Road Safety Education for Higher-Grade Children of Primary School

Effects of Peer Discussions and Role-Playing Exercises on Children’s Attitudes and Behavior

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Abstract
This article describes the effects of peer discussion and role-playing exercises on self-estimation for risk involvement and crossing behavior on actual roads for higher-grade children of primary school. Higher-grade children discussed children’s road accident situations and ways of communicating with lower-grade children. In role-playing exercises, higher-grade children acted as teachers and actually trained lower-grade children in road-crossing skills. Results of a questionnaire indicated that after peer discussion and role-playing exercises, higher-grade children recognized that they might be involved in road accidents. Observations indicated that higher-grade students tended to cross actual roads more carefully after peer discussion and role-playing exercises. It is necessary to develop a practical scheme for higher-grade children to receive repeated education based on peer discussion and role-playing exercise.

1. BACKGROUND
Children are exposed to risks of accidents on the road when going to and from school, because their school routes are usually narrow in Japan. Therefore, it is crucial to ensure Japanese children’s road safety. In addition, children are future drivers; therefore, they need to be educated so that as drivers they will prioritize safety on the road and be considerate of other drivers as well as pedestrians. Therefore, continuous implementation of road safety education beginning with young children is important. In Japan, children usually join in road safety training programs to acquire road-crossing skills once or twice each year. As a result, higher-grade primary school children are repeatedly taught road safety that they already know and acquired in earlier stages of their development. Thus, they may not be motivated to participate in road safety education, and they may not actively engage in the program. Therefore, it is necessary to develop new educational programs that will motivate higher-grade children to participate in traffic safety activities and form positive attitudes and behavior toward road safety.1

This article describes a new educational program for higher-grade children to learn road safety and to consider other pedestrians as well as drivers. The effects of the new program are investigated based on the children’s
self-evaluation of their risk involvement and their crossing behavior on actual roads.

2. EDUCATION PROGRAM

The education program proposed in this study was developed for higher-grade children so that they could learn road safety and consider the thinking of other people. The aims of the program were that higher-grade children would form an attitude to prioritize safety on the road and learn social skills that would cause them to consider other pedestrians as well as drivers.

The program involved three peer discussions and two role-playing exercises.

3. METHOD

3.1 Participants

Thirty-nine children aged 8 and 9 years (23 boys and 16 girls) joined in the higher-grade education program. In addition, 26 lower-grade children aged 6 and 7 (16 boys and 10 girls) participated in the second role-playing session.

3.2 Procedure

3.2.1 Exercises

Three peer discussions and two role-playing exercises (pre-learning and one other role-playing) were implemented on different days. Each peer discussion and pre-learning in role-playing exercise lasted 45 minutes, which was equivalent to one lesson in Japanese primary school. The other role-playing session lasted 90 minutes.

(1) Peer discussions

During the first peer discussion, experts introduced themselves and asked the higher-grade children some questions about road accidents in Japan to gain rapport with them. Experts explained how to discuss with each other to help them understand how to deal with others, based on their knowledge of counseling.

Nine groups consisting of four or five children discussed the following matters with peers in a group (Fig. 1). One volunteer helped the children with their discussions in each group.

![Fig. 1. Peer discussions with volunteers](image)

【Discussion matters】Day 1: Road accident factors
Day 2: Measures preventing children from being involved in accidents
Day 3: How to communicate with lower-grade children

Experts gave the children feedback on road accident factors and possible measures of child road accidents after the second and third discussions to understand them well.

(2) Role-playing exercises

Experts gave the higher-grade children a manual before conducting the role-playing exercises. The manual was developed to help the children deal with lower-grade children and teach them safe road-crossing behavior.

At the beginning of the pre-learning session, experts on road safety explained to the higher-grade children how to conduct role-playing with younger children. As the pre-learning session, the higher-grade children then taught safer road-crossing behavior to one another in pairs.

In the second role-playing session, the higher-grade children acted as teachers who actually taught safe road-crossing behavior to lower-grade children, referring to the manual. The role-playing session was conducted in the school gymnasium. Mock roads with poor visibility typical of Japanese school routes were set up in the gymnasium. Behavioral modification training was adopted by the higher-grade children to teach road-crossing skills to the lower-grade children. The
higher-grade children asked the younger children to cross the mock-up road as they would an actual road. The higher-grade children observed the lower-grade children’s crossing behavior and checked their positive and negative points of their behavior based on the following (Fig. 2): (a) stop or not before reaching the curb, (b) look all around for traffic or not, (c) walk on the crosswalk or not, and (d) raise a hand during crossing or not. These points were described in the manual for the higher-grade children. Finally, the higher-grade children praised the lower-grade children for their appropriate road-crossing behavior and modified their inappropriate road-crossing based on their observations. This behavioral modification training was repeated twice for each lower-grade child.

The experts aided the higher-grade children in dealing with the lower-grade children and teaching the crossing behavior to them.

3.2.2 Effect verification

To investigate the effects of the educational program on the attitudes and behavior of the higher-grade children, surveys and behavioral observations were conducted.

(1) Surveys

Six surveys were conducted for the higher-grade children: before the first peer discussion, after each peer discussion, and after each role-playing exercise. The survey included 12 items. In this study, the results of the following two items were reported.

(a) Do you think that you will become involved in road accidents in your daily life? (risk perception)
(b) Do you think that you can understand the thinking of lower-grade children? (consideration)

The higher-grade children responded to each item using a five-point Likert scale (always think so – usually think so – neither – don’t think so – don’t think so at all).

(2) Behavioral observation

Behavior of the higher-grade children was observed to investigate whether effects of the educational program were reflected in their daily behavior on a road. The observations were performed for 8 days before pre-learning and 7 days after the last role-playing session. Three experts unobtrusively checked the higher-grade children’s crossing behavior on a three-way intersection near their school after the children left school in the afternoon. These evaluations were as follows.

Appropriate: The higher-grade child walked and looked to the right and to the left before crossing the road.
Running: The child didn’t walk but looked to the right and to the left before crossing the road.
Inattentive: The child walked but did not look to the right and to the left before crossing the road.
Dashing out: The child ran and did not look to the right and to the left before crossing the road.

4. RESULTS

The survey results are plotted in Fig. 3. The results of one-way ANOVA and Tukey post hoc tests indicated that the higher-grade children’s recognition that they might be involved in a road accident was higher after the second peer discussion than before and after the first discussion (Fig. 3(a)). The results also indicated that the children tended to think that they
could understand the thinking of lower-grade children after the last role-playing session (Fig 3(b)).

The data to analyze the children’s behavior were selected based on two points: their behavior without moving vehicles and the behavior on which two experts’ evaluations agreed. The results are presented in Fig. 4. Results of Chi-squared tests indicated significant differences in behavior before and after the role-playing exercises: the children tended to behave more appropriately on the actual road after the exercises.

![Graph showing behavioral changes before and after role-playing exercises](image)

Lower score: children thought they might be involved in accidents

Higher score: children thought they could understand the thinking of lower-grade children

※dis: discussion

5 DISCUSSION

This paper describes the effect of a new educational program for higher-grade children of primary school. The program included peer discussion and role-playing exercises. The peer discussions encouraged the higher-grade children to recognize that they might be involved in road accidents. The discussion with peers and experts’ feedback about the factors of road accidents and possible measures to prevent children from being involved in accidents may change the attitudes of higher-grade children regarding road safety.

In addition, the new program proposed in this study improved the higher-grade children’s behavior on actual roads. Our previous study indicated that peer discussions or role-playing exercises alone did not change higher-grade children’s behavior. Therefore, repeated education including both peer discussions and role-playing exercises was conducted to achieve behavioral changes of higher-grade children.

It is necessary to develop a practical scheme for higher-grade children to receive repeated education in the limited school curriculum in Japan.

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References
