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# The Effectiveness of Indigenous and Low – Cost-Teacher Made Science Instructional Materials in Selected Third Year Students of The Balayan National High School

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The study entitled “The Effectiveness of Indigenous and Low-Cost-Teacher Made Science Instructional Materials in Selected third Year Students of the Balayan National High School” aimed to strongly emphasized the manner by which science is taught as well as the content are matters of concern that need careful analysis. The use of indigenous and low cost-made instructional materials by the science III teachers becomes highly commendable and their relation to selected variables: students’ achievement in science, students’ attitude toward the use of low-cost teacher made instructional materials in selected third year students of Balayan National High School .The researcher would like to find out whether the use of indigenous and low-cost instructional materials will be of great help to the students’ improved achievement in science and contribute to upgrade the science instruction in secondary level. Based on the results, it was found out that indigenous and low – cost teacher –made science instructional materials were effective substitute for different laboratory apparatuses and there were positive attitudes of the students with regard to the utilization of indigenous and low – cost teacher – made science instructional materials. There was a significant correlation of the degree of utilization of the materials with respect to students’ performance in Science; the effectiveness of indigenous and low – cost teacher – made science instructional materials were 100% effective as that of the actual laboratory apparatus.

**INTRODUCTION**

Now is an age of science discovery. Therefore, every aspect of human living or indirectly is influenced by science. Problems in health, in economics and even recreation necessitate the use of scientific knowledge and methods for their solutions.

Thus, the demand for scientific knowledge, research and scientists is great in our society. Science is associated with the methods of studies and research by which new information is uncovered and new principles formed resulting in the modification or discarding of old principles. It is involved in the lines of the child and the adult both must be equipped with scientific knowledge and the capacity to think scientifically. They must develop scientific attitudes so as to be able to adjust to their environment objectively.

To give opportunities to students, proper instruction is a must. Teaching them would be more fruitful if instructional aids fit with their needs. It is a recognized fact that every classroom encounter is a product of significant factors of the learning environment such as ability of the students, background information previously learned, availability of instructional materials and other facilities in the science room.

The utilization of indigenous resources in the community as one of the instructional aids and devices was already endorsed by the Department of Education, especially for the science instruction in the third year sponsored by “PRODED PROGRAM” or Program for Decentralized Educational Development (DECS,1987:27).

The school administrators are still continuously programming for the acquisition of science equipment and facilities on how to improve the quality of science education instruction but the various feedback from the field during the science conferences and close dialogues with the classroom science teachers, show that they need adequate science instructional materials, especially in the third-year students. Their laboratory experiments were undertaken with experiences on manipulating science equipment and apparatus. Today there is a need to improve process to quality education, in order to maximize the attainment of objectives in third year education. Teaching science must be focused on substantive and process content, skill development, productivity and technology. (DECS Order Number II: Series 1990)

Science students are the prime concern of the educators who are actively involved in science instruction, the researcher strongly emphasizes that the manner by which science is taught as well as the content are matters of concern that need careful analysis. Therefore, the use of indigenous and low cost-made instructional materials by the science III teachers becomes highly commendable and their relation to selected variables: students' achievement in science, students' attitude toward the use of low-cost teacher made instructional materials, selected third year students of Balayan National High School.

## MATERIALS AND METHODS

### Research Design

This study used the normative-descriptive research design in as much as its tool point is to describe a phenomenon based on the current conditions and to ascertain the general characteristics of a group.

This investigation also used the normative survey from the respondents the existing status and practices in science teaching through the use of the indigenous materials and other related instruments.

### Participants of the Study

The study was administered to the Selected Third year students and science III teachers of the Balayan National High School. The samples of this study were sixteen (16) junior students. There were 240 third year students presently enrolled during the time of the study. The selection was done through a random selection of the students from the alphabetically arranged list of students in each of the four sections, odd number students were chosen to comprise the sample.

Table 1. Distribution of the population Sample of the Study.

Sections	Male N	N	Female N	n
A	28	2	37	2
B	30	2	36	2
C	22	2	27	2
D	30	2	27	2
	110	8	127	8

Table 1 presents the total population of third year male and female students and the actual size of the sample used in the study. The sampling procedure yielded sixteen (16) respondents. The ration of female to male respondent was 1: 1.

### Research Instruments

Relevant information was gathered by using the following: (1) an attitude-scale questionnaire and (2) an activity to be perform by students using the teacher made science instructional materials and the same activity using the laboratory apparatus inside the science laboratory. The profile of the variables was considered and comprehensively with the corresponding analysis and interpretation.

### Validity and Reliability of the Instruments

The validity of the attitude and the Students Performance in Science III were established through.

A. Face Validity – The test was evaluated by three teachers who have taught Science III. They evaluated the test whether they were measuring performance in Science III or not.

B. Content Validity – Content items were based on the Desired Learning Competencies for Science III and the course syllabus for High School Science III. From the evaluation of the three teachers who were taught the subject, those items were considered not within the scope of the covered topics were changed.

To establish the reliability of the instruments, the tests were pre – tested to thirty-two (32) students randomly chosen to constitute the try – out samples. They were chosen from the group of students not included in the final sample.

The reliability of the test on the Attitudes Towards Science III and The Students Performance on Science III were computed using Coefficient Alpha (see Appendices A and B). The computed reliability coefficients were further tested for significance using the t-test at 0.001 level of significance. The computed reliability coefficients of the instruments are shown in this table.

Table 2. Reliability Coefficients (r) of the Instruments and their Significance.

Instruments	Reliability Coefficient (r)	t-value
Attitude Towards Science III	0.58*	3.79
Students Performance in Science III	0.74*	5.82

\*significant at  $\leq 0.001$ ,  $t = 3.674$ ,  $df = 28$

The reliability coefficient for the Attitude Towards Science III test based on the Coefficient Alpha was found to be 0.58 with t – value of 3.79 and was also significant at 0.001 level. The reliability Coefficient of the test for the Students Performance in Science III was found to be 0.74 and with t – value of 5.82 which was significant at 0.001 level.

From these results, it can be inferred that the two developed instruments, namely the Attitude Towards Science III and the Students Performance in Science III were reliable.

#### Data Gathering Procedure

To determine the Attitude Towards Science III and the Students Performance in Science III (Appendix A and B) with the approval from the Office of the Principal to administer the tests. The Attitude Towards Science III was administered a day before the administration of the Students Performance in Science III to eliminate any possible influence of these tests on their responses.

#### Treatment of Data

For the Students Performance in Science, the percentage distribution categorized steps for the performance were computed. This result provided a description of the relative distribution of the questions used by the different types of laboratory experiments. Ranks were used to determine which of the Students Performance in Science III (Improvised or Actual).

The comparison between the use of Improvised and Actual Science instructional Materials were tested.

### RESULTS AND DISCUSSION

Tests for determining the Attitudes Towards the Utilization of Instructional Materials and The Students Performance in Science III were made. Results showed that students show eagerness in the utilization of Science Instructional Materials. They showed positive attitude in performing experiments even with the used of improvised materials. Students performed well in the activity given in using the improvised and actual laboratory apparatus.

Table 3 shows that students performed activity in Science III using the improvised materials well and good, the same with when they used the actual laboratory apparatuses.

Their scores in using the improvised instructional materials were almost the same with the activity using the actual laboratory apparatuses.

In comparing the scores, male students were numbered 1 to 8 the same with the female students, then opposite the number were the scores from the activities performed (Appendix A and B).

Table 3. Table showing the scores of the students in using the improvised science instructional materials and the actual laboratory apparatuses.

Improvised Instructional Materials				Actual Laboratory Apparatuses			
Male	Score	Female	Score	Male	Score	Female	Score
1	27	1	26	1	27	1	26
2	25	2	25	2	25	2	25
3	27	3	25	3	27	3	25
4	25	4	25	4	25	4	25
5	25	5	25	5	25	5	25
6	24	6	25	6	24	6	25
7	24	7	25	7	24	7	25
8	28	8	25	8	28	8	25

As seen from the table, male number 8 got the highest score, followed by male 1 and 3, then female 1 was the third. Males 2 and 5 rank number 4 the same with females 2 to 8, male 6 and 7 were the last in rank.

From the given results, the test showed that using low-cost teacher made science instructional materials were as effective as in using the actual laboratory apparatuses.

It also implied that even without the actual laboratory apparatuses students can still performed different activities effectively using the improvised science instructional materials. They also had the positive attitudes in performing activities using the improvised science instructional materials.

## CONCLUSIONS

Based on these results, the following conclusions were drawn:

1. It was found out that indigenous and low – cost teacher –made science instructional materials were effective substitute for different laboratory apparatuses.
1. There were positive attitudes of the students with regard to the utilization of indigenous and low – cost teacher – made science instructional materials.
2. There was a significant correlation of the degree of utilization of the materials with respect to students’ performance in Science.
3. The effectiveness of indigenous and low – cost teacher – made science instructional materials were 100% effective as the actual laboratory apparatuses.

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