The Level of Pedestrian Safety Among Rural and Urban School Children

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Abstract: This study aims to examine the level of pedestrian safety among students in schools at urban and rural area. The study area involved two selected schools located in the Kota Bharu to represent urban area and rural area. The number of samples used was 300 involving students who walk to school. The data used was of primary and secondary sources. The primary data was collected by means of questionnaires, observations and interview sessions with respondents. Meanwhile, secondary data was obtained by means of library research, reports and journals from electronic sources. The data was analysed using descriptive and inferential statistics. Descriptive analyses were presented in the form of percentages, frequencies, means and standard deviations. The results showed that traffic congestion factor was the biggest risk leading to road traffic accidents in both urban and rural school areas. Next, the overall findings showed that the level of respondents' satisfaction towards the four variables tested namely facilities, environment, traffic and attitudes were still at unsatisfactory level. For comparative test, the results showed that the level of pedestrian safety among school students in rural areas was better compared to urban areas.

1. Introduction

Student safety is very important in a country that is heading towards the formation of a developed country because students are an important asset of the country. Students are the main factor in this study because students are the most active individuals, especially when they go home from school. Among the main modes of transportation for students to school include public transport such as cars, motorcycles, bicycles and walking. Among the modes of transportation that students choose for trips to school include private transportation, public transport and non-motorized transport. private transportation consists of motorcycles and cars for the high-income group. Public transport includes public buses and school buses while non-motorized transportation is walking and bicycle [5]. In addition, the residence of students close to the school also affects students walking and can save costs and travel time to school [8].

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1.1 Problem Statement

Traffic factors affect the safety of students who walk on the way to school. In Malaysia, urban school locations are more at risk for pedestrians to have accidents when compared to schools in rural areas because in urban areas the number of vehicles is higher. Attitude is one of the dominant factors which can pose a threat to pedestrians, especially students because of the attitude of consumers who do not comply with the law namely driving a vehicle above the speed limit set in front of the school, selfishness and not giving priority to pedestrians to cross roads for example like to park vehicles on the shoulder of the road which causes other drivers to fail to detect the presence of pedestrians on the shoulder of the road.

1.2 Objective

The objective is to study the elements that effect the level safety among students walking to school and to assess the level of pedestrian safety between urban schools and rural schools.

1.3 Scope of study

The scope of this study focuses on urban and rural school students in Padang Garong National School and Chicha Menyabong National School in Kota Bharu, Kelantan. Students are a sample in this study consists of various races and religions. Among the methods used are through primary data namely questionnaires, observations and secondary data based on statistical study data.
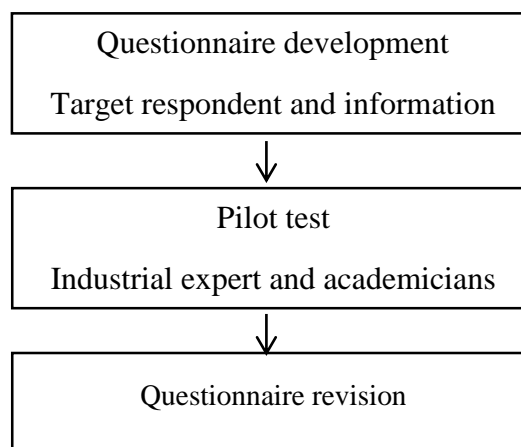
1.4 The important of study

The results of this study to extent some guide the government to make improvements so that the level of student safety is improved and can cross the journey safely while using road transport. This study was conducted to find out in depth about the level of safety of school students when using transportation as well as students' understanding of the law and their concerns when using vehicles will result in a high level of safety for students during the process of going to and from school. This study is important to the authorities and the school. Examples of authorities refer to the Royal Malaysian Police (PDRM), Ministry of Education Malaysia (MOE), Road Transport Department (JPJ) and others.

2. Method

2.1 Study Design

This study is a process to identify the problems that occur by understanding the problems encountered as well as finding solutions to address the problems. The objectives, scope of the study and the location of the study should be given a detailed explanation so that the goals of the study can be achieved. In addition, the selection of location selection is important to obtain the correct data and have relevance to the study to be done. To collect data required on the specific issue that needed to study, the questionnaire survey found to be appropriate method.
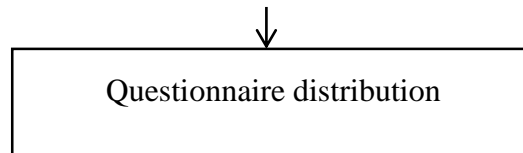
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Figure 2.1: Questionnaire's survey process

2.1.1 Quantitative Variables

[1] states that quantitative research will be linked to numerical data. This data was collected through questionnaire method. Then, the observed data observed in the field area will be analyzed using SPSS and excel. The quantitative variables will be labeled in numerical values represent the properties associated with the object of the variable. Discrete variables were used in the questionnaire. Discrete variables refer to variables that can only receive one specific value. It has inconsistent real categories and has real boundaries between one category and another. [7] nominal scale questions such as gender, label 1 represents males and label 2 will represents females. Meanwhile, for the ordinal scale, each number represents the level of satisfaction of each study respondent.

2.1.2 Qualitative Variables

[7] explains that qualitative research is done to understand a social phenomenon and culture. The description of the data for the qualitative variables is in the form of text so that the researcher can understand an event studied in depth. Qualitative data elements will use interview and observation methods. Data findings will then be presented in the form of text and images. Interviews are a form of qualitative data conducted in interaction between two individual to obtain data directly from the respondents. [4] explained that interviews are complementary to the information obtained through observations conducted in the study area. Face-to-face interview methods were conducted in this study to obtain in-depth information, especially for questions in the form of opinions and views from respondents. Observation methods are also done to collect qualitative data by simply making observations and notes.

2.2 Location study

Location study was at Chicha Menyabong National School represent for rural school and Padang Garong Nasional School represent for urban school. For urban school has four lane one way and about 100 meter from school has a roundabout to the city and the road was very busy while for rural school has one lane road and not too busy. This location chosen because this location was chosen to achieve the purpose for which this study was conducted.
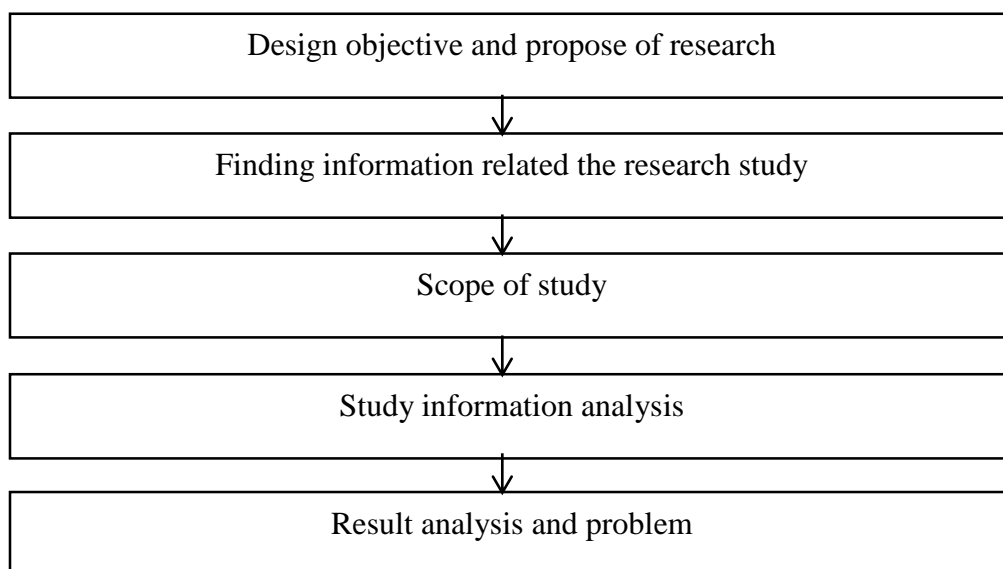
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Figure 2.2: Flowchart

3.   Results and Discussion

This chapter will discuss the areas and methodology used in the study. Research area study, study design, data requirements, data collection methods, data analysis techniques are discussed in detail in this chapter. Study design using quantitative and qualitative research methods. The data of this study is divided into two, namely primary and secondary data. Primary data were observed through the distribution of questionnaires and observations.The likert scale has been used in this study to gain more tally into the respondents respond and the method used for generate data using excel and SPSS.

The scale of 1 to 5

1 2 3 4 5

Increasing degree is agree

Figure 3.1: The scale of questionnaire view

3.1   Respondent's view on difficult of crossing

Based on the graf shows that for urban schools 102 people (68 percent) answered 'Yes' and 48 students (32 percent) answered 'No' while for rural schools 69 people (46 percent) answered 'Yes' and 81 (54 percent)) people answered 'No'. Views for urban schools show that the percentage of students having difficulty crossing the road is higher while for rural school students the percentage of crossing the road is low which indicates that students do not have problems crossing the road.
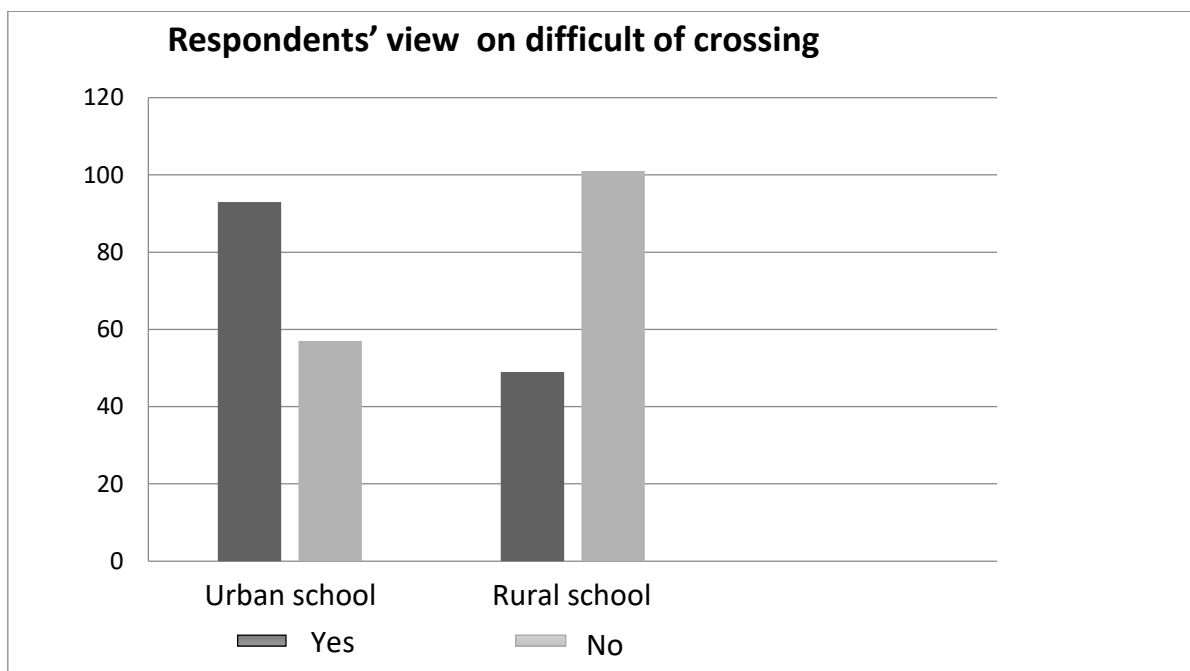

Figure 3.1: Respondents' view on difficult of crossing

The results of the respondents show that both schools have different main factors, namely for urban schools the main factor is traffic congestion as well as wide and intersecting road conditions while for rural schools there is no pedestrian crossing facilities.The results of the observations prove that traffic congestion does not occur only during peak hours but all the time because it is the main route to the city center. At the same time, due to the wide and intersecting road conditions, it is also difficult for pedestrians to cross because the driver will usually bring the car without following the set

speed limit and the driver will scramble to change the direction of the road and can cause road use conflicts.
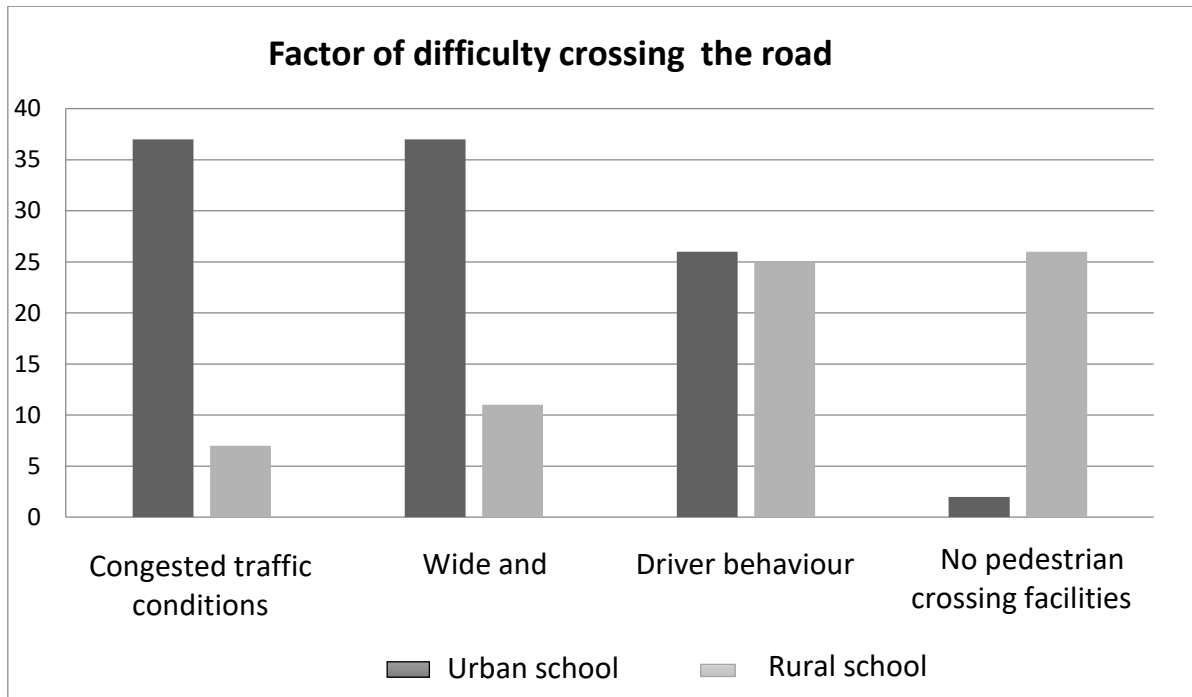

Figure 3.2: Factor of difficulty crossing the road

3.2 Respondents' level of satisfaction with the provision of pedestrian facilities

Table 3.1: Traffic

Traffic	Rural school		Urban school	
	Mean	Standard Deviation	Mean	Standard Deviation
Traffic condition at peak times	1.94	0.508	2.45	0.966
Numbers of vehicles during the peak hours	1.94	0.508	1.91	0.543
Road user behavior	2.91	1.07	2.05	0.717

The level of satisfaction of the respondents to the traffic situation in schools in urban areas as a whole is at an unsatisfactory level. Beside that, the highest mean values in the table for rural school and urban school are represented by traffic conditions during peak hours. Average mean value of 2.91 with a standard deviation of 1.07 for rural schools. Meanwhile, for urban schools, the highest mean value is represented by the traffic conditions at peak hours also with a mean value of 2.45 and a standard deviation of 0.966.

Table 3.2: Environment

Environment	Rural school		Urban school	
	Mean	Standard Deviation	Mean	Standard Deviation
Neighbourhood condition	4.00	0.328	4.00	0.463
Environmental atmosphere	3.53	1.00	3.15	1.077
Condition of road structure	2.89	0.942	2.84	0.942

The results of the study of the level of satisfaction of the respondents to the environment in both areas as a whole is at an unsatisfactory level. Next, the highest mean values in table the both schools namely are represented by neighborhood items with an average mean value of 4.00 and a standard deviation of 0.328 for rural schools while for urban schools a mean value of 4.00 and a standard deviation of 0.463. Both of these schools show neighborhood conditions affecting students walking to school and traffic congestion occurs.

Table 3.3: Driver behaviour

Driver behaviour	Rural School		Urban school	
	Mean	Standard Deviation	Mean	Standard Deviation
Vehicle speed at school	1.91	0.314	1.85	0.362
Driver's concern for pedestrian	2.01	0.505	2.03	0.561
Driver compliance with traffic laws	2.33	0.700	2.50	0.849

The results of the study in both schools in urban areas show that vehicles passing through the school area are difficult to give way to students to cross the road, especially motorcycle users. This situation causes pedestrians to have to wait a long time to cross the road.

4. Conclusion

In conclusion, all parties need take action and their respective roles in terms of providing facilities, environment, traffic and aspects of pedestrian behaviour in order to reduce the risk of road accidents to students who walk on the way to school. Based on observations both schools show neighborhood conditions such as the presence of houses near schools, government buildings such as the Department of Survey and Mapping, State Education Department (JPN), Kota Bharu Municipal Council (MPKB), shops, one-way streets and main roads to the city center. The objective ids

achieved. Lastly, systematic cooperation, efforts and improvement strategies need to be implemented with the involvement of all communities regardless of race and religion to ensure the safety of pedestrians among school students.

Acknowledgement

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