

Study on User Satisfaction of Pick Areas for Elementary Schools – Using Nanyang Elementary School in Taichung City as Example

Chun-Feng Chang, Yan-Chyuan Shiau* and Kuan-Yin Chen

Department of Construction Management, Chung Hua University

707, WuFu Rd., Sec. 2, Hsinchu, 30012, Taiwan

E-mail: E10316003@chu.edu.tw; *ycshiau@ms22.hinet.net; jac32455@gmail.com

Abstract

This study has investigated the user satisfaction of pick areas for elementary schools and their improvement requirements. Questionnaire is adopted to discuss user satisfaction of the school environment. The improvement strategies for pick areas were inspected for different various backgrounds. The research results have showed that overall satisfaction ranges from general to satisfaction. Some useful suggestions are proposed. These suggestions can be served as reference for schools and educational organizations to establish an unimpeded pick area for a safe school commuting environment.

Keywords: Commuting Environment, Pick-up/Drop-off Area, Walkways, Satisfaction, Improvement needs

1. Introduction

1.1 Background

According to statistics from the Ministry of Health and Welfare in 2010, data showed that among campus accidents in elementary schools, the percentage of deaths from traffic accidents ranked top and reached more than one-third of total accidents. Most of the traffic accidents involved students occurred on the way to or from schools and mostly happened near students' home or school [1]. Over recent years, government institutions at various levels have actively promoted improvement on overall commuting environment to school by providing safe and comfortable commuting environment, as well as encouraging cooperation between communities and schools, which shall gradually integrates surrounding commuting environment to schools, and further achieves a perfectly smooth and safe commuting environment to school [2].

1.2 Purpose of Research

Based on the above-mentioned problems and situations, the purpose of this research includes the following:

- Discuss the satisfaction and improvement needs from parents of students in elementary schools towards current situation of commuting environment to school and pick-up/drop-off area.
- Analyze the difference between satisfaction from parents of students in elementary schools with different backgrounds towards current situation of commuting environment to school and pick-up/drop-off area.
- Discuss the difference between improvement needs from parents of students in elementary schools with different backgrounds towards current situation of commuting environment to school and pick-up/drop-off area, as well as providing relevant suggestions about establishment or improvement for commuting environment to school pick-up/drop-off area.

1.3 Definition of commuting environment to school and pick-up/drop-off area

The commuting environment to school mainly includes six fundamental areas: (1) Pedestrian walkways around the campus (i.e., walkways to school); (2) traffic safety facilities including pedestrian crossings and traffic sig-

© The 2016 International Conference on Artificial Life and Robotics (ICAROB 2016), Jan. 29-31, Okinawa Conventional Center, Okinawa, Japan

nals; (3) pick-up/drop-off block for parents; (4) pedestrian walkways, land bridges and underpasses from school to residential communities; (5) passages from school gates to campus buildings; (6) various functional facilities and landscapes with visual effects along above-mentioned passages. The pick-up/drop-off area refers to the region consisting of traffic safety facilities such as pedestrian walkways around the campus, pedestrian crossings and traffic signals, as well as pick-up/drop-off block for parents within the commuting environment to school. [3]

2. Investigation on Research Base

Nanyang Elementary School is located on Nanyang Road, Fengyuan District, Taichung City as a central school in township format with numerous stores and dense population nearby. According to information provided by education notification system of the Education Bureau of Taichung City [4]: In 2014, Nanyang Elementary School had a total of 102 classes with 2,905 students, which made it the largest school with most students among 228 public elementary schools in Taichung City. The main gate sits right next to Nanyang Road, the main road towards the City with Ziqiang Street on the east side, Tongan Street on the north side and Huiyang Street on the west side. The school is surrounded by roads that form a 4-way intersection at each corner. There are 6 gates in total, where 3 gates serve as entries and exits for students arriving and leaving the school. Investigation was made on traffic safety facilities at 4 intersections around Nanyang Elementary School and its 3 gates.

3. Results of Research

3.1 Analysis on profile of participants

This research took parents escorting students to and from Nanyang Elementary School in Taichung City as the participants, where questionnaires were used to understand their satisfaction towards the current status of the commuting environment to school and pick-up/drop-off area. In the "Gender" category under parents of students in elementary schools sampled for investigation, the majority were 453 females at 71.3 %. In the "Age" category under parents of students in elementary schools sampled for investigation, the majority were 373 parents between

40-49 years old at 58.7%. In the "Education level" category under parents of students in elementary schools sampled for investigation, the majority were 303 parents with college degree at 47.7 %. In the "Occupation" category under parents of students in elementary schools sampled for investigation, the majority were 170 parents in service industry at 26.8 %. In the "Average monthly income" category under parents of students in elementary schools sampled for investigation, the majority were 290 parents with NTD 20k-40k at 45.7%. In the "pick-up/drop-off method" category under parents of students in elementary schools sampled for investigation, the majority were 352 parents using motorcycles at 55.4.7%. In the "Most often used gate" category under parents of students in elementary schools sampled for investigation, the majority were 298 parents using the main gate (Nanyang Road) at 46.9%.

3.2 Analysis on satisfaction towards status of commuting environment to school and pick-up/drop-off area

The commuting environment to school and pick-up/drop-off area includes three items: the walkways to school, pick-up/drop-off block for parents and traffic safety facilities. In this research, the 5-point Likert Scale was used for measurements and answering. Analysis was done with descriptive statistics such as mean and standard deviation to show the difference of satisfaction between each question. The resultant statistics are as follows:

- The item with the greatest satisfaction from parents of students in elementary schools to "walkways to school" was the "adequate width". The item with the greatest satisfaction to "pick-up/drop-off block for parents" was "adequate control time". The item with the greatest satisfaction to "traffic safety facilities" was "proper execution adopted by the school on non-material control measures".
- The top three items with the greatest satisfaction from parents of students in elementary schools to current status of commuting environment to school and pick-up/drop-off area were "proper execution adopted by the school on non-material control measures", "adequate establishment of pedestrian crossings on surrounding roads" and "adequate width of walkways to school".

- The overall satisfaction from parents of students in elementary schools to current status of commuting environment to school and pick-up/drop-off area was between normal and satisfied. The item with the greatest satisfaction was "traffic safety facilities" followed by "walkways to school" and then "pick-up/drop-off block for parents".

3.3 Differential analysis of satisfaction towards the current status of item with different backgrounds

The objective of this section is to discuss the difference between satisfaction from parents of students in elementary schools with different backgrounds (including gender, age, education level, occupation, average monthly income, pick-up/drop-off method and the most often used gate) towards commuting environment to school and pick-up/drop-off area. In this research, independent sample T test and One-Way ANOVA were adopted for analysis. The background acts as the independent variable and satisfaction to commuting environment to school and pick-up/drop-off area as dependent variable. Should distinctive difference be achieved, the Scheff Method can be used afterwards to compare and verify the difference. Based on results of satisfaction from research investigation, the following three conclusions can be summarized:

- For parents of students in elementary schools with different gender, age, education level, occupation, average monthly income and pick-up/drop-off method towards commuting environment to school and pick-up/drop-off area, there is no distinctive difference in satisfaction between "walkways to school", "pick-up/drop-off block for parents" and "traffic safety facilities", as well as the "overall satisfaction".
- For parents of students in elementary schools using different gate towards commuting environment to school and pick-up/drop-off area, there is no distinctive difference in satisfaction to "pick-up/drop-off block for parents"; but distinctive difference does appear in satisfaction to "walkways to school" and "traffic safety facilities", as well as the "overall satisfaction".
- For satisfaction from parents of students in elementary schools to "traffic safety facilities", the main gate receives the greatest satisfaction, which is followed by the back gate, and then the east gate. In terms of satisfaction towards "walkways to school" and "overall satisfaction", the main gate receives greater satisfaction than the east gate.

3.4 Analysis on improvement needs for commuting environment to school and pick-up/drop-off area

The objective of this section is to discuss improvement needs from parents of students in elementary schools with different backgrounds (including gender, age, education level, occupation, average monthly income, pick-up/drop-off method and the most often used gate) towards the current situation of commuting environment to school and pick-up/drop-off area, which covers items such as walkways to school, pick-up/drop-off block for parents, traffic safety facilities. Descriptive statistics was used for analysis, where the number of items for improvement needs were represented with frequency distribution and percentage, as well as ranking the improvement needs according to magnitude of percentage (Fig. 1 to Fig. 3).

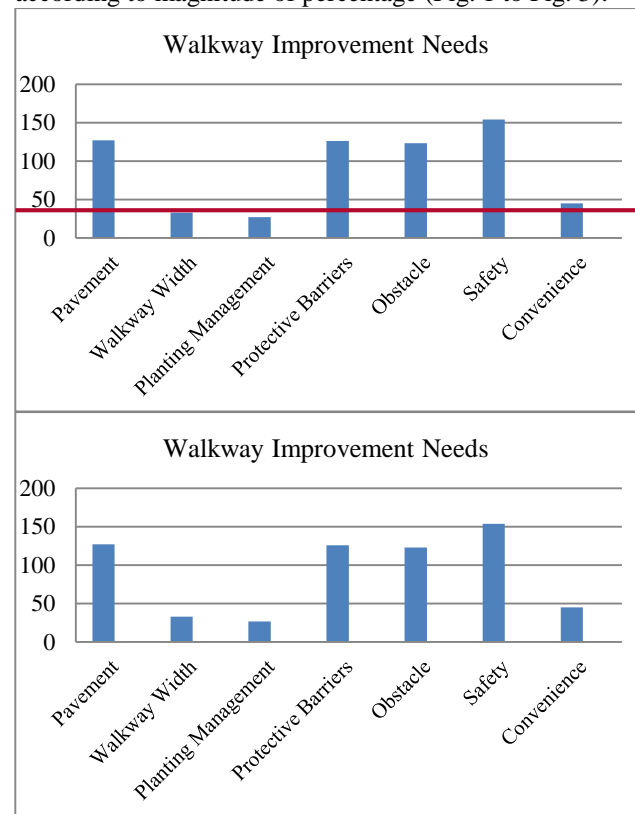


Figure 1 Analysis on improvement needs for walkways to school

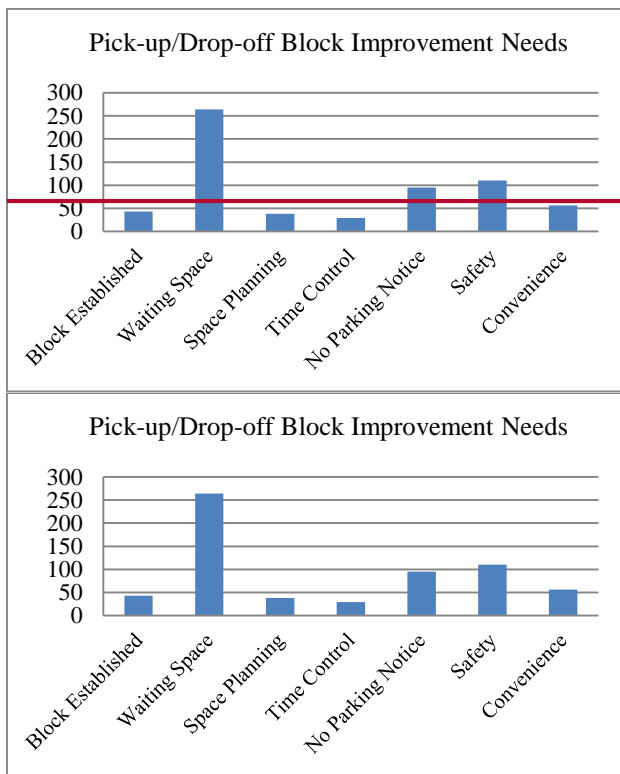


Figure 2 Analysis on improvement needs for pick-up/drop-off block for parents

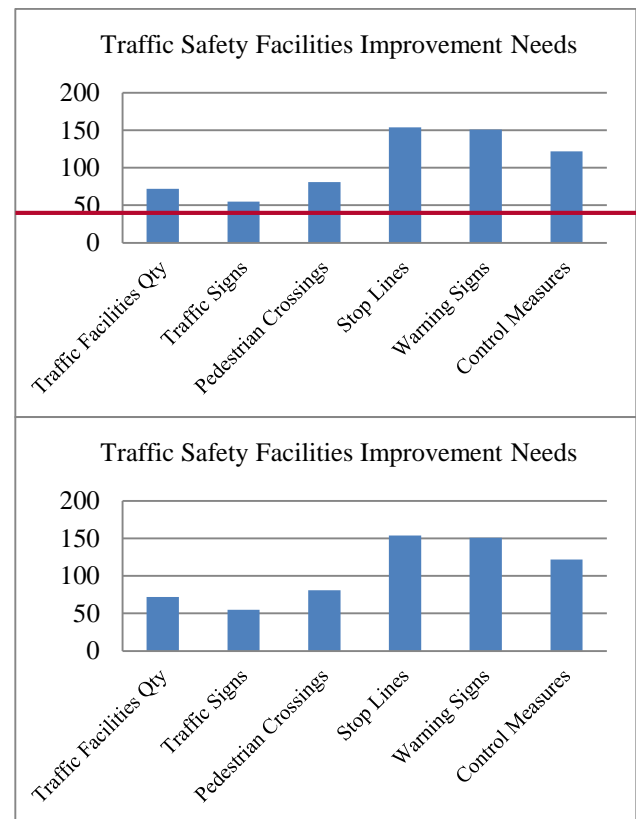


Figure 3 Analysis on improvement needs for traffic safety facilities

4. Conclusions and Suggestions

4.1 Conclusions

Based on the investigation of this research, the analysis on data of satisfaction from parents of students in elementary schools towards the current status of commuting environment to school and pick-up/drop-off area reveals the following:

- The overall satisfaction from parents of students in elementary schools towards the current status of commuting environment to school and pick-up/drop-off area is between normal and satisfied. The satisfaction on individual items ranks from "traffic safety facilities", "walkways to school" to "pick-up/drop-off block for parents".
- The satisfaction from parents of students in elementary schools towards the current status of commuting environment to school and pick-up/drop-off area does not show distinctive difference because of difference

in gender, age, education level, occupation, average monthly income and pick-up/drop-off method.

- For improvement needs from parents of students in elementary schools towards commuting environment to school and pick-up/drop-off area, the "walkways to school" shows the greatest needs for "high safety"; the "pick-up/drop-off block for parents" shows the greatest needs for "sufficient waiting space" and the "traffic safety facilities" shows the greatest needs for "clear and adequate marking of stop lines along surrounding roads".
- The suggestions made by parents of students in elementary schools for establishing perfect commuting environment to school and pick-up/drop-off area are ranked from "control time of vehicle passing, implement separate access for pedestrians and vehicles, enhance executions of penalties to illegal parking", "ask traffic police to assist with traffic guidance", "hire experts to provide suggestions of improvements" and "provide sufficient funds for improvements".

4.2 Suggestions

Based on the investigation and results of this research, the following suggestions are proposed for improvements on commuting environment to school and pick-up/drop-off area:

- Suggestions for commuting environment to school and pick-up/drop-off area
 - (i) Enhance maintenance and management of walkways to school
 - (ii) Increase waiting space in pick-up/drop-off block for parents
 - (iii) Enhance maintenance and repair of traffic safety facilities
- Suggestions for education authorities
 - (i) Hire experts in planning of commuting environment to design a suitable improvement program, as well as providing schools with sufficient funds to establish a perfectly safe commuting environment to school and pick-up/drop-off area.
 - (ii) Re-plan the school districts to reduce problems such as insufficient pick-up/drop-off space and traffic chaos in commuting environment to school due to excessive number of students.

6. References

1. P. J. Wang, Y. C. Wu, The safe way to school, *Journal of Healthy Cities*, Vol. 4, Page 46-51, 2006.
2. Y. J. Wang, A study on the degree of satisfaction of school walkways for elementary school students in Yulin County, Master's Thesis for the master's program of leisure environment management, Department of Tourism Management, Nanhua University, Chia-Yi, 2013.
3. C. A. Hsiao, A study on the safety and satisfaction of pick-up area at primary school of Taoyuan City, Master's Thesis for the master's program under the Department of Architecture, Fengchia University, Taichung, 2011.
4. Website of Education Bureau, Taichung City Government, <http://www.tc.edu.tw/school/student>.