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Analysis of Traffic Noise Pollution at School Area that Located in Gemencheh Town, Negeri Sembilan

Thevhan Murally[1], Zawawi bin Daud[2]

[1]Faculty of Civil Engineering and Built Environment,
University Tun Hussein Onn Malaysia, 86400 Parit Raja, Johor, MALAYSIA

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Abstract: Nowadays, Humans have caused a great deal of tremendous progress in recent times. However, in order to accomplish progress, one of the challenges generated by humans was Road Traffic Noise, which was caused by the unavoidable arrival of vehicles on the road. However, years later, everyone has their own automobile to travel on the road, which is the primary source of Traffic Noise Pollution. This research study was done primarily in three school areas: SMK Dato Mohd Taha, SJK(C) Sin Min, and SK Datuk Abdullah, all of which are located in Gemencheh town. The sound level meter (SW-524) was utilized for the measurement. For three days, each school was monitored (07:30-08:30) in the morning and (12:30-1:30) in the afternoon for one-hour data traffic noise collection: Day 1 (Sunday), Day 2 (Monday), and Day 3 (Tuesday) (Tuesday). In addition, a questionnaire survey was distributed to school pupils in order to determine their level of awareness. The purpose of selecting these two observation periods was to establish which school area had the highest Leq, TNI, NC, and Lnp, and to compare the value study regions at peak times with the Malaysian Department of Environment (DOE). According to the data studied on traffic noise, SMK Dato Mohd Taha has the highest Leq value, TNI value, and Lnp value. In addition, SJK(C) Sin Min was recorded with an NC value. Meanwhile, SK Datuk Abdullah does not violate the DOE's real noise limit. DOE's actual noise limit for Leq was 60dBa, TNI was 74dBa, and Lnp was 88dBa. According to the data acquired, the Leq, TNI, and Lnp surpass the DOE Malaysia's maximum noise limit guidelines. The majority of respondents (schoolchildren) answered "Yes" to SMK Dato Mohd Taha in the questionnaire poll. In comparison to SK Datuk Abdullah, there were less respondents who said "Yes," demonstrating the current scenario of SMK Dato Mohd Taha's maximum traffic noise because its road was the major road connecting Tampin and Gemas. Meanwhile, SK Datuk Abdullah has the largest percentage of "No" votes.

Keywords: Traffic noise pollution, equivalent noise level, traffic noise level, noise climate, noise pollution level

1. Introduction

Traffic noise is becoming a major noise in industrialized countries like Malaysia. The school area, in particular, has a greater record than the other areas that have been examined. The principal sources of noise in the research region are predominantly motor vehicles: motorbikes, buses, automobiles, and trucks. According to the World Health Organization (WHO), noise pollution has become a serious problem in developed countries. Among transportation noise sources, traffic noise is inescapable [1]. Noise has a well-documented negative impact on human health. According to the World Health Organization, noise "must be recognized as a serious danger to human well-being." Because of increased industry and urbanization, noise pollution has emerged as one of the most serious environmental threats to human health. Road traffic noise (RTN) is created by motor vehicles and the contact of the tyre with the road surface. It has been established that it is dependent on numerous criteria such as traffic volume, speed, number of cars, whether the road is elevated or in cutting, road gradient, and road surface quality. In idle circumstances such as crossroads and red lights, the noise produced by the engine and other vehicle components is critical [2].

*Corresponding author:zawawi@uthm.edu.my

Because of the increasing expansion of adjacent possible school sites, many schools are now located in congested regions such as economic areas near marketplaces, stores, restaurants, industrial districts, and so on, on key road-sited places. Aside from that, the noise caused by automobile traffic might cause interference and disrupt the school's teaching and learning tasks [3]. This will cause various issues, such as hearing problems in the neighborhood within the school. As a result, schools must be located in a peaceful setting since noise might disrupt school activities [4]. Schoolchildren are the school's community, and their learning quality affects them as well [5]. According to research, the quality of a teacher is critical in boosting the performance of schoolchildren. School Environmental influences can have an impact on children's performance. Recent research has shown that the communication between instructors' instruction and students' learning has linear impacts [6]. The school environment has a significant impact on the performance of students [7]. Physical issues in hearing loss caused by inner ear injury will be influenced by sound pressure. Furthermore, the circulatory system's physiological impact issue and raised blood pressure might create further negative responses and rapid breathing [8].

The study's goal was to evaluate the intensity of traffic noise at a school in Gemencheh Town, Negeri Sembilan. The goals of this study are to investigate the traffic noise attributes of Equivalent Noise Level (Leq), Traffic Noise Index (TNI), Noise Climate (NC), and Noise Pollution Level (Lnp) at three school areas: Also, to identify schoolchildren's knowledge of traffic noise pollution at three schools: Selangor has the highest population density, with 5.46 million people. Selangor is a thriving state in Malaysia, as well as a country with various cities; Selangor's richness has resulted in more excellent infrastructure, such as highways and public transportation, owing to the quick rise of modernity in Lembah Klang [9]. As a result, the state of Selangor provides more job opportunities. As a result, the employment sector accounts for the majority of the population density in Selangor. According to the carrier sector guideline, the Malaysian government implemented a five-day work week that began Monday and concluded Friday, with working hours ranging from 8 a.m. to 6 p.m. Selangor residents are accustomed to battling traffic congestion on their daily commutes to and from work. As a result, the current study was carried out to assess the degree of traffic noise and raise awareness among schoolchildren in Gemencheh Town, Negeri Sembilan. The assessment of traffic pollution in these regions was also compared to the Department of Environment (DOE) Malaysia's noise limit and regulation. In addition, a questionnaire study was conducted to assess the public's comprehension of traffic noise, which has become a major source of noise pollution in the school area.

2. Literature Review

2.1 Sources of Noise

Traffic noise is a significant and ubiquitous source of noise [10]. Machines and transportation systems, such as automobiles, planes, and trains, are primary outdoor noise sources worldwide. Noise hurts both health and behavior. This concept usually refers to sounds or noises out of the ordinary in terms of loudness or production. It is tough enough to escape the noise in our current surroundings. Lack of urban planning, overall, promotes exposure to undesired sounds. According to studies, traffic noise in each region has been steadily increasing since development began in that area, owing to a rise in the transit of products and people in that area. It was also shown that in metropolitan areas, traffic-induced noise is the most prevalent noise source, accounting for 80 percent of all traffic noise sources. The most prevalent noise in the areas is traffic noise, which is seen as a severe concern. Table 2.1: Data of Average Noise Level (DBA) by Vehicle Type (UIC) [11].

Table 2.1 - Data of average noise level (DBA) by vehicle type (UIC)

Vehicle Type	Average Noise Level (DBA)
Car	82.0
Motorcycles	90.0
Large cargo trucks	103.0
Turbojet airplanes	150.0
Bullet trains	65.0
Baggage trains	60.0
Local trains	70.0

Based on the most recent table 2.1 from the International Union of Railways, trains generate less noise than trucks, vehicles, airplanes, and other modes of transportation. The train is the most environmentally friendly mode of transportation in terms of noise, which is a major contributor to environmental harm and human health. As a result, the railway, among other modes of transportation, produces the least amount of noise in metropolitan areas. [11].

The compression and expansion cycles of the engine cause noise and vibration. The suction system makes noise when the suction valves open and close, and the volume varies based on the engine's mode of operation, speed, and air filter type. Figure 2.1 illustrates human noise discomfort as a function of noise source mode.

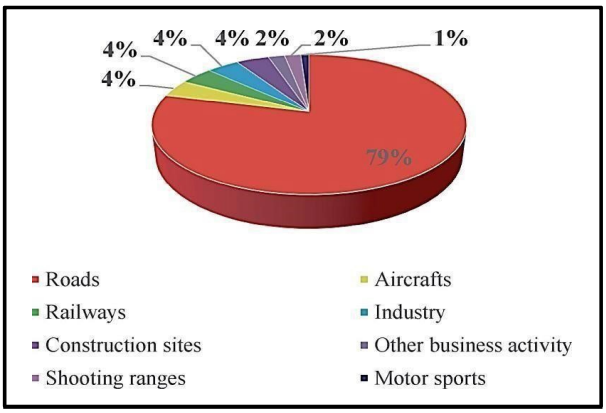

Fig. 2.1 - Noise irritation in humans varies depending on the type of noise source [12]

The downforce engine's job for railway traffic is to contribute to noise in the railway propulsion system (in the automotive diesel engines, which are also the noisiest type of engine), the engine cooling system, the transmission system, and the ventilation system [12].

2.2 The Effect of Traffic Noise on the Health of Humans

2.2.1 Noise Effect on Hearing Loss

The most prevalent avoidable cause of hearing loss is noise. A single exposure to a loud impulsive sound, such as a gunshot, or a long-term steady-state exposure to sound pressure levels more than LA 75-85dBA. In an industrial context, for example, noise-induced hearing loss can develop. The loss of auditory sensory cells in the cochlea is a pathogenic component of noise-induced hearing loss. Hearing loss caused by noise is a public health concern. According to the Worldwide Burden of Disease 2010 study, 13 billion people suffer from hearing loss [13]. The scientists ranked hearing loss as the 13th most important factor. approximately 199 million each year, or 26% of total worldwide years lived with disability (YLD). Adults will be on set for non-disease-related hearing loss, which represented for 79 percent of YLD owing to hearing loss.

2.2.2 Noise Annoyance

Annoyance is one of the most noticeable consequences of noise on humans. It is a descriptive reaction impacted by a variety of factors such as noise kind, personal attributes, statistical features, and environmental factors [14]. Furthermore, two sound levels of comparable strength might cause varying levels of discomfort. Noise sensitivity is a significant predictor of noise irritation, depending on an individual's characteristics. Noise-induced discomfort disturbs daily activities, moods, thoughts, sleep, and rest, according to Noise-induced pain.

2.2.3 Disturbance in Mental Health

Noise has been connected to mental health indicators such as well-being ratings, symptom profiles, psychotropic medicines, and sleeping pills, as well as cognitive-hospital admission rates, according to a demographic study. Children, the elderly, and individuals with underlay depression may be particularly vulnerable to these outcomes due to a lack of efficient coping strategies. Children are irritated by noise, and as a result, they report a worse quality of life [15]. Increased aggressive behavior and a reduction in helpful conduct have been linked to noise levels above 80dBa.

2.3 The Effect of Traffic Noise on the School Children at School Area

Various attempts have been made in many countries to enhance the quality of education and instruction in schools, with a focus on physical characteristics. While these criteria are important in assessing educational excellence, the appropriateness of the school atmosphere must also be evaluated [16].

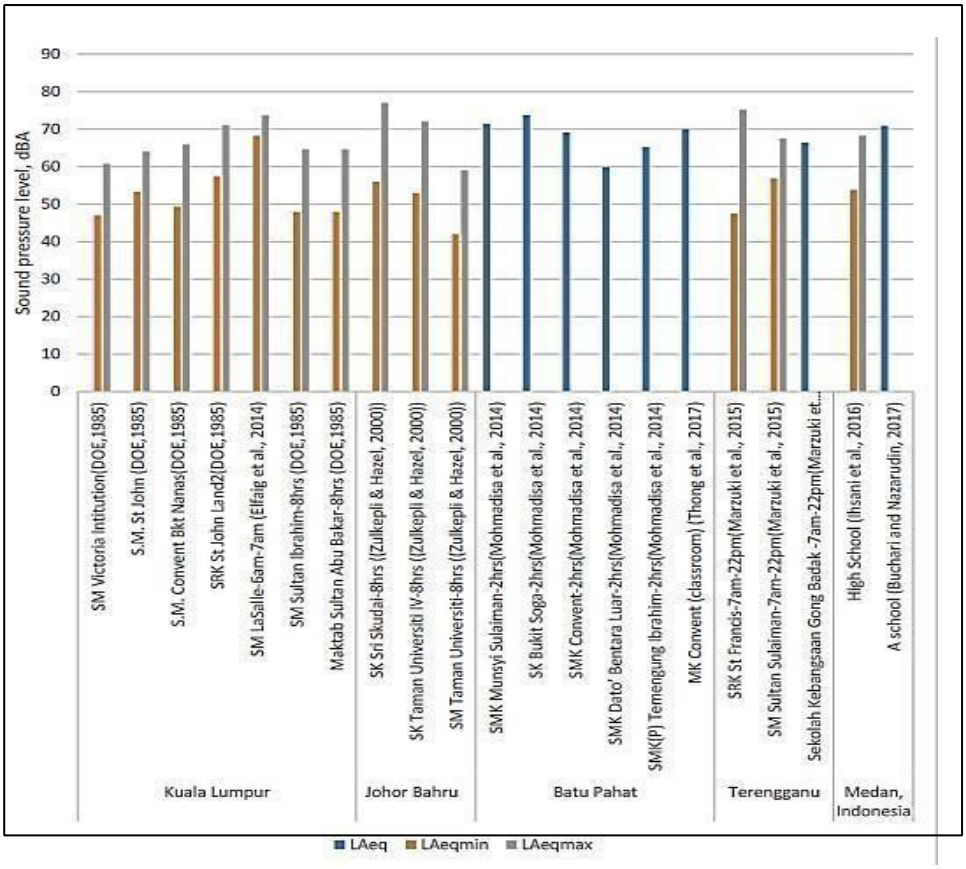

Fig. 2.2 - Traffic noise level at the school area in Malaysia [17]

"Equivalent A-weighted sound level (LAeq)" As demonstrated in Figure 2.2, a constant sound level conveys the same amount of sound energy in all situations and at all times [17]. For the purposes of these guidelines, the daytime Leq is the equivalent A-weighted sound level for the daytime period of 7.00 am to 10.00 pm (0700 to 2200 hours), and the nighttime Leq is the equivalent A-weighted sound level for the nighttime period of 10.00 pm to 7.00 am (2200 to 0700 hours) and maximum instantaneous. Within a measurement interval, the highest instantaneous sound level is the maximum immediate sound level (Lmax). The largest sound level detected represents the peak amplitude of noise events [18].

2.4 Quality of Environmental Act 1974

The construction sector must adopt a more ecologically friendly strategy to address the problem of environmental deterioration. Green design in Malaysia focuses on low-carbon growth, efficiency in terms of energy, and the utilization of green technology. One example is the building sector [19]. Malaysia, as a developing country, places a high priority on economic growth, particularly in its goal to become a developed nation by 2020. As a result, the Malaysia Plans take a similar and consistent stance on environmental conservation as part of its overall economic growth objectives. Their goals are to guarantee that the maintenance of sound environmental conditions is balanced against economic growth goals and that any environmental standards imposed should take into consideration the country's degree of development, which offers support for its development initiatives. This philosophy, based on sustainable development, is the foundation of Malaysian environmental law, notably the Environmental Quality Act 1974 [20].

2.5 The Road Transport Act of Malaysia

Road transport is a performance to make provisions in order to manage, traffic on roads, as well as other issues pertaining to roads and vehicles. Similarly, the Malaysian Institute of Road Safety Research (MIROS) created an autoregressive integrated moving average (ARIMA) model to forecast Malaysian road fatalities until 2020. (ARIMA) model to anticipate Malaysian fatalities through 2020[21]. Besides this, the efficiency of institutional road safety management should be examined in terms of the consequences of actions related to legislation, coordination, promotion, monitoring, and evaluation, and against hazards associated with the use of motor vehicles to provide for the

protection of third parties against risks arising from the use of motor vehicles; to provide for the coordination and control of transportation means and facilities.

2.6 Normal Standard of Traffic Noise Level

Department of Environment (DOE) is always aware of the issue, particularly in terms of noise pollution. They've been modifying the regulations for dealing with noise and vibration in a range of applications, such as vehicle noise, ambient noise, and outdoor noise sources, on a regular basis. In one of the published recommendations for environmental noise restrictions and management, DOE offered a table indicating the allowable sound levels for various purposes, as seen in Figure 2.5 as examples from the guidelines [22].

FIRST SCHEDULE

RECOMMENDED PERMISSIBLE SOUND LEVEL (L_{Aeq}) BY RECEIVING LAND USE FOR NEW DEVELOPMENT

Receiving Land Use Category	L_{Aeq} Day 7.00 am - 10.00 pm	L_{Aeq} Night 10.00 pm - 7.00 am
Low Density Residential, Noise Sensitive Receptors, Institutional (School, Hospital, Worship).	55 dBA	50 dBA
Suburban Residential (Medium Density), Recreational	60 dBA	55 dBA
Urban Residential (High Density), Mixed Development	65 dBA	60 dBA
Commercial Business Zones.	65 dBA	60 dBA
Industrial Zones	70 dBA	65 dBA

Fig. 2.5 - Schedule of maximum permissible sound level meter for land use received [23]

3. Materials and Methods that Used in Methodology

3.1 Study of Area

Gemencheh was chosen as the research location. Gemencheh was a growing town in the district of Tampin. This study focuses on the noise traffic among three schools in distinct locations, each with its own means of transportation. There were two types of schools: one secondary school, SMK Dato Mohd Taha (S1), and two primary schools, SJK(C) Sin Min (S2) and SK Datuk Abdullah (S3), which served as station points. The school was chosen based on its proximity to the major road as well as the school, in order to obtain an appropriate noise traffic level. Figure 3.2 depicts the map view of three selected schools.

Fig. 3.2 - Map view of research study: S1(SMK Dato Mohd Taha), S2 (SJK(C) Sin Min) and S3(SK Datuk Abdullah)

3.2 Measurement for Traffic Noise Level

There are two types of data measurement methods conducted for this study. Firstly, collected data on noise traffic using equipment in the three-school area. Secondly, Conduct a questionnaire form survey among the school children. The equipment used to manage the traffic noise data is Sound Level Meter (SW-524). This digital sound level meter can measure the noise at 30-130 dB decibels. The device measures the environmental noises in the field, such as noise projects, quality control, health prevention, cure, etc. The device was used in noisy places such as industries, offices, traffic roads, and homes. Table 3.4 shows the description of the sound level meter.

Table 3.4 - Sound level meter (SW-524)

Sound Level Meter (SW-524)	
	
a) Equipment view	b) Sound level meter on the tripod stand

The site was vital in ensuring that the methodological procedure was followed in accordance with the objectives and scope of the study. Three observation points were chosen to determine the degree of traffic noise at the selected schools. The sound level meter is used to measure traffic noise levels. A data survey was conducted at three schools. At each position, the sound level meter was set roughly 1.5 m above ground level. Each school was monitored twice a day, in the morning and afternoon, between 07:30 and 08:30 and 12:30 and 01:30 for weekdays on Monday and Tuesday, and for weekends on Sunday. The timing determination was taken every 1 second for one hour to measure the noise level at the school in the morning and afternoon. To assess the traffic noise level at the school in the morning and afternoon, the timing determination was obtained every 1 second for one hour.

Table 3.5 - Data time taken for traffic noise reading

School name	Morning	Afternoon
SMK Dato Mohd Taha	07:30-08:30	12:30-13:30
SJK(C) Sin Min	07:30-08.30	12:30-13:30
SK Datuk Abdullah	07:30-08:30	12:30-13:30

3.3 Method of Data Measurement

3.3.1 Calculation of Equivalent Noise Level (Leq)

Four sorts of findings in the analysis will be documented based on the data reading. The data will be used to determine the level of noise in the researched region. The noise level in the research zone was calculated using the Equivalent Noise Level (Leq) calculation, as shown in Equation 3.1 below.

$$Leq = 10\,log(\frac{1}{N}\sum 10^{L\div 10}) \quad (3.1)$$

N=Average Peak Level

L=the Noise level in Db(A)

Equation 3.1 shows the formula for calculating the Equivalent Noise level (Leq). If the Leq value does not exceed the current guideline for the maximum allowable sound level for boundary noise, the ambient noise level is analyzed. Lmax is the highest sound level, while Lmin is the lowest sound level. L10 and L90 represent traffic and background noise, respectively. L10 and are both assessed using a percentile analysis.

3.3.2 Calculation of Traffic Noise Index (TNI), Noise Climate (NC), and Noise Pollution Level (Lnp)

Another equation used to quantify data noise traffic acquired from measurements in the study location is the Traffic Noise Index (TNI). The A-weighted noise levels are measured in the open air. The standard generated from a mixture of noise levels in Equation 3.2 above has a greater association with satisfaction. The formula for determining Traffic Noise Index (TNI) is shown in Equation 3.2 below.

$$TNI = 4(L_{10} - L_{90}) + L_{90} - 30 \quad (3.2)$$

L_{10}=*Average peak level*

L_{90}=*Intermediate background noise level*

The equation used to construct the Traffic Noise Index (TNI), may be determined using the formula Noise Climate (NC) and the equation provided in equation 3.3 below.

$$NC = (L^{10} - L^{90}) \quad (3.3)$$

L_{10}=*Average peak Level*

L_{90}=*Intermediate background noise level*

The term "noise climate" refers to the range of sound levels that fluctuate throughout time. Also, the value obtained from Noise Climate(NC) may be used to the Traffic Noise Index(TNI) equation and noise pollution level (Lnp). The following traffic characteristics were estimated using data obtained from the three schools: Traffic Noise Pollution (Lnp). The noise pollution level is calculated using the equation shown in equation 3.4 below.

$$L_{np} = Leq + (L_{10} - L_{90}) \quad (3.4)$$

L_{10}=*Average peak level*

L_{90}=*Intermediate background noise level*

From equation 3.4, utilized to compute the Noise Pollution Level (Lnp) for the three locations by plugging in the value from the Noise Climate (NC) into equation 3.4. The measurement is designed to combine the ambient noise level with the degree of consistency in time of the noise (assuming that the more consistent the noise, the more distracting and uncomfortable it gets). Determine the noise climate value before beginning to calculate the Noise Pollution Level (Lnp) and TNI value. Then, just enter the values that appear in equations 3.2 and 3.4.

3.3.3: Questionnaire Form

The second method was to conduct questionnaire survey forms. This survey is another means of gathering data for research in order to establish the justification of traffic noise among students at the three schools investigated. The purpose of this questionnaire is to determine how well schoolchildren understand the issue. As a result, the questionnaire form distributes the papers to the students by placing them in front of them. If the schools were opened, just the questionnaire surveys would be done in those schools as face-to-face surveys. The survey form's measuring goals allocate around 10 respondent school pupils for each researched school. As a result, there will be 30 responders from all three institutions. Because there are two primary schools and one secondary school, the questionnaire survey will be given to standard six students in the primary school and form five students in the secondary school. Appendix 1 shows the rating level for each question on the survey form, as the answer "Yes" or "No," as well as the questionnaire form. The schoolchildren must complete two portions, as specified in the appendix. Segment A offers background information on the respondent, whereas Segment B queries their level of understanding regarding Traffic Noise Pollution and related issues. The Questionnaire Survey Form asked a total of ten (10) questions.

4. Finding and Discussions

4.1 Calculation of Data Traffic Noise

Table 4.7 - Comparison of data traffic noise at three different type of school area

		07:30-08:30				12:30-13:30			
		Leq	**TNI**	**NC**	**Lnp**	**Leq**	**TNI**	**NC**	**Lnp**
		(dBa)				**(dBa)**			
S1	**Day 1**	85.58	125.3	23.1	62.48	**92.11**	124.3	21.2	**70.90**
	Day 2	80.32	105.58	17.57	62.74	88.44	139	26.6	61.84
	Day 3	88.42	131.6	23.6	64.82	85.67	**139.5**	28.1	55.44
S2	**Day 1**	78.94	122.8	23.5	55.44	81.24	122.6	23.2	58.04
	Day 2	79.07	125.5	24.6	54.47	79.36	133.6	27.2	52.17
	Day 3	86.64	127.5	24.2	62.44	77.99	138.8	**29.1**	**48.90**
S3	**Day 1**	**71.71**	89	**15.1**	56.61	70.28	97	**17.4**	52.88
	Day 2	76.55	109.9	21.7	54.84	72.55	97.12	17.48	55.07
	Day 3	73.10	101.2	18.1	55	72.53	**77.18**	10.82	61.71

Table 4.7 compares data on road noise obtained from the three schools analysed. There were certain days set out to calculate traffic noise statistics. The highest Leq value measured on the first school's three days was 92.11dBa on Day 1 (Sunday) afternoon. Other figures included the highest Traffic Noise Index (TNI) value on Day 3 (Tuesday) afternoon, which was 139.5dBa. The highest noise climate (NC) recorded on Day (Tuesday) was 28.1 dBa in the afternoon. Furthermore, the noise pollution level (Lnp) was measured at a maximum of 70.90dBa on Day 1 (Sunday) afternoon. On Day 3 (Tuesday) morning, the maximum Leq value measured in three days at second school was 86.64dBa. Other results included the highest Traffic Noise Index (TNI) score of 138.8dBa on Day 3 (Tuesday) afternoon. The maximum noise climate (NC) was 29.1 dBa on Day 3 (Tuesday) in the afternoon. Furthermore, Noise Parameters on Noise Pollution Level (Lnp) were measured at a high of 62.44dBa on Day 3 (Tuesday) morning. The greatest Leq value measured for three days on third school on Day 2 (Monday) AM was 76.55dBa. The highest Traffic Noise Index (TNI) score of 109.9dBa was recorded on Day 2 (Monday) morning. On Day 2 (Monday), the highest noise climate (NC) was observed at 21.7 dBa in the AM. Furthermore, on Day 3 (Tuesday) evening, Noise Parameters on Noise Pollution Level (Lnp) were recorded at a high of 61.71dBa.

In a nutshell, SMK Dato Mohd Taha was one of the three schools that investigated the greatest data traffic noise observed. The school had the highest Equivalent Noise Level (Leq), which was 92.11dBa on Day 1 afternoon. This figure surpasses the DOE's (Department of Environmental Malaysia) noise standard of 60dBa. Furthermore, these imply that the school was in a very unfavorable condition in terms of noise level restriction. This recording was made on a non-school day, which was a Sunday. Aside from that, the traffic noise index reached a peak of 139.5dBa on Day 3 (Tuesday) afternoon at SMK Dato Mohd Taha. It surpasses the TNI noise limit of 74dBa. However, for the noise environment, the DOE of Malaysia established a limit of 25-30 dBa, with the highest NC value being 29.1dBa recorded on SJK(C) Sin Min. The greatest noise pollution level (Lnp) measured at SMK Dato Mohd Taha was 70.90dBa on Day 1 (evening), which did not surpass the real noise limit for Lnp of 88dBa. Aside from that, SK Datuk Abdullah generated the lowest traffic noise data to compare with the highest data traffic noise, such as the Leq value 71.71dBa, TNI value of 77.18dBa, which exceeds the allowable TNI noise limit 74dBa on SK Datuk Abdullah, and NC value of 17.4dBa, which did not exceed the minimum noise limit NC 25-30. Finally, the noise pollution level (Lnp) was measured at SJK(C) Sin Min at 48.90dBa, which does not exceed the real noise limit for Lnp of 88dBa. Finally, comparing the weekend day of Sunday (Day 1) and the weekdays of Monday (Day 2), Tuesday (Day 3), Sunday has the greatest data traffic noise on Equivalent noise level (Leq) and Noise Pollution Level (Lnp). All of the highest and least rate traffic noise sources are depicted in Figures 4.10 and 4.11.

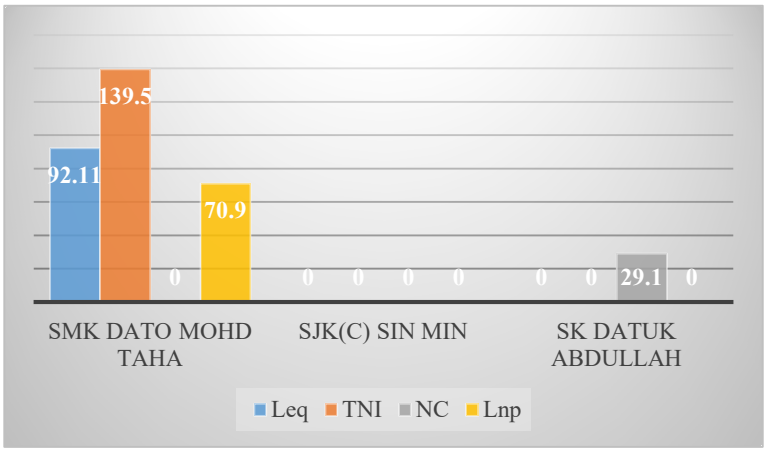

Fig. 4.10 - Highest rate of traffic noise sources between three schools

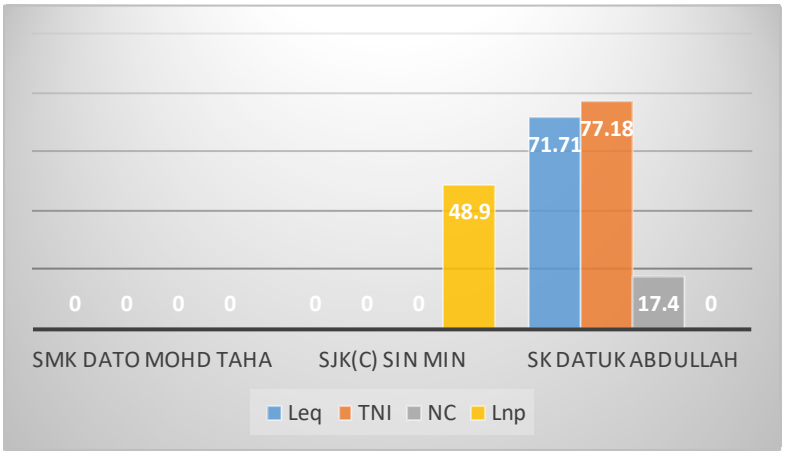

Fig. 4.11 - Lowest rate of traffic noise sources between three schools

4.2 Data of Questionnaire Survey Form

Table 4.8 - Comparison of data respondent of questionnaire survey

No	Name of school	Question		Respondents			
				Yes		No	
				n	%	n	%
S1	SMK Dato Mohd Taha	Q1	Hearing Problem	0	0	10	100
		Q2	Environment school	7	70	3	30
		Q3	Origin of noise	7	70	3	30
		Q4	Unpleasant traffic noise	7	70	3	30
		Q5	Classroom lesson	4	40	6	60
		Q6	Mental Health Impact	4	40	6	60
		Q7	Communication in classroom	4	40	6	60
		Q8	Negative impact on education	5	50	5	50

		Q9	Worse of traffic noise	7	70	3	30
		Q10	Government precautions	6	60	4	40
			Total	**51**	**51**	**49**	**49**
S2	SJK (C) Sin Min	Q1	Hearing Problem	0	0	10	100
		Q2	Environment school	0	0	10	100
		Q3	Origin of noise	9	90	1	10
		Q4	Unpleasant traffic noise	3	30	7	70
		Q5	Classroom lesson	4	40	6	60
		Q6	Mental Health impact	0	0	10	100
		Q7	Communication in classroom	5	50	5	50
		Q8	Negative impact on education	6	60	4	40
		Q9	Worse of traffic noise	5	50	5	50
		Q10	Government precautions	6	60	4	40
			Total	**38**	**38**	**62**	**62**
S3	SK Datuk Abdullah	Q1	Hearing Problem	0	0	10	100
		Q2	Environment school	1	90	90	10
		Q3	Origin of noise	0	0	10	100
		Q4	Unpleasant traffic noise	0	0	10	100
		Q5	Classroom lesson	0	0	10	100
		Q6	Mental Health Impact	0	0	10	100
		Q7	Communication in classroom	0	0	10	100
		Q8	Negative impact on education	0	0	10	100
		Q9	Worse of traffic noise	0	0	10	100
		Q10	Government precautions	0	0	10	100
			Total	**1**	**1**	**99**	**99**
		Sum of total three school respondents		**90**	**90**	**210**	**210**

Table 4.8 depicts the data questionnaire survey obtained at three various types of school settings. According to the table, the school with the most respondents (schoolchildren) who answered "Yes" was SMK Dato Mohd Taha, with 51 respondents. In comparison to SK Datuk Abdullah, there was just one respondent who said "Yes." This demonstrates the catastrophic situation of the SMK Dato Mohd Taha traffic noise since its road was the primary road between Tampin and Gemas. With 99 replies, SK Datuk Abdullah respondents also said "No." The majority of the queries were on how the present situation of noise around the school was. Such as having a noise problem, the environment at

school, the source of the noise, the impact on mental health, classroom communication, the negative influence on education, the intensity of traffic noise, and government efforts to avoid traffic noise pollution.

5. Conclusion

In the field of research, it is widely recognized that noise pollution can have a negative impact on community health. Noise control should be improved in any area related with a building, particularly residential areas such as schools, so that instructors and kids may feel at ease without being irritated. As a consequence, the objectives stated at the outset of the research were strongly represented throughout the research investigation. The first purpose was to gather noise and sound pressure levels from three schools along the road in Gemencheh town and calculate noise measurements such as Equivalent noise level (Leq), Traffic Noise Index (TNI), Noise Climate (NC), and Noise Pollution Level (Lnp). According to the statistics on traffic noise acquired by the first school, SMK Dato Mohd Taha has been severely impacted by traffic noise. On Sunday afternoon, it has the greatest Leq value of 92.11 dBa (Day 1). The other traffic metric, Traffic Noise Index, was measured on Day 3 (Tuesday) afternoon at 139.5dBa. Aside from that, the greatest Noise Pollution Level (Lnp) was 70.90dBa on Day 1 (Sunday) afternoon. SMK Dato Mohd Taha had the greatest values for Leq, TNI, and Lnp. Finally, the noise level for Noise Climate(NC) was 29.1dBa (Day 3), Tuesday afternoon, as measured at SJK(C) Sin Min. The third school (SK Datuk Abdullah) has no data on the greatest traffic noise levels. As a consequence, it was determined that SMK Dato Mohd Taha has a very high mode of traffic noise level, especially on weekends. Aside from that, SJK(C) Sin Min has shown a respectable degree of traffic noise on weekends and weekdays. Last but not least, SK Datuk Abdullah has recorded a very low mode of traffic noise that meets the Malaysian Department of Environment's noise guideline.

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