A FIRST YEAR DESIGN PROJECT

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Abstract: ***Noise in educational institutions has always been a problem. This is due to the number of students suing the corridors and classrooms. In spite of this problem being present, no research work has been undertake to determine it extent. This project therefore was undertaken to determine the noise level along the corridors of the College of Engineering building. The results of the noise level varied from a level of 65 decibels to 85 decibels. The standard noise allowed is 70 decibels which showed that the noise level in corridors far exceeded the allowable level. The study therefore recommends that the noise level along the corridors has to be reduced so that it will not create hearing damages to the students and teachers in the future.***

❑ INTRODUCTION

NOISE POLLUTION

Cars, trucks, lawn mowers, leak blowers, chain saws, power drill, television, radio, video games, computers, the list of noise makers in our modern is almost endless, and our world keeps getting noisier. Noise - which can be defined as any unwanted sound - is one of the most common forms of pollution, one that can easily damage the hearing and general health of the people and animals.

We need to study noise so that we could understand or know the effect of it on our hearing. In our study of noise along the Engineering corridor is not enough to determine the sound level.

But the effect of it causes such signs of stress, and according to the experts, noise can also make people irritable and confused. Because when we are exposed to loud noise, our body react as if we must flee danger. Our blood vessels narrow, our skin pales, our muscle tense - all evidence that our body senses danger.

We also damage our ears if we are expose to noises that are less loud, but that we hear more often. For example, office workers who daily endure noise from telephones and loud machines may lose some hearing over time. Workers in loud factories also experience hearing lose.

Noise pollution can also affect animals. For example, sudden loud noises can wake animals that are hibernating. This, in turn, raises their metabolic rates and can cause them to consume fats reserves they need to survive through to spring. And also, it may annoy or disturbed classes, it can interfere with the ability of person to converse with someone else.

❑ HISTORICAL DEVELOPMENT OF SOUND

The data given in the table that follows is for Single Event Noise levels (SENL), the loudness of the noise that interrupt sleep, conversation, TV watching and disrupts classroom activities.

Most published information from the country, regarding noise for the El Toro reuse project. Is given in a very different measure: as Community noise Equivalent levels (CNEL). The CNEL is calculated average over 24-hour period. Because it is a calculation, based on the mixture of noises, it is not possible to hear what 65 CNEL sounds like.

The brief but loud sound of a jet plane flying near to engineering building which can exceed 10db SENL, is averaged with the longer intervening quiet period, which may be 45db SENL, when calculating the CNEL. A deafening explosion, on an otherwise quiet day, similarly might yield a low CNEL calculation. Night time noises are "penalized" by 5 or 10 dB in the CNEL calculations.

The country of Orange Environmental Impact Report takes the position that a 65 dB CNEL does not impose a significant adverse impact, even though it may include repeated short bursts of very loud noise.

❑ Sound levels (dB) and relative loudness of typical noise sources in indoor and outdoor environments.

DB (A)	Overall Level	Community Voice Levels (Outdoors)	Home and Industry Noise Levels	Subjective Loudness (Relative to 70dB)
120	Uncomfortably loud	Militaryjet aircraft take-off from aircraft carrier with afterburner at 50 ft. 130dB	Oxygen Torch. 121dB	32 times as loud
110		Turbo-fan aircraft at take-off power at 200 ft 118dB	Reverting machine. 110dB Rock band. 108-114 dB	16 times as loud
100		Boeing 707 or DC-8 aircraft at one nautical mile (6080 ft.) before landing... 106dB jet fly-over at 1000 ft. 103dB Bell J-2A helicopter at 100 ft. 100dB	Newspaper Press 97dB	8 times as loud
90		Boeing 737 or DC-9 aircraft at one nautical mile (6080 ft.) before landing... 97dB Power mower...96dB Motorcycle at 25 ft. 90dB	Newspaper Press ...97dB	4 times as loud

80		Car washes at 20 ft. 89dB Propeller plane Fly-over at 1000 ft. 88dB Diesel truck 40mph at 50 IL 84dB Diesel train 45 mph at 100 ft. 83dB	Food blender...88dB	2 times as loud
70		High urban ambient sound...80dB Passenger car 65 mph at 25 ft. 77dB Freeway at	Living room music...76dB Radio or TV-audio vacuum cleaner...70dB	70dB (A)
60		Air conditioning unit at 100 ft. 60dB	Cash registrar at 10 ft. 65-70dB Electric typewriter at 10 ft. 64dB Dishwasher (Rinse) at 10 ft. 60dB Conversation ...60dB	1\2 as loud
50		Quiet large transformers at 100 ft. 50dB		1/4 as loud
40		Birds calls...44dB Lowest limit urban ambient sound...40dB		
10		Just audible		
0		Threshold of hearing		

3.1 PROBLEM DEFINITION

To determine the noise level along the corridor of engineering building. This is a critical problem during class hour's break. Noise cannot be avoided, but later on, this study can give the possible recommendation to reduce the impact of the intensity of sound. Noise is a mixture of many different frequency or notes not harmonically related. It is an effect creating a sound. Many students especially during the class interval/ after the first bell. Walk along the corridor and create a noise problem.

3.2 ULTIMATE OBJECTIVE

a) To measure the sound level at the corridor and stairways during the interval/ after the first bell.

b) Get the necessary data to determine the value of sound level.

c) To recommend methods that can be used to lower the noise level along the corridor.

3.3 IMMEDIATE OBJECTIVES

a) To determine the sound level of corridor and stairway during class interval or after the first bell.

b) To find possible solution of noise solution on Engineering corridor.

c) Determine or find the effect of noise on human health based on past record.

3.4 LIMITATION OF STUDY

The study will be made on Thursday at 8:25-8:30 until 5:30 in the afternoon and at Friday 7:55-8:00 until 4:55-5:00. Only two days of collecting the sound level at the corridor. Collection of data limited only at the corridor of Engineering building at Central Philippine University.

❑ METHODOLOGY:

1. First, measure the sound level in the stairway or the third floor and record data.

2. Then stairway of second floor.
3. And also stairway of third floor.

4. Determine the value of sound level and effect on the human being.

5. Gathering information form the following members of the group to analyze the topic.

4.1 DATA COLLECTION AND ANALYSIS

Measure the sound level of third floor, stairs at second floor and first floor at Thursday starts at 8:25-8:30 to 5:25-5:30 until Friday starts at 7:55-8:00 to 4:55-5:00 in the afternoon. All gathered information will be treated as a whole so that each member can deliver idea as an effect of study.

In this study as we gathered data, sound could either be at the highest range and sometimes it could either be in normal. Because the data we have collect, reached at 70 dB but sometimes it can reached more than 85 dB, and may be it can damage cars gradually according to the report we have read.

Day	Time	Data collection of noise level at corridor		
		1st floor	2nd floor	3rd floor
Thursday	8:25	82 dB	80 dB	74 dB
	8:30	84 dB	82 dB	70 dB
	9.55	83 dB	84 dB	70 dB
	10:00	84 dB	84 dB	72 dB
	11:25	74 dB	70 dB	61 dB
	11:30	70 dB	82 dB	60 dB
	12:55	61 dB	60 dB	60 dB
	1:00	64 dB	62 dB	64 dB
	2:25	74 dB	72 dB	74 dB
	2:30	74 dB	74 dB	85 dB
	3:55	72 dB	70 dB	80 dB
	4:00	73 dB	72 dB	84 dB
	5:25	72 dB	74 dB	80 dB
	5:30	72 dB	74 dB	85 dB
Friday	7:55	72 dB	70 dB	60 dB
	8:00	82 dB	64 dB	64 dB
	8:55	80 dB	74 dB	64 dB
	9:00	80 dB	80 dB	64 dB
	9:55	74 dB	74 dB	72 dB
	10:00	80 dB	70 dB	72 dB
	10:55	70 dB	60 dB	64 dB
	11:00	64 dB	60 dB	72 dB
	11:55	70 dB	60 dB	72 dB
	12:00	60 dB	62 dB	64 dB
	12:55	61 dB	72 dB	74 dB
	1:00	64 dB	74 dB	72 dB
	1:55	70 dB	74 dB	72 dB
	2:00	74 dB	74 dB	74 dB
	2:55	72 dB	72 dB	60 dB
	3:00	74 dB	70 dB	74 dB
	3:55	72 dB	74 dB	64 dB
	4:00	70 dB	72 dB	74 dB
	4:55	60 dB	70 dB	62 dB
	5:00	61 dB	64 dB	71 dB

4.2 Resources and Facilities

Resources needed are the Realistic Sound Level Meter. It is an extremely versatile device for measuring sound intensify in just about any acoustic environment and also student creating the noise.

■ WORK SHEDULE:

January 21, 1999 measuring sound level based on the school time

	Meet the group Advisor and discuss about the topic
January 22, 1999	measuring sound level based on the school time Research at the library
	Investigate the problem, know the history
	Consult with the advisor and the final right up
January 23, 1999	finalized the written proposal

■ ANTICIPATED PROBLEMS AND POSSIBLE SOLUTIONS

Since this study is about noise of corridor and stairway from first, second floor the anticipated problems is indefinite collection of data or limited number of days of testing because from January 18, 19, and 20 are schedule of midterm exam.

So, the possible solution should increase the number of days of testing so that it must be accurate.

■ CONCLUSION

So that, base on the standard value the noise level varies from 61 dB to 85 dB. If the value of 85 dB is used as the standard results 3 times as loud as the normal standard. Although the maximum value of 60 dB is 1/2 as loud as the normal standard.

Therefore, the recommended that the noise level above 70 dB be reduce to the normal standard. So that, along the corridor will not disturb/distract on going classes. Posting notices for students not to be noisy walking along the corridor can do this. The teachers also stand near the door in order to see to it that the noise level is control. The teachers should advice the students in any class not to be noisy when walking along the corridor.

If this is undertaken, it is expected that the noise level will go down to a maximum 75 dB. This will inturn not cause the destruction and disturbance of classes going on.

The results have showed that by undertaking this study possible solution to the noise problem along the corridor can now be made.

■ References:

Gale Encyclopedia of Science "Noise Pollution " Copyright 1996, Vol. 4, pp. 2524-2526, Lacewings - Phenyl Group, Gale research.