

USING NURSETUNE SONG AS A MOTIVATIONAL AND COGNITIVE TECHNIQUE IN SCIENCE TEACHING

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Abstract

The purpose of the study was to determine the significant difference between the pretest performance and posttest performance of the Control group and Experimental Group after the use of nursetune song as a motivational and cognitive technique in teaching science. The sample consisted of 261 grade IV students which were divided into two groups; the first group was exposed to nursetune songs while the other group served as the control group. Researchers assessed the level of nursetune songs in terms of self-reflection and benefits using a five – point Likert type of survey questionnaire. The findings supported the hypothesis that by singing the Nursetune science-content songs which in turn contribute to the learners to remember the lesson and building concepts because of the repetitive nature. A pre-test and post-test was administered to measure the science content knowledge acquired during the use of nursetune songs. Results indicate that there is a statistically significant difference between the mean score in the post-test of control and experimental group. This suggests that the performance in the post-test of the pupils in the experimental group is significantly better than the control group. Further, the outcome of the post-test proves that using nursetune songs in teaching topics related to matter produces a greater improvement in the performance of the learners and it is superior to the traditional teaching technique. The need to incorporate the use of science-content songs in lesson planning is recommended in teaching lessons for the learners having a below average performance.

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1.1.1. Keywords: *nursetune song; self-reflection; performance; cognitive; motivational*

2. Introduction

The most effective teaching strategy contributes most effectively to student's learning and it must be selected prudently. Pejic, (2016) and Nihada et. al. (2016) observed that students nowadays are being so forgetful; even if the lesson was delivered, the students forget it right away resulting to the poor academic performance of the learners in learning curriculum. Targeting the three (3) domains of learning such as the cognitive, affective and psychomotor can be a great help to young learners in improving their skills. One of the nine multiple intelligences written by Gardner (1983) is the musical intelligence which is inherent in every individual; it just need to be sharpened in order for it to function well and properly. Sala & Gobet (2020) claimed that music training has repeatedly been claimed to positively impact children's cognitive skills and academic achievement which rely on the assumption that engaging in intellectually demanding activities fosters particular domain-general cognitive skills, or even general intelligence. Thus, to activate the mind of learners so as to retain pieces of information and the ability to understand what they have learned rely on the technique to be applied as in the presentation of the lesson and activities that must suit the young learners' interests and characteristics. The use of nursery rhymes and songs play an important role in sharpening the

young mind in learning concepts in different areas. Regardless of the way it is taught, the key to successful use of a song is its application (El-Nahhal, 2011).

2.1. Purpose of the Study

The purpose of the study was to determine the significant difference between the pretest performance and posttest performance of the Control group and Experimental Group after the use of nursetune song as a motivational and cognitive technique in teaching science.

2.2. Literature Review

Music creates a relaxed atmosphere that motivates students and helps them to be more productive. Activities such as singing songs, writing lyrics and creating rhythmic patterns are the best way to teach learners with musical intelligence. Songs help students imitate and remember words which contribute meaningfully to the student's cognitive, affective and psychomotor learning domain (Almutairi, 2017; Fonseca & Arnold, 2014).

Effective cognitive processes make learning easier allowing the new information to be stored in the memory for a long time (Lawless, 2017).

DiDomenico, (2017) used rhymes and songs for teaching core vocabulary to elementary school students to investigate the effectiveness of using songs and rhymes as a viable strategy for teaching in classroom settings. The learners' motivation and self-confidence increased and was found to be a substantial strategy through which memorization and retention of words are facilitated.

Nursery rhyme songs in terms of science-content knowledge and different kinds of nursery rhyme experiences was found to increase children's ability to recite popular and familiar rhymes (Yoon & Kim, 2017).

Studies that utilize science songs as a teaching strategy especially when accompanied by visuals or movement, like dancing, have the potential to reach diverse participants with multi-modality delivery. Using science-content music and even creating their own science songs could provide an effective teaching strategy for teacher that engages and helps them understand science process skills and learn content material and science concepts (Crowther, 2011).

One common strategy to measure students' learning and a valuable diagnostic tool for more effective teaching is to administer a pretest and posttest (Kuehn, 2017).

By comparing pretest and posttest results, the teacher can see what students actually learned from the lesson and had the possibility to show improvement on their performance Ocampo (2015).

3. Methodology

Gathering of Lessons with low MPS (Mean Percentage Scores) Results.

Planning and Design phase. Identification of lessons applicable for the utilization of nursetune based in the science curriculum provided by DepEd for grade IV students.

Development of the Nursetune. Consolidation of the collected data, inclusion of nursetune in the identified lessons and construction of the evaluation using the pre-test and post-test.

Permission to conduct the study. Upon completion of the required documents as stated in the curriculum guide of DepEd for grade IV, request for the issuance on the authorization to the concerned school principals and school heads to conduct the study.

Validation of the learning material. Thirty (30) Science teachers from different schools in Calauan, Laguna assessed the validity of which included Sto. Tomas Elementary School, three (3) teachers; Sto. Tomas (Annex) Elementary School, two (2) teachers; Hanggan Elementary School, two (2) teachers; Calauan (Central) Elementary School, five (5) teachers; Masiit Elementary School, two (2) teachers; Prinza Elementary School, three (3) teachers; Bangyas Elementary School three (3) teachers; San isidro Elementary School three (3) teachers; Imok Elementary School two (2) teachers and Dayap Elementary School, five (5) teachers.

Distribution and utilization of the learning material. The nursetune learning material was utilized by two hundred sixty one (261) Grade IV students from Sto. Tomas Elementary School.

Pre-test. All students took the fifty (50) item multiple choice test questions based from the learning competencies.

Actual use of the learning material. The nursetune learning material was utilized for the 15 days lessons.

Post-test. At the end of the lesson, all students took the post-test which was identical to the pre-test.

Treatment and analysis of Data. The data collected was subjected to the appropriate statistical treatment followed by the interpretation of the results and findings.

4. Results and Discussion

Table 1. Level of Self-Reflection and Benefits of Nursetune Songs as a Motivational and Cognitive Technique

	Indicative Statement	W. Mean	SD	VI
	The use of Nursetune song...			
Affective				
1.	helps me to understand more science concepts than when I am in a normal class discussion.	4.53	0.72	Strongly Agree
2.	helps me to remember the lesson because of the repetition of lyrics.	4.75	0.51	Strongly Agree
3.	excites me to learn more about science.	4.78	0.61	Strongly Agree
4.	is very effective for me.	4.69	0.59	Strongly Agree
5.	lets me enjoy the learning.	4.72	0.52	Strongly Agree
6.	does not require me to put a lot of effort in studying the science concept.	3.97	0.97	Agree
7.	motivates me to learn because the topics are incorporated in the song.	4.63	0.61	Strongly Agree
8.	engages me in our class discussion and activities.	4.69	0.69	Strongly Agree
9.	provides information very clear and easy to understand.	4.59	0.61	Strongly Agree
10.	is an excellent tool in teaching the science subject.	4.66	0.60	Strongly Agree

Table 1 is about the level of self-reflection and benefits of Nursetune songs as a motivational and cognitive technique. The self-reflection indicative statements are divided into two (2) variables, the affective and psychomotor. Affective indicator assessment are asked to determine the behavior and feelings of the learners

while using the Nursetune song in their Science subject. In addition, psychomotor indicator assessments in Table 2 are asked to evaluate student's engagement and skills exhibited.

Table 2. Effects of Nursetune Songs on the Students' Engagement and Exhibited Skills

	Indicative Statement The use of Nursetune song...	W. Mean	SD	VI
Affective				
1.	enhances my learning skills.	4.53	0.72	Strongly Agree
2.	encourages us to share ideas, concepts we know.	4.75	0.51	Strongly Agree
3.	gives energy to us in studying science.	4.78	0.61	Strongly Agree
4.	helps lessen the pressure we have in science topics.	4.69	0.59	Strongly Agree
5.	makes us comfortable in our science class.	4.72	0.52	Strongly Agree
6.	helps me to become attentive and participative in class discussion.	3.97	0.97	Agree
7.	is very accessible thus I can have it, repeat it in our home.	4.63	0.61	Strongly Agree
8.	lets me love our science subject this time.	4.69	0.69	Strongly Agree
9.	makes me feel that I will answer the examination correctly because of the lyrics I have in my mind.	4.59	0.61	Strongly Agree
10.	connects me with my classmates whenever we repeat lyrics of the song altogether.	4.66	0.60	Strongly Agree

Based on the results, it has a composite mean of 4.54 and a verbal interpretation of strongly agree. This is due to the fact that the pupils are highly motivated to learn more about science because of the learners learned the lesson by singing the Nursetune science-content songs. relating to Matter. This is supported by the fact that the pupils are excited to learn more about science (WM = 4.78, SD = 0.61). Nursetune songs help them to remember the lesson because of the repetition of lyrics. (WM = 4.75, SD = 0.51) and it allows them to enjoy learning (WM = 4.72, SD = 0.52).

Self-reflection is a way of looking back on what was learned and how learning took place. The results in Table 2 further validated the study conducted by Lew and Schmidt (2011), it was hypothesized that self-reflection and academic achievement influenced each other interactively, i.e. students by looking back on how and what they have learned results in them having better self-reflection skills, which subsequently lead them to perform better in the classroom or on knowledge acquisition tests. Second, we were interested to investigate which type of reflection (i.e. self-reflection on how learning took place and/or what was learned) was more effective in promoting learning and thus academic achievement.

The learners learned the lesson by singing the Nursetune science-content songs. The learners are more excited to learn and the songs help them remember the lesson because of the repetitive nature. Thus, the songs contribute effectively to learning.

Table 3 is about the mean score performance of the pupils in the pre-test and the post-test in a selected topic in science. The results show that the control group has an average performance in both tests. The experimental group, on the other hand, has an average performance in the pre-test but their performance in the post-test is moving towards mastery. In terms of consistency of performance in both tests, the control group has more consistent performance compared to the performance of the experimental group.

Table 3. Mean Score Performance of the Learners in Pre-test and Post-test

	Assessment	Mean	SD	Average MPS	Descriptions
Control Group					
	Pre-test	18.91	3.90	37.81	Average
	Post-test	26.38	5.82	52.75	Average
Experimental Group					
	Pre-test	18.66	4.35	37.31	Average
	Post-test	39.38	6.76	78.75	Moving Toward Mastery

This is supported by the study of Forster (2009) which found out that pre-test/posttest can be valuable diagnostic tool for more effective teaching and to measure how much students have improved in one semester or study. While taking the pre-test at the beginning of the semester, students are not expected to know the answers to all of the questions; however, they should be expected to utilize previous knowledge to predict rational answers.

Table 4 is about the difference between the pre-test mean score of control and experimental group. Based on the table, there is no significant difference between the mean score of the two groups in the pre-test. This implies that the pupils in the control group and experimental group have the same level of cognitive thinking skills.

Ocampo (2015) noted that students who were given post test had the possibility to show improvement on their performance. This is manifested through the teachers' effort in delivering the lesson based on the result of the pre-test.

Table 4. Difference Between the Pre-test Mean Score of Control and Experimental Group

Group	Mean	SD	t	Sig.	Mean Diff.	95% CI of the Diff.		Interpretation
Control	18.91	3.90	-0.24	0.8097	-0.250	-2.317	1.817	Not Significant
Experimental	18.66	4.35						

Table 5 represents the difference between the pre-test and post-test mean score performance of control and experimental group. Based on the table, there is a significant difference between the pre-test and post-test mean scores of the both control and experimental group. The control group has an improved performance in

the post-test after they are exposed to traditional method of teaching. The same can be said about the performance of the experimental group in the post-test after their exposure to Nursetune songs.

Table 5. Difference Between the Pre-test and Post-test Mean Score of Control and Experimental Group

Paired Differences										
Group	Test	Mean	SD	Mean Difference	SD	95% CI of the Diff.		t	Sig.	Interpretation
						Lower	Upper			
Control	Pre-test	18.91	3.90	7.469	6.844	5.001	9.936	6.173	0.000	Significant
	Post-test	26.38	5.82							
Experimental	Pre-test	18.66	4.35	20.719	6.280	18.455	22.983	18.864	0.000	Significant
	Post-test	39.38	6.76							

According to Schalich (2015) , the pre-test and post-test can be a valuable diagnostic tool for more effective teaching. It should be design to measure the amount of learning a student has acquired in a specific subject. To do this, questions concerning all of the topics covered during the third quarter must appear on the test. To demonstrate and evaluate the student progress has been made during the given quarter, the post-test score should be higher than the pre-test score.

There is progress and changes in the performance of the learners since their mean score in the post-test is significantly higher than their mean score in the pre-test. Which means that the utilization of Nursetune song in teaching science is a great help to the students better understanding of the lesson.

Table 6. Difference Between the Post-test Mean Score of Control and Experimental Group

Group	Mean	SD	t	Sig.	Mean Diff.	95% CI of the Diff.		Interpretation
						Lower	Upper	
Control	26.38	5.82	8.24	0.000	13.000	9.846	16.154	Significant
Experimental	39.38	6.76						

Table 6 is about the difference between the post-test mean score of control and experimental group. Based on the table, there is a significant difference between the mean score in the post-test of control and experimental group. This suggests that the performance in the post-test of the pupils in the experimental group is significantly better than the control group. Further, the outcome of the post-test proves that using Nursetune songs in teaching topics related to Matter produces a greater improvement in the performance of the learners and it is superior to the traditional teaching technique.

This is supported by the study of Alessandri & Perinelli (2017) which points out that post-test can be used to check a predetermined level of mastery. When it is used to check the mastery, it is important that answers be provided on returning to a particular area of content to overcome any weakness. This means that the post-

test allows simple feedback cycle to be included in the design of the materials which links questions on the post-test to their respective areas of contents. To check the mastery of the objective as the function of post-test, the questions must be appropriate and congruent with the objectives they are to be assessed.

5. Conclusion

Results indicate that there is a statistically significant difference between the mean score in the post-test of control and experimental group. This suggests that the performance in the post-test of the pupils in the experimental group is significantly better than the control group. The findings supported the hypothesis that Nursetune science-content songs contribute to the learners in remembering the lesson and building concepts because of the repetitive nature.

6. Recommendations

Listening to nursetune showed a positive effect on the self-reflection and benefits as shown in the learners improved engagement during class discussions which in turn enhanced their skills to understand more the science concepts as compared with the normal class discussion. Thus, the need to incorporate the use of science-content songs in lesson planning is recommended for the learners including those who are having a below average performance.

References

- Pejic, A. (2016). The Effect of Using Songs On Young Learners and Their Motivation for Learning English. Retrieved 21 August 2019 from https://www.researchgate.net/publication/312054146_The_Effect_of_Using_Songs_On_Young_Learners_and_Their_Motivation_for_Learning_English
- Nihada, D. et. al (2016). The Effect of Using Songs On Young Learners and Their Motivation for Learning English Retrieved 21 August 2019 from https://www.researchgate.net/publication/312054146_The_Effect_of_Using_Songs_On_Young_Learners_and_Their_Motivation_for_Learning_English
- Gardner, Howard (1983), *Frames of Mind: The Theory of Multiple Intelligences*, Basic Books, ISBN 978-0133306149
- Sala, G. & Gobet F. (2020). Cognitive and academic benefits of music training with children: A multilevel meta-analysis. From https://www.researchgate.net/publication/343299596_Cognitive_and_academic_benefits_of_music_training_with_children_A_multilevel_meta-analysis
- El-Nahhal, M. M. (2011). The effectiveness of using children songs on developing the fourth graders' English vocabulary in Rafah governmental schools. *Department of Curricula and Teaching Methods*, (3), 1-73.
- Almutairi, M. (2017). Using Songs in Teaching Oral Skills to Young Learners: Teachers' Views and Attitudes Retrieved February 14, 2020 from https://www.researchgate.net/publication/311706500_Using_Songs_in_Teaching_Oral_Skills_to_Young_Learners_Teachers'_Views_and_Attitudes
- Fonseca, M. C., & Arnold, J. (2014). Multiple intelligence theory and foreign language learning: A brain-based perspective. *International Journal of English Studies*, 4(1), 119-136.

- Lawless, C. (2017). Applying Cognitive Learning Theory to Your Corporate Learning Strategy Retrieved March 30, 2019 from <https://www.learnupon.com/blog/cognitive-learning-theory/>
- DiDomenico, J. 2017. Effective Integration of Music in the Elementary School Classroom Retrieved April 4, 2020 from <https://files.eric.ed.gov/fulltext/EJ1171782.pdf>
- Yoon, J. & Kim, K. (2017). Science Song Project: Integration of Science, Technology and Music to Learn Science and Process Skills. K-12 STEM Education, 3(3), 235-250. The Institute for the Promotion of Teaching Science and Technology (IPST). Retrieved September 28, 2019 from <https://www.learntechlib.org/p/209553/>
- Crowther, G. (2011). Using Science Songs to Enhance Learning: An Interdisciplinary Approach. Retrieved April 4, 2020 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3292070/>
- Kuehn, R. P. (2017).PrePost-Test-A-Diagnostic-Tool-For-More-Effective-Teaching-of-EFL-Students. <https://owlcation.com/academia>
- Ocampo (2015)Effectiveness of Students' Team Achievement Division on Students' Attitude Towards Physics Asia Pacific Journal of Multidisciplinary Research Vol. 3 No. 4, 112-117 November 2015 Part III P-ISSN 2350-7756 E-ISSN 2350-8442 www.apjmr.com
- Lew, M. & Schmidt H. G. (2011). Self-reflection and academic performance: Is there a relationship? from https://www.researchgate.net/publication/51100201_Self-reflection_and_academic_performance_Is_there_a_relationship
- Forster, M. (2009).Informative assessment: Understanding and guiding learning. Paper presented at the ACER research conference on Assessment and Student Learning. Retrieved March 9 2017 from: http://research.acer.edu.au/cgi/viewcontent.cgi?article=1040&context=research_conference
- Schalich, M.E.(2015).Analysis of Pr Analysis of Pre Test and P est and Post Test Performance of Students in a formance of Students in a Learning Center Model at the Elementary School Level from <https://scholar.dominican.edu>
- Alessandri, G., & Perinelli, E. (2017). Evaluating Intervention Programs with a Pretest-Posttest Design: A Structural Equation Modeling Approach. *Frontiers in Psychology*, 8, 223. doi:10.3389/fpsyg.2017.00223