science teachers may need intensive technique to provide students with appropriate guidance about problem solving.

The teacher took the responsibility of monitoring the progress of the learners. Parents and learners may ask assistance from the teacher via e-mail, telephone call, text messages/messenger chats are utilized by the teacher to reach the students. If it is possible the teacher does home visitation to learners needing remediation or assistance (Llego, n.d.). To guide the students in synchronous learning it is the responsibility of the the teacher to fill in the gaps in academic lost.

According to Kaur (2020), Stories are traditional means of communication that play vital role in transferring values belonging to culture from one generation to another and acts as a powerful pedagogical tool helping people to process their daily experiences. Stories can be a dynamic educational tool that provides instructional flexibility. Moreover, it was used in the science classroom by incorporating scientific facts and the nature of science into fiction to teach science and how to do science. Narratives can be used in the science classroom not only to develop the cognitive domain but also the affective domain and soft skills in students. To become effective in delivering the lessons storytelling was used as a pedagogical approach teaching problem solving in chemistry.

The Chemistory aimed to improved problem solving skills in chemistry of Grade 10 students. This will arouse students interests in

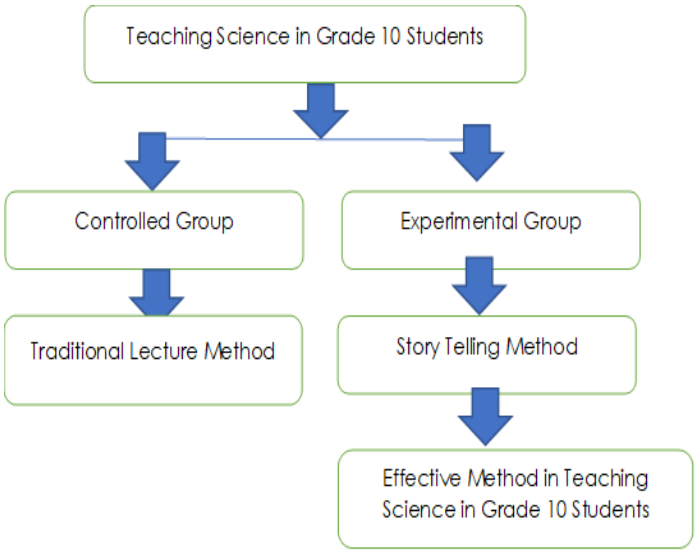
problem solving and complete the submitted tasks. With this intervention the problem-solving skill of the students improved.

This research improved the problem-solving skills among Grade 10 students at Mamplasan National High School for school year 2022 - 2023. Thus, at the end of the program, the students:

1. analyzed problems;
2. solved-problems systematically; and
3. improved problem solving skill in chemistry.

METHODOLOGY

The gather pertinent data, the researcher selected the heteregenously grouped students in Mamplasan National High School. This research adopted the conceptual framework below to conduct the study following a strict implementation of its process.



In the preparation phase the researcher sought the approval of the school head to conduct the research and permission of the parents for the participants in this research. The materials used by the researcher were the self-made pre-test and post-test and short story which was validated by the English, research and science coordinators.

The respondents were selected through the purposive sampling method. Forty (40) students of the population were used as the subject of the study who were heterogeneously group. One heterogenous section for controlled group and the other heterogenous section for experimental group. Non-biased treatment was applied in implementing the intervention. Age, gender, course, grades in sectioning are considered.

Consequently, they are the current student of the researcher in the Science 10 class for the school year 2022 – 2023.

In intervention phase, the researcher followed the IDEA lesson exemplar in teaching the lesson while in experimental group the researcher followed the IDEA lesson but in the development part the researcher used story telling technique called chemistory in lessons with problem-solving.

After the lessons were taught, post-test are given in both group. Appropriate statistical analysis such as t-Test were used to show the mean difference between the two group.

RESULTS

After collecting the data, the researcher analyzed them by using statistical analysis. The researcher recorded the result of the pretest and posttest and was subjected to appropriate statistical treatment. This was conducted to find out whether using Chemistory technique in teaching chemistry can improve the students' problem solving skill.

To identify the level of proficiency of the students in their pretest and post-test, a frequency distribution table was used. To solve the mean score of both pretest and posttest, the Average Weighted Mean (AWM) was used.

Mean Score of The Students in Their Pretest

Group		Mean	Mean Difference
Experimental	Pretest	7.25	0.4
Controlled Group	Pretest	6.85	

The table revealed that the students from the experimental group got a mean of 7.25 in their pretest while the students from the controlled group got a mean of 6.85. It implies that there is 0.4 significant difference between the performance of the students in their pretest scores.

Mean Score of The Students in Their Posttest

Group		Mean	Mean Difference
Experimental	Post test	18.5	4.45
Controlled Group	Post test	13.6	

It can be seen that the students from the experimental group got a mean of 18.5 while the controlled group got a mean score of 13.6. The mean difference between the scores of the two groups is 4.4

Level of Proficiency of the Students in Their Posttest

SCORE	VERBAL INTERPRETATION	EXPERIMENTAL GROUP	%	CONTROLLED GROUP	%
21-25	Highly Proficient	7	35	0	0
16-20	Proficient	9	45	7	35
11-15	Nearly Proficient	4	20	10	50
6-10	Low Proficient	0	0	3	35
1-5	Not Proficient	0	0	0	0

Based on the level of proficiency, there are 7 students in the experimental group who are highly proficient but there are no students in the controlled group,

while there are 9 students who are proficient in the experimental and 7 in the controlled group, 4 are nearly proficient in experimental and 10 students in controlled group. Lastl, there are 3 students in the controlled group who are low proficient but none in the experimental group. There are no students who are not proficient in both groups.

To check the significance difference of the students in terms of their pretest and posttest after using Chemistory in improving th problem -solving skill, the paired t-test was used with the help of the computer software Statistical Package for Social Sciences (SPSS)

Difference Between the Posttest Mean Scores of the Two Groups After Using Chemistory

	Experimental	*Controlled*
Mean	18.05	13.6
Variance	11.94473684	12.04210053
Observations	20	20
Pearson Correlation	0.967204897	
Hypothesized Mean Difference	0	
df	19	
t Stat	22.43526548	
P(T<=t) one-tail	1.95292E-15	
t Critical one-tail	1.729132812	
P(T<=t) two-tail	3.90583E-15	
t Critical two-tail	2.093024054	

It can be seen that the students from the experimental group got a mean of 18.05 while the controlled group got a mean score of 13.6. The mean difference between the scores of the two groups is 4.45. A computed t – value of 22.435 revealed that there is a significant difference between the performance of the two groups after using chemistory as an approach in teaching chemistory involving problem solving.

DISCUSSION

After the thorough process, the researcher concluded that Chemistory lessons, as a learning technique, is effective in improving the problem-solving skill, analyzing and solving systematically the problems in chemistry using the GUFSA style (given, unknown, formula, solution and answer) thus, increasing the proficiency level of the grade 10 students.

It is recommended, especially now that we have difficulty in teaching science which involves problems to utilize Chemistory as it is proven to significantly improve the students' problem -solving skill in chemistry in this research.

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