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# 한국형 어린이 통학버스 안전성 향상 기술 개발



## 어린이 통학버스 보행자 안전을 향상시키기 위한 첨단 운전자간 통신수단

Farmer Devon\* · 신판주\*\* · 김현\*\*\* · 김재철\*\*\*\* · Kongkhammanivong Intha\*\*\*\*\*

### Advanced Driver-to-Driver Communication Tools to Enhance Pedestrian Safety Around School Buses

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**Key Words :** 어린이 통학버스 안전, 교통안전, Road Projection, 교통 심리학, 자동차 조명

#### ABSTRACT

In this study, we investigated Korean drivers' knowledge of their legal responsibilities regarding school buses and explored potential enhancements for the lighting systems employed on Korean school buses. Our research comprised results from two surveys and on-road experiments. The first survey targeted school and daycare staff as well as parents of schoolchildren, while the other was aimed at general drivers. Our findings from surveys revealed a prevalent lack of awareness among Korean drivers regarding the significance of the existing lighting systems on school buses. However, when exposed to concepts of advanced lighting concepts incorporating variable message signs (VMS) and road projections, we observed notable improvements in both behavior and understanding of these lighting signals from survey respondents. In a subsequent set of on-road experiments involving 29 participants, we first examined reactions to conventional lighting on school buses and confirmed that a mere 10% to 29% of participants adhered to the mandated stopping procedure. However, when we introduced road projection systems, compliance increased by up to 93%. These results underscore a compelling argument for implementing VMS or road projections as a novel means of driver-to-driver communication for traffic safety-related applications.

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## 어린이 통학교통정책 학습: 한국의 경험에서 본 교훈

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### Policy Learning for Children's School Transportation: Lesson's From Korea's Experience

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**Key Words :** 어린이 통학버스 안전, 교통안전, 도로 안전, 차량 안전 정책, 운전자의 징계

#### ABSTRACT

School transportation is critical for students in both developed and developing countries as it provides opportunity and access to education. Because of this, it is also vital that school transportation is reliable and safe. Developing countries generally still have a high rate of accidents for children traveling to and from school, occurring almost every day, due to a lack of good policy, knowledge, and safety equipment and technologies. In this presentation, we reviewed the effects of safety enhancements and policies that have been implemented in the Republic of Korea since 1988 which has resulted in an up to 98% decrease in accidents involving school children on Korean roads and compare Korea's performance to other developed OECD peer nations. We also discuss how and why the Korean case makes for a good chance for policy learning to export safety knowledge, legislation, policies, regulations, and principles to developing countries, such as the Lao PDR and Cambodia.

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## 좌석 및 좌석안전띠 유형에 따른 어린이 인체상해 특성 비교연구

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### A Study on the Comparison Injury Characteristics of Child According to Seat and Seatbelt Types

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**Key Words :** Child Occupant(어린이 탑승객), Lap Belt(2점식 좌석안전띠), Three-point Belt(3점식 좌석안전띠), Sled test (충돌모의시험), Injury(상해)

#### ABSTRACT

This study was focused on comparison of child safety according to seat types and seatbelt types of passenger in coach 4,500kg or less. Through sled test according to the ECE 129 regulation, the characteristics of injury criteria of Q6 and Q10 were confirmed according to the seat and seatbelt types. As a result of test, Q6 and Q10 is in excess of injury criteria when wearing lap belt and three-point belt in adult seats. It is needed to introduce injury criteria and child seats with three-point belt to protecting child occupants.

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## 중형 어린이통학버스 사고예방 기술 도입을 위한 사용자 요구사항 분석

박보현\* · 이상화\*\* · 신강원\*\*\*

### Analysis of User Requirements for the Implementation of Accident Prevention Technology in Medium-Sized School Buses

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**Key Words** : School bus(어린이통학버스), Requirements(요구사항), School bus safety(어린이통학버스 안전)

#### ABSTRACT

In Korea, significant efforts are being made to reduce school bus accidents involving children by overhauling laws and systems, but unfortunately, the number of such accidents is on the rise. The types of children's school bus traffic accidents can be broadly classified into three types: accidents where a child gets caught in the body of a school bus, collisions that occur due to collisions between other vehicles and other facilities, and pedestrian accidents that occur while children are walking after getting on and off the bus. This can be seen as the need to introduce safety technology to prevent accidents in children's school buses.

Therefore, in this study, a requirements survey was conducted on medium-sized children's school buses, which account for more than half (63.49%) of children's school buses in elementary schools, to introduce safety technology to prevent accidents in children's school buses.

The requirements survey was divided into survey items according to the type of user, and the results were derived by consisting of basic statistical items, vehicle satisfaction, inconveniences, and improvements. In the future, based on the analysis results of this study, we will propose traffic accident prevention technology that needs to be implemented in medium-sized children's school buses.

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## 베트남의 전기저상 어린이 통학버스 도입 필요성 요인

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### The Need Factors for Electric Low-Floor School Buses in Vietnam

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**Key Words :** Need factor, Electric Low-floor, Children, School Bus, Vietnam

#### ABSTRACT

This empirical study conducted an AHP analysis among Vietnamese stakeholders on the need factors for the electric low-floor children's school buses in Vietnam. The need factors were divided into different parts such as safety, technology, industry, environment, and policy factors, and the need factors were analyzed through pairwise comparisons. The results of this study provide implications for the overseas expansion of technology to improve the safety of Korean children's school buses.

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