(TORQUE) TAKE-HOME AND REINFORCEMENT QUEST: INTENSIFYING INTEREST AND ENTHUSIASM IN SCIENCE VIA HOME-LAB KITS

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ABSTRACT

This study explored the learning approach adopted to investigate the effect of Take-Home and Reinforcement Quest (TORQUE): Intensifying Interest and Enthusiasm in Science via Home-lab Kits on the performance of students in Enhanced Science 7. It utilized the posttest only control group experimental design. The TORQUE Home Lab Kit used as a treatment of the study covered three of the least mastered skills in the subject area. Sixty students from 5 classes enrolled in Biñan City Science and Technology High School of the school year 2021-2022 were used as respondents. The score in the Enhanced Science Achievement Test (ESAT) administered as posttest measured students' performance in the subject area. Independent t-test was employed to determine the significant difference between the mean responses in posttest of those who were given TORQUE Home Lab Kits (Set A) and students who were only given the regular instruction (Set B). The Achievement Test Means Scores of Set A (M=35.1) is significantly higher than that of Set B (M=25.6). Independent Sample t-test showed that the Achievement Test Mean Scores of Set A (M=35.1, SD=2.89) and the Achievement Test Mean Scores of Set B (M=25.6, SD=3.05) were significantly different. The null hypothesis of no significant difference was rejected, $t(29) = -12.35$, $p < .05$. Thus, the Achievement Test Mean Scores of Set A were statistically significant with the Achievement Test Mean Scores of Set B. The results of the study showed that the use of TORQUE Home Lab Kit is effective in terms of improving students' performance in Enhanced Science.

Keywords: *Home-lab Kits, Learning Kits, Science*

INTRODUCTION

In response to the challenges and issues brought by the pandemic, the Philippine education system provided interventions to ensure learning continuity known as the DepEd Order 12, s. 2020 or the Basic Education Learning Continuity Plan (BE-LCP). One of its principles is through recalibration of the K-12 curriculum, alignment of learning materials, deployment of multiple learning delivery modalities, and provision of corresponding training for teachers and school leaders, and proper orientation of parents or guardians of learners.

On that account, the study will mainly focus on the alignment of learning materials to the needs of the learners. To do so, the learning delivery modality implemented by the school was considered. The School Learning Continuity Plan of Biñan City Science and Technology High School implemented an online distance modality to respond on the results of the Learner Enrolment and Survey Form (LESF).

Furthermore, one of the concerns discussed during the focus group discussion (FGD) of the faculty of Biñan City Science and Technology High School regarding the result of the first quarter needs assessment is the provision of additional learning materials to help and support students offline learning at home.

Therefore, TORQUE is a self-learning material focusing on reinforcement and hands-on activities to assist learners on acquiring the Most Essential Learning Competencies (MELCS) in Special Science Program. This SLM is designed to be a take-home and reinforcement activity to be answered individually with subsequent rewards. Thus, this study aimed to determine if it will enhance students' performance specifically in the least mastered skills of the Grade 7 Students in Biñan City Science and Technology High School.

The idea of the study is to develop a home-lab kit that students may perform as an offline enrichment and reinforcement activity to support self- learning modules (SLMs) (Bautista, Berdan, & Errabo, 2020). Furthermore, the development of a home-lab kit can improve students' performance specifically in the least mastered skills in Enhanced Science of selected Grade 7 Students in Biñan City Science and Technology High School. The home-lab kit is composed of three (3) hands-on laboratory activities in Grade 7 Enhanced Science, activity sheets and preventative measure provisions all included in a plastic box (Sithole, Chiyaka, & Mabwe, 2022).

METHODOLOGY

The study is an experimental and used the posttest only control group design. Experimental part of the study is the students' performance in Enhanced Science 7 Achievement Test. Quantitative analysis was used to determine any difference between the posttest means. The participants for this study were Grade 7 students and one (1) teacher of Biñan City Science and Technology High School.

The respondents/participants of the study were selected through convenience sampling from the five sections being handled by the teacher researchers. These sections of Grade 7 are heterogeneously arranged so the researchers selected sixty (60) students from the five sections to become respondents. All selected participants were utilizing Online Distance Learning as their modality of learning delivery. However, additional criterion was considered upon selection.

The participants included in the data gathering were students, and a teacher of Grade 7 level of Biñan City Science and Technology High School. Furthermore, they were participants who provided consent to participate in the study.

In the conduct of the study, the researchers used Enhanced Science Achievement Test which was developed and validated. The researchers made and developed a 30 multiple – choice item Science achievement test and was used as instrument in the study. The achievement test measured the cognitive skills of the respondents: namely, content, application and procedure (Salviejo, Aranes, & Espinosa, 2014). The test was developed following a table of specifications. The total score in the Science Achievement Test is

30 which covers 3 least mastered skills in Enhanced Science 7.

The first phase of the study was the implementation of the TORQUE Home Lab Kits to Set A Students. Under this phase, TORQUE Home Lab Kits were given as supplementary material after the regular instruction to Set A while Set B were only given the regular instruction. After the implementation of the TORQUE Home Lab Kits, administration of the Science Achievement test to the respondents followed.

DISCUSSION

The mean score of Set A is 35.1 while the mean score of Set B is 25.6. It can be depicted that the Achievement Test Mean score of those who were given Take-Home and Reinforcement Quest (TORQUE) Home Lab Kits (Set A) are higher than those who were only given the regular instruction (Set B). Figure 1 shows the Achievement Test Mean Scores of Set A and Set B.

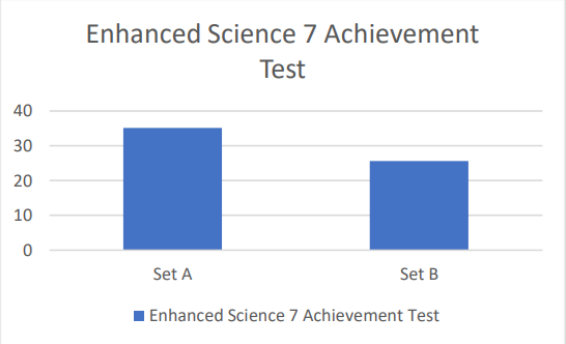

Figure 1. Achievement Test Mean Scores of Set A and Set B

To test the null hypothesis that the Achievement Test Mean Scores of Set A (M=35.1, SD=2.89) and the Achievement Test Mean Scores of Set B (M=25.6, SD=3.05) were not significantly different, a t-test for Independent Samples for Means was performed, as shown in Table 1 above.

The null hypothesis of no significant difference was rejected, $t(29) = -12.35$, $p < 0.05$. Thus, the Achievement Test Mean Scores of Set A were statistically significant with the Achievement Test Mean Scores of Set B.

TORQUE is a self-learning material focusing on reinforcement and hands-on activities to assist learners on acquiring the Most Essential Learning Competencies (MELCS) in Special Science Program. This SLM is designed to be a take-home and reinforcement activity to be answered individually with subsequent rewards. Thus, this study aimed to determine if it will enhance students' performance specifically in the least mastered skills of the Grade 7

Students in Biñan City Science and Technology High School. The result of this study found that Set A students who were given the Take-Home Output and Reinforcement Quest (TORQUE) Home Lab Kit after the regular instruction has a higher mean score in the Science Achievement Test than the Set B students who were only given the regular instruction.

In addition, this study revealed that there was a significant difference between the mean scores in the Science Achievement Test of Set A and Set B.

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	n	Mean	SD	t	t-crit	df	Decision
Set A	60	35.1	2.89	-12.35	1.67	58	Reject H_o
Set B	60	25.6	3.05				

Table 1. t-Test: Independent Sample for Achievement Test Mean Scores

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