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Effectiveness of Contextualized Learning Activities in Teaching Force

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Abstract: ***The objective of this study is to help the students acquire the knowledge and concept of Force in a simple way through contextualized learning activity. This is also to address the need of the teachers who are teaching grade 8 Science. Tested and effective contextualized learning activities can be a way of solving the low performance of the students based on the Mean Percentage Score (MPS). The participants of the study were Grade 8 Special Education and Special Program for the Arts sections of Dapa National High School S.Y. 2017 - 2018. These sections were categorized as homogeneous for implementing the contextualized learning activity. Thirty-four (34) students from Grade 8 SPEd are the experimental group and were subjected with contextualized learning activity and thirty-four (34) students from the SPA were given traditional way of teaching. To determine the level of performance of the students' mean percentage score were used. The significant difference between the pre-test and post-test performances of the experimental and controlled group were analysed through the analysis of covariance (ANCOVA). There is a significant difference between the pre-test and post-test performance of control and experimental groups when they were implemented according to different teaching. The pre-test and post-test performance of students exposed to contextual and localized teaching activities is much higher than the group of students exposed to traditional and not contextualized learning activities.***

Keywords: Contextualized Learning Materials, Teaching Learning

1. Introduction

Contextualization is one of the trends in implementing change. It states that the curriculum shall be flexible enough to enable and allow schools to localize, indigenize and enhance the same based on their respective educational and social contexts as stated in paragraph h of Sec 5, of Republic Act 1033. It maximizes materials that are locally available and well – organized in terms of subject to make it relevant to the students' culture. Thus, the development of locally-produced teaching materials with contextualized activity is encouraged.

However, the relevance of education to the life experience of learners seems to be a problem. Dapa National High School experienced difficulty in uplifting the performance of the students. Grade 8 Science Mean Percentage Mean (MPS) revealed that students were not mastered the topic. It garnered 65.83 mean and classified as nearing mastery in the level of mastery for school year 2016-2017. It means that the problem of the academic performance of the students in grade 8 science still exist and haven't solve. In the same manner, Patchen & Cox-Petersen (2011) hypothesized that science is not generally presented in a way that is accessible and meaningful to all students, a problem that may result in inequitable achievement.

In line with this, Dapa National High Schoolteachers attended seminar about contextualization. However, their application to this innovative approach in teaching hasn't measured of its effectiveness. The MPS still proved that the performance of the students in grade 8 science is still not solved. It means that the teachers are not aware of the effectiveness of the contextualized learning activity though they are using this approach of teaching. With the use of the developed intervention learning material can support students struggle in the domain of learning (Situmorang, 2014).

The objective of this study is to help the students acquire the knowledge and concept of Force in a simple way through contextualized learning activity since it has the lowest MPS in the school report. Also, this study seeks to address the need of the teachers who are teaching grade 8 Science. Tested and effective contextualized learning activities can be a way of solving the low performance of the students.

2. Review of Related Literature

This part presents the review of related literature and studies that have important contributions in contextualized learning activity in teaching Force. These are some of the supplemental information considered by the researcher in the process of completing this study

Use of Contextualized Learning Materials

Contextualization has been given emphasis in many studies being conducted and has been defined in many ways. As to the original concept, Mazzeo et al.,(2003) presented it as a variety of teaching strategies crafted to have a smooth connection of learning the basic skills and content through focusing the teaching and learning process on concrete applications in a specific context that catches the interest of the students. The dictum was also used as basis in implementing the new curriculum of the Department of Education. This may bring students' concrete learning based on the application on their experiences in a specific context. The use of CLM incorporating real-life situations into instruction has many reasons. Foremost is that it serves as application of theoretical material in real-life situations, making content easier to understand, and that the relevance of content is demonstrated by real-life examples. Theall, (2014) adheres that relevance is a major component of many motivational activities and particularly important if learners' experiences can be used as a basis for new learning.

One of the goals and effects of a contextualization is to capture the students' attention by illustrating the relevance of the learning experience. CLM helps students find and

create meaning through experience, drawing from prior knowledge in order to build upon existing knowledge. The primary principle of CLM is that knowledge becomes students' own when it is learned within the framework of an authentic context. In CLM, the traditional curriculum is placed in a broader framework that integrates other subject content into the learning. Learning goals are elevated to higher order thinking skills to find information, adapt to change, and communicate effectively while relating to others" (Berns & Erickson, 2001).

In addition, contextual teaching and learning help the teachers and students relate the meaning through prior and new knowledge to get new understanding. Satriani et al., (2012) added that contextual teaching and learning motivate the learners to take charge of their own learning and to relate between knowledge and its application to the various contexts of their lives. It can likewise make learning become more meaningful because the students enjoy their own learning by doing the practical activity. The last benefit is that it can strengthen students' memory and understanding of the concept because the students are learning through the material that has taken from their experience and new knowledge. In other words, they relate their prior and new knowledge to get new understanding. Hence, they can easily remember, recall, and comprehend the material. Contextualized Learning Materials according to cultural background could promote sustainability and preservation of indigenous knowledge. Students' cultural perspectives influence how they construct knowledge while cultural background influences cognitive style and motivation (Morales, 2014). The effects of intertwining culture with science learning are observed in the improved student concept attainment. Learners see physics as something that would supplement the knowledge of their roots which increases their motivation to learn. They view learning of physics concepts as something that has real-life significance and they engage in deep processing of information and physics concepts using the same schema of thinking they often use as when they do their daily decision-making activities. They are able to employ patterns of assimilation similar to how they assimilate daily and real-life concepts. This is similarly situated with the paradigm of context-based learning emphasizing culture as the context and is within the line of study of several research and projects.

Effects of the Contextualized Learning Materials

Contextualization of a course's content and concepts can improve student motivation, learning, and persistence. The knowledge has been shown that instruction with contextualized content can activate learners' prior knowledge and promote more effective problem solving. In changing the concept, contextualization of content in interactive classroom engagement activities that motivates students with a concept's relevance can improve learning. On the other hand, promoting metacognition, contextualization of content helps students reflect on their learning to bridge ideas from a familiar concrete context of an abstract concept so they can recognize their own personal relationship to these concepts (ASEE Annual Conference & Exposition, 2016).

In teaching physics teachers ensured to get the certain extent and hoping to use examples of certain contexts to let students understand how physics is applied in the real world, or let students take part in certain explorative activities. In traditional physics teaching, teachers used an idealized example to avoid the complications of the real world and can students relate the topic based on the contextualized activity. The teachers facilitate students' grasp of the exact point of a physics concept. For example, we may use "a toy car slides down a frictionless incline plane" as an example to teach the resolution of force as well as Newton's Second Law; we may use the example of a "uniformly accelerating elevator" to teach the application of free body diagram etc. These examples are not realistic, but are very effective in transferring basic physics concepts (Sing, 2011).

3. Research Questions

This study sought to answer the following:

a) What is the performance of the students' in controlled and experimental group during pre-test and post-test?
b) Is there a significant difference between the performance of the students in controlled and experimental group based on their Post-test?

4. Scope and Limitation

This study was conducted in Dapa National High School, Dapa Surigao del Norte School Year 2017-2018. It focused on the 1st quarter of Grade 8 Science with the topic of Force. The respondents were the Grade 8 Special Education and Special Program for the Arts sections. These sections were categorized as homogeneous for implementing the contextualized learning activity. Thirty-four (34) students from Grade 8 SPEd were the experimental group and were subjected with contextualized learning activity, and thirty-four (34) students from the SPA were projected with traditional way of teaching.

5. Research Methodology

This section includes the participants, data gathering method, research instrument, and data analysis plan.

Participants

The participants of the study are the Grade 8 Special Education and Special Program for the Arts sections of Dapa National High School S.Y. 2018 - 2019.These sections were categorized as homogeneous for implementing the contextualized learning activity. Thirty-four (34) students from Grade 8 SPEd were the experimental group and were subjected with contextualized learning activity and thirty-four (34) students from the SPA were projected with traditional way of teaching.

Data Gathering Method

The researcher wrote a formal letter of request to the School Principal asking approval to conduct a study. The participants were identified and will have the same number. Others from the SPEd will not be included in the group of the participants and was formally informed. Discussion of the Force topic was delivered first before giving Pre-Assessment Worksheets (Pre-Test) to the both Grade 8 SPEd and SPA. Next, re discussion of the topic was implemented.

During the assessment, Post-test assessment was given and data were gathered from the controlled group and experimental group. Comparison of obtained test results were determined the effectiveness of the developed Contextualized Learning Activities; results of Pre-Test and Post-Test of the learning groups were compared using appropriate statistical tools discussed in the succeeding section.

Research Instruments and Validation
To obtain the validity and reliability of the results of the study, appropriate statistical tools were used.

The following statistical tools were used in the study. To determine the level of performance of the students' mean percentage score was used. The mean percentage score is the quotient of the raw score and the total number of points times 100%.

Their scores along the different activities was graded using prepared rubrics and their scores in the pre – test – post test results were interpreted using the DepEd proficiency descriptive rating:

Score Range	Descriptive Rating
90 % and above	Advanced (A)
85% - 89%	Proficient (P)
80% - 84%	Approaching Proficiency (AP)
75% - 79%	Developing (D)
74% and below	Beginning (B)

Analysis of covariance (ANCOVA) was used to examine if there is a significant difference between the post-test performances of the students exposed to each type of teaching strategies.

Hypothesis:

Ho: There is no significant difference between the performance of the students in controlled and experimental group based on their Post-test.

Ethical Issues
The researcher was formally talked to the participants who are not included in the group. Specifically, the students from the SPEd who have an existing participants for the experimental group.

6. Discussion of Results

This chapter presents and discusses the findings and conclusions of the study based on the guide questions posted in part III of the research.

6.1 Findings

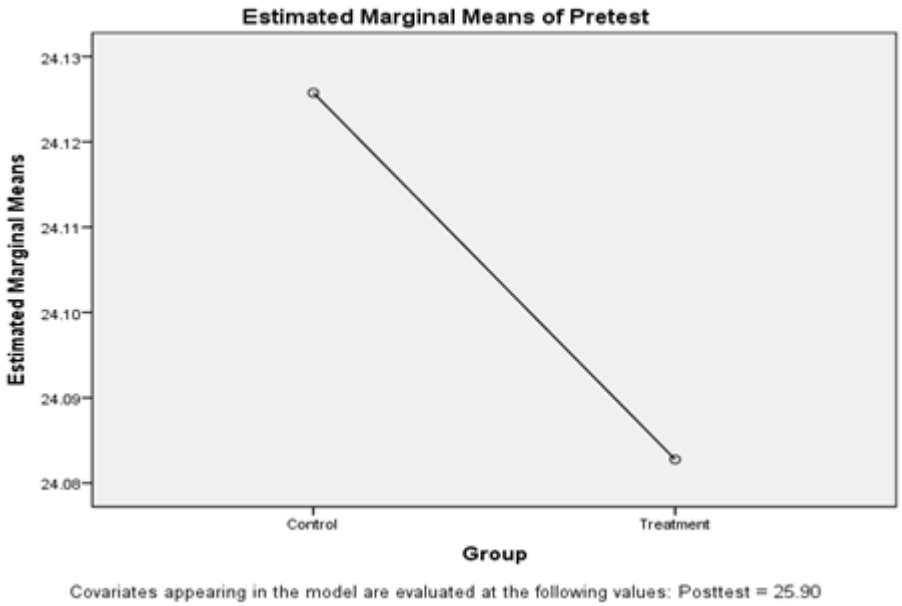
This part presents the effectiveness of teaching Force using the contextualized learning activities. The students' performance on the different type of test were determined using mean percentage score (MPS).

The performance of the students' in control and experimental group in Pre-test

Table 1 presents the performance of the students in control and experimental group in pre-test. Two groups of respondents have the same item set given during the pre-test administration of the test.

Table 1: Performance of the students in control and experimental group in pre-test

Group	Mean	Std. Deviation	Quantitative Interpretation	Descriptive Rating
Control	23.85	.86	79.5	Developing
Experimental	24.00	.78	80	Approaching Proficiency (AP)



It can be gleaned that the experimental group obtained the mean of 24.00 and the control group garnered 23.85. It means that pre-test results of the homogenous groups are not quite having a large gap to each other and also, control and

experimental group have0.86 and 0.78 standard deviations respectively.

Mostly, the pre-test performance of the experimental group (24.00) is more prominent than the control group (23.85). This means that Control group is developing which obtained 75.5 in quantitative rating whereas, Experimental group is Approaching Proficiency which obtained 80 in quantitative rating.

The performance of the students' in control and experimental group in Post-test

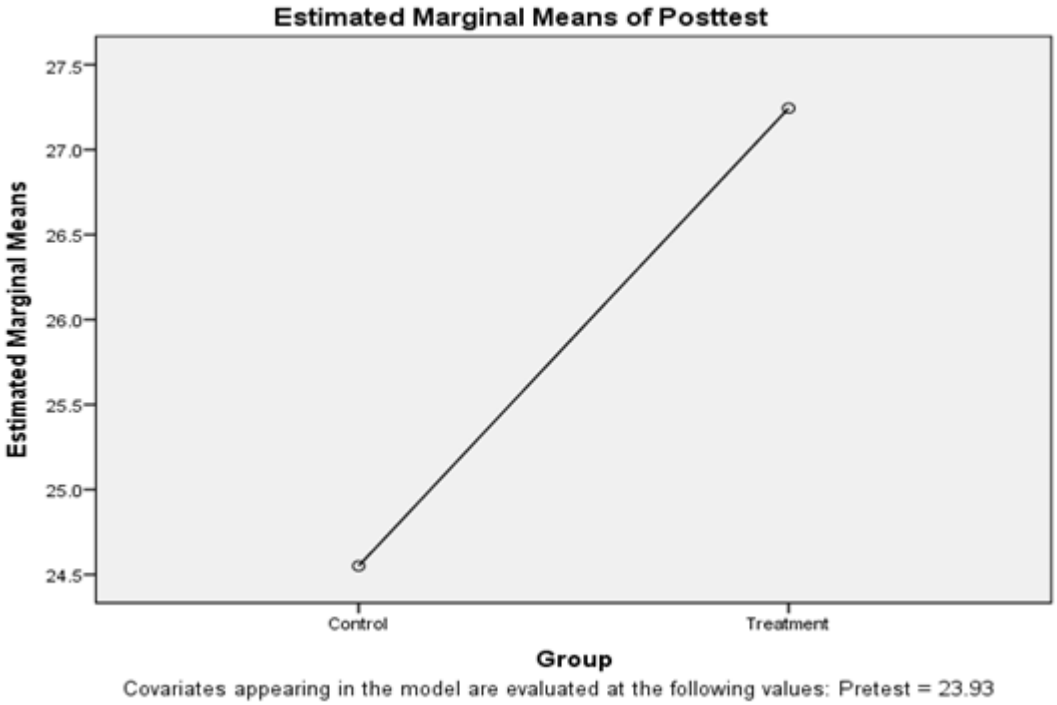
Table 2 shows the performance of the students of control and experimental group in post - test.

Table 2: Performance of the students in control and experimental group in Post-test

Group	Mean	Std. Deviation	Quantitative Interpretation	Descriptive Rating
Control	24.53	1.64	81.77	Approaching Proficiency (AP)
Experimental	27.26	1.58	90.87	Advanced (A)

The table above displays that the control group has a mean of 24.53 which is higher than the score during pre-test while the experimental group has a mean of 27.26 which improved most. In addition, the table illustrates a gap between control group and experimental group in post – test. Treatment group obtained 90.87 which is Advanced (A) in descripting rating compared to experimental group which obtained only 81.77 which is Approaching Proficiency (AP).

However, a remarkable difference between the two results in the pre-test and post-test phase can show that contextualization strategy was better and more effective.In fact, as Moltz (2010) notes contextualization is a form of "deep learning" which aims to make the learning process reflective, detach and expressive through engaging the target language in a rich and realistic situation. In addition, Moghaddas (2013) found out in his study that students in the pre-test showed relatively the same results lower than the post-test taught through contextualization strategy.



Significant difference between the performance of the students' in control and experimental group in Pre-test and Post-test

Table 3 revealed that there is a significant difference between the performance of the students in a control and experimental group. It can be gleaned that the p-value obtained of .025 which means that statistically there is a significant. In other words, the t-value obtained of 5.30 and the mean difference is 13.01.

Table 3: Significant Difference between the performance of the students' in control and experimental group in Pre-test and Post-test

	Mean Difference	t-value	p-value	Decision
Pre-test vs Post-test	13.01	5.30	.025	Reject Ho

Ballesteros (2015) have found out that there was significant improvement in their performance in Science using localization and contextualization approach in teaching Science. Contextualized Learning Activities helps the performance of the students especially in relating it the real situation and can be relevant to their experiences. It is identified as a promising strategy that actively engages students and promotes improved learning and skills development (Baker, Hope & Karandjef, 2009).

7. Conclusions

The pre-test and post-test performance of students exposed to contextual and localized teaching activities is much higher than the group of students exposed to contextualized but

non-localized teaching activity in teaching force of teaching. In general, the team of students exposed to contextualized and localized teaching is better than a group of students exposed to contextual and non-localized teaching.

There is a significant difference between the pre-test and post-test performance of control group students and experimental group when they are combined according to different tasks. However, the post-test, regarding student learning activities exposed to contextual and localized teaching is better performed than students exposed to contextualized but not localized learning activities.

8. Recommendations

It is recommended that teachers should use localized examples, exercises, and illustrations in teaching Force to improve the student performance in Science. The curriculum developers can include the use of indigenous data in teaching Science as one of the leading teaching-learning strategy. The exercises, illustrations, and examples of the instructional material that should be used by a teacher must be authentic and indigenous to be effective.

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