

Using maths and science curriculum to increase understanding of how and why correct, age-appropriate child car seat use improves safety

Louise Cosgrove^a

^a*Kids and Traffic*, Macquarie University,

Abstract

Kids and Traffic, part of Transport for NSW's (TfNSW) Road Safety Education Program, seeks to prevent child road trauma. *Kids and Traffic* collaborates with educators to develop integrated road safety curriculum, including maths and science, to improve child and adult understanding of how and why child car seats protect children. Findings from the Buckle up Safely Program (Keay et al., 2012) and observational evidence suggest that this approach can improve safety outcomes for children through increasing correct use of age-appropriate restraints. Evaluation now underway will inform professional development and resources to be made available to all NSW early learning centres.

Background

Transport related injuries remain a leading cause of death in children under 16 years of age in Australia. As part of TfNSW's longstanding Road Safety Education Program, *Kids and Traffic* partners with early childhood organisations and other stakeholders to improve safety outcomes for children, families and communities. The shared goal is to move Towards Zero road trauma.

In 2017, over half the children, 0-16 years, killed or seriously injured in road traffic crashes in NSW were motor vehicle passengers. (Centre for Road Safety, Transport for NSW, 2018). For optimal crash protection children need to be restrained in age-appropriate, correctly fitted and correctly used child car seats. However, only a minority of children are optimally restrained. Optimal protection occurs when a child car seat is securely coupled to the vehicle and the child is tightly secured within the seat. Seatbelts need to cross their bones, the strongest part of the child's body, for crash forces to be best withstood (Brown & Bilston, 2012).

Kids and Traffic professional development workshops for educators and resources for children and families explain how and why children need to be optimally restrained. Maths and science based teaching and learning successfully increases child and adult knowledge and understanding related to correct use of age-appropriate child car seats.

Implementation

Kids and Traffic collaborates with educators to develop child-centred, cross-curriculum, play-based road safety education. An integrated early childhood curriculum, including maths and science, supports road safety learning through concepts such as data, measurement, speed, force, physiology and anatomy.

As part of ongoing road safety education children engage in learning about the human body and how the strong skeleton protects the vital organs from injury. Human body texts, puzzles, posters and online resources provide provocation for enquiry and investigation for project-based learning. Discussion on the types of child car seats children use and where seatbelts should cross their bodies is supplemented by tangible resources such as x-rays, models and graphics for exploration.

Measuring children's height and comparing their sizes and types of child car seats used are successful teaching tools to demonstrate that, for optimal protection, the type of restraint used must match the size of each child's body.

Families are ultimately responsible for children's safety. Educators who document and share children's engagement and learning via photos, videos and text help families understand how and why age-appropriate, correct car seat use is necessary and thus contribute to improving safety outcomes for child passengers.

Conclusion

Kids and Traffic collaborates with early childhood educators to design and implement cross-curriculum road safety education to increase knowledge and understanding of age-appropriate and correct child car seat use. Maths and science concepts are used successfully to achieve this outcome.

Formal evaluation of this approach with preschool aged children has now begun at two early learning centres in Sydney. Results will inform development of an additional *Kids and Traffic* professional development workshop and related resources to be made available to all NSW early learning centres.

References

- Brown, J. & Bilston, L.E. (2012). Child occupant protection in Australia. *Journal of the Australasian College of Road Safety*, 23(2), 37-45.
- Centre for Road Safety, Transport for NSW. (2018). Road traffic casualty crashes in NSW. Statistical statement for the year ended 31 December 2017. State of NSW through Transport for NSW.
- Keay, L., Hunter, K., Brown, J., Simpson, J.M., Bilston, L.E., Elliott, M., Stevenson, M. & Ivers, R.Q. (2012). Evaluation of an Education, Restraint Distribution, and Fitting Program to Promote Correct Use of Age-Appropriate Child Restraints for Children Aged 3 to 5 Years: A Cluster Randomized Trial. *American Journal of Public Health*, 102(12), 96-102.