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INDEPENDENT LEARNING STRATEGY THROUGH 4R'S CYCLE (READ-REWRITE-RECITE-REVIEW): SUPPLEMENT TO MODULAR DISTANCE LEARNING IN SCIENCE PROFICIENCY

BBSHIEL R. CLAUD

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Abstract: **This action research was conducted to provide support and to ensure that learning process is effective using the 4R's cycle strategy: read, rewrite, recite and review as supplement to modular distance learning at home. Thus, this research determined the effectiveness of 4R's Cycle or Read-Rewrite-Recite-Review Cycle as an independent learning strategy for Grade 8 students of Quirico G. Manzano Memorial National High School in Candoni, Negros Occidental, Philippines. The participants of the study were the Grade 8 students enrolled for school year 2021-2022. Two hundred six students selected from six sections were utilized for groupings using stratified random sampling. It utilized the mixed methods (quantitative-qualitative) with Mean, Standard Deviation, and Paired Sample t-test statistical tools. Findings revealed that students were at a beginning level during the pretest. After the intervention, the post- test scores revealed that students were able to achieve a proficient level. Mean difference of the pretest and post-test was statistically significant which implies that the intervention was effective which significantly improved the level of proficiency of students in Science. Therefore, this study found that the use of 4R's Cycle was an effective learning strategy for increasing the proficiency level of students in Science.**

Keywords: **independent learning strategy, 4R's cycle strategy, Paired Sample t-test statistical tools.**

1. CONTEXT AND RATIONALE

In the Philippines, the secondary science education curriculum was reformed to help students realize that principles learned in science are relevant to everyday life. The primary aim of the Department of Education is to educate students to become science literate citizens, to be able to actively participate actively in the community, and to acquire scientific knowledge and skills to develop a greater understanding of the scientific concepts and ideas that impact the society and the environment.

In the international assessments conducted by TIMSS in 2003 and 2019 and PISA in 2018, the Grade 8 Filipino students scored poorly. In the 2003 Trends in International Mathematics and Science Study (TIMSS), they were ranked 41st out of 44 participating countries in Science. In the 2018 Programme for International Student Assessment (PISA), they were second lowest in Mathematics and Science. In the 2019 TIMSS, assessment of fourth grade pupils showed that only 13% of them were found on the low benchmark while the rest did not reach this level. These results implied that Filipino elementary and secondary students had limited understanding of scientific concepts and knowledge of foundational science facts.

On the national level, in the six-year period of National Achievement Tests from 2007-2012, the national performance of secondary students also showed a low mastery score of 39.33 percent which was attributed to their low levels of mastery in English.

In Quirico G. Manzano Memorial National High School, Grade 8 students achieved an average mean percentage score of 72.47 from 2019-2020 and 74.20 from 2020-2021. Yet, these results showed that they did not reach the national standard mastery level of 75 percent. Upon review, these scores were attributed to students' poor comprehension and higher order thinking skills.

Thus, the researcher, as a Science teacher, conducted this study to provide support to ensure that science learning process is effective using a strategy that involves Read, Rewrite, Recite, and Review (4R's cycle) to supplement the modular science learning. Through this 4R's cycle, students were expected not only to learn their lessons by reading but also to practice and rehearse what they have learned. Thus, students were able to write, recite, think, and self-check their progress in their SLM and LAS.

2. ACTION RESEARCH QUESTIONS

This study determined the effectiveness of 4R's Cycle or Read-Rewrite-Recite-Review Cycle as an independent learning strategy of Grade 8 students of Quirico G. Manzano Memorial National High School.

Specifically, this sought to answer the following research questions:

1. What is the proficiency level in Science of Grade 8 students before and after the intervention?

2. Is there a significant difference in the proficiency levels in Science of Grade 8 students before and after the intervention?

3. What are the remarkable experiences of the students from the study?

3. PROPOSED INNOVATION, INTERVENTION AND STRATEGY

This study was on the effectiveness of 4R's Cycle or Read-Rewrite- Recite-Review Cycle as an independent learning strategy to supplement Modular Distance Learning as an intervention to provide support to ensure that science learning process is effective

It utilized an Action Research Design with mixed methods (quantitative and qualitative). It was conducted at Quirico G. Manzano Memorial National High School, District of Candoni, Negros Occidental, for school year 2021-2022. Two hundred six participants were Grade 8 students enrolled in six sections for groupings with a population of 206 using stratified random sampling.

A pre-test was conducted using a standardized test to assess students' proficiency. The test questions were accumulated from the DepEd modules/ learning activity sheet (LAS) pretest and post-test during the Second Quarter. After the pre-test, the intervention was implemented, researcher conducted home visitations to evaluate the implementation of the strategy at home and provide needed assistance. A rubric on the comprehension proficiency of students in Science topics was used to assess their learning in the 'rewrite and recite' phase.

Rubric for monitoring and assessing students reading comprehension.

4 Advanced

3 Proficiency

2 Approaching Proficiency

1 Conditional

Reading for Information

Student includes most important details and key language or vocabulary

from text.

Student includes many important details from text.

Student includes some important details from text.

Student includes few or no important details from text.

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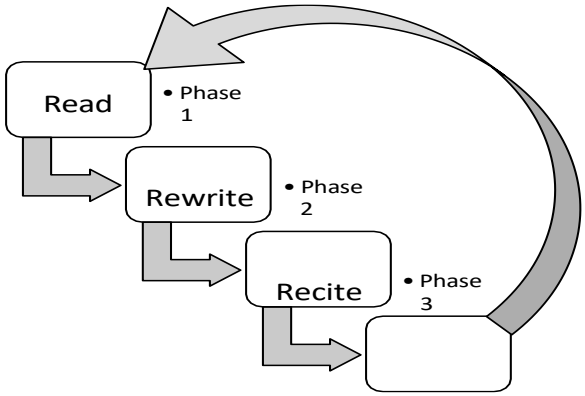
Recalling Information
Student explains most events in sequence and explains most key facts.
Student explains many events in sequence and explains many facts.
Student explains some events in sequence and explains some facts.
Student explains little or no events in sequence nor explains any key facts.

Analyzing
Student analyzes and addresses all aspects of the topic
Student analyzes and addresses many aspects of the topic
Student analyzes and addresses some aspects of the question.
Student analyzes and addresses few or no aspects of the question.
Synthesizing Information
Student proficiently applies and processes information.
Student adequately applies and processes information.
Student basically applies and processes information.

Student is not able to apply and process information.

This intervention was applied for eight (8) weeks for one hour daily. Online monitoring was scheduled daily with students sending photos as evidences of their daily activities. A certificate of appearance was signed by the student and the parents. After the intervention phase, a post-test was administered using the same standardized test.

The 4R's cycle has four different phases on the different learning activities to ensure that the information is repeatedly processed into the students' memory and at the same time not to bore them as they encounter the same concepts and ideas. Figure 1 below shows how the 4R's cycle was performed.



Phase 1 – Read. In this phase, students read the lesson carefully using printed self- learning modules revised t make them suitable for the strategy was made by the researcher such as the omission of the pretest and post-test.

Phase 2 – Rewrite. After reading the printed materials, students we rewrote the important details and facts from the lesson on a separate sheet provided.

Phase 3 – Recite. In this phase, students recalled the important ideas they have read and written and explained or translated them in their own words. This activity was done without reading or glancing over the notes written by students.

Phase 4 – Review. After recalling the learned concepts from the lesson, ths students self-checked their progress to keep track what they have learned and make adjustments in order to complete the task of recalling freely all-important details from the lesson.

In each of these phases, students allowed their parents to monitor their workto ensure that the strategy was properly implemented.

4. ACTION RESEARCH METHODS

Data Gathering Methods

The proficiency level in Science of Grade 8 students were determined by conducting pretest and post- test. A standardized test was used to assess students' proficiency. To compute and interpret the test scores of students based on the DepEd criteria:

Proficiency Level (%) = No. of correct answers no. of questions x 100

Proficiency Scale	Interpretation
90% and Above	Advanced
85% – 89%	Proficient
80% – 84%	Approaching Proficiency
75% – 79%	Developing
74% and Below	Beginning

B. Data Analysis Plan

Data were analyzed and treated using descriptive and inferential statistics.

For question no. 1, Mean and Standard Deviation were used.

For question no. 2, Paired Samples t-test was used.

For question no. 3, thematic analysis was used.

Plans for Dissemination and Advocacy

Findings of this study was disseminated to the District of Candoni, the Division of Negros Occidental and most especially to the teachers of Quirico G. Manzano Memorial NHS during LAC sessions, workshops or during the In-service Training for Teachers

5. RESULTS AND DISCUSSION

On analysis of the pretest (before intervention) and post-test (after intervention) scores of students. Results showed that students got a mean percentage score (MPS) of 36.0 (SD=15.2) before the implementation of the intervention (pretest) and achieved a mean percentage score (MPS) of 85.0 (SD= 6.0) after post-test. It revealed that students were at a beginning level during the pretest. After intervention, post-test scores of students were on a proficient level. The increase in the proficiency level of students implies that the intervention has effectively provided them with learning opportunities to memorize and practice which allowed them to store information and helped them retain this information easily.

To determine the significant mean difference of pretest and post-test scores, a Paired t-test was used, set at p-value = 0.05. Results showed that the pretest and post-test scores of students has a mean difference of 49.0. Since the results revealed a t= 23.3 at a p-value <0.05, the mean difference of the pretest and post-test is statistically significant. This implies that the

intervention implemented was able to significantly improve the level of proficiency of students in Science. This increase in proficiency level may be attributed to the intervention applied on different learning strategies using the 4R's cycle on memorization and practice, rereading, rehearsal, and self-monitoring activities. It allowed students to easily recall information form their lessons. The students were able to note that the intervention strategy they have used has greatly impacted their retention. These learning strategies, rereading and rewriting, applied in the 4R's cycle have intensified its effectiveness in the retention skills of students. It also provided learners with opportunities to become learning independent.

A focused group discussion was conducted with 10 selected students based on their test scores during the post-test. Five students with the highest scores and another five with the lowest scores were identified and asked the question, "What are your experiences during the conduct of the intervention (use of 4R's Cycle)?". Students' responses were recorded and analyzed thematically using the Creswell's qualitative approach

Theme 1: Learning became easier and meaningful. It helped students to learn easier. Students emphasized that they used to find learning science difficult using the modules. Respondents 1, 2, and 9 also asserted that with the use of 4R's Cycle, they were able to understand their lessons better.

Moreover, respondents 1 and 2 also mentioned that 4R's Cycle can also be used in other subjects. They have tried using the strategy with other subjects and they have experienced the same results.

Theme 2: Information can be easily recalled during tests. All respondents also indicate that with the use of 4Rs cycle was easier in taking the tests. Three respondents said they were able to recall more information from their modules. A respondent also stated that even without reviewing before the test, he got a high score. Four respondents mentioned that the 4R's Cycle allowed them to recall important details from their lessons and remembering these important concepts became easier because they were able to write them, memorize, and practice. Three respondents also saod that they were able to have correct answers during their test.

Theme 3: The strategy sets a goal for students to achieve. The 4R's Cycle involved self-monitoring during the 4th and 5th day of the implementation. According to respondents, the strategy provided them an opportunity to be self-aware of their learning as they set goals every week. If these goals were not achieved, they revisit the information and apply the 4R's Cycle again. One respondent said that the 4R's Cycle challenged her to achieve the set goals. Four respondents added that the 4R's Cycle gave them an opportunity to become independent learners.

Theme 4: Parents became actively involved with students' learning. Respondents claimed that the strategy was very helpful when their parents were actively involved in the learning process being monitored their work at home. They claimed they received praises and motivation from them.

6. SUMMARY OF FINDINGS

1. Students were at a beginning level before the intervention was implemented and had achieved proficient level after the intervention.

2. There was significant difference between students' pre-test and post-test scores after the intervention was implemented.

3. Students benefitted from the intervention using the 4R's cycle by understanding and recalling lessons to make learning easier for them to become independent learners.

7. CONCLUSION

Based on the findings of the study, the researcher concludes that the use of 4R's Cycle was an effective learning strategy for increasing the proficiency level of students in Science based on the significant increase in their pretest (beginning) to post-test (proficient) scores. Their mastery of the lesson using reading and rereading, rewriting, reciting, and reviewing has helped improve students' proficiency in Science.

The 4R's cycle has strengthened students' ability to become independent learners specifically on understanding science lessons better and recall important information easier. It confirms that the 4R's Cycle was an effective learning strategy for Grade 8 students in Science.

Cognizant to the findings of the study and the conclusions formulated, the researcher recommends the use of 4R's Cycle as an intervention for students' proficiency level in Science.

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