Enhancing Science Performance of Grade V Pupils Through the Use of Sine'skwela Program in San Marcelino District

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Abstract
The study aimed to determine the effect of the use of Sine'skwela Program in enhancing the academic performance in Science among Grade V pupils of selected schools in the District of San Marcelino. It made use of descriptive quantitative and qualitative research design with questionnaire as one of the tools in gathering data. To determine the academic performance in Science pre-test and post-test were given to the two hundred twenty-nine (229) respondents. Rubrics and narrative observation made by the teacher were utilized to assess the affective and psychomotor domains of learning. Findings revealed that there was a significant difference in the level of academic performance before and after the use of Sine'skwela Science episodes. The proficiency level before was "beginning" and "approaching proficiency" after. It was also found out that the educational video as Sine'skwela resulted to positive outcomes both affective and psychomotor domains; attitude and skills. However, findings showed that there was no significant association between the pupil-respondents knowledge and the school from which they come from. The study concludes that educational videos are more than just supplementary tools; they are catalysts for holistic development. By fostering positive attitudes and improving practical skills alongside test scores, the *Sine'skwela* program proves to be a vital asset in enhancing the overall scientific literacy of Grade V pupils.

Keyword: Sine'skwela Program, Educational videos, Academic Performance, Science Education, Grade V Pupils;

Introduction

Globally, the integration of Educational Television (ETV) in the classroom serves as a powerful pedagogical tool that enhances student comprehension, engagement, and academic performance in science through several key mechanisms: By combining audio, motion, and visual tracks, ETV accommodates diverse learning styles and helps students construct deeper cognitive frameworks for abstract scientific principles (Saltrick, n.d.).Empirical reviews in low- and middle-income countries indicate that high-quality, curriculum-aligned educational broadcasts significantly raise learning outcomes in core subjects like science by providing a cost-effective method to scale up standardized, expert-designed lessons (Watson, 2020).Regular exposure to educational science programming sustains children's interest in the subject over time, stimulates supplementary scientific discussions at home, and buffers against the typical decline in science interest observed as students transition into higher grade levels (Bonus et al., 2024).While historical comparative studies noted negligible differences when television merely replicated traditional lecturing, modern literature stresses that ETV maximizes performance when utilized purposefully—particularly through satellite and multimedia platforms that transport students to inaccessible or microscopic environments (Ahlawat, 2015)—and when accompanied by structured teacher guidance or interactive co-viewing (Saltrick, n.d.; Watson, 2020).

Television-based instruction (TBI) in the Philippines has transitioned from a novel, supplementary classroom tool into a vital instructional modality. Faced with persistent resource constraints and regional accessibility barriers, the Department of Education (DepEd) has continually integrated television and digital platforms to meet 21st-century learning goals. This pathway was historically established by pioneering public broadcasting initiatives, such as the "Continuing Science Education via Television" project, which successfully used broadcasting to train teachers and deliver direct science instruction to classrooms. Modern localized studies in public schools reveal that both teachers and learners heavily rely on and highly value TBI. The primary driver of its success is its entertaining, visually captivating format. This high visual appeal significantly boosts student engagement, creating a direct positive correlation with enhanced academic performance.

The District of San Marcelino became one of the fortunate beneficiaries of this partnership, with four of its 19 schools selected to receive flat-screen televisions and free cable installations sponsored by ABS-CBN. With access to the Knowledge Channel's daily broadcasts, teachers in these recipient schools can seamlessly integrate media

into their daily routines because the televised lessons are strictly aligned with the Philippine Elementary Learning Competencies (PELC) and the official budget of work. To facilitate this seamless integration, schools were provided with semester-based schedule guides, allowing educators to map out their lesson plans well before the scheduled viewing sessions.

As a highly versatile instructional tool, *Sine'skwela* can be strategically utilized by teachers for initial student motivation, core lesson presentation, or the reinforcement of complex scientific skills. Ultimately, this integration of technology provides the structural framework for the current study. This specific background directly frames the core objective of the researcher, which is to determine the exact extent of *Sine'skwela* usage among Grade V pupils in selected schools within the District of San Marcelino and analyze its direct impact on enhancing their academic performance in Science.

Methodology

Research Design

The descriptive qualitative method of research was used in the study. It utilized the pre-test and post-test, questionnaire on the extent of utilization of the Sine'skwela Program and documentary analysis using rubrics to assess pupils' attitude and skills while pupils were viewing the Sine'skwela program.

Respondents and Location of the Study

The study was conducted in four school recipients of the Knowledge Channel program using the Sine'skwela Program in San Marcelino District as shown, specifically, there were two sections in School A with Eighty-four 84 Grade V pupils; two sections in School B with 50 Grade V pupils; two sections in School C with 65 Grade V pupils and School D with 30 Grade V pupils with a total of Two hundred Twenty-nine (229) pupil-respondents for the S. Y. 2015-2016

Figure 1 shows the locale of the study composed of San Marcelino E/S in Brgy. Burgos, Linasin E/S in Brgy. Linasin, San Guillermo E/S in Brgy. San Guillermo and Rabanes E/S situated in Brgy. Rabanes all of which are in the San Marcelino District.

Figure 1. A Map Showing the Locale of the Study

Instruments

To gather useful data in determining the extent of utilization of Sine'skwela Program in enhancing Grade V pupils' Science academic performance, pre-test and post-test were administered, questionnaires were given for the utilization of the program and documentary analysis or observation using rubrics while the pupils were viewing the programs during the usage of the Sine'skwela Program by the pupil-respondents.

The Data and the Gathering Procedure

The data of the study consisted of the pre-test and post-test results administered. The questionnaire was used to determine the extent of the utilization of the Sine'skwela Program. Documentary analysis with rubrics was used while the pupils are viewing the program to check if there was an effect on the attitude and skills of the pupils upon the use of the Sine'skwela.

The researcher secured permit before administering the questionnaire, the pre and post-test. Enough time was given in explaining the procedure to teacher-participants in the four school under study. When the questionnaires were retrieved and rubrics collected, the data were collated and analysed.

Data Analysis

The result of the pre-test and post-test, response to the questionnaire and the rubrics were analysed and subjected to statistical treatment. Statistical Treatment of Data**.** The tabulated data in Microsoft Excel were treated using Statistical Package for Social Sciences Version 20 (SPSS v.20) software. Manual calculations were disregarded; thus, presentation of formula is not necessary. The following are the statistical treatment of this study: **T-test of correlated or paired samples**. This compares the means between two related groups obtained from the same sample. It was utilized in testing the hypothesis that there is no significant difference in the students' pre-test and post- test scores. The rejection or acceptances of the null hypotheses was based on some level of difference as a criterion, the 5% and 1% level. **Analysis of Variance (ANOVA)** was used to analyse the differences of the knowledge level, attitude and skills of the students after intervention when grouped according to school. **Chi-Square** was used to calculate if there is an association between the knowledge level of the students and their schools.

Results and Discussion

Table 1 Level of Pupils' Performance in Science V

SCHOOLS	SCORE	N	Range	Minimum	Maximum	Mean	MPS
SCHOOL A	PRE	84	23.00	5.00	28.00	18.20	36.40 *
	POST	84	22.00	28.00	50.00	41.23	82.46
SCHOOL B	PRE	50	22.00	7.00	29.00	17.96	35.92
	POST	50	23.00	27.00	50.00	41.18	82.36
SCHOOL C	PRE	65	18.00	5.00	23.00	14.0	28.18*
	POST	65	26.00	24.00	50.00	37.32	74.64**
SCHOOL D	PRE	30	12.00	8.00	20.00	14.53	29.06
	POST	30	23.00	27.00	50.00	41.63	83.26**
	TOTAL	**229**			MEAN		80.68

**Significant at 5% level of £ **Highly Significant*

A pre- and post-test analysis conducted across four respondent schools revealed a substantial improvement in the pupils' Science performance after being exposed to *Sine'skwela* Science episodes.

Initially, the overall pre-test Mean Percentage Score (MPS) stood at 32.39%, falling under the "beginning" proficiency level. This indicated that while pupils possessed some prior ideas about the topics, their foundational knowledge was insufficient. Following the intervention, the overall post-test MPS surged to 80.68%, elevating the pupils' knowledge level to "approaching proficiency." This significant increase demonstrates that the students acquired substantial subject knowledge from the educational videos.

These findings strongly imply that using *Sine'skwela* as an instructional video tool is an effective strategy for enhancing the academic performance of Science pupils. This aligns with the previous study by Ibe (2002), which concluded that the *Sine'skwela* program enhances teaching and learning in elementary school Science, noting that students exposed to the program generally outperform their unexposed peers in examinations.

Table 2 Extent of Usage of Sine'skwela Program in San Marcelino District

Sineskwela Program Utilization		School A	School B	School C	School D	TOTAL	%
1. How often do pupils watch Sine'skwela Program?							
	Once a week			65	30	95	41.30
	Twice a week	84	50			134	58.52
	Once a month					0	
2. Numbers of minutes the pupils watch Sine'skwela Program.	25 to 30 minutes			65	30	95	41.30
	19-20 minutes	84	50			134	58.52
3. Pupils share to their parents the lesson they learned from the Sine'skwela Program.	Yes	73	43	53	25	194	84.35
	No	11	8	12	5	36	15.65
4. Familiarity of the pupils with Sine'skwela Program.	Solar System	30	23	25	14	92	40.00
	Other Members of the Solar System	29	17	23	8	77	33.48
	What is Tides	25	11	17	8	61	26.52
Total		**84**	**50**	**65**	**30**	**229**	

Item No. 1 shows the frequency of watching Sine'skwela Program among the four school-respondents 2 of these similarly views once a week, 65 from School C and 30 from School D with a total of 95 with a percentage of 41.30. While the 2 schools views twice a week, 84 from School A and 50 from School B with a total of 134 with a percentage of 58.52.

The study demonstrates that the frequent or increasing utilization of educational videos like *Sine'skwela* serves as an effective teaching tool, yielding positive outcomes in both academic and affective domains (CBP, 2004). This is further supported by Ibe (2002), who asserts that continuous exposure to educational video programs promotes better learning in Science by providing visually compelling access to information essential for enhancing student comprehension.

Data regarding the duration of video exposure revealed two distinct patterns among the 230 pupil-respondents across four schools: Short Duration (19–20 minutes): Represented the majority of the sample, consisting of 84 pupils from School A and 50 from School B, totaling 135 students (58.70%). Extended Duration (25–30 minutes): Consisted of 65 pupils from School C and 30 from School D, totaling 95 students (41.30%).

Beyond classroom viewing, the program stimulated home-bound discussions. A significant majority of the pupils (84.35%, $n = 194$) reported sharing their lessons with their parents—broken down as 73 from School A, 43 from School B, 53 from School C, and 25 from School D. Conversely, only 15.65% ($n = 35$) responded negatively (11 from School A, 8 from School B, 12 from School C, and 5 from School D). This high rate of home sharing is crucial, as parents can actively assist in their children's studies and further explain concepts to ensure deeper understanding.

These results indicate that familiarity with viewed topics strongly contributes to better conceptual understanding and memory retention. As Barron (1999) notes, video materials can be replayed and reviewed as often as necessary; this familiarity accommodates varying learning abilities and ultimately leads to superior student performance.

Table 3 Difference in the Level of Pupil-Respondents in Science Academic Performance

TEST	Mean	Standard Deviation	Mean Difference	T -value	Sig (2-tailed) (≤0.05)	Decision
PRE-TEST	16.502	4.609	-23.659	-65.659	.000	Significant
POST-TEST	40.161	7.809				

There is a significant difference in the performance ratings between Pre-test and Post-Test of Grade V pupils of different schools. The t value of -65.659 with the corresponding probability value of 0.00 is significant at alpha 0.05. The mean difference of -23.659 means that there is a big improvement in Post-Test. This means that there is sufficient sample evidence to prove that the Post-Test scores are higher ratings than Pre-Test. The standard deviation of the pre-test was 4.609 and 7.809 of the post-tests showed that there is a big difference on the performance of the pupil-respondents based on the result of the test administered

This supports the study of Gregorian (2006) that media literacy instruction has shown to have a positive correlation with demonstrable academic improvement in core subject areas.

Table 4 Differences in Science V Performance of Pupils Grouped According to Schools

		Sum of Squares	df	Mean Square	F	Sig.	Decision
PRE-TEST	Between Groups	842.857	3	280.952	15.794	.000	Significant
	Within Groups	4002.392	225	17.788			
	Total	4845.249	228				
POST-TEST	Between Groups	735.757	3	245.252	4.190	.007	Significant
	Within Groups	13171.264	225	58.539			
	Total	13907.022	228				

The table reveals that there is a significant difference in the Pre-test of Grade V Pupils of the four school respondents. The Pre-Test F value 15.794 with P-value of .000 and F-Post-test value of 4.190 with P- value of .0007 show a significant difference in Post-test scores of Grade V Pupils of the four school respondents.

This finding supports the study of Ibe (2002) which suggests that exposure to Sine'skwela enhances pupils' ability to understand the written language. The results showed that there is a positive effect on the cognitive skills of the pupil-respondents in the four school respondents where pupil get higher score from the post-test conducted. Hobbs and Frost (2001) additional, preliminary results from a three-year study of a new media literacy program funded by the U.S. Department of Education indicate that media literacy can play an important role in improving student performance in core-curriculum subjects.

The Post Test F value 4.190 with P-value of .007 means that there is a significant difference in the Post-test scores of the pupils when grouped according to their school.

This finding supports the study of Ibe (2002) which said that Sine'skwela continues to effect better learning in Science by pupils who were exposed to the program. The results proved that pupils' interest was heightened when the episodes were used in the teaching learning process in the four school respondents which lead to better Science performance of the pupil-respondents.

Significant Differences in Performance of Pupils among Schools

The Post- Hoc analysis was conducted using Tukey HSD (Honestly Significant Difference). In the pre-test, School D and C are identified as grouped 1, they are grouped because they have closer mean score result, they have obtained lowest mean score and School B and A were identified as grouped 2 because they have closer mean score result, they have obtained higher mean result. Both the mean scores of School D and C lie on the lower group and the mean scores of School B and A lie on the higher group. Also, School D has few pupils since only one section was used unlike the other three (3) with 2 sections each.

This shows that before using Sine'skwela program as an intervention, pupil respondents in School D and C had closely similar result for the lower group while School B and School A had closely similar results for the upper group. This tells that the pupils had already prior knowledge with regard to the topics discussed before using the

Sine'skwela Program.

Table 4.2 Post Hoc Analysis of the Pre-Test and Post Test of the four schoolsUsing Tukey's HSD

PRE-TEST

POST-HOC TEST	SCHOOL	N	Subset for alpha = 0.05	
			1	2
Tukey HSD Tukey's honestly significant difference	C	65	14.092	
	D	30	14.533	
	B	50		17.960
	A	84		18.202
	Sig.		.954	.992

POST-TEST

POST-HOC TEST	SCHOOL	N	Subset for alpha = 0.05	
			1	2
Tukey HSD Tukey's honestly significant difference	C	65	37.323	
	B	50	41.180	41.180
	A	84	41.226	41.226
	D	30		41.633
	Sig.		.056	.991

Moreover, for the post-test scores, Tukey HSD identified School C, B and A as group 1 because there were two sections, used as pupil-respondents and School B, A and D as Group 2 because they have the same mean result on the post-test. Here it can be gleaned that School B and A were group in 1 and 2 because they have same mean result and two sections of pupil respondents used, while School C was for group 1 only because among the four school it got the lowest mean result with two sections of pupil-respondents, as while School D got the highest mean result with one section of pupil-respondents only which was group 2 only.

This shows that after using the Sine'skwela program in the four school respondents as an intervention the knowledge level of the pupil-respondents have increased. It proves that the pupil's performance was enhanced using the intervention. According to the study by Jeremias (2022) explained the integration of targeted video and television lessons has resulted in statistically significant jumps from pre-test to post-test performance levels, making it an optimal medium for active learning.

Table 5 Differences in the Knowledge Level, Attitude and Skills of the Pupils before Intervention when Grouped According to School

		Sum of Squares	df	Mean Square	F	Sig.	Decision
Work Habits (Attitude)	Between Groups	0.1338	3	0.045	2.608	0.087	Significant
	Within Groups	0.2737	16	0.017			
	Total	2.020	19				
Cooperative Skills (Skills)	Between Groups	0.0781	3	0.854	0.491	0.00	Significant
	Within Groups	0.3657	12	0.030			
	Total	0.4438	15				

This shows that there is a significant difference in knowledge level, attitude and skills of the pupils before intervention when grouped according to school. The Work Habits F value is 2.608 with P-value of 0.087.
The table shows there is a significant different in the Cooperative skills of the pupils before intervention when grouped according to school. The Cooperative Skills F-value is 0.491 with P-value of .00.
The findings prove that the work habit and cooperative skills of the pupils before intervention require greater attention and needs to be improved based on the data. The guidance of the teachers is really needed to assure conducive atmosphere in the work place.

Table 6 Differences in the Knowledge Level, Attitude and Skills of the Pupils after Intervention When Grouped According to School

		Sum of Squares	df	Mean Square	F	Sig.	Decision
Work Habits (Attitude)	Between Groups	1.495	3	0.498	15.19	0.00	Significant
	Within Groups	0.525	16	0.033			
	Total	2.020	19				
Cooperative Skills (Skills)	Between Groups	1.626	3	0.542	48.63	0.00	Significant
	Within Groups	0.134	12	0.011			
	Total	1.760	15				

The intervention (using *Sine'skwela* educational video episodes like "The Solar System" and "What is Tide?") yielded a significant difference in pupils' knowledge levels, attitudes, and skills across different schools. Work Habits: $F = 15.19$, $p = .00$ (Statistically significant) Cooperative Skills: $F = 48.63$, $p = .00$ (Statistically significant)
Teacher observations confirmed that the episodes actively engaged students and enhanced three core domains: Cognitive (Knowledge): Improved active class participation, identification of scientific concepts (e.g., parts of the sun), memorization, listening, and reading skills. Psychomotor (Skills): Developed note-taking habits, hands-on manipulation of lab equipment during guided experiments, and artistic expression through singing the show's theme songs. Affective (Attitude): Fostered enthusiasm, fun in learning, and behavioral discipline, acting as an effective tool to calm and focus the students.
In the study of Mayer (2002) Explains that well-designed multimedia instructional messages promote active cognitive processing in students, even if they appear behaviorally inactive. It notes that age-and-skill-appropriate content is a stronger determinant of future academic success than raw television viewing time. Guiab (2003) Supports the rise in cooperative skills, noting that cooperation encourages pupils to work together for individual and common good regardless of background, providing equal opportunities for success and encouraging peer interaction and idea-sharing.

Table 7 Association of the Knowledge Level of the Pupils before Intervention with the Use of Sine'skwela Science Episodes According to Teachers

Knowledge (Pencil and Paper Test)	Computed Values		Decision
Parts of the Sun	Chi-square	3.83	
	df	6	Not Significant
	p-value	.6994	
The Planets	Chi-square	6.75	
	df	6	Not Significant
	p-value	.3348	

Other Members of the Solar System	Chi-square	3.26	
	df	6	Not Significant
	p-value	.7751	
The Tides	Chi-square	5.37	
	df	6	Not Significant
	p-value	.4978	
Making Models of the Solar System	Chi-square	26.57	
	df	6	Significant
	p-value	.0002	

There is no significant association of knowledge level of the student before the intervention with the use of Sine'skwela Science Episodes.

Since the computed value is lesser than the critical value, it means that there is no significant association on the knowledge level of the students before using the Sine'skwela Science Episodes. Thus, based on hypothetical data, we could say that the knowledge level is independent. The student has already their prior knowledge with regards to the topic before they have used the Sine'skwela Science Episodes.

Making Models of the Solar system has a significant value because it is higher than the critical, that there is significant association on the manipulative skills of the pupils on the use of Sine'skwela Science Episodes.

Table 8 Association of the Knowledge Level of Pupils after Intervention with the Use of Sine'skwela Science Episodes According to Teachers

Knowledge (Pencil and Paper Test)	Computed Values		Decision
Parts of the Sun	Chi-square	6.69	
	df	9	Not significant
	p-value	.6692	
The Planets	Chi-square	6.75	
	df	9	Not significant
	p-value	.6634	
Other Members of the Solar System	Chi-square	8.76	
	df	9	Not significant
	p-value	.4596	
The Tides	Chi-square	2.12	
	df	9	Not significant
	p-value	.9895	
Making Models of the Solar System	Chi-square	7.59	
	df	6	Not significant
	p-value	.2696	

There is no significant association between the pupils' knowledge level and with the Sine'skwela Science Episodes after the intervention based on the results of the study.

Thus, based on the hypothetical data, it means that the pupil's knowledge is not significant to different schools, pupil's knowledge is independent of the different groups of schools

This finding supports the study of Tanner (2008) about explaining relationship among student's outcome on the physical environment. It explains that the school itself doesn't affect the performance of the pupil-respondents but it's on the intervention design used in the study which affects their performance.

Conclusion and Recommendations

Conclusion:

Based on the summary of findings, the researcher concluded that: There is a significant difference in the performance ratings between Pre-test and Post-Test of Grade V pupils of different schools. Frequent use or an increasing use of educational videos such as Sine'skwela was advisable because it is an effective teaching-tool, with positive outcomes in both academic and affective domain. There is a significant difference in knowledge level, attitude and skills of the pupils before and after intervention when grouped according to school. There is no significant association between the students' knowledge and their school after the intervention. Thus, based on the hypothetical data, it means that the student's knowledge is not significant to different schools, student's knowledge is independent of the different groups of schools.

Recommendations:

Based on the summary of findings, and conclusions arrived at, the researcher offer the following recommendations to wit: Using Sine'skwela Program among Grade V pupils is an effective instructional material that enhances pupils Science academic performance. It is also advisable to use it for other grade levels with Science subject. To attain continuous improvement in using Sine'skwela Program as an instructional video (IV) teachers should closely monitor and supervise the integration of Knowledge Channel program in their daily lesson logs. To continue patronizing Sine's kwela because of the positive effect on the domains of learning and it is an effective teaching tool, with positive outcomes in both cognitive and affective domains. The implementation of Sine'skwela must be monitored by the school heads to know if they are using the media or not. Conduct trainings, workshop for teachers in using the Sine'skwela program/ TV assisted instruction. Teacher must develop/establish an assessment tool to gauge the achievement levels of the pupils.

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