

# **TRAFFIC CALMING IN THE VICINITY OF SCHOOLS**

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A dissertation submitted in partial fulfillment of the  
requirements for the award of the degree of  
Master of Urban Design

Faculty of Built Environment  
Universiti Teknologi Malaysia

JANUARY 2012

To my beloved mother and my family

To my respected supervisor

## **ACKNOWLEDGEMENT**

First and above all, I am grateful to God, the creature and the guardian, and to whom I owe my existence.

I would like to express my sincere gratitude to my supervisor Dr. Muhammad Zaly Shah for the continuous support of my research, for his patience, motivation, enthusiasm, and immense knowledge. His guidance helped me in all the time of research and writing of this dissertation. I could not have imagined having a better advisor and mentor for my Master Degree.

Also to express my sincere appreciation and thanks to my mother, my sister and my brother for their help, endless moral support, understanding and encouragement towards me in achieving the success in this course.

Not forgetting also, special thanks to Prof. Idid whose encouragement, guidance and support from the initial to the final level enabled me to finish this course successfully.

Finally, I would like to thank to all my friends, course mates who so ever help me to ensure the success of this work, especially to Fahimeh for the words of encouragement and her support.

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## **ABSTRACT**

In the last century, roads have been replaced for vehicles and became widened and straightened. These changes help vehicles go faster but make the condition more dangerous for other activities such as walking or cycling. The safety of school children walking to and from school is a major concern to parents, teachers, law enforcement agencies and the general community. Identifying problems and implementing improvements from the bulk of activities at relevant agencies in their effort to reduce child pedestrian injuries around schools. This includes traffic engineering approaches such as traffic calming measures, to improve the safety of school children walking along or crossing busy streets around school areas. Traffic calming has been used extensively in residential and commercial areas but it is generally unknown how effective traffic calming is in school areas. With all the effort done in implementing traffic calming around school area, there are still occurrences of accidents involving school children around the vicinity of schools in Malaysia. In this research the objectives are to find out the most common type of traffic calming in schools' area and identifying the other factors that affect traffic calming to influence better. This study covers the entire Taman Universiti region in Skudai town where seven schools exist. Based on the specific criterions three schools have been sampled that all were primary and the existing condition and the traffic calming that was installed have been surveyed based on observation method, afterward; according to the result of data collection and data analysis the new suggestions have been proposed.

## ABSTRAK

Sejak berabad yang lalu, jalan raya telah dibina bagi kemudahan pengangkutan serta diperbaiki dari semasa ke semasa dengan ditambah kelebaran dan kelurusannya. Tidak dinafikan perubahan ini membantu memudahkan dan mempercepatkan sistem pengangkutan, namun dalam masa yang sama ia menjadikan keadaan jalan raya lebih berbahaya untuk aktiviti-aktiviti lain seperti berjalan kaki atau berbasikal. Hari ini, keselamatan kanak-kanak untuk pergi mahupun pulang dari sekolah menjadi kebimbangan utama kepada bukan sahaja kepada ibu bapa, malah pihak sekolah, agensi-agensi penguatkuasaan undang-undang dan masyarakat umum. Mengenal pasti masalah dan melaksanakan pelbagai penambahbaikan oleh agensi berkaitan dilihat sebagai usaha untuk mengurangkan kes kemalangan di kalangan kanak-kanak sekolah. Ini termasuk penggunaan pendekatan kejuruteraan trafik seperti 'Traffic Calming' untuk melindungi keselamatan kanak-kanak semasa berjalan atau melintasi jalan raya yang sibuk di sekitar kawasan sekolah. Pendekatan 'Traffic Calming' telah digunakan secara meluas di kawasan-kawasan kediaman dan perniagaan, tetapi keberkesanan penggunaan 'Traffic Calming' di kawasan sekolah masih belum diketahui. Walaupun segala usaha dilakukan termasuk penggunaan pendekatan 'Traffic Calming', kejadian kemalangan melibatkan kanak-kanak sekolah masih berlaku. Dalam kajian ini, objektif utama adalah untuk mengenalpasti jenis pendekatan 'Traffic Calming' yang paling biasa digunakan di kawasan sekolah dan mengenalpasti faktor-faktor lain yang boleh menyumbang kepada keberkesanan pendekatan 'Traffic Calming'. Kajian ini dilakukan di Taman Universiti, Skudai, Johor di mana terdapat tujuh buah sekolah di kawasan ini. Melalui kriteria-kriteria khusus, tiga buah sekolah yang telah disampel dikenalpasti sebagai sekolah rendah, dan keadaan yang sedia ada serta pendekatan 'Traffic Calming' yang telah

digunakan ditinjau berdasarkan kaedah pemerhatian. Kemudian, setelah menganalisis data yang telah dikumpul, kaedah baru akan dicadangkan.

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**LIST OF ABBREVIATIONS**

DSK	Sekolah Kebangsaan
SMK	Sekolah Menengah Kebangsaan
Taman U	Taman Universiti
UTM	Universiti Teknologi Malaysia
ITE	Institute of Transportation Engineers

## **CHAPTER 1**

### **INTRUDACTION**

#### **1.1 Introduction**

In the last century roads have been replaced for vehicles and became widened and straightened. These changes help vehicles go faster but make the condition more dangerous for walking, cycling and for nearby residents. Even during the early years some neighborhoods insist to decrease motor vehicle use because it made many accidents on those areas.

The term “Traffic Calming” is a direct translation of the German “Verkehrsberuhigung.” It refers to a system of design and management strategies, developed in Europe and widely practiced there, that aims to incorporate vehicle traffic into communities in balance with other uses on streets (Litman, 1999).

Traffic calming is a way to simultaneously address transportation needs and quality-of-life issues in our communities. It is a change from traditional transportation planning, and is a movement toward balancing the needs of all users of the roadway. Traffic calming involves rethinking the physical design of streets,

recognizing the street as public space shared by pedestrians, cyclists, and motorists alike. Other benefits of traffic calming include increased transportation choices, improved neighborhood identity, improved air quality, and improved transit access (Reardon, PE, & Madey, 1997).

In Europe, traffic calming began as a grassroots movement in the late 1960's. Priority has been given to pedestrian instead of private vehicles that has ensured safe and comfort ambiance for pedestrians. The efforts that had been taken by some countries such as United Kingdom, Holland, Denmark, and Germany have been successfully regained spaces for pedestrians, especially in residential areas. This traffic control approaches through speed control and deterring through traffic on local road and street in community service centre by using road humps, narrowing of carriageway, changing of pavement materials, chicanes, and etc that is not capital intensive and had been called as traffic calming (Secunda, 2008).

In Malaysia, the registered vehicles has increased from 9.14 million vehicles in 1998 to 13.88 million vehicles in 2004 with average growth rate is 6.39% per annum. This tremendous increase in vehicle registration would augment a demand of passenger car usage on the road network, particularly in cities (RoyalMalaysianPolice, 2006).

Today's most of parents drive their children to school and part of morning traffic is due to this activity. As a result, traffic congestion has increased around schools, prompting even more parents to drive their children to school. The health consequences to our children and to the well being of the community are extensive.

We must consider about health, fitness, traffic relief, environmental awareness, and safety for children. There is a connection between school, community and the government to create a healthy lifestyle for children and a safer, cleaner environment for everyone.

## 1.2 Statement of the problem

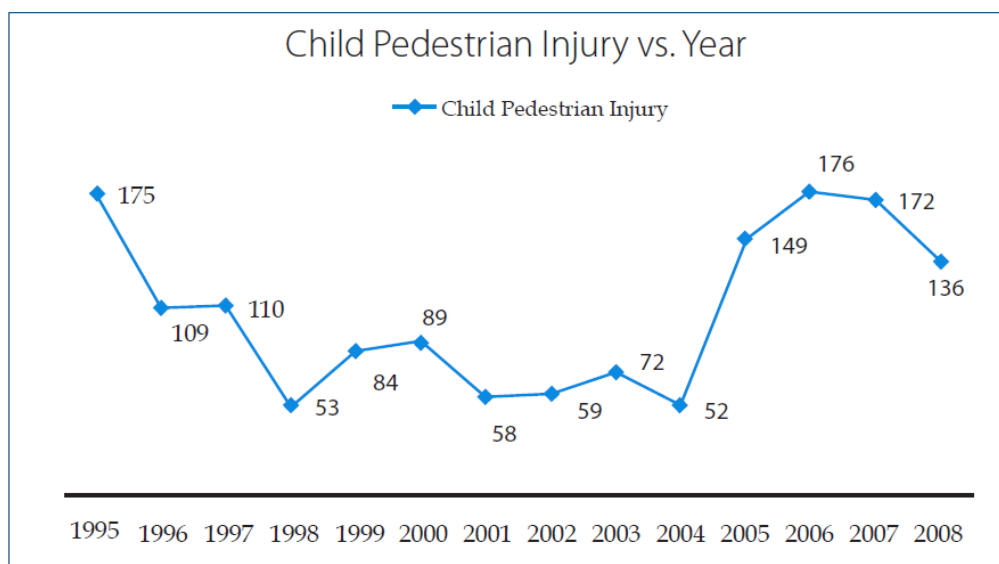
Rapid development in cities has brought various forms of traffic related problems either directly or indirectly, including traffic congestion, delays, increase in road accident rate, air pollution, noise; loss of urban heritage, natural elements and public amenities in towns. All these are due to high rise of traffic volume on the roads particularly private vehicles (McLean, et al., 1997).

Malaysia is experiencing rapid growth in population, economy and motorization. This increase in population and motorization has led to an alarming increase in the number of road accidents. There were 341,252 road accidents in the year 2006 with 6,287 deaths (RoyalMalaysianPolice, 2006). Clearly, road accidents pose as a major health and social problem in this country and there is an urgent need to implement known and effective intervention programs to reduce the number of accidents and the severity of the injuries sustained by accident victims.

In Johor Bahru, the current rate of car ownership is 218 cars per 1,000 residents and is expected to rise to 242 cars per 1,000 residents beyond 2015 (Johor Bahru District Local Plan 2020).

Graph 1.1 shows the child pedestrian (6–18 years old) casualties around school areas. Based on the Graph 1 below, data in Malaysia on child pedestrian casualties for the last 14 years were analyzed to obtain a clear picture of problems related to their safety. Since 1995, the number of child pedestrian casualties in the vicinity of schools is found to be in a decreasing trend up to year 2004 but shows an alarming steep upward trend in child pedestrian casualties in year 2005

(Malaysian Institute of Road Safety Research, 2008). This graph also shows the inconsistency of school and road authority to provide a sustainable safe environment for the students. However, inconsistency in the data retrieval from the police could not be ruled in this case due to technical error.



**Graph 1.1** Child pedestrian (6–18 years old) casualties around school areas (MIROS, 2008)

Nevertheless, the data shows that child pedestrian injuries do occur in the vicinity of school areas and the numbers are high enough to signal an alarming situation. In brief, the vicinity of the schools in Malaysia in general is still not safe for school children.

In order to reduce the number of casualties among school going children, a secure and safe road crossing environment around schools in Malaysia must be provided. Appropriate intervention programs such as engineering treatments or enforcement measures are thus very important as part of the national road safety strategies. The intervention strategies would have to be focused to address specific safety problems in the schools' vicinity, such as high speed of traffic, poor segregation of pedestrians from motorized traffic, inadequate crossing facilities and others. One of the most potent approaches to counter these problems is by investing

in reliable crossing facilities. However, this will have to be complemented and supported by appropriate traffic calming measures on the road (Manan & Hoong, 2010).

Traffic calming measures are used extensively in Malaysia especially in residential and commercial areas (HPU, 2002). However, the effectiveness of these measures is yet to be definitively determined, especially for those deployed in the vicinity of schools. Although the public authorities have implemented various traffic calming measures around schools, there are still occurrences of accidents involving school children. However, before progressing with any new or innovative traffic calming measures, a study must be carried out to evaluate the existing traffic calming schemes in the schools' area. A carefully planned and executed study will allow us to determine whether the present scheme has performed at the intended and expected level.

### **1.3 Purpose of the study**

We have known for decades that injury is the leading cause of death among children over one year of age in industrialized countries. Rather than trying to retrofit environments to mitigate unsafe conditions, urban planners have begun taking into consideration the requirements for well-being across the human lifespan and designing built surroundings that meet those needs. The purpose of this study is to obtain minimize physical risk to children at the same time; it should maximize opportunities for physical activity.

#### **1.4 Objective of the study**

The major purpose of this study is to investigate the safety of school zones. Details of the key study areas for school zone safety in relation to this study are summarized as follow:

- I. Identify the most important factors that affect the role of Traffic Calming in the vicinity of schools.
- II. Identify the most commonly used schemes based on traffic calming in the study area.

#### **1.5 Research questions**

- I. Have Traffic Calming been as an effective method for schools area?
- II. What are the common traffic calming tools for schools area?
- III. What have been done and what needs further operation?



## **1.6 Significance of the study**

Child pedestrians are vulnerable users of the road unprotected from the kinetic energy of speeding automobiles and incapable of making mature judgments to minimize their risk of harm from traffic. Fortunately, there is substantial evidence that modifying the built environment can increase the safety of child pedestrians.

The findings of this study are important to help create a safe road and environment for children to journey to schools. Because nearly all children are pedestrians and none are drivers, a child's journey to school is the natural place to start reversing these overwhelming trends away from active transportation. In order to encouraging children to walk to school means ensuring that when communities are built, they are designed appropriately to allow short, safe walks from home to school and other destinations.

## **1.7 Scope of the study**

The respondents of this study are the schools in Taman Universiti area in Skudai. There are seven schools in this area which are surrounded by residential buildings. Some schools based on the specific criterions were chosen which discuss in chapter IV. After that, the data collection was done according to observation method to find out the problems and capture the objectives of this study.

## **1.8 Summary**

In this chapter we discussed about the significance of this subject and the importance of the traffic calming that why should be done for schools area, also introduce the case study. In the next chapter the history of traffic calming and different tools of it around schools would introduce, in addition; the effective tools in the vicinity of schools would be discussed.

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