BIOLINKS: A LOCALIZED AND CONTEXTUALIZED INSTRUCTIONAL MATERIAL

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ABSTRACT

Science program in the Philippines' K to 12 curriculum experienced major modifications and improvements. However, some aspects of the reform lead to disarray that hindered the attainment of educational goals. The mismatch of instructional materials and sound pedagogy is one of the major concerns of educational reform. This study explored the impact of utilizing contextualized and localized instructional materials on the academic performance of students in science that was anchored with sound evidences and theories.

A quasi-experimental design with control and experimental group was utilized. A pre-test was given to both groups prior to intervention. A contextualized and localized instructional material was developed and was administered to experimental group. A post-test was given afterwards. Data was collected through quantitative analysis, evaluated and interpreted.

Initially, both groups acquired the same level of mastery. Afterwards, data revealed that the experimental group exposed to contextualized and localized instruction, attained a very significant increase in their post-test scores. This implied that the use of such instructional materials obtained a positive effect and leads to increased academic performance among students.

Results showed that contextualized and localized instructional materials played a vital role in educational reform. It does not only address the local needs of the students but elicit an increased academic performance. Furthermore, it showed positive effects in the performance of the learners as an effective strategy of imparting life-long learning abilities among students.

Keywords: *contextualization, localization, pedagogy, instructional materials*

INTRODUCTION

A new educational paradigm was adopted by the Republic of the Philippines in School Year 2012-2013, known as the K to 12 Curriculum, which was made legal by Republic Act 10533, also known as the Enhanced Basic Education 2013. There are many innovations introduced to the curriculum such as the extension of years spent in school. From the old 10-year scheme, Grade 1 to 10 has been modified to 12 years. Among the different disciplines, science is one of the subjects which undergo major revisions (Ligsanan, 2017).

This Republic Act mandates that the curriculum should be learner-centered, inclusive, developmentally appropriate, relevant, responsive, contextualized, and global yet flexible enough to enable and allow schools to localize, indigenize, and enhance the same based on their respective educational and social contexts.

Science program in the K to 12 curriculum experiences major changes and modifications. One of which is the use of spiral progression approach across all subject area to ensure mastery of knowledge and skills using different pedagogical approaches such as constructivism, and inquiry-based, reflective, collaborative, and integrative approach where concepts and skills are being taught. By providing these pedagogies, it enriches the students' cognitive, affective, and psychomotor domains. Also, in this approach, the different disciplines in science like life, chemistry, physics, and earth, have been incorporated in every level (Montebon, 2014).

As stated in the *K to 12 Curriculum Guide Science 2013,* the aim of science curriculum is to produce scientifically literate citizens who are informed and active participants of the society and responsible decision makers who apply scientific knowledge that will significantly impact the society and the environment. Specifically, the science curriculum is designed to enhance three learning domains of the students. These are performing scientific processes and skills, understanding and applying scientific knowledge, and developing scientific attitudes and values.

As such, contextualization and localization are now an emerging theory or strategy in order to gain the goal of quality education in scientific literacy. As stated in DepEd Order No. 43 s. 2013, also known as the "Enhanced Basic Education Act of 2013", Section 10.2 Article (d) and (h) "the curriculum shall be contextualized, global and flexible enough to enable and allow schools to localize and indigenize, and enhance the same based on their respective educational and social contexts".

Because of this consensus that science education is facing serious challenges in terms of pedagogical, contextual, resource, and other learning aspects, there is a great need for the curriculum to be contextualized to meet the local contexts and make learning more meaningful to produce globally competitive learners. Moreover, instructional materials used in the teaching-learning process must be adaptable to the local needs and preference of students to make learning more accessible and open to all.

These made the researcher certain to conduct this study which investigated the effects of contextualized teaching guide and localized instructional materials on the academic performance of students in science.

METHODOLOGY

In this study, the researcher utilized quasi-experimental design. A non-equivalent control group quasi-experiment is an empirical study used to estimate the causal impact of an intervention on its target population without random assignment. It requires an experimental group and control group, both given a pre-test and post-test, but in which the control group and the experimental groups do not have pre-

experimental equivalence. The researcher used this method to measure the correlation of contextualized teaching guides and localized instructional materials on the academic performance in science of grade 10 students.

The respondents of the study were two (2) heterogeneous sections of grade 10 students with a population of 45 within the third quarter of the School Year 2017-2018. For ethical considerations, the researcher informed and secured permission from the parents/guardians of the respondents about the research procedure to be undertaken.

The contextualized teaching guide and localized instructional materials were the main instruments of this study. The self-constructed contextualized teaching guide and localized instructional materials were forwarded to the adviser for comments and suggestions. Revisions were incorporated for the improvement of the instrument.

To determine the performance of the respondents, a test instrument was constructed. The pre-test was given to the learners prior to the teaching-learning process in which the results were used as the baseline data in determining if there would an increase in terms of competencies learned, as well as their academic performance in science.

The tests were composed of thirty-item test analysis in multiple choice formats. They were based in the learning competencies covered in the topics on Module 1: Nervous, Endocrine, and Reproductive Systems; Module 2: Heredity and Variations; Module 3: Biodiversity and Evolution; and Module 4: Ecosystems: Biodiversity. The pre-test assessed the students' prior knowledge of the topics. After the administration of the contextualized teaching guides and localized instructional materials to the experimental group and modular approach to the control group, the respondents took the post-test which measured their content knowledge of the topics.

The lesson plans for this study followed the Daily Lesson Log (DLL) format prescribed by the Department of Education. The researcher prepared and constructed the lesson plans guided by the daily lesson log template of the Division of Biñan City. Two different lesson plans were prepared by the researcher one patterned after the modular approach as prescribed by the Department of Education (DepEd) and contextualized teaching guide and localized instructional. Both were patterned after the competencies in the Science Curriculum Guide of the Department of Education (DepEd).

The lesson plans were executed within 60 minutes a day within the third quarter of the school year 2017-2018.

The self-constructed contextualized teaching guide, localized instructional materials, lesson plans, pre-tests and post-tests, and table of specifications were forwarded to the adviser for comments and suggestions. Revisions were incorporated for the improvement of the instrument. The instrument was then validated by experts in the field of education. Revisions were then again incorporated and checked by validators for approval. After the validation of the instruments, the administration to the respondents was conducted.

RESULTS

The study tested the significant difference between the pre and post-program performances of control and experimental group, and the significant difference between the pre and post-program performances of students after being exposed to contextualized teaching guides and localized instructional materials.

Mean, standard deviation, t-test of dependent means, and t-test of correlated means were used in the analysis of data.

In modules 1 and 4, pre-test scores were the same between the two test

groups which obtained a mean score of 7.2 and 8.5, respectively; while for modules 2 and 3, the control group had a slightly higher pre-test score. In module 2, the control group obtained a mean score of 9.2; while the experimental group obtained 8.9. In module 3, the control group obtained a mean score of 8.7; while the experimental group obtained 8.5. It revealed that the mean scores in the pre-tests of both the control and experimental group were close to each other. This indicates that the baseline data were relatively the same across four modules.

Post-tests scores were higher for the experimental group across the four modules as compared to control group. In module 1, the control group obtained a mean score of 17.9; while the experimental group had 23.4. In module 2, the control group obtained a mean score of 19.4; while the experimental group had 23.7. In module 3, mean scores of 19.0 and 26.4 were obtained by the control and experimental groups, respectively. Lastly, in module 4, the control group obtained a mean score of 20.5; while the experimental group had 24.7.

Across the four modules, there was no significant difference (*p>0.05*) in pre-test scores between the two groups. This indicates that the baseline knowledge between the control and experimental groups was relatively the same across the four modules prior to administration of localized instructional materials and contextualized teaching guide.

However, in terms of the post-test, across the four modules, there was a significant difference (*p<0.05*) in post-test scores between the two groups. This indicates that the post-test scores of the experimental group were significantly higher than that of the control group across the four modules. The results also indicate that the experimental group performed better in the post-test compared to the control group.

There was a significant difference (*p<0.05*) between the pre-test and post-test scores of the control group across four modules.

In module 1, pre-test obtained a mean score of 7.2, while the post-test had 17.9 (t=-18.503, p-value=<0.01). In module 2, mean score of 9.2 and 19.4 were obtained in the pre-test and post-test, respectively (t=-14.910, p-value=<0.01). A mean score of 8.7 was obtained in the pre-test and 19.0 in the post-test in module 3 (t=-17.426, p-value=<0.01). Lastly in module 4, mean score of 8.5 in the pre-test was obtained and 20.5 in the post-test (t=-20.637, p-value=<0.01).

This indicates that the post-test scores of the control group were significantly higher than the pre-test scores across the four modules. The results also indicate that the control group performed better in the post-test compared to the pre-test.

There was a significant difference (*p<0.05*) between the pre-test and post-test scores of the experimental group across four modules.

In module 1, pre-test obtained a mean score of 7.2, while the post-test had 23.4 (t=-26.805, p-value=<0.01). In module 2, mean score of 8.9 and 23.7 were obtained in the pre-test and post-test, respectively (t=-27.572, p-value=<0.01). A mean score of 8.5 was obtained in the pre-test and 26.4 in the post-test in module 3 (t=-35.727, p-value=<0.01). Lastly in module 4, mean score of 8.5 in the pre-test was obtained and 24.7 in the post-test (t=-31.185, p-value=<0.01).

This indicates that the post-test scores of the experimental group were significantly higher than the pre-test scores across the four modules. The result also indicates that the experimental group performed better in the post test compared to the pre-test.

DISCUSSION

Contextualization and localization of science lessons may be employed by educators to enhance the academic performance of learners. They may embrace and commit their time to be creative, forward-looking, and adept in using available resources within the community, construct real-life experiences of learners to connect concepts to issues that are relevant so that the needed skills and competencies will be developed among learners, and become adept in their chosen careers as prescribed by the K to 12 programs.

Educators may integrate contextualization and localization of learning materials in other fields of discipline because it shows positive effects in the performance of the learners and has been proven effective as a strategy for imparting life-long learning outcomes among learners.

Exercises, illustrations, materials, and examples that are used by educators in the teaching-learning process might be contextualized, indigenized, and localized to be effective and relevant to the learners.

Curriculum developers may include the use of contextualization and localization as one of the leading teaching-learning strategies to improve the academic performance of learners in different areas of discipline.

Further study about contextualization and localization is encouraged using bigger sample size or different grade levels to verify the result of the present study.

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