ATRANS
(ASIAN TRANSPORTATION RESEARCH SOCIETY)

4TH ATRANS SYMPOSIUM
STUDENT CHAPTER SESSION

SCHOOL ZONE SAFETY MANAGEMENT
A CASE STUDY IN NAKHON RATCHASIMA

✎ AUTHURS ✎
PHATTARASUDA WITCHAYAPHONG
KRISRI TIPPAYAWONG
PAKORN TANGJATURASOPON
SPMPRASONG SUTTAYAMULLY

Suranaree University of Technology

SCHOOL ZONE

✎ *Presentation Outline* ✎

1. • Problem Statements
2. • Research Objectives
3. • Research Procedure
4. • Data analysis and result
5. • School zone safety management

www.sut.ac.th   Suranaree University of Technology

SCHOOL ZONE

📖 *Problem Statements* 📖

The number and percentage of injuries and deaths
in children under the age of 15 years (2004-2007)

Source: Bureau of Epidemiology, Ministry of Health (2004-2007)

www.sut.ac.th   Suranaree University of Technology

SCHOOL ZONE

📖 *Problem Statements (con't)* 📖

1) "School Zone" vulnerable to accidents especially during the time before and after school.
2) "Children are not Adults"
3) the reason of insecurity of school zone.

- No. of students
- The lack of traffic discipline in the use of the students
- Non-compliance with traffic regulations
- The lack of careful while driving
- activities on footpath
- the lack of traffic sign "school zone"

The reasons cause of accidents!!!

⭐ To protect and reduce all of these problems

www.sut.ac.th   Suranaree University of Technology

Slide 1

SCHOOL ZONE 📖 *Research Objectives* 📖

1) To decrease the accidents in school zone
2) Construct the plan to prevent and improve the traffic accident problems
3) Raise the standard level of safety in the other communities in Thailand

www.sut.ac.th — *Suranaree University of Technology*

Slide 2

SCHOOL ZONE 📖 *Research Procedure* 📖

School Safety Management

Conclusion

Data Analysis

Survey & Data collection —
Road Characteristic
Speed
No. of people cross street
Safe gap

Location of research (2 schools in Korat)

www.sut.ac.th — *Suranaree University of Technology*

Slide 3

SCHOOL ZONE 📖 *Data Analysis and results* 📖

★ *Case studied* ★ *2 Schools in Muang District Nakhon Ratchasima*

1) **Sukanaree School**   **Situation:** Pho klang Rd.& Jomsurangyard Rd.
No. of students: 6,700

2) **Tessaban 1 (Burapa wittayakorn) School**
Situation: Chom Phon Rd.
No. of students: 5,400

www.sut.ac.th — *Suranaree University of Technology*

Slide 4

SCHOOL ZONE 📖 *Data Analysis and results* 📖

★*Road Characteristic* ★

Pho klang Rd.

Chom Phon Rd.

Sukanaree School

Tessaban 1 School

Jomsurangyard Rd.

www.sut.ac.th — *Suranaree University of Technology*

SCHOOL ZONE 📖 *Data Analysis and results* 📖

★ *The problems* ★

Side of Jomsurangyard Rd.

SCHOOL ZONE 📖 *Data Analysis and results* 📖

★ *The problems* ★

Sideof Phokrang Rd.

SCHOOL ZONE 📖 *Data Analysis and results* 📖

★ *Studied of No. pedestrian around crosswalk* ★

"Phoklang Rd."

"Jomsurangyard Rd."

"Chom phon Rd."

SCHOOL ZONE 📖 *Data Analysis and results* 📖

★ *Studied of No. pedestrian around crosswalk* ★

Sukanaree School

Tessaban 1

"Phoklang Rd."   Jomsurangyard Rd.   Cham Phon Rd.

Slide 1

📖 *Data Analysis and results* 📖

★ *the factors of using crosswalk* ★

1. The Store/ shop in school zone
2. Parking to drop/send children outside the area of crosswalk
3. Lack of caution in children
4. No staff/ volunteers to facilitate

www.sut.ac.th — Suranaree University of Technology

Slide 2

📖 *Data Analysis and results* 📖

★ *The study of spot speed* ★

Select Study Methodology
1. Determine the issue at hand
2. Does the study require a small or large sample
3. Select the stopwatch, radar meter, or pneumatic road tube method

Select Location
1. Select the proper location
2. Plan the data collection preparations
3. Select a day
4. Complete the pre-study documentation

Complete Study
1. Collect the data
2. Evaluate the data
3. Calculate the speed percentiles

Document
1. Finalize the report
2. File the report
3. Communicate the results

www.sut.ac.th — Suranaree University of Technology

Slide 3

📖 *Data Analysis and results* 📖

★ *The study of spot speed* ★

1) Sukanaree School
Phoklang Rd.

60 m   40 m

40 m   60 m

Speed Percentile 85th

- 07.20-08.30 น. (bef)
- 07.20-08.30 น. (aft)
- 15.30-16.30 น. (bef)
- 15.30-16.30 น. (aft)
- 16.30-17.45 น. (bef)
- 16.30-17.45 น. (aft)

Reference Point: 1L-2L   2L-3L   3R-2R   2R-1R

www.sut.ac.th — Suranaree University of Technology

Slide 4

📖 *Data Analysis and results* 📖

★ *The study of spot speed* ★

2) Sukanaree School
Jomsurandyard Rd.

60 m   40 m

40 m   60 m

Speed Percentile 85th

- 07.20-08.30 น. (bef)
- 07.20-08.30 น. (aft)
- 15.30-16.30 น. (bef)
- 15.30-16.30 น. (aft)
- 16.30-17.45 น. (bef)
- 16.30-17.45 น. (aft)

Reference Point: 1L-2L   2L-3L   3R-2R   2R-1R

www.sut.ac.th — Suranaree University of Technology

Slide 1

★ *The study of spot speed* ★

3) Tessaban 1 School
Chom Phon Rd.

- 07.20-08.30 น. (bef)
- 07.20-08.30 น. (aft)
- 15.30-16.30 น. (bef)
- 15.30-16.30 น. (aft)
- 16.30-17.45 น. (bef)
- 16.30-17.45 น. (aft)

www.sut.ac.th — Suranaree University of Technology

Slide 2

★ *Safety Gap* ★

(Minimum Safe Crossing Gap)

$$Min.Safe\ Gap = \frac{Street\ width\ (ft)}{Walking\ Rate\ (ft/s)} + 2(N-1) + Perception/Reaction\ Time$$

- Street Width (ft) = 13.4 m = 44 ft
- N = Number of Rows in 85th-percentile (5 students per Row)
- Perception/Reaction Time = 3 s
- Walking Rate (Children) = 3.5 ft/s

www.sut.ac.th — Suranaree University of Technology

Slide 3

★ *Safety Gap* ★

Sample size (students)	Frequency			
	07.30-08.30		15.30-16.30	
	Freq.	Cuml. Freq.	Freq.	Cuml. Freq.
3 or < 3	31	31	74	74
4-6	13	44	36	110
7-9	7	51	23	133
10-12	3	54	9	142
13-15	0	54	1	143
16-20	0	54	0	143
21-25	3	57	0	143
26-30	2	59	0	143
31-35	0	59	0	143
> 35	1	60	0	143
85th percentile	51 (7-9 students)		122 (7-9 students)	

Min. Safe Crossing Gap = 18 sec

www.sut.ac.th — Suranaree University of Technology

Slide 4

Engineering maintenance

Provide knowledge and understanding of traffic safety

Enforcement on traffic regulation

www.sut.ac.th — Suranaree University of Technology

Slide 1

SCHOOL ZONE

📖 *School zone safety management* 📖

★ *Engineering Maintenance* ★

- Should not have obstructions on the footpath.
  - High traffic volumes ⟶ needs for infrastructure improvement

- The traffic sign should be improved for ready to use at all times. "School Zone", "Speed Limited", "Crosswalk Sign for pedestrian"

- Instructions from school crossing guards must be obeyed at all times. - ex: traffic police, volunteer etc.

- Avoid providing a parking area near the school crossing zone.

- Traffic calming

www.sut.ac.th

Suranaree University of Technology

Slide 2

SCHOOL ZONE

📖 *School zone safety management* 📖

★ *Engineering Maintenance* ★

www.sut.ac.th

Suranaree University of Technology

Slide 3

SCHOOL ZONE

📖 *School zone safety management* 📖

★ *Provide knowledge and understanding of traffic safety* ★

Additional training, both theoretical and practical about the traffic on a daily basis.
- Safety crossing road
- Awareness in safety for using public transport
- Traffic sign and traffic regulation

Advise parents to control law enforcement around school zone
- parking zone
- Speed limited
- Be prepared to stop if children are in the crosswalk

www.sut.ac.th

Suranaree University of Technology

Slide 4

SCHOOL ZONE

📖 *School zone safety management* 📖

★ *Enforcement on traffic regulation* ★

Should provide the staff forced driver to follow traffic rules strictly

No obstruction from physical features
Sufficient space to avoid obstruction from the vendors

Parking area

www.sut.ac.th

Suranaree University of Technology