



**IMPACT EVALUATION OF PUNO NG BUHAY PROGRAM
VIDEOS ON ENVIRONMENT**

Bayan Academy for Social Entrepreneurship and
Human Resource Development, Inc.

A study commissioned by the Knowledge Channel Foundation, Inc.

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ABSTRACT

Videos, as instructional materials, are viewed to be effective tools in learning. The Knowledge Channel Foundation, Inc. (KCFI) in cooperation with the Philippine Tropical Forest Conservation Foundation (PTFCF) produced four instructional video episodes (Episode 1: Philippine Forest Formations, Episode 2: Mangroves and Forests, Episode 3: Climate Change, and Episode 4: Philippine Forests and Keystone Species) in 2012 under its Puno ng Buhay series for Grade 7 Science. This study evaluated the impact of the Puno ng Buhay videos in terms of knowledge gained by Grade 7 students, as well as the effectiveness of video showing with facilitated learning.

Grade 7 students in two mid sections from five selected public high schools in the cities of Manila, Paranaque, Quezon, Pasig and Taguig were the subjects of the study. A pretest and post-test research design was used with treatment and control groups to evaluate the study parameters. Data gathering was done on March 11-14, 2014.

Based on the results of paired samples t-test analysis, the students gained knowledge on important environmental concepts after watching the video episodes. The increase in knowledge was statistically significant. The results of the study also revealed that video showing with facilitated learning was more effective than mere teacher's lecture at 0.05 level of significance.

The study also identified the prospective actions that students will take to reduce the effects of climate change after watching the videos. Results showed that the students identified more concrete steps in reducing climate change rather than the common answers on tree planting and garbage disposal.

Results of the impact study shows that using the Puno ng Buhay video episodes in teaching the concepts on environment, coupled with facilitated learning, will be a big boost in disseminating to the present and next generations the call to take care of the environment.

Keywords: video, instructional, environment, Philippine forests, formation, keystone species, climate change, pre-test, post-test, video showing, facilitated learning, environment principles, mangroves

Chapter 1: INTRODUCTION

Educational videos have time and again been proven to be effective learning materials. They continue to be used as tools to enhance classroom teaching and learning. There are also educational videos that are now being used as learning materials in both television and training programs.

Ronald Berk (2009) reviewed the theoretical and research-based evidence on the use of videos in classroom setting. Findings of his study showed that videos have a fit with the characteristics of the internet generation of students. They also provide a valid approach to cater to their multiple intelligences and learning styles.

Videos catch the student's attention and focus his or her concentration. They also set the mood of the class, enough to maintain the student's interest on the topic at hand. The studies reviewed by Beck (2009) support the dual-coding theory "that multimedia auditory/verbal and visual/pictorial stimuli increase memory, comprehension, understanding, and deeper learning than either stimulus by itself.

Nikopoulou-Smyrini and Nikopoulos (2010) have evaluated the impact of video-based teaching versus traditional lectures on the student's learning. Montazemi (2006) reported that learning environment with video support is more useful among the graduate students they studied. They found out that the students' intrinsic motivation to learn the subject matter had a significantly positive effect on their satisfaction with the availability of video presentations.

The Knowledge Channel Foundation, Inc. produced four video episodes under the Puno ng Buhay series for use by Grade 7 Science students in public schools. These videos are on: (1)Philippine Forest Formations;(2)Mangroves and Forests; (3)Climate Change; and (4) Philippine Forests and Keystone Species. It also produced a fifth episode on teaching with the series for the teachers. This fifth video episode served as a guide in teaching the subject on forests, trees and the environment.

In 2012, KCFI conducted a study on each of the episodes' appeal to students and how they comprehend the lessons (Appeal and Comprehension Report). Findings revealed that 96 percent of the respondents liked the four videos well. They also learned from the episodes.

This study, on the other hand, aimed to evaluate the Puno ng Buhay episodes in terms of the knowledge gained by Grade 7 students, as well as the effectiveness of video showing with facilitated learning. This is for KCFI to establish the impact of its episodes on the cognitive level, as well as on its call to action to protect the environment.

Objectives of the Study

Specifically, the objectives of the study were:

1. To evaluate the knowledge gained by Grade 7 students in selected public high schools from the Knowledge Channel's video episodes on Philippine forest formations, mangroves and forests, climate change, as well as Philippine forests and keystone species.
2. To determine the effectiveness of the video-based and facilitated learning of these subjects versus the traditional classroom lecture.
3. To solicit potential actions from the students on environment issues, in particular on how to reduce the effects of climate change.

Hypothesis of the Study

The null hypotheses tested for this study were:

1. There was no difference in the knowledge gained by the treatment groups after the video showing and facilitated learning.
2. The video showing and facilitated learning method of teaching the environment concepts in the four episodes tested is as effective as the teacher's lecture on the subjects.
3. There was no difference in the knowledge gained by the students per episode after video showing and facilitated learning.

Scope and Limitations of the Study

For all schools, the fifth video of the Puno ng Buhay series, which is the teacher's guide, was delivered to the schools a day before the study so that teachers from the control group could teach the subject using his or her style of teaching. However, given uncontrollable conditions wherein some teachers would not view the guide due to their hectic schedule, video scripts were given as reference for the lecture. Each teacher also has a different style in teaching. This teacher factor is one of the limitations of this study. In the future, this may be eliminated by strictly requiring the teachers to watch the videos for uniformity. Another is that only one teacher will be asked to teach in the control groups over a staggered period.

Chapter 2: RESEARCH METHODOLOGY

Research Design

A pre-test and post-test research design was used to determine the effectiveness of video showing and facilitated learning in teaching concepts of environment namely Philippine forests, mangroves and forest formation, climate change and keystone forest species to Grade 7 students.

For every school, one class served as the control group and another class as the treatment group. The middle sections of the schools were purposively selected for this research. The treatment group was exposed to video showing and facilitated learning on the four main subjects. On the other hand, the teacher in the control group taught the class using the traditional method without using the videos.

The four videos produced by the Knowledge Channel and shown to the treatment group were:

1. Episode 1 – Philippine Forest Formations
2. Episode 2 – Mangroves and Forests
3. Episode 3 – Climate Change
4. Episode 4 - Philippine Forests and Keystone Species

The participating teachers for the control groups received the fifth video produced by Knowledge Channel as guide in teaching the four videos of the Puno ng Buhay Program. They were delivered a day before the scheduled visit to the school.

The pre-tests were administered before the start of classes for both groups. After the video showing and facilitated learning for the experimental group, and the lecture given to the control group, post-tests were administered. Table 1. shows the highlights of the study research design.

Table 1. The study research design components

ITEM	ACTIVITY/REMARKS
Research Design	Pre-test and Post-test design
Treatment Group	One class in the midsection of every school was shown the four videos in one sitting from Episode 1 to Episode 4. The teacher facilitated the learning process every after each video was shown.
Control Group	Another class in the midsection of every school was taught on the same topics or subjects by a teacher using lecture, visual materials and/or group activities.

ITEM	ACTIVITY/REMARKS
Pre-test	Pre-tests were administered to both the treatment and control group.
Post-test	Post tests were administered immediately after the class session ended.

Respondents of the Study

Grade 7 students from five schools in Metro Manila were the respondents of the study. The schools were selected from the list of Knowledge Channel cooperating high schools; and these were:

1. Elpidio Quirino National High School in the City of Manila
2. E. Rodriguez Jr. National High School in Quezon City
3. Paranaque National High School in Paranaque City
4. Western Bicutan National High School in Taguig City
5. Sagad High School in Pasig City

The Grade 7 students from the two mid sections in each school served as respondents in the study.

A total of 187 Grade 7 students participated in the experimental groups, while 183 Grade 7 students participated in the control groups.

Research Instruments

The researcher developed the pretest and post-test instruments for each Puno ng Buhay video episode. The instruments were pretested and validated for understandability and correctness. See Appendix 1 for a final copy of the pre-test and post-tests, as well as the Answer Key.

After all items, the students were asked how they could contribute in reducing the effects of climate change. Specifically, they were asked, "As a Grade 7 student, what will you do to reduce the effects of climate change?" They were asked to write 5 to 10 sentences in response to this question for both pretest and post-test.

Data Analysis

Both pretest and post-tests were checked and tabulated for comparison. See Appendix 2 for the data tabulations.

Using t-test analysis for paired samples, which examines whether two samples are statistically different from each other, results of the tests were examined to analyze the knowledge gained among the students before and after exposure. T-test analysis is

commonly used when the variances of two normal distributions are unknown and when an experiment uses a small sample size.

On the other hand, t-test analysis for independent samples was used to determine whether video showing with facilitated learning was more effective than the traditional method of teaching, that is, without video showing.

T-test analysis for paired samples and independent samples were used to test the first and second null hypotheses, respectively, at five percent level of significance.

For prospective action, the researcher used frequency analysis to identify the most common actions that students would take after watching the videos on environment.

Chapter 3: RESULTS AND DISCUSSION

Knowledge Gained by the Students Exposed to Video Showing and Facilitated Learning

Results showed that there was a statistically reliable difference between the means of the pretests and post-tests for all treatment groups in the five schools. This means that there is a significant increase in the knowledge gained among students after watching the video episodes of Puno ng Buhay.

Table 2 shows the results of the pre-test and post-tests for the treatment groups with analysis of level of significance in knowledge gained. Based on this test, the difference in the scores is significant if the t-test significance result is less than or equal to 0.05.

Table 2. Results of paired t-test conducted on the treatment groups to measure the difference in the pre-and post-test results

School	Sample Size	Paired Differences		
		Mean Difference	t	Significance
Elpidio Quirino National High School	22	4.09	5.031	.000
E Rodriguez Jr. National High School	28	7.43	9.514	.000
Sagad High School	48	4.40	7.861	.000
Paranaque National High School	42	6.19	8.946	.011
Western Bicutan National High School	45	5.60	8.708	.000

*Note: Difference is significant if result is less or equal to 0.05.

Hence, the first null hypothesis of this study, that is, there is no difference in the knowledge gained by the treatment groups after the video showing and facilitated learning, is rejected.

Effectiveness of Video Showing with Facilitated Learning versus the Lecture Method

Using the t-test for independent samples, results showed that video showing with facilitated learning is more effective than teaching the environment topics without using the videos.

To be able to reject the second null hypothesis of the study, that there is no difference in video showing and facilitated learning and the teacher’s lecture, the sig (2-tailed) should be less or equal to 0.05. Based on Table 3 below, all mean differences are significant.

Table 3. Results of t-test for determining the effectiveness of video showing with facilitated learning vs. teacher’s lectures on selected environment topics

School	t-test for independence of test results*				
	t	df	Mean Difference	Significance (2-tailed)	Standard Error
Elpidio Quirino National High School	2.356	51	3.58944	0.022	1.52214
E Rodriguez Jr. National High School	9.419	56	8.11667	0.000	0.8617
Sagad High School	10.45	86	8.74211	0.000	8.3659
Paranaque National High School	5.342	81	7.17886	0.000	0.96951
Western Bicutan National High School	10.552	86	8.29871	0.000	0.78646

* t computed is significant when sig (2-tailed) is less than or equal to 0.05

Prospective Actions

The call to action by schools was based on the responses made by the students on the question “As a Grade 7 student, what will you do to reduce the effects of climate change?” They were asked to write 5 to 10 sentences in response to this question.

The pre-test and post- test results were ranked and presented in Appendix 3 Tables 1 and 2.

Pre-test Responses

Table 4 shows the top five potential actions by schools to reduce climate change.

Tree planting was the first potential action to reduce climate change by the three schools, namely E Rodriguez Jr. National High School, Sagad High School and West Bicutan National High School. Tree planting was also the second potential action by the Paranaque National High School. Moreover, tree planting was the third potential action by the Elpidio Quirino National High School.

On the other hand, **proper garbage disposal** was the first potential action for the Paranaque National High School and Elpidio Quirino National High School. Proper

garbage disposal was the second potential action for E Rodriguez Jr National High School, and third for the Sagad High School.

Information dissemination is the second potential action identified by Sagad High School and West Bicutan National High School. Information dissemination activities are the fourth potential action by the Elpidio Quirino National High School, and fifth potential action by the West Bicutan National High School.

Recycling of things is the second potential action identified by the Elpidio Quirino National High School. All schools, except the Paranaque High School, also identified recycling of things as potential action.

Table 4. Potential action listed by the students/school to reduce effects of climate change prior to video showing and facilitated learning in the treatment group

School	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
E Rodriguez Jr NHS	Tree planting	Proper garbage disposal	Clean the surroundings	No burning	
Paranaque NHS	Proper garbage disposal	Tree planting	Do not cut trees	No burning	Clean surroundings Information dissemination Care for the environment & forest conservation
Elpidio Quirino NHS	Proper garbage disposal	Recycle	Tree planting	Information dissemination	Do not cut trees
Sagad HS	Tree planting	Information dissemination	Proper garbage disposal	Do not cut trees	Care for the environment & forest conservation
West Bicutan NHS	Tree planting	Information dissemination	No burning	Joining environment groups	Do not cut trees

Post-test Responses

Table 5 shows the post-test responses of the students by schools on the same question, "As a Grade 7 student, what can you do to reduce the effects of climate change?"

Table 5. Potential action listed by the students/school to reduce effects of climate change after the video showing and facilitated learning in the treatment group

School	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
E Rodriguez Jr NHS	Tree planting	Conserve electricity	Care for the environment and forest conservation	Use eco bags	Joining environment groups & lessen usage of electrical appliances
Paranaque NHS	Tree planting	Do not cut trees & Proper garbage disposal	Walking and biking & Conserve electricity		
Elpidio Quirino NHS	Proper garbage disposal	Walk or Biking	Tree planting	No burning	Monitor trees planted
Sagad HS	Tree planting	Proper garbage disposal & Joining environment groups		Information dissemination	Conserve electricity
West Bicutan NHS	Tree planting	Do not cut trees	Proper garbage disposal	Information dissemination & Joining environment groups	

Tree planting is the first potential action of all schools, except Elpidio Quirino National High School. Paranaque National High School changed its first action to tree planting after the video showing and facilitated learning.

Proper garbage disposal, conserving electricity, walking or biking, no to cutting of trees and joining environment groups were the second action points for the schools.

The Elpidio Quirino National High School still selected proper garbage disposal as its first action and retained tree planting as its third potential action. It also changed its second action from recycling things (pretest response) to walking or biking after the post-test.

It can be seen that as a result of video showing, the following prospective actions were added to their roster of pretest responses:

- Conserve electricity
- Lessen usage of electrical appliances
- Use eco bags
- Walking and biking
- Joining environment groups
- Monitor trees planted

Aside from tree planting, garbage disposal, information dissemination and recycling, which are common answers related to environmental conservation, there were unique answers that appeared in the post-test which shows that the Puno Buhay episodes indeed created awareness among students that they could do a lot of things to arrest climate change. The answers became more specific and draws down to even the simplest executable form of action such as walking and biking. Also, there is a more sustainable prospective action cited such as joining environment groups that advocate massive environmental protection. Monitoring of trees planted rather than mere planting was a step forward in helping reduce the effects of climate change. The Puno ng Buhay videos concretized prospective actions in ways and means that are more tangible and possible for high school students to do.

Chapter 4: CONCLUSION

A paired sample t-test showed that there were significant differences in the post-test and pre-test means of test results across schools. This means that videos have increased the students' knowledge on the environment concepts found in the four videos.

Statistical analysis also showed significant difference in the effectiveness of video showing and facilitated learning versus the teacher's lecture in teaching environment concepts on Philippine forest formation, mangroves and forests, climate change as well as Philippine forests and keystone species.

The study showed that video with facilitated learning significantly increased the knowledge and potential positive actions of students on environment concepts. Using these videos in teaching these concepts on environment coupled with facilitated learning will be a big boost in disseminating to the present and next generations the call to take care of the environment here and now.

Moreover, the students have identified action points to be done after video showing and facilitated learning. The videos solicited a more concrete prospective action among students on how they could partake in reducing the effects of climate change.

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APPENDICES

Appendix 1. Pre-test and post-test instruments and the Answer Key

Appendix 2. Tabulated study results

Appendix 3. Potential action of students before and after video showing and facilitated learning