

The Effects of Noise on Students at School: A Review

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Abstract: This paper reviews on issues relating to the effects of noise on children at school. Specially, the effects of environmental and classroom noise on children's academic performance, children's annoyance due to noise and surveys of classroom noise levels. Consistencies and discrepancies between due results of various studies are highlighted.

Intruduction:

In the past 30 years, there has been a great deal of research into the effects of noise on children's learning and performance at school. Noise, defined as unwanted sound has a major effect in the school classroom. Exposure to high noise levels are very well known to have harmful effects on health and well-being of human beings. Noise is a well known source of pollution in urban and work environments. Different studies in different time indicates that noise pollution around the educational institutes produces multi problems to the teaching learning process and negatively affects the performance of both teachers and students. The noise level should be in the range of 40 db to 50 db in and around an educational institute [3, 4]. But it exceeds in all cases. It has been seen that questionnaires also help in determining the effect of sound in educational institution. Different Questionnaires should be prepared for students, teachers and officials[13,14].

Sources of noise in the classroom:

The noise in a classroom is made up of external noise which is transmitted through the building envelope, plus internally generated noise, so that children in school may be exposed to noise from a wide variety of sources. The main source of noise is due to transport system, industrial noise, and noise of people outside the school. An additional source of noise which cause significant disturbance to teaching is the noise of rain falling on light weight school roofs [19, 20].

The predominant external noise source, particularly in urban areas, is likely to be road traffic although aircraft noise may also affect many schools, with fewer schools exposed to railway noise. A survey in 2012 carried by D Debnath, S.k nath and N.K Barthakur titled "environmental noise pollution in Educational institute of Nagaon town, Assam ,India" found that 46% noise in Educational institute due to vehicles ,40% noise due to student themselves and 9% noise due to people outside and 5% due to construction work and others. Again B. Phukan and k kalita did an experimental study of noise pollution in Guwahati university campus, Guwahati ,Assam, India, and according to this study, national high way 37 is mostly responsible for all these noise in the university campus as highways are always liable to have large numbers of vehicles of various kinds plying throughout the day. However Wazir Alam in his research article "GIS based Assessment of noise pollution in Guwahati city of Assam India" mentioned that higher noise level in the city is due to rapid and unplanned urbanization resulting in great influx of people from all parts of the region and country, improper management of city roads and traffics, lack of sufficient parking spaces and exponential growth of both private and public vehicles in the city .The greenery and forest cover decreasing at alarming rate due to unplanned growth and urbanization has resulted in reducing noise cushion in the city[5,6]. Narrow linking roads, absence of arterial roads and lack of flyovers and over bridges in some locations of the city are responsible for huge gathering of vehicles resulting in a chaotic and noisy environment.

Effect of Noise on Children:

Due to high noise in educational institutions students cannot concentrate in classroom teaching and they lose interest to study silly noise pollution also effects the teachers they cannot teach effectively during teaching session because of uncomfortable classroom conditions.

A noise study was carried out in two public schools in Valencia, Spain. One School was exposed to excessively high road traffic noise levels while the other was located in a relatively quiet area .The socio economic level of those schools were very similar. A set of external and internal noise measurements were carried out, along with two different attention tests among the children. Test results were consistently better in the quiet school[2,7].

Hetu et al found a significant drop in children's performance particularly in learning to read, when the background noise level interfered with speech. Similar results were obtained by Maxwell and Evans in a study of pre-school children who had been exposed to levels in the classroom of 75 dB. Following acoustic treatment to reduce the noise, the children's performance improved in letter, number and word recognition [1, 2]. In contrast, in a study of older children, aged 13 and 15, working in levels of 58 to 69 dB during mathematics classes there was poor correlation between sound level and standard of work.

Measures for reduction of noise:

The following range of measures to be taken to reduce noise pollution in education institutes

1. The educational institutes have criteria of a good planning for an institute and it should be located far from main road, busy pwd roads, and other noise sources.
2. Educational institutes should have buildings that have sound insulation system and high fence using concrete walls which protect noise from outside.
3. Educational institutes should be aware of plantation of trees and vegetation buffer zone because trees and vegetation can absorb 4dB to 6dB noise intensity depending on their characteristics.
4. Students, teachers and public awareness would also helpful in reduction in noise level in educational institutes
5. A strict law concerning noise pollution in educational institutes should be implemented.

Table 1: Ambient noise level to be maintained (Environment Protection Rules, 1986)

S/N	Area Code	Category of Area	Day time (6 a.m. & 9 p.m.)	Night time (9 p.m. & 6 a.m.)
1.	A	Industrial Area	75dB	70dB
2.	B	Commercial Area	65dB	55dB
3.	C	Residential Area	55dB	45dB
4.	D	Silence Zone	50dB	40dB

Conclusion:

This paper reviews the sources, effects and controlling ways for excessive noise. Automobiles, industries, highway, transport, airport, railways and public address system Turns out to be major sources of noise pollution. Most of our day-to-day activities, by knowingly or unknowingly every one of us contribute to generate noise pollution. Often neglected noise pollution adversely affects the students in teaching learning process. It is harmful for academic performance of students [11, 17]. Indirectly, noise pollution can destroy their life generations by generations silently. It is a great threat to both health and education of students. Because high level of noise may no cause serious or immediate effects but if such noisy environments prevail, it may impact the population in many ways. Hence, the educated people may complain to the statutory Board for violation of noise level limits by any noise generator [15, 16]. The suitable action will be taken to attenuate the noise levels and controlling pollution. In future, public education, governments and NGOs can play significant role in controlling the noise pollution.

References:

- [1]. Biraj B Sing and V.K.Jain(1994), A comparative study of noise levels in some residential, industrial, and commercial areas of Delhi.School of Environmental Science, Jawaharlal University, New Delhi-110067
- [2]. D.J. Fisk. Statistical sampling in community Noise Measurement, (1973), Journal of Sound and Vibration, 30(2), pp221-236.
- [3]. G.R. Watts and N.S. Godfrey(1999). Effects on roadside noise levels of sound absorptive materials in noise barriers. Applied Acoustics 58:385-402.
- [4]. Vidya sagar and Nageswara Rao,(2006), Noise Pollution Levels in Visakhapatnam City (India),Journal of Environmental Science and Engineering ,48(2),pp 139-142.
- [5]. Wazir Alam, (2011), GIS based Assessment of noise pollution in Guwahati city of Assam, India,International Journal of Environmental Sciences, 2(2), pp 731-740.
- [6]. Gupta, A. and Chakraborty ,R(2003), 'An intregrated Assessment of Noise Pollution in Silchar , Assam, North-East India', Pollution Reacherch, 22(4), pp 495 -499.
- [7]. Gupta, A. and Chakraborty, R(2003), 'An integrated Assessment of Noise Pollution in Silchar, Assam, North-East India', Pollution Research,22(4),pp 495-499.
- [8]. Kumar ,R.R. and Somashekhar, R.K(2001), Status of Noise Level in Bangalore City, Journal of Environmental and Pollution ,8(2),pp 197-199.

- [9]. Mohan, S., Dutta, N And Sarai, S.M (2000), 'Subjective Reaction to Road Traffic Noise of Resident Living in Delhi City', *Pollution Research*, 19(3), pp 353-356.
- [10]. Pondhe, G.M.,Nirguda, D.S. and Dhembare, A.J(2002), Monitoring of Noise Level and Subsequent Hearing Loss at Dadar, Mumbai. *Eco. Env. And Cons.*8 (2),pp125-127.
- [11]. Rao, K. V., and Padmaja, p (1999), 'Ambient Noise Level Monitoring in Guwalior at Various Zones ', *Journal of Environmental Pollution* ,6(2&3), pp 211-214.
- [12]. Anonymous (2000): Ambient air quality in respect of noise. Central Pollution Control Board, New Delhi: Schedule-part II, Sec.3.
- [13]. Das, A B(2006): Noise Pollution : Its environmental implication and evaluation.E- Planet, 4:26-28.
- [14]. Datta, J K, S Sadhu, S Gupta, R Saha, N K Mondal and B Mukhopadhyay (2006): Assessment of noise level in Burdwan town, West Bengal. *J.Environ.Biol.*27:609- 612.
- [15]. Garg, S, R Garg and R Garg (2007): *Environmental Science and environmental studies*. Khanna Publishers, New Delhi.
- [16]. Bakari,C.A.(2013), the hazardous effects of noise.
- [17]. *British Medical Bulletin* (2003), vol 68(c). The British council. Retrieve from the internet 7th April, 2014.
- [18]. Godson.R, Ana. E, Derek.G, Shendel.L, (2009), Assessment of noise and associated health impacted of selected secondary schools in Ibadan. *Journal of environmental and public health*. Article ID739502. Retrieve from the internet 7th April, 2014.
- [19]. Menkitli, A.I.(1996),*Environmental noise pollution* .In P.A. Alozie(ed) *Technology, science and environment: Current overview*. Calabar: Emillis publications.
- [20]. Picard,M.&Bradley, J.S.(2001),*Revisiting speech interference in classroom* , *Audiology*.40,221-224.Retrieve from the internet 9th April,2014.