

Parent Concern in Safeguard Primary Children on Road Safety

Awaludin Noorman^{1,3}, Siti Salwa Salleh^{1,2}

¹Malaysia Institute of Transport (MITRANS), University Technology MARA, Shah Alam, Malaysia, ²College of Computing, Informatics and Mathematics, University Technology MARA Negeri Sembilan, Seremban Campus, Negeri Sembilan, Malaysia, ³Road Transport Department, Ministry of Transport, Seremban Branch, Negeri Sembilan, Malaysia

Corresponding Author Email: ssalwa@uitm.edu.my

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Abstract

There is a lot of traffic at the school entrance since parents are dropping off or picking up their children at the school premises. The situation becomes worse during peak hours. This led to the emergence of three concerns among parents about safeguarding children: the drop-off location for children at school entry, traffic congestion around school, and road safety facilities. In this context, parental concerns must be investigated in the Malaysian context as well, as it would help the school improve safety measures for the children. Thus, the study collected data from parents at a primary school as respondents. The result of the study revealed that traffic congestion emerged as the most prominent concern, with the highest mean score of 4.82. Another major finding shows that drop-off space and traffic congestion negatively correlate with parents' concerns, indicating their adverse impact on parents' perceptions of road safety at school compounds. In contrast, facilities related to road safety displayed a positive correlation, indicating their positive influence on parents' concerns. The study also identified positive correlations between drop-off space and traffic congestion, drop-off space and facilities related to road safety, and traffic congestion and facilities related to road safety. Multiple regression analysis confirmed that these three issues explained 74.0% of the variation in parents' concerns about children's road safety at school compounds. The outcome of this study has been shared with the school for further action, and as a continuation, future studies will focus on supporting the outcome with evidence by conducting road safety observation and specification inspections around the school compound.

Keywords: Children Road Safety, School, Traffic Congestion, Drop-Off Area, Road Safety Facilities

Introduction

Accidents and injuries that occur in school premises are no longer a foreign issue for every country, including Malaysia. The design of the building, the school environment and the activities carried out for teachers and students must have minimal impact on risk; therefore, schools are categorized as low-risk premises. The irony is that to this day cases of accidents, injuries and deaths that occur among students still occur regardless of whether inside or outside the school premises. Safety for school children means they are school are free from any injury, pain or danger (Gregory et al., 2012). According to Sivasankar et al (2016), road accidents are the leading cause of death and injury among children whether as pedestrians, vehicle passengers or riders or motorcyclists or cyclists. There is heavy traffic at the school entrance caused by parents dropping off or picking up children at school compounds. The situation is worse at peak times when more drivers are passing through the location on their way to or from work or other destinations. Rothman et al (2017), there are three concerns arise among parents in safeguard children on road safety at school compounds which include the drop-off place for children at school entry, the traffic congestion around school and the facilities regarding road safety such as traffic signs and signals surrounding a school. Thus, concern among parents about the safeguard children on the road safety at school compounds need to be investigate as well in Malaysia. To achieve that aim, this study to identify parents concern in safeguard children on road safety at school compounds, to measure the relationship between independent variables and parents concern in safeguard children on safety at school compounds and to propose alternative solution to overcome the issue in safeguard children on road safety at school .

Review of Literature

The physical safety of the school is important to keep students safe from injury and harm. The physical environment of the school includes the physical building and structure of the school, infrastructure, furniture, and the use and presence of chemicals and biological agents; the site position of a school; and the environment around the school including air, water, and materials that children can touch, land use near roads as well as other hazards (WHO, 2014). The interpretation of well-being also takes into account the context of physical well-being, that is, feeling healthy without any physical, mental and emotional illness. According to Biggeri et al (2012) well-being is considered a dynamic state and a balance between abilities; individual needs and expectations; and prioritize opportunities. Health is defined as an individual who is able to reach his or her potential in order to enjoy physical well-being; mental; and maximum and complete social (DOH Ireland, 2013). Well-being is the correlation between the physical and psychological aspects of personality; giving satisfaction to oneself; and benefit the community (Sekiwu & Kabanda, 2014). Student well-being is seen in the context of the school environment, the extent to which a student functions effectively in the school community is positive, has resilience and self-satisfaction, and is related to the student's experience in school. Gutman and Feinstein's (2008) study of child well-being found that the dimension of well-being can be seen through mental health; anti-social behavior; pro-social behavior; and the achievement of their progress. The school environment, as a context of learning and education, also plays an important role in children's outcomes.

Safety and health management systems play an important role in creating safe schools and prosperous students. Several incidents that threaten safety in schools such as shootings, attacks, bullying and security disturbances that took place in America have led to annoyance

not only by the locals but also internationally. In this regard the World Health Organization WHO (2017) has urged countries around the world to implement investments using knowledge on the root causes of violence in schools, while providing training, resources, and guidance to schools. The Comprehensive School Safety (CSS) Program (2017) by WHO, for example, has provided a safe school framework that can be used in schools around the world. CSS is a program initiative that aims to protect school people from accidents, injuries and deaths in school through strategic plans, protect educational investment and control, strengthen and reduce the risk of accidents on school premises. Although school safety is an important element that needs to be given attention by the school management but safety in the school is also the responsibility of parents and the community. Involvement of parents as part of students' school life is also able to increase the sense of security. Parental involvement in the school from the perspective of the students is of a direct nature through meetings of the Parent Teacher Association; meeting student progress or engaging in field activities such as gotong royong. The involvement of parents and the community in the context of this school greatly helps to propel school initiatives towards safe and prosperous schools (Goldkind & Farmer, 2013; Sekiwu & Kabanda, 2014).

Bina et al (2021) conducted a study on the analysis of traffic upon school departure and found that pedestrian misbehaviours and the presence of volunteers traffic guards and 30 km/h limit zones play a crucial role in increasing or decreasing the risk of road crashes. They emphasized the need for considering the interaction between environmental characteristics and behaviours in specific school contexts to plan interventions for improving mobility and ensuring children's safety. Allen et al (2022) conducted a comparative road safety study in Adelaide and identified parental concerns regarding highly trafficked roads near schools and the associated high rate of vehicle collisions. They proposed measures such as rerouting heavy traffic away from school areas, implementing traffic calming measures, and establishing 30 km/h speed limits within school precincts to address these concerns. Distefano et al. (2019) focused on Italian parents' mode choice for home-school travel and found that the lack of safe paths and available parking spaces near schools influenced parents' decision to drive their children. These factors contribute to parental concerns about road safety in school compounds. Rothman et al (2017) state that children's exposure to traffic as pedestrians is highest during school travel, leading parents to cite traffic safety as a significant concern. Traffic congestion during drop-off and pick-up times, as well as specific behaviours such as double parking and uncontrolled mid-block crossings, further contribute to safety risks. La Vigne et al (2017) identify vehicles, particularly parents dropping off and picking up their children, as the main cause of traffic congestion around schools. They emphasize the need to address this issue to ensure the safety of students, teachers, parents, residents, and motorists. Strategies such as drop-off and pick-up procedures, traffic calming measures, and clear visibility for pedestrians and drivers are suggested to mitigate congestion and reduce the risk of collisions. Parental concerns about traffic hazards and congestion can lead to an increase in car transportation to and from schools, further exacerbating the congestion problem. Factors such as narrow streets, inadequate road design, and the absence of pedestrian and bike pathways contribute to the unsuitability of the environment for road users. Overall, the studies and findings discussed in the paragraph highlight the multifaceted nature of traffic congestion and road safety concerns around school areas. They underscore the importance of addressing environmental factors, behaviours, and parental concerns to create safe and efficient mobility solutions for children in school compounds.

Conceptual Framework

Figure 1 shows the conceptual framework used in this study. The dependent variable in this study is the parent concern and issue in safeguard children on road safety at school compound. There are three independent variables that have been considered in this study, namely, 1) Drop-off space for children at the school entry, 2) Traffic Congestion around the school, and 3) Facilities relates to Road Safety.

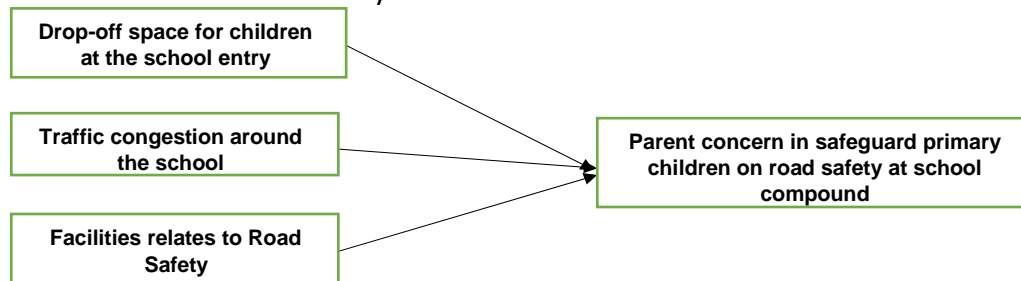


Figure 1. Conceptual framework

The study embarks on examining the following hypothesis

H0: There is no significant relationship between drop-off space for children at the school entry and parents concern in safeguard children on road safety at school compound.

H1: There is a significant relationship between drop-off space for children at the school entry and parents concern in safeguard children on road safety at school compound.

H0: There is no significant relationship between traffic congestion around the school and parents concern in safeguard children on road safety at school compound.

H2: There is a significant relationship between traffic congestion around the school and parents concern in safeguard children on road safety at school compound.

H0: There is no significant relationship between Facilities relate to Road Safety and parents concern in safeguard children on road safety at school compound.

H3: There is a significant relationship between Facilities relate to Road Safety and parents concern in safeguard children on road safety at school compound.

Materials and Methods

The research approach of this study is divided into three phases which are data collection, data analysis and result and report preparation as shown in Figure 2.

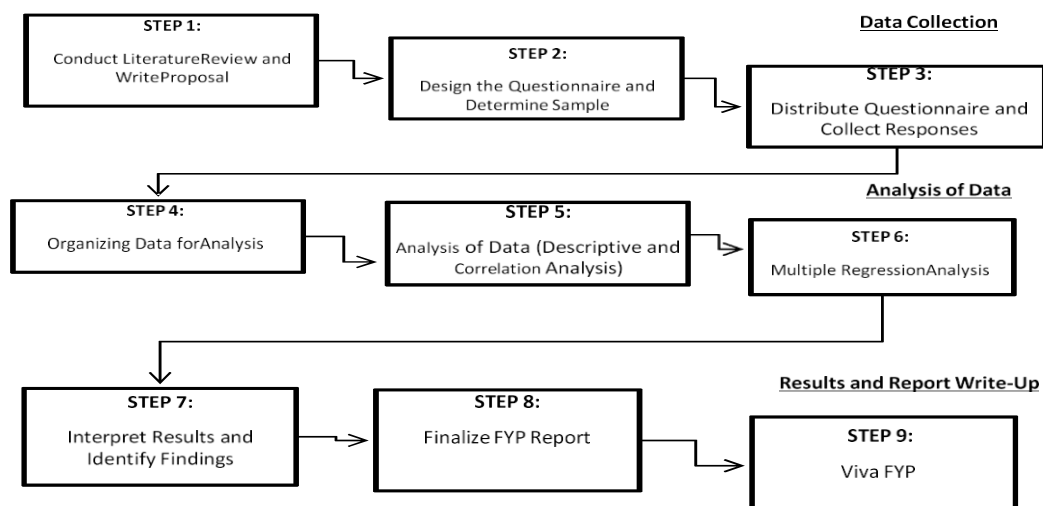


Figure 2. Research activities

This study uses primary data and quantitative method. The data of this study were gathered by means of a survey. The questionnaire of 5 scale Likert from strongly agree to strongly disagree contains 5 sections. Section A: Respondent Demographic Profile, Section B: Drop-Off Space for Children at the School Entry (IV1). Section C: Traffic Congestion around the School (IV2), Section D: School Environment (IV3) and Section E: Parents Concern in Safeguard Children on Road Safety at School Compound (DV). Parents from one primary School in Klang Valley has been chosen and simple random sampling (SRS) technique have been applied.

Result

Overall result of average mean is shown in Table 1 where drop-off space for children at the school entry is the highest mean (4.4). This is followed by school security body and teacher with mean responses of 4.3; and drop-off space in the school compound of 4.23. Thus, since the average means of responses are about 4.31 and above, these indicate that the respondents strongly agree with the statements given which represent the drop-off space for children at the school entry issue.

As for the traffic congestion around the school, the highest means of responses are: 4.87 for traffic congestion around the school compounds and 4.71 for traffic congestion around the school is associated with parking. There are three statements under this variable share the same value of mean: 4.83. They are on traffic congestion at the school compound, often result in accidents around school compound, and due to most parents sending their children using private cars instead of using school bus services. Thus, the score means of each statement showed 4.82 and above which indicates majority of respondents are strongly agreed that parents more concern about traffic congestion around the school compounds.

Mean responses for the facilities relate to road safety seems to be lower than those obtained for drop-off space for children at the school entry and traffic congestion around the school. Its highest mean (4.37) concerns with related to "the school has provided school crossing guards to control traffic around the school compounds", followed by 4.2 for designated car drop-off areas and 4.1 for requirement for school to provide a walkway/trails. Meanwhile, the mean response towards signage, traffic light and zebra crossing at is 3.93 indicating that disagreement of the respondents towards this statement. Overall, it can be considered that the respondents are not convincingly agree or disagree towards the statements concerning the facilities relate to road safety.

Responses towards the parents' concern in safeguard children on road safety at school compounds statements are weak (lower means of responses). Parents seem not sure about the safeguard children on road safety when at school which the statement of "I am confident that my children are safe when on school compounds" score mean: 2.8. This followed by 2.77 for "I believe that the school has provided good environment to safeguard children on road safety at school compounds". Then, 2.33 for "I am confident in the level of road safety at the school". The statement of "there was enough space for parents to drop-off their children in school compound" received score of means by respondent: 2.26. Lastly, the statements of "Parents are allowed to drop-off their children opposite the road from school" with score mean: 2.2. The score means for the dependent variable showed that majority of respondents disagreed with the statement under this variable. Thus, this shows that parents are worried about the children safety at school compound.

Table 1
Mean for Responses on All Variables of the Study

Variables	Items	Means/ Average
Drop-off space for children at the school entry	Drop-off space in the school compound is helping the parents to ensure their children's safety	4.40
	The school security body and teacher have the authority to control the congestion at the drop-off space	4.30
	Drop-off space in the school compound was controlled by the school security body and teacher	4.23
Traffic congestion around the school	Traffic congestion around the school compounds affects the safety of children to school	4.87
	Traffic congestion in school compounds is due to most parents sending their children using private cars instead of using school bus services	4.83
	There was traffic congestion at the school compound especially in the morning and the afternoon	4.83
	Traffic congestion often results in accidents around school compounds	4.83
	Traffic congestion around the school is associated with parking	3.71
Facilities relate to Road Safety	The school has provided school crossing guards to control traffic around the school compounds	4.37
	Designated car drop-off areas or 'Kiss and Rides' are separated lanes designated for dropping off or picking up students from using private motor vehicles	4.20
	The school provides a Walkways/trails for students walk to school	4.10
	There was signage, traffic light and zebra crossing at the school compounds	3.93
Parents concern in safeguard children on road safety at school compounds	I am confident that my children are safe when on school compounds	2.80
	I believe that the school has provided good environment to safeguard children on road safety at school compounds	2.77
	I am confident in the level of road safety at the school	2.33
	There was enough space for parents to drop-off their children in school compound	2.26
	Parents are allowed to drop-off their children opposite the road from school	2.20

Table 2 displays the Cronbach Alpha values (α) concerning all the independent variables and dependent variable in which Drop-off space for children at the school entry has the value of 0.75, while Traffic congestion around the school attains the value of Cronbach Alpha 0.73, and the facilities relate to Road Safety with 0.72 of Cronbach Alpha value. The dependent variable, Parents concern in safeguard children on road safety at school compounds, has the value of 0.76. Referring to Table 3.3 on Cronbach Alpha Scale and Meanings, these values are in the

range of $0.6 \leq \alpha < 0.7$ where each variable has a reliability value higher than 0.6, and therefore having acceptable internal consistency.

Table 2

Descriptive Analysis and Cronbach Alpha values for all variables.

	Drop-off space	Traffic congestion	Facilities Road Safety	Parents concern in safeguard children
Cronbach Alpha	0.75	0.85	0.72	0.76
Mean	4.31	4.82	4.16	2.40
Std Deviation	0.76	0.51	0.85	0.67

Table 3

Correlation coefficient results for all variables

Variables	Drop-off space	Traffic congestion	Facilities Road Safety	Parents concern
Drop-off space	1			
Traffic congestion	0.57**	1		
Facilities Road Safety	0.69**	0.47**	1	
Parent concern	-0.51	-0.86	0.4	1

Note: ** correlation is significant at the level 0.01 level (two-tailed)

Entry and facilities relate to Road Safety indicates that there is a strong positive linear correlation between these two variables. Thus, the availability of drop-off space at school will reduce traffic congestion around the school and increase the school environment for children safety. As for the Traffic congestion around the school and facilities relate to Road Safety, $r = 0.47$ while $p = 0.000$ and $\alpha = 0.01$ shows that there is a moderate positive linear relationship between both variables.

R-squared (R^2) in regression analysis indicates the proportion of variance in the dependent variable explained by the independent variable. R-squared ranges from 0 to 1 and represents the goodness of fit of the regression model to the observed data. A higher R-squared value suggests a better fit for the model. Table 4 presents the regression model summary, showing the R-value that represents the multiple correlation coefficients. The findings indicate the impact of independent variables on the dependent variable, with R-squared values always falling between 0 and 1. As R^2 increases, the model describes more variation in the data and becomes more reliable for prediction. However, in certain areas of study, unexplained variation may be inherently higher, leading to lower R-squared values. Even with a low R-squared value, if the independent variables are statistically significant, important conclusions about the association between variables can still be drawn. The significance value is consistently below 0.005, indicating the statistical significance of the independent variables. The F value, which measures overall significance, is higher, further supporting the reliability of the study based on the regression analysis. This study contributes to improving

understanding of parents' concerns regarding children's safety in school compounds. Based on Table 4.5, the multiple regression model with all predictors results in an R-squared value of 0.74, indicating that 74.0% of the variations in safeguarding children on road safety at school compounds can be explained by three independent variables: drop-off space at the school entry, traffic congestion around the school, and road safety-related facilities. The remaining 26.0% of the variation is attributed to other important variables, such as parents' concerns, which were not examined in this study. The regression analysis also confirms that the model fits well, with a significant p-value below 0.001 and an F value of 24.86.

Table 4
Regression Analysis

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig
	B	Std. error	Beta		
Constant	34.68	2.61		13.29	0.000
The drop-off space for children at the school entry	-0.11	0.18	-0.51	-0.59	0.562
Traffic congestion around the school	-0.91	0.13	-0.86	-0.69	0.000
Facilities relate to Road Safety	0.07	0.11	0.40	0.61	0.550
F value	24.86				
Sig	0.000				
Adjusted R ²	0.71				
R ²	0.74				

Discussion and Recommendation

The analysis revealed negative significant relationships between the independent variables and the dependent variable, which is parents' concern for safeguarding children on road safety at school compounds. The literature reviews highlighted traffic congestion as a crucial concern for parents, as it poses risks to the safety of students, teachers, parents, and residents. The limited drop-off space at school entries leads to behaviours such as uncontrolled mid-block crossings and double parking, further exacerbating congestion issues. Additionally, inadequate road infrastructure and poor road conditions in school areas contribute to fatal accidents. The study's results show that drop-off space and traffic congestion have negative impacts on parents' perception of road safety at school compounds, while facilities related to road safety have a positive impact. These relationships were found to have moderate to strong correlations. It was concluded that the identified issues significantly influence parents' perceptions of road safety.

Furthermore, the study explored the correlations between the independent variables. A positive and moderate correlation was found between drop-off space and traffic congestion. Similarly, a positive and strong correlation was observed between drop-off space and facilities related to road safety, as well as between traffic congestion and facilities related to road safety. These findings support the notion that these variables are interconnected and contribute to parents' perceptions of road safety.

The study utilized multiple regression analysis to examine the model. The analysis confirmed that the model was a good fit, with an R-squared value of 0.74, indicating that 74.0% of the variations in parents' concerns for safeguarding children on road safety at school compounds can be explained by the three identified issues. However, it was noted that 26.0% of the variation in the dependent variable was attributed to other unexplored factors. These results were summarized in Table 4. To support the findings, the study referenced previous research that highlighted additional factors contributing to traffic congestion, such as poorly timed traffic lights and insufficient temporary parking spaces. The study also acknowledged the positive influence of the independent variables on parents' perceptions of road safety. It was indicating that two (2) independent variables in this study have negative significant relations and one (1) independent variable have positive significant relation with the dependent variables. Thus, it can be concluded that all the variables of the Hypothesis which is **H1**: There is a significant relationship between drop-off space for children at the school entry and parents concern in safeguard children on road safety at school compound.; **H2**: There is a significant relationship between traffic congestion around the school and parents concern in safeguard children on road safety at school compound.; **H3**: There is a significant relationship between facilities relate to Road Safety and parents concern in safeguard children on road safety at school compound was accepted and all the **H0** is rejected.

Conclusion

In conclusion, the study successfully identified and analysed the issues of drop-off space, traffic congestion, and facilities related to road safety as significant factors impacting parents' concerns for safeguarding children on road safety at school compounds. The correlations between these variables were examined, and a regression analysis confirmed the model's fit. The findings contribute to understanding the complex dynamics of road safety concerns at schools and provide insights for improving safety measures in school environments.

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