

Synthesis title:

Child Pedestrians

Category: Pedestrians



Other Relevant Topics:

- ▶ Teenage Pedestrians (Pedestrians)
- ▶ Safe Route Planning (Pedestrians)
- ▶ Pedestrians (Roads)

Keywords:

Child/ren,
Pedestrians,
Education

About the Road Safety Observatory

The Road Safety Observatory aims to provide free and easy access to independent road safety research and information for anyone working in road safety and for members of the public. It provides summaries and reviews of research on a wide range of road safety issues, along with links to original road safety research reports.

The Road Safety Observatory was created as consultations with relevant parties uncovered a strong demand for easier access to road safety research and information in a format that can be understood by both the public and professionals. This is important for identifying the casualty reduction benefits of different interventions, covering engineering programmes on infrastructure and vehicles, educational material, enforcement and the development of new policy measures.

The Road Safety Observatory was designed and developed by an Independent Programme Board consisting of key road safety organisations, including:

- ▶ Department for Transport
- ▶ The Royal Society for the Prevention of Accidents (RoSPA)
- ▶ Road Safety GB
- ▶ Parliamentary Advisory Council for Transport Safety (PACTS)
- ▶ RoadSafe
- ▶ RAC Foundation

By bringing together many of the key road safety governmental and non-governmental organisations, the Observatory hopes to provide one coherent view of key road safety evidence.

The Observatory originally existed as a standalone website, but is now an information hub on the RoSPA website which we hope makes it easy for anyone to access comprehensive reviews of road safety topics.

All of the research reviews produced for the original Road Safety Observatory were submitted to an Evidence Review Panel (which was independent of the programme Board), which reviewed and approved all the research material before it was published to ensure that the Key Facts, Summaries and Research Findings truly reflected the messages in underlying research, including where there may have been contradictions. The Panel also ensured that the papers were free from bias and independent of Government policies or the policies of the individual organisations on the Programme Board.

The Programme Board is not liable for the content of these reviews. The reviews are intended to be free from bias and independent of Government policies and the policies of the individual organisations on the Programme Board. Therefore, they may not always represent the views of all the individual organisations that comprise the Programme Board.

Please be aware that the Road Safety Observatory is not currently being updated; the research and information you will read throughout this paper has not been updated since 2017. If you have any enquiries about the Road Safety Observatory or road safety in general, please contact help@rospa.com or call **0121 248 2000**.

How do I use this paper?

This paper consists of an extensive evidence review of key research and information around a key road safety topic. The paper is split into sections to make it easy to find the level of detail you require. The sections are as follows:

Key Facts	A small number of bullet points providing the key facts about the topic, extracted from the findings of the full research review.
Summary	A short discussion of the key aspects of the topic to be aware of, research findings from the review, and how any pertinent issues can be tackled.
Methodology	A description of how the review was put together, including the dates during which the research was compiled, the search terms used to find relevant research papers, and the selection criteria used.
Key Statistics	A range of the most important figures surrounding the topic.
Research Findings	A large number of summaries of key research findings, split into relevant subtopics.
References	A list of all the research reports on which the review has been based. It includes the title, author(s), date, methodology, objectives and key findings of each report, plus a hyperlink to the report itself on its external website.

The programme board would like to extend its warm thanks and appreciation to the many people who contributed to the development of the project, including the individuals and organisations who participated in the initial consultations in 2010.

Key facts

- 3,624 children aged 0-11 years old were pedestrian casualties in 2016.
- Child pedestrian (aged 0-15) fatalities rose by 36 per cent to 34 in 2016, 26 per cent above the 2011-15 average.
- The majority of reported child pedestrian casualties (99 per cent) occurred on built-up roads in 2016.

(RRCGB, DfT, 2017)

- In 2014, 324 children aged 4 -11 years old were killed or seriously injured (KSI) on journeys made during term time and in the hours in which children may be expected to be making a journey to or from school (this is 36% of the total number (n=710) of child pedestrian KSI casualties aged 4-11 years old).

(D. Lloyd et al, 2015)

- Child pedestrians from poorer households are five times more likely to be Killed or Seriously Injured in Road Traffic Incidents (RTIs) than their richer counterparts.

(ETSC, 2005)

- An evaluation of 20 mph zones in the UK demonstrated that the zones were effective both in reducing traffic speed and in reducing RTIs. In particular child pedestrian injuries were reduced by 70 per cent from 1.24 per year in each area before to 0.37 per year after the zones were introduced.
- Pedestrian skills training programmes have been shown to improve children's skills, such as timing and finding safe places to cross, provided that they are specifically targeted (at particular road safety skills).

(E. Towner, 2005)

Summary

Child pedestrians are defined for the purpose of this synthesis as a pedestrian under 12 years old (to minimise overlap with the Teenage Pedestrians category). However, it should be noted that some research defines children as aged 0-15 years old, and where this research has been used the relevant age range has been made clear.

In 2016, 3,624 children aged 0-11 years old were pedestrian casualties. (RRCGB, DfT, 2017)

In 2011, 290 children aged 4 -11 years old were killed or seriously injured (KSI) on journeys made during term time and in the hours in which children may be expected to be making a journey to or from school. The transition between primary and secondary school is a significant factor in child pedestrian casualties as children often begin to walk to school unassisted and have to negotiate unfamiliar routes (age 12 is the peak for child pedestrian RTI involvement).

It is recognised that boys, older children and disabled children are more likely to be injured as a pedestrian than younger children (who are usually accompanied) and girls. However, social status has also been suggested as a predictor to pedestrian involvement in a RTI. A number of studies have correlated levels of deprivation with increased child casualties. Consequently it has been stated that children from poorer households are five times more likely to be a pedestrian casualty than children from richer households.

Reducing child pedestrian casualties can be tackled through a combination of the 'Three Es': Education, Engineering and Enforcement. The use of a range of interventions from each of the 'Three Es' is likely to both increase awareness of road safety issues amongst children and adults and reduce child pedestrian casualties.

Education encompasses a range of interventions that can be delivered by, for example, parents, teachers, youth clubs and road safety professionals. Research suggests that a mixture of theoretical sessions and on the roadside practical training can increase awareness and improve behaviour. The effectiveness of road safety education in terms of reduction in casualties, however, is difficult to confirm. This is due to the fact that interventions cannot be easily compared as they are often evaluated in different ways and it is normally a combination of factors that reduce casualties.

In terms of engineering, there is now good evidence that suggests that implementing traffic calming in an area can reduce child casualties. Modifications such as 20 mph zones can also have a dramatic effect on the number of child pedestrian KSIs. A number of schemes in the UK have shown a 70-75 per cent reduction in KSIs.

Enforcement interventions are limited to those which target dangerous drivers in the vicinity of schools. The presence of Police patrols after school on foot or on bicycles are a visible deterrent for those taking part in illegal activities such as speeding, drink/drug driving and those disobeying traffic signals. Police presence is also likely to encourage safer behaviour from the school children.

Methodology

A detailed description of the methodology used to produce this review is provided in the Methodology section of the Observatory website at <http://www.roadsafetyobservatory.com/Introduction/Methods>.

This synthesis was compiled during July 2012.

Child pedestrians are defined for the purpose of this synthesis as a pedestrian under 12 years old (to minimise overlap with the Teenage Pedestrians category). However, it should be noted that some research defines children as aged 0-15 years old, and where this research has been used the relevant age range has been made clear.

The steps taken to produce this synthesis are outlined below:

- **Identification of relevant research** – searches were carried out on pre-defined research (and data) repositories. The search terms and words used included, but were not limited to:
 - 'Child pedestrian';
 - 'Pedestrian';
 - 'Casualties';
 - 'Children';
 - 'Think!';
 - 'Education';
 - 'Engineering'; and,
 - 'Enforcement'.

A total of 113 pieces of relevant research were identified, these included.

- 75 focussed on children aged 0-15 years old.
 - 36 specifically focussed on children under 12 years old.
 - 2 providing general pedestrian information.
- **Initial review of research** – primarily involved sorting the research, based on key criteria, to ensure that the most relevant and effective research was included in this synthesis. Key criteria included:
 - Relevance – whether the research has adequate focus on child pedestrians i.e. did the research focus on children under 12 years old.
 - Age of research – whether the research has been published within the last 15 years (exceptions made for older but highly topical pieces).
 - Interventions – whether the research proves (or disproves) effective interventions to improve child pedestrian road safety.
 - **Detailed review of research** – key facts, figures and findings were extracted from the identified research to highlight the relevant topic issues.

- **Compilation of synthesis** – the output of the detailed review was analysed for commonality and a synthesis written in the agreed format. Note that the entire process from identifying research to compiling the synthesis was conducted in a time bound manner.
- **Review** – the draft synthesis was subjected to extensive review by a subject matter expert, proof reader and an Evidence Review Panel.

Please note that the terms Great Britain and UK have been reproduced in this synthesis as they have been used in the associated references.

Key Statistics

This section collates key statistics relating to child pedestrians.

This review includes statistics from Reported Road Casualties Great Britain 2011, which were the latest available data when the review was written. In December 2017, statistics from Reported Road Casualties Great Britain were updated to [Reported Road Casualties Great Britain 2016](#).

Number of child pedestrian casualties

- The majority of child KSI casualties are pedestrians, accounting for 66 per cent of the total in 2011.
- Compared with 2010, there was a 3 per cent fall in child pedestrian KSI casualties in 2011.
- 4,718 children aged 0-11 years old were pedestrian casualties in 2011.
- In 2011, 290 children aged 4 -11 years old were killed or seriously injured (KSI) on journeys made during term time and in the hours in which children may be expected to be making a journey to or from school (this is 34% of the total number (n=851) of child pedestrian KSI casualties aged 4-11 years old).
- Child pedestrian fatalities (aged 0-15) rose by 27 per cent to 33 in 2011, but remained below the 2009 figure of 37; the 2011 figure was 42 per cent below the 2005-09 average.

(P. Kilbey *et al*, 2012)

- The child (0-14 years old) pedestrian fatality rate per 100,000 children (based on data between 1996 and 2000) in the UK was ranked 17th of 26 Organisation for Economic Co-operation and Development (OECD) countries.
- Trends for child pedestrian deaths, child pedestrian kilometres travelled and child pedestrian fatality rates per unit of exposure for 0-5 year olds, 6-9 year olds and 10-14 year olds groups showed that for all age groups the number of fatalities per population and unit of exposure was decreasing, suggesting that walking had become safer. For all age groups the amount of walking had decreased but appeared to be stabilising.
- Trend data suggests that pedestrian fatalities are decreasing over time for all countries and the difference between the UK and the top performing countries is narrowing.

(N. Christie *et al*, 2004)

- There are large differences in recorded child casualty rates across Great Britain ranging from 1 in 206 children injured per year to 1 in every 1,158 children per year. The average rate in Great Britain is 1 in 427, significantly lower than the national risk for all people, 1 in 231.

(Road Safety Analysis, 2010)

Nature of collisions

- It is estimated that a 1 mph reduction in mean speed would result in a 4.3 per cent reduction in all-injury RTIs, and a 10 per cent reduction in KSI RTIs.

(TRL, 2000)

- Research has shown that, for pedestrians in impacts with the front of cars, the risk of fatality increases slowly until impact speeds of around 30 mph. Above this speed, risk increases rapidly (between 3.5 and 5.5 times from 30 mph to 40 mph).

(D. Richards, 2010)

- An analysis of the accident circumstances for fatally injured child pedestrian and cyclist casualties aged 9-15 using police accident files showed that:
 - Nearly half the children (44%) were fatally injured on roads with a speed limit over 30mph.
 - Boys were more likely than girls to be involved in an accident
 - Two-thirds of the fatally injured children were accompanied, and most were with friends.
 - The police reports suggested that a quarter of the child pedestrians had crossed the road without looking both ways and/or crossed at an inappropriate location.

(J. Sentinella and M. Keigan, 2005)

- Child road casualties are 25 per cent more likely to occur in the summer months than during the winter.

(Road Safety Analysis, 2010)

- The majority of reported child pedestrian casualties (98 per cent) occurred on built-up roads in 2011.

(P. Kilbey *et al*, 2012)

- During evaluation of the Neighbourhood Road Safety Initiative (NRSI; development of schemes by 15 Local Authorities to reduce road casualties in their most deprived areas), analysis of 2001 casualty data showed that whilst most children were injured on residential roads, these made up about 80% of the road length in the NRSI areas. When this was accounted for, the risk to the children was highest on the main roads.

(N. Christie *et al*, 2010)

Demographics and effects of social background

- Analysis of child road casualty data from the period 2004-2008 demonstrated that:
 - As the age of the child increases, the risk of being a pedestrian casualty also increases.
 - Boys were more likely to be injured than girls in all age groups.

(Road Safety Analysis, 2010)
 - Disabled children are also particularly vulnerable and highly exposed to the dangers of speeding vehicles e.g. evidence suggests that children with hearing or vision impairments are at greater risk of being involved in a road accident.
- (ETSC, 2005)

There is strong evidence that socio-economic deprivation is linked to child pedestrian RTIs: the risk of being involved in an RTI as a child pedestrian increases as socio-economic status decreases.

- Casualty analysis shows a statistically significant positive correlation between casualty rates and deprivation level. The data shows that a child pedestrian or cyclist is five times more likely to be injured in the most deprived areas of Northern Ireland than in the least deprived areas.
- (S. Wood *et al*, 2011)
- During evaluation of the Neighbourhood Road Safety Initiative (NRSI; development of schemes by 15 Local Authorities to reduce road casualties in their most deprived areas), analysis using 2001 casualty and census data showed that the child pedestrian casualty rate in the most deprived Index of Multiple Deprivation (IMD) decile was about five times that in the least deprived.
- (N. Christie *et al*, 2010)
- Child pedestrians from poorer households are five times more likely to be Killed or Seriously Injured in RTIs than their richer counterparts.
- (ETSC, 2005)
- In the UK there is a steep social gradient in child pedestrian fatalities and at present there is no routine monitoring of the socio-economic status of all road traffic casualties at a national level.
- (N. Christie *et al*, 2004)

Research findings

Summaries of key findings from several research reports are given below. Further details of the studies reviewed, including methodology and findings, are given in the References section.

Attitude to road safety

- When asked to list their top 3 concerns regarding their child's safety, parents were most concerned about "bullying", followed closely by "accidents on the road" ("Abduction" was ranked third). This has been the case since 2009; prior to this, "accidents on the road" were the major concern.

(S. Leggett and R. Duff, December 2011)

- Research conducted in 2003 highlighted the fact that parents' safety concerns related to their children's and other drivers' actions, traffic levels and other dangers (i.e. strangers).

(C.V Platt *et al*, 2003)

- When asked about road safety, "accidents on the road" is the main concern among children (with specific worries such as drivers travelling too fast, being followed by or not being seen by drivers, and drunk drivers).
- When asked, parents generally believed that children needed to be 10-11 years old before being responsible enough to walk or cycle without an adult.

(S. Leggett and R.Duff, March 2011)

Environmental factors

- Children in Great Britain were significantly more likely than children in the other countries (France and the Netherlands) to walk to school along more major through roads, with higher traffic volumes and faster traffic. In addition, children in Great Britain were less likely to be subject to speed limits lower than the standard urban limit.
- British children are more likely to use unmarked crossings when crossing the road. These, and other, behavioural differences may increase the RTI risk in Great Britain compared to other countries.
- Factors likely to increase the severity of child pedestrian casualties include: vehicle speeds; lighting conditions (higher severity during darkness); types and number of vehicles involved and location (away from junctions).

(P. Bly *et al*, 2005)

- Child pedestrian (and cycling) RTIs are highest in the early years of secondary school, at around the age of 12 years old, corresponding to a period in which children, most of whom lack the experience of coping with traffic, begin to go to school unassisted.

(ETSC, 2005)

Education, Engineering and Enforcement

Reducing child pedestrian casualties can be tackled through a combination of the 'Three Es':

- Education;
- Engineering; and,
- Enforcement.

Each of the 'Three Es' will be discussed in the following sections. However, only the interventions which are likely to benefit the largest number of children have been included. Interventions which are targeted towards specific groups, such as disabled children, have not been included although it is expected that the majority of general interventions will be relevant.

Education

Education covers a wide range of road safety interventions aimed at both children and adults, including:

- Ad hoc road side training provided by parents;
- Traffic clubs;
- School classroom based road safety education;
- Roadside training provided by schools, youth clubs and road safety professionals;
- Walking school buses;
- Websites providing road safety information and resources for pupils, teachers and parents;
- Targeted advertising such as TV and posters; and,
- Online games.

A combination of the above interventions will raise awareness in both children and adults. Whether 'raising awareness' reduces child pedestrian casualties is difficult to prove, and is missing from the available research.

- Parental involvement

The word parent is used in this section, although any adult accompanying a child such as grandparent, carer, or child minder will be acting as a role model and can provide road side training.

Parental involvement in a child's road safety education is of paramount importance. Parents often understand that they have a role to play in educating their children about road safety at the roadside but do not always educate by example. Parents can be unaware that children may copy their road crossing habits, and for this reason support is required. Traffic Clubs and other appropriately targeted interventions and other resources can help parents set a good example. Often these interventions improve awareness but it is very difficult to attribute a reduction in child pedestrian casualties to the intervention.

The following section focuses on parental involvement in road safety education.

- Holding hands is the most common form of parent-child interaction when crossing roads.
- Research suggests that children, when in the company of an adult, rely on the adult for safety. However, unaccompanied children seem to be more likely to do road safety checks than accompanied children.

(M. Cattan *et al*, 2008)

- Conversely another study states that the mere presence of a parent, may cause children to behave more cautiously.

(B.K. Barton and D.C. Schwebel, 2007)

- Although parents are aware of the risks associated with roads, most parents do not have a deliberate strategy for teaching children to be safe on the roads.
- As a result parents are not fully aware of the effect they have as a role model and tend to be an inconsistent role model for road safety.
- Parents should be supported in the important role they play in the road safety education of their children by using appropriately targeted interventions beginning at the ante-natal stage.
- Parents should be encouraged to be actively involved in local road safety initiatives to reinforce messages and to keep them updated with current good practice.
- Children felt the most effective way for parents to teach road safety education was to start young, teach rules with explanation, set a good example and provide opportunities to develop skills at the roadside.

(J. Green *et al*, 2008)

- The obvious resource for road safety training is the child's own parent. Parents are, de facto, the primary educators in this field; they are the child's main companion on the roads, the model from whom the child learns by observation, and the arbiter of road safety strategies.

(S. Wood *et al*, 2003)

- Traffic Clubs

- A booklet for parents of children aged 5-8 year old was produced during a 2003 pilot study. The booklet helped parents to teach traffic skills and comprehension to their own children. Initial feedback indicated that the scheme offered a child-orientated perspective on road safety issues that was new to parents. It may be that, having read the booklet once, parents' understanding of the problems of road safety from the child's perspective are altered so fundamentally that subsequent interactions with their children serve to reinforce the message underlying the scheme in an enduring way.

- Evaluation has demonstrated that the booklet provides a practical method for parents (of 5-8 year olds) to help improve their children's road safety skills and hazard awareness.

(S. Wood *et al*, 2003)

- The Children's Traffic club intervention was aimed at pre-school children (aged between 3 and 5 years old). A set of booklets were issued every 6 months to parents and children which promoted road safety issues. The programme was found to increase knowledge and self-reported behaviour of the children, and also had a positive effect on collisions (Bryan-Brown and Harland, 1999).

(cited in A. Martin, 2006)

- School classroom based road safety education

Although road safety is not specifically part of the national curriculum, road safety can be included in Personal Social, Health and Economic lessons (PSHE) and can also link to other parts of the national curriculum such as IT and Expressive Arts. A number of resources are available for teachers; these link classroom sessions with homework and often discuss the importance of involving parents. Classroom sessions can be complimented by practical road side training schemes.

- Road safety is not currently part of the national curriculum but it is recognised that safe behaviour develops over time and needs to be constantly practised, reinforced and reflected upon throughout the primary school years. It is recommended that schools develop a comprehensive road safety programme in which parents, teachers, road safety professionals and others in the community work together to ensure that children can make responsible decisions in the road environment.

(Road Safety Scotland, nd)

- Schools are more supportive towards road safety training when it actively links to, and reinforces, the national curriculum.

(K.Whelan *et al*, 2008)

- A number of links can be made between road safety education throughout the primary curriculum, these include:
 - Health Promoting Schools;
 - School Travel Plans;
 - Safer Routes to school;
 - Eco-Schools;
 - Citizenship;
 - ICT;
 - Expressive Arts and school assemblies;
 - English Language; and,
 - Health.

- Consultation with educators and Road safety Officers (RSOs) explored what could be done to make road safety education more accessible and user-friendly for both teachers and pupils. Responses included greater access to: drama productions, interactive information technology software, lively and interactive presentations by outside agencies, hard-hitting videos and better quality and more up-to-date facilities.

(MVA Consultancy, 2009)

- Although many resources exist for the 11-12 year old age group, very few placed any emphasis upon, or highlighted, the transfer from primary to secondary school.
- Research aimed to develop and evaluate a road safety programme to ensure that children have developed the skills required to match the independence they are given when they move to secondary school. During the transition process between primary and secondary school, the *Making Choices* educational resources were distributed to parents. These resources included leaflets, activities and journey planners to be used before, during (school holidays) and after the transition. The educational resources recognised the maturity and changing lifestyle of the children.
- The *Making Choices* activities were also used in primary and secondary schools by teachers. Most primary teachers had integrated the activities within Geography and PSHE to complement the existing transfer process. In nearly all secondary schools, the teachers used the materials in timetabled PSHE lessons.

(C.V. Platt *et al*, 2003)

- Roadside training

Ad hoc roadside training can be provided by parents and can also be provided by schools, volunteers (including parents), youth clubs and road safety professionals. It is well documented that classroom based education can provide a foundation for road side training and it is practice at the roadside that helps children make informed decisions about road safety.

- Practical roadside experience is an essential ingredient of pedestrian skills training.

(E. Towner, 2005)

- The *Kerbcraft* programme is firmly based on learning theories and educational evidence and was designed to enhance pedestrian skills in 5-7 year old children over a period of 12-18 months. Studies have shown that there is strong statistical evidence of the positive impact of training in all three *Kerbcraft* skills:
 - Recognising safe versus dangerous crossing places;
 - Crossing safely at parked cars; and,
 - Crossing safely near junctions.
- Success and failure of the scheme was often dependant on the motivation and ability of the *Kerbcraft* co-ordinator. The supply of volunteers was also another important factor. (K. Whelan *et al*, 2008)

The Stepping Out road safety scheme described below provides an example of good practice, especially in relation to evaluation and finding out 'what works'.

- *Stepping Out* is a road safety pedestrian training scheme for 7-9 year olds offered by Staffordshire County Council to schools across Staffordshire. The scheme consists of three phases:
 - Teacher-led classroom training including worksheets, a DVD and discussion;
 - A 60-90 minute practice walk during which children learn to walk a route on roads near to their school; and,
 - An observed walk which assesses skills the children have learnt on the scheme, during which children independently walk the route they learnt.
- The scheme has helped to increase children's and parents' awareness of potential dangers on and around roads, in particular driveways, and has helped children to understand the potential consequences of their actions.

(L. Hillyard, 2010)

- Roadside training by volunteer parents for groups of children can lead to significant improvements in children's road safety behaviour.
- Education measures that include a 'life course' approach to education, working with parents and teachers to offer progressive, interactive education and training, using the Traffic Club (for 3-4 year olds) and *Kerbcraft* (practical roadside training for 5-7 year olds) models of delivery are likely to be effective in increasing pedestrian skill.

(S.Wood *et al*, 2011)

- Walking school buses

A Walking School Bus (WSB) is a group of children who walk to school accompanied by an adult. A major advantage of walking school buses is that they reduce parents' dependence on the car and can remove the potential hazard from vehicles from a school locale.

- The success of walking buses is dependent on the reliability of their staffing and scheduling. Thus, like their motorised counterparts, WSBs follow timetables, stop only at designated points and operate year-round. Moreover, they are dependent on both 'passengers' and 'drivers'/'conductors' following certain rules: children's behaviour is monitored and periodically corrected by adult volunteers, while those adults may find themselves subject to the surveillance of parents, schools, local authorities and even police.
- WSBs have been perceived as empowering, offering significant benefits in the areas of sociability, safety and physical exercise, as well as traffic reduction.

(R.A Kearns and D.C.A, Collins, 2003)

- Websites providing road safety information and resources

THINK! Education provides road safety resources and information for teachers, pupils and parents as well as road safety professionals and youth groups. Teachers, road safety professionals and youth groups were asked whether they were aware of the resources in a recent study. Awareness was high and all parties involved thought the resources were useful.

- Awareness of the THINK! Education resources was high, particularly among Road Safety Officers (RSO) who are responsible for the delivery of road safety education. RSOs help schools to plan and implement the delivery of road safety education. Teachers were less likely than out-of-school group leaders to have previously visited the THINK! Education resources website.
- Teachers were more likely to have access to computers and the internet during education sessions than out-of-school leaders. RSOs generally could not rely on computer or internet access during education sessions they helped to deliver.
- THINK! Education resources were viewed very positively by teachers and group leaders, with the vast majority finding them high quality or easy to use. RSOs were also positive about the quality of the resource.

(EdComs, 2011)

- Road safety professionals

- Road safety teams are using, or endeavouring to use, a firm evidence base in determining how their resources should be targeted. Casualty data and statistics are playing a key role in local decision-making.
- Immediate gains may be achieved in increasing the amount of training currently provided by Road Safety Officers (RSOs) to their partners in delivery. Fire officers, in particular, may benefit from a prompt response, with recent legislative changes requiring them to play an increasingly active role in road safety education. Supporting and enabling these staff should be viewed as capacity-building rather than diverting responsibility away from RSOs.

(MVA Consultancy, 2009)

- User involvement

- Young people can be hard to reach, and more user involvement in programme design for young people could be beneficial.

(E. Towner *et al*, 2005)

- In some top performing countries in terms of road safety (e.g. the Netherlands and Sweden) participant approaches are being utilised, where children are consulted about traffic safety or are encouraged to research and learn about traffic themselves.

(N. Christie *et al*, 2004)

- Taking the child's perspective seriously means understanding how a task or situation will look to the child, and what implications this interpretation of events will have for the child's assessment of danger and choice of strategies at the roadside. By understanding how children with different perspectives interpret situations and events, we can gain insight into what it is that cues safer behaviour or the use of roadside skills in some cases - and fails to cue these things in others.

(M. Ratcliff and S. Bouchier-Hayes, nd)

- Targeted advertising

The Tales of the Road campaign is aimed at 6-11 year olds, and TV/cinema advertising and online games and information have been used to raise awareness. Although children are aware of the campaign and other forms of 'Edutainment' it is difficult to state whether they are putting the key messages into practice on the roadside i.e. whether there is an effect on behaviour. Similarly, whilst advertising may be memorable, e.g. 'hard-hitting' advertising, there is a lack of evidence that it actually changes behaviour. Good practice suggests providing a person with an action to make them safer is more effective than just raising awareness.

- Awareness of the Tales of the Road campaign has increased in the wake of high profile television and cinema campaigns. The number of children aware of the Tales of the Road campaign was 20 per cent.

(S.Leggett and R.Duff, 2011)

- 'Edutainment' in the form of an educational video may not be effective, despite parents considering it a useful tool.

(M.Cattan, 2008)

- Qualitative research suggested that graphic illustration of catastrophe should not be shied away from when depicting the impact and consequences of RTIs. Significant numbers of 8-11 years old and the vast majority of those over 11 years old can cope with it.

(M. Ratcliff and S. Bouchier-Hayes, nd)

- Online games

The Code of Everand (CoE) game was commissioned and developed in 2009 as part of the DfT's THINK! Campaign to improve road safety. *CoE* introduced a fantasy land called Everand, criss-crossed by spirit channels inhabited by dangerous creatures. The world integrates a model for learning by asserting the need to look left and right in advance of crossing a channel. The game also aims to encourage children to plan safe routes and avoid more dangerous channels. The evaluation suggested that children felt they were safer at the roadside but it remains unclear whether or not actual behaviour at the roadside has improved.

- Game-based learning (The Code of Everand) was deployed and promoted on a large-scale and was able to reach and engage a sizable audience representing a hard-to-reach demographic. Approximately 62,000 UK children aged between 9-15 years old played the game.
- The game was more popular at the younger end of this spectrum, with schools years 5 and 6 (ages 9-11 years old) generating proportionally higher numbers of sign ups.
- Although only 20 per cent of players were girls, the game reached a broad range of areas and ethnicities.
- Self reported attitudes of children towards the game showed a broadly positive attitude towards serious gaming in a road safety context.
- Quantitative evidence showed that respondent children who played the game self-reported safer behaviour than a national sample.
- The game worked in reaching a large number of children in the target age group, and received predominantly positive feedback. However, due to a number of factors (such as self reporting, and the indirect nature of the game) it is difficult to conclude that the game had a concrete impact on road safety behaviours across the player base.

(I. Dunwell *et al*, 2011)

Engineering

- There is now good evidence that area-wide engineering schemes and traffic calming measures reduce RTIs.

(E. Towner *et al*, 2005)

- The use of special measures to slow traffic (including formal traffic calming schemes) is prevalent in the Netherlands, but is less common in Great Britain or France. The types of measures encountered in the Netherlands include road humps, artificial curves, pinchpoints near islands, special road surfaces, and speed cameras.

(P. Bly *et al*, 2005)

- Road safety policy could focus on the following as the main aspects of policy and design of the road environment where risk might be reduced:
 - Traffic calming and lower speed limits;
 - The design of local distributor and residential roads, especially to provide a more forgiving road environment where mistakes by child pedestrians are less likely to result in RTIs and injuries; and,
 - Crossings at junctions.

(P. Bly *et al*, 1999)

- Clearer guidelines are needed for implementing low speed limits near schools and in identifying these areas as enforcement zones.
- In relation to children as pedestrians, the top performers were Sweden, the Netherlands, Finland, Germany and Denmark. In contrast to the other countries, the majority of these countries report that they:
 - Have speed reduction measures (including environmental modification and low speed limits) and signalised crossings in most local authorities or municipalities;
 - Have these measures outside many schools;
 - Have outside play areas, such as parks or playgrounds, in most residential areas;
 - Conduct national publicity campaigns once a year or more, aimed at child pedestrian safety; and,
 - Have legislation that assumes driver responsibility for RTIs involving child pedestrians in residential areas.
- A review of Road Environment Policy identified a need to have more widespread introduction of 20 mph (30-40 kph) speed limits, a more targeted approach to the environment around schools, and greater provision of safe play areas in the UK.

(N. Christie *et al*, 2004)

- Environmental change, such as area wide traffic calming, 20 mph zones, and safe routes to school, supported by engineering measures may have a role to play as long as implementation involves the community.

(S. Wood *et al*, 2011)

Enforcement and legislation

- Enforcement is needed to address the risks posed by antisocial behaviour of drivers and riders, especially targeting male drivers and riders aged 17-20 years old and 31-40 years old and at times when children play and travel.
- Interventions are likely to be more successful in disadvantaged areas if they include comprehensive approaches (i.e. a range of different measures), involve the community, are tailored to the characteristics of the community and use local data both to understand travel patterns and risk, and in the evaluation.

(S. Wood *et al*, 2011)

How effective?

Interventions are often evaluated in different ways, and this makes it difficult to compare findings effectively. A number of evaluations claim that awareness of particular issues was increased but there is little evidence to suggest that this awareness has led to an improvement in child behaviour at the roadside or a reduction in child pedestrian casualties. Reductions in child pedestrian casualties may be attributed to a number of factors which will include a combination of education, engineering and enforcement interventions. The following section outlines some interventions that have been deemed effective.

- A Traffic Club booklet for parents of children aged 5-8 years old was produced during a 2003 pilot study. The booklet helped parents to teach traffic skills and comprehension to their own children. Use can yield up to a 20 per cent fall in 'dart-out' RTIs.

(S. Wood *et al*, 2003)

- Traffic clubs using age-paced materials designed to promote parental teaching have been shown to be more effective than school based traffic clubs in effecting behaviour change.

(E. Towner *et al*, 2005)

- The *Kerbcraft* programme is firmly based on learning theories and educational evidence and was designed to enhance pedestrian skills in 5-7 year olds children over a period of 12-18 months. Studies have shown that there is strong statistical evidence of the positive impact of training in all three *Kerbcraft* skills:
 - Recognising safe versus dangerous crossing places;
 - Crossing safely at parked cars; and,
 - Crossing safely near junctions.

(K. Whelan, *et al*, 2008)

- *Stepping Out* is a road safety pedestrian training scheme for 7-9 year olds offered by Staffordshire County Council to schools across Staffordshire. Evaluation results showed that children who received *Stepping Out* had significantly better road safety knowledge scores than those who did not receive the training.

(L. Hillyard, 2010)

- *Making Choices* is an educational road safety programme, designed to ensure that children have developed the skills required to match the independence they are given when they move to secondary school. During research children that had been involved in the *Making Choices* scheme tended to show a greater level of personal responsibility than the control group.

(C.V. Platt *et al*, 2003)

- An evaluation of 20 mph zones in the UK proved to be effective both in reducing traffic speed and in reducing RTIs. In particular child pedestrian injuries were reduced by 70 per cent from 1.24 per year in each area before to 0.37 per year after the zones were introduced.

(E. Towner *et al*, 2005)

- Traffic calming measures in villages can yield reductions in speed. RTIs involving vulnerable road users aged under 16 year olds were reduced following scheme installation. Child pedestrian KSI RTIs were reduced by 75 per cent.
- The most substantial measures (physical features and signing/markings measures with high visual impact) would be the most effective in terms of speed and RTI reduction.

(TRL, 2000)

- In the mid 1990s Hull City Council launched a programme of implementing 20 mph speed limit zones to tackle casualty rates for child pedestrians as they were well above the national average. On average, each zone reduced child pedestrian injuries by 75 per cent. The Council also saw a first year economic rate of return from these schemes of 1,160 per cent and crash reductions saved an estimated £35m, by 2002.

(N. Christie *et al*, 2004)

- A combination of speed reduction measures such as speed cameras and traffic calming (i.e. road narrowings, chicanes, road humps, road signs) can prove to be effective in preventing 70 per cent of RTIs involving children.

(ETSC, 2005)

Gaps in research

Many of the education based interventions discussed in this synthesis have not been subject to rigorous peer reviewed assessment and evaluation.

- Road safety programmes combining educational and environmental measures in an integrated package show some potential but more rigorous research is required.

(E. Towner *et al*, 2005)

References

Department for Transport research and statistics

Title: Reported Road Casualties Great Britain: 2011 Annual report
Author / organisation: P. Kilbey, D. Wilson, O. Beg, G. Goodman and A. Bhagat for Department for Transport (DfT)
Date: September 2012
Format: Pdf
Link: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/9280/rrcgb2011-complete.pdf
Free / priced: Free
Objectives: This report delivers statistics relating to all RTIs reported to the police in Great Britain in 2011.
Methodology: Statistics are compiled from the STATS19 database of RTIs i.e. police reported RTIs.
Key Findings <ul style="list-style-type: none">• The majority of child KSI casualties are pedestrians, accounting for 66 per cent of the total in 2011.• Compared with 2010, there was a 3 per cent fall in child pedestrian KSI casualties in 2011.• 4,718 children aged 0-11 years old were pedestrian casualties in 2011.• 290 children aged 4 -11 years old were killed or seriously injured (KSI) on journeys made during term time and in the hours in which children may be expected to be making a journey to or from school.• Child pedestrian fatalities rose by 27 per cent to 33 in 2011, but remained below the 2009 figure of 37; the 2011 figure was 42 per cent below the 2005-09 average.
Themes: Road, Road Traffic Incident, statistics, children (0-15 years old)
Comments: The national road casualty statistics remain the single largest source of RTI data and provide a valuable time series. It includes contributory factors, which give a qualitative indication of the factors that led to the incident, including behavioural and environmental factors.

Title: Reported Road Casualties Great Britain: 2013 Annual report
Author / organisation: Department for Transport (DfT) Date: September 2014 Format: Pdf Link: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/359311/rrcgb-2013.pdf
Free / priced: Free
Objectives: This report delivers statistics relating to all RTIs reported to the police in Great Britain in 2013.
Methodology: Statistics are compiled from the STATS19 database of RTIs i.e. police reported RTIs.
Key Findings <ul style="list-style-type: none"> • The majority of child KSI casualties are pedestrians, accounting for 69 per cent of the total in 2013. • Compared with 2012, there was a 13 per cent fall in child pedestrian KSI casualties in 2013. • 3,943 children aged 0-11 years old were pedestrian casualties in 2013. • 385 children aged 4 -11 years old were killed or seriously injured (KSI) on journeys made during term time and in the hours in which children may be expected to be making a journey to or from school. • Child pedestrian fatalities rose by 30 per cent to 26 in 2013, but remained below the 2009 figure of 37; the 2011 figure was 54 per cent below the 2005-09 average of 57.
Themes: Road, Road Traffic Incident, statistics, children (0-15 years old)
Comments: The national road casualty statistics remain the single largest source of RTI data and provide a valuable time series. It includes contributory factors, which give a qualitative indication of the factors that led to the incident, including behavioural and environmental factors.

Title: Reported Road Casualties Great Britain: 2014 Annual report
Author / organisation: Department for Transport (DfT) Date: September 2015 Format: Pdf Link: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/463797/rrcgb-2014.pdf
Free / priced: Free
Objectives: This report delivers statistics relating to all RTIs reported to the police in Great Britain in 2014.
Methodology: Statistics are compiled from the STATS19 database of RTIs i.e. police reported RTIs.
Key Findings <ul style="list-style-type: none"> • The majority of child KSI casualties are pedestrians, accounting for 66 per cent of the total in 2014. • Compared with 2013, there was a 12 per cent increase in child pedestrian deaths, and a 1% increase in injuries in 2014. • 3,949 children aged 0-11 years old were pedestrian casualties in 2014. • 385 children aged 4 -11 years old were killed or seriously injured (KSI) on journeys made during term time and in the hours in which children may be expected to be making a journey to or from school. • Child pedestrian fatalities rose by 12% to 29 in 2014, but remained well below the 2005/09 figure; the 2014 figure was 58% lower than the 2005-09 average.
Themes: Road, Road Traffic Incident, statistics, children (0-15 years old)
Comments: The national road casualty statistics remain the single largest source of RTI data and provide a valuable time series. It includes contributory factors, which give a qualitative indication of the factors that led to the incident, including behavioural and environmental factors.

<p>Title: Children's Traffic Safety: International Lessons for the UK (Road Safety Research Report No. 50)</p>
<p>Author / organisation: N. Christie, S. Cairns, H. Ward and E. Towner, prepared for the Department for Transport. Date: July 2004 Format: Pdf Link: http://webarchive.nationalarchives.gov.uk/20100203035325/http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/childrenstrafticsafetyintern.pdf</p>
<p>Free / priced: Free</p>
<p>Objectives: To identify good practice and innovation from other countries that could help to improve the traffic safety of children in the UK.</p>
<p>Methodology: Survey of Policy and Practice (relating to Childrens' Road Traffic Safety) to complement the Organisation for Economic Co-operation and Development (OECD) member country survey. The survey comprised three key elements: an analysis of International Road Traffic and Accident Data (IRTAD) fatality data, an analysis of the relationship between socio-economic and demographic indicators and fatality rates, and a questionnaire-based survey.</p>
<p>Key Findings:</p> <ul style="list-style-type: none"> • The child (0-14 years old) pedestrian fatality rate per 100,000 children (and based data between 1996 and 2000) in the UK was ranked 17th of 26 OECD countries. • Looking at trend data: pedestrian fatalities are decreasing over time for all countries and the difference between the UK and the top performing countries is narrowing. • Trends for child pedestrian deaths, child pedestrian kilometres travelled and child pedestrian fatality rates per unit of exposure for 0-5 year olds, 6-9 year olds and 10-14 year olds groups showed that for all age groups the number of fatalities per population and unit of exposure was decreasing, suggesting that walking had become safer. For all age groups the amount of walking had decreased but appeared to be stabilising. • The UK has adopted good practice in a number of areas but current practice needs strengthening. • The top performers in terms of overall lowest fatality rates in terms of child pedestrians (Sweden, Netherlands, Finland, Germany and Denmark) reported that they: <ul style="list-style-type: none"> ○ Have speed reduction measures (including environmental modification and low speed limits) and signalised crossings in most local authorities or municipalities; ○ Have these measures outside many schools; ○ Have outside play areas, such as parks or playgrounds, in most residential areas; ○ Conduct national publicity campaigns once a year or more, aimed at child pedestrian safety; and, ○ Have legislation that assumes driver responsibility for RTIs involving child pedestrians in residential areas.

- A more widespread approach to modifying the environment is required in the UK to improve the safety of children as pedestrians or bicyclists, and barriers to implementation need to be overcome.
- Clearer guidelines are needed for implementing low speed limits near schools and in identifying these areas as enforcement zones.
- There was little difference between top performing and other countries with regard to the promotion of pedestrian education initiatives, having compulsory road safety education and conducting regional publicity aimed at child pedestrian safety.
- In the UK there is a steep social gradient in child pedestrian fatalities with children in the lowest socio-economic group being five times more likely to be killed as a pedestrian compared to their counterparts in the highest group.
- The UK, together with Canada, had the highest percentage (11 per cent) of children living in lone parent families out of the 21 OECD countries that provided this information. A lone parent family has been identified as a predictor of child pedestrian RTI involvement.
- The relatively poor performance of the UK for pedestrian safety may be related to socio-economic risk factors, and may be compounded by old urban development and high population density in these areas.
- The DfT has implemented a highly targeted approach to address the inequalities in child pedestrian traffic RTIs with the Pedestrian Skills Training Project in deprived areas and with the Dealing with Disadvantage Initiative.
- Review of Road Environment Policy identified a need to have more widespread introduction of 20 mph (30-40 kph) speed limits, a more targeted approach to the environment around schools and greater provision of safe play areas in the UK.
- Road environment improvements in UK hampered by the barriers of cost and shortage of staff resources.
- Top performing countries share a number of approaches to safety, such as teaching pedestrian skills at the roadside, in playgrounds or traffic parks and providing materials and advice for parents.
- Evidence from the international survey suggests that publicity can make an important contribution to the holistic approach to children's traffic safety.
- More consideration should be given to the introduction of legislation on driver responsibility for pedestrian RTIs.
- There could be more national support for promoting safe and sustainable travel to school by linking these themes with explicit and clear curriculum topics and by making safe travel to school an aspect of the school inspection process.
- In order to become more like the top performers, the UK needs to adopt a stronger and more widespread approach towards pedestrian and bicyclist infrastructure.

Themes: Good practice, Innovation, Traffic Safety, Children.

Comments: Good practice review, highlighting international initiatives.

Title: Village traffic calming – reducing accidents (Traffic Advisory Leaflet 11/00)
Author / organisation: Transport Research Laboratory (TRL) for the Department for Transport. Traffic Advisory Leaflet 11/00. Date: December 2000 Format: Pdf Link: http://assets.dft.gov.uk/publications/tal-11-00/tal-11-00.pdf Free / priced: Free
Objectives: The purpose of this study was to assess the effect on RTIs of traffic calming measures in a number of villages.
Methodology: The study made comparisons of RTI statistics (frequency and severity) before and after the installation of traffic calming measures.
Key Findings: <ul style="list-style-type: none"> • Traffic calming measures in villages can yield reductions in speed, which are associated with substantial reductions in injury RTIs, particularly KSI RTIs. • RTIs involving vulnerable road users aged under 16 year olds were reduced following scheme installation. Child pedestrian KSI RTIs were reduced by 75 per cent.
Themes: Traffic calming, RTI reduction
Comments: Robust, shows real reductions in RTIs.

Title: Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants (Road Safety Web Publication No. 16)
Author / organisation: D. Richards (TRL) for DfT Date: 2010 Format: Pdf Link: http://webarchive.nationalarchives.gov.uk/20120606181145/http://assets.dft.gov.uk/publications/pgr-roadsafety-research-rsrr-theme5-researchreport16-pdf/rswp116.pdf Free / priced: Free
Objectives: To investigate the relationship between speed and the risk of fatal injury, for both pedestrians and car occupants.
Methodology: Calculation of pedestrian injury risk curves using logistic regression. The curves were calculated from 3 data sources: Ashton and Mackay data from the 1970s, German In-depth Accident Study data from 1999-2007, and OTS and police fatal file data from 2000-2009.
Key Findings: <ul style="list-style-type: none"> • Comparison of the pedestrian risk curves from the different datasets shows that the risk of pedestrian fatality is generally higher for the dataset from the 1970s, indicating that the probability of pedestrians being killed when hit by the front of a car has reduced over the last 30 years. • In all of the pedestrian datasets, the risk of fatality increases slowly until impact speeds of around 30 mph. Above this speed, risk increases rapidly – the increase is between 3.5 and 5.5 times from 30 mph to 40 mph. • Although the risk of pedestrians being killed at 30mph is relatively low, approximately half of pedestrian fatalities occur at this impact speed or below.
Themes: Pedestrian injury, risk curves, OTS data.
Comments: Robust analysis.

Title: Young adolescent pedestrians' and cyclists' road deaths: analysis of police accident files (TRL report 620)
Author / organisation: J. Sentinella and M. Keigan (TRL) for DfT Date: 2005 Format: Pdf Link: https://trl.co.uk/reports/TRL620 Free / priced: Free
Objectives: Analysis of the accident circumstances for fatally injured pedestrian and pedal cyclist casualties aged 9-15.
Methodology: Review of police fatal accident files and Coroners reports. Road accidents between 1986 and 1995 were examined from 42 police forces in England and Wales (data from 291 accidents involving 202 pedestrian fatalities and 90 pedal cyclist fatalities were available for analysis).
Key Findings: <ul style="list-style-type: none"> • Just under half of the child pedestrian casualties were fatally injured on A-roads. • Nearly half the children (44%) were fatally injured on roads with a speed limit over 30mph. • A quarter of pedestrian fatalities were involved in accidents near crossing facilities such as zebra, pelican or pedestrian refuge. • At the time of the accident, just over half of the pedestrians (58 per cent) were either playing or at leisure. • Boys were more likely than girls to be involved in an accident • Two-thirds of the fatally injured children were accompanied, and most were with friends. • The police reports suggested that a quarter of the child pedestrians had crossed the road without looking both ways and/or crossed at an inappropriate location.
Themes: Fatal child casualties
Comments: Amount of data available regarding the child's behaviour was limited.

<p>Title: Road Traffic Injury Risk in Disadvantaged Communities: Evaluation of the Neighbourhood Road Safety Initiative (Road Safety Web Publication No.19)</p>
<p>Author / organisation: N. Christie, H. Ward, R. Kimberlee, R. Lyons, E. Towner, M. Hayes, S. Robertson, S. Rana, and M. Brussoni (for DfT) Date: 2010 Format: Pdf Link: http://assets.dft.gov.uk/publications/road-injury-risk-in-disadvantaged-areas/rswp19.pdf Free / priced: Free</p>
<p>Objectives: The Neighbourhood Road Safety Initiative (NRSI) was established in 2002, whereby 15 local authorities (LAs) in England were allocated funds to develop schemes to reduce road casualties in their most disadvantaged areas. The evaluation the NRSI aimed to explore the impact of the initiative on improving road safety in deprived areas and increasing understanding of the root causes of the high risks of traffic injury in these areas.</p>
<p>Methodology: The evaluation engaged a multidisciplinary team of researchers who adopted a mixed method approach involving:</p> <ul style="list-style-type: none"> • quantitative analysis of casualty data (using 2001 data); • surveys among the community and among school children; • qualitative research among parents; and • qualitative research among those involved in working in partnership to deliver the initiative.
<p>Key Findings:</p> <ul style="list-style-type: none"> • Using 2001 casualty and census population data, a strong relationship was found between deprivation and casualties per 1,000 population, with the casualty rate for pedestrians living in the more deprived areas of Greater Manchester being higher than for those in the more affluent areas. This is an important finding as it shows that there is an inequalities gradient for all ages of pedestrian casualties and not just for the children. • Where children go and what they do has a strong influence on their casualty patterns. In the case of children (1–15 years) about a third of their injuries occur on residential roads, but a similar proportion also occur where the road is near an area of outdoor recreation, shops, cafes and takeaways. • While most children are injured on the residential roads, these make up about 80% of the road length in the NRSI areas. When this is accounted for, the risk to the children is highest on the main roads. • The NRSI has had a positive effect on the number of casualties occurring across the 15 areas. This reduction is estimated to be 9% in the after period compared with what might have been expected if the NRSI had not taken place. Within the picture for all casualties, there are different effects on certain road-user types and ages: <ul style="list-style-type: none"> ○ In the case of children (1–15 years) the reductions are about 15% for child casualties of all types, 13.5% for pedestrians and 20% for car occupants. In the case of all children and child

pedestrians, at least some of the improvement appears to have arisen due to a deterioration in child safety in the comparison areas and for which we have no explanation.

- The picture that emerges from the focus groups is that parents only reluctantly allow their children to play in the street because there is little else to do, with many club activities being perceived as scarce, expensive and inaccessible.

Themes: Deprivation, casualties, evaluation

Comments: Robust analysis but data used is from 2001.

Title: Children's road safety campaign evaluation post evaluation of the Tales of the Road campaign report

Author / organisation: S. Leggett and R. Duff. Childwise for the Department for Transport (DfT)

Date: December 2011

Format: Pdf

Link:

<http://webarchive.nationalarchives.gov.uk/20120606112243/http://assets.dft.gov.uk/publications/think-research/talesoftheroad-evaluation-2011.pdf>

Free / priced: Free

Objectives: The Tales of the Road campaign is aimed at 6-11 year olds. The key message is 'you need to use good road safety behaviour or you could come to real harm'. The objectives of the evaluation were to:

- Determine awareness levels of the Tales of the Road campaign;
- Measure current attitudes and opinions on road safety, and claimed road safety behaviour;
- Measure absorption of the Tales of the Road messages, as well as likeability and engagement;
- Allow comparison to the last wave of the Hedgehogs campaign in 2007, Tales of the Road Phase 2 research in 2009, and the latest Tales of the Road research in February 2011.

Methodology: Face-to-face interviews on the street or in the home.

Interviews took place among children in school years 1-6 at primary school (6-11 year olds). Children were shown a series of images from the television and website campaign for Tales of the Road adverts.

Key Findings:

- Parents were most concerned about bullying when considering their child's safety, followed closely by "Accidents on the road". This has been the case since 2009, but before this, "Accidents on the road" were the major concern.
- Good behaviour still far outweighs poor road safety behaviour – more than 80 per cent of children in the sample said that they look both ways before crossing the road or generally take care when crossing, whilst 24 per cent said that they wear bright clothes or something reflective at night (introduced for the first time at this wave to complement the Dress Bright Be Seen advert).
- Almost all 6-11 year olds in the sample (96 per cent) had watched one of the children's television channels carrying the Tales of the Road adverts within the previous couple of months, and were therefore potentially exposed to the advertising.
- 50 per cent of the sample (had not been to the cinema in the last couple of months, whilst the Tales of the Road advertising was featured in films.
- "Accidents on the road" is mentioned spontaneously as a potential danger 33 per cent of the sample, with this proportion falling over the last few years. "Accidents on the road" is now on par with bullying as a potential danger (also 33 per cent).

- Spontaneous mentions of RTIs on the road increase with age, highest amongst 41 per cent of 9-10 year olds.
- Children from ethnic groups were more likely to mention RTIs as a potential danger (37 per cent vs. 32 per cent).
- Children in rural areas were also more likely to think RTIs on the road were a danger (38 per cent vs. 31 per cent in urban/suburban areas).
- Claimed road safety behaviour amongst children changes little over time with practically all claiming to practice some good behaviour, but the vast majority also claim some poor road safety behaviours.
- Awareness of the Tales of the Road advertising has regained ground in the wake of the higher profile television and cinema campaign. Spontaneous Tales of the Road recall is back up to 20 per cent, after a dip following low level activity earlier this year.
- Understanding of Tales of the Road is still positive but differs by advert.
- As with previous waves of research, the response from those aware of the Tales of the Road advertising differed slightly from those not aware. They are more likely to spontaneously mention “Accidents on the road” as a danger to children their age and pick out road safety issues from a list.

Themes: Child road safety, Advertising, Evaluation

Comments: Robust research but does not show how the adverts have had a real impact on the RTI statistics.

Title: Road safety education for children transferring from primary to secondary school (Road Safety Research Report No. 35)

Author / organisation: C.V. Platt, A.B. Clayton, S.M. Pringle, G. Butler and M.A. Colgan. Prepared for the Department for Transport.

Date: May 2003 **Format:** Pdf

Link:

<http://webarchive.nationalarchives.gov.uk/20100203035346/http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/roadsafetyeducationforchildr.pdf>

Free / priced: Free

Objectives: To develop and evaluate a road safety training/awareness resource/programme to ensure that children have developed the skills required to match the independence they are given when they move to secondary school.

Methodology: Reviewed existing road safety resources (and those for transition from primary to secondary in particular), undertook initial surveys (725 parents of transition age pupils) and focus groups with school transition age children and their parents (14 parents and 120 year 6 and 7 children) on their perceived role of parental and school's role regarding road safety education, and developed a draft educational programme *Making Choices*. Evaluated the effect of the programme using a pre-test post test design with a control and experimental group. Testing used to assess children's awareness of road safety issues, their decision-making responses and their change in travel patterns

Key Findings:

- Although many resources existed for the transition age group, very few placed any emphasis upon or highlighted the transfer from primary to secondary school.
- Parents' safety concerns related to childrens' and other drivers' actions, traffic levels and non-safety dangers (e.g. strangers).
- The move to secondary school seen as a major life change with expected increased independence.
- Parents considered it important that road safety teaching should enable children to assess situations rather than stick to rules and codes.
- *Making Choices* resource developed: comprised 5 resources (including leaflets, activities, journey planners).
- The experimental group tended to show a greater level of personal responsibility and a greater awareness of personal safety issues, not only in road situations, but, for example, when using public transport than the control group.
- Most primary teachers had integrated the activities within Geography and Personal, Social and Health Education (PSHE) to complement the existing transfer process. Few teachers stated that they would like to see anything added to the materials.
- In nearly all secondary schools, the teachers used the materials in timetabled PSHE lessons. Again, there was little demand for additional material.
- Concerns were raised amongst primary teachers about the curriculum time required and the need for long term planning.

Themes: Transition from primary to secondary school, Road safety curriculum resource, Evaluation

Comments: Highlights the need to attend to school transition age children and to understand the barriers and motivators to enable these children to adopt safe behaviours when they travel independently.

Title: Children's road safety advertising tracking post evaluation of the Tales of the Road campaign report

Author / organisation: S. Leggett and R. Duff. Childwise for The Department for Transport

Date: March 2011

Format: Pdf

Link:

<http://webarchive.nationalarchives.gov.uk/20120606112243/http://assets.dft.gov.uk/publications/think-research/talesoftheroad-advertising-tracking-2010.pdf>

Free / priced: Free

Objectives: The Tales of the Road campaign is aimed at 6-11 year olds. The key message is 'you need to use good road safety behaviour or you could come to real harm'. The objectives of the evaluation were to:

- To determine awareness levels of the Tales of the Road campaign, giving a comparison against the last wave of results (April 2009).
- To measure current attitudes and opinions on road safety, and claimed road safety behaviour, and the extent to which these have changed since this audience were last researched
- To measure Tales of the Road message take-out.
- Awareness of, and reaction to, the Tales of the Road campaign amongst parents.

Methodology: Face-to-face interviews on the street or in the home. Interviews took place among children in school years 1-6 at primary school (6-11 years old) with one of their parents. Sample size 1,000, selected to ensure a representative sample. Children were shown a series of images from the television and website campaign for Tales of the Road adverts.

Key Findings:

- 6-11 year olds watch around 3 hours of television a day. Favourites websites are Facebook, YouTube, FRIV and Club Penguin.
- "Accidents on the road" is the main concern among children (with specific main worries being drivers travelling too fast, being followed by or not being seen by drivers, and drunk drivers).
- Parents considered children need to be 10-11 years old before being responsible enough to walk or cycle without an adult.
- Concern about the dangers of the road continues to fall. Since 2009, parents have become more concerned about bullying, but RTIs on the road are a close second.
- Claimed road safety behaviour amongst children has changed little over time. The proportion of children claiming good road safety behaviour is the same, with small movements within poor road safety behaviour.

- With a lower level of campaign activity during 2010, awareness of the Tales of the Road advertising has fallen back.
- Despite scaled back activity, Tales of the Road advertising message understanding is now better than before, for the reduced core of children who are aware of the advertising.
- As in 2009, those aware of the Tales of the Road advertising were more likely to mention the road as a danger, and be aware of potential safety issues but had similar road safety behaviours as those unaware of the campaign.

Themes: Child road safety, Advertising, Evaluation

Comments: Robust research but does not show how the adverts have had a real impact on the RTI statistics.

Title: Child Pedestrian Exposure and Accidents – Further Analyses of Data from a European Comparative Study (Road Safety Research Report No. 56)

Author / organisation: P. Bly, K. Jones and N. Christie, MVA Limited prepared for the Department of Transport.

Date: September 2005

Format: Pdf

Link:

<http://webarchive.nationalarchives.gov.uk/20110509101621/http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/childpedestrianexposureandac.pdf>

Free / priced: Free

Objectives: The aim of the research was to understand the differences in exposure and RTI rates of 5-15 year olds within similar road environments and, by identifying the factors that might explain higher RTI rates in Great Britain, to assess the implications for policy.

Methodology:

A comparative study of child pedestrian RTIs and exposure to risk in Great Britain, France and the Netherlands which was completed in 1999 provided a rich database of children's travel patterns, their characteristics and behaviour, as well as measures of the road environments they travel in and the circumstances of the most serious child pedestrian RTIs (DETR, 1999).

This subsequent study sought to analyse this data in more detail, alongside other sources of data on child's exposure and RTI involvement, and use the results to:

- Help refine policies aimed at improving child pedestrian safety;
- Focus on identifying differences in the patterns of exposure to risk among British children with differing socio-demographic characteristics, in comparison with children in the Netherlands and France; and,
- To investigate factors associated with differences in exposure in the three countries.

The findings were also compared with those from other important studies and sources of data for Great Britain, and additional analyses of STATS19 were undertaken.

Key Findings:

- Although Great Britain's overall road safety record is very good in comparison with other countries, throughout the 1990s the RTI rate for child pedestrians was higher than average for the European Union (EU) countries.
- Children in Great Britain are significantly more likely than children in the other countries to walk to school along more major through roads, with higher traffic volumes and faster traffic, and they are less likely to be subject to speed limits lower than the standard urban limit (DETR, 1999).
- It is clear that lower speed limits apply to a greater proportion of child exposure in France and the Netherlands than in Great Britain, and the study suggests that the issue of speed limits in residential areas merits policy consideration.
- British children are more likely to use unmarked crossings when crossing the road. These, and other, behavioural differences may increase the RTI risk in Great Britain compared to other countries.
- Special measures to reduce speeds are much more prevalent in the Netherlands. Measures in the Netherlands included road humps; artificial curves; pinchpoints near islands; special road surfaces; and speed cameras.
- Factors likely to increase the severity of child pedestrian casualties include: gender (boys more likely to suffer fatal or serious injury than girls); vehicle speeds; lighting conditions (higher severity during darkness); vehicles involved; and, location (away from junctions).

Themes: Child and Teenager Road Safety, European comparison, RTI rates

Comments: Good practice review, highlighting international initiatives.

Title: Child-Parent Interaction in Relation to Road Safety Education: Part 1 – A Critical Literature Review (Road Safety Research Report No.101)

Author / organisation: M. Cattan, H. Green, C. Newell, R. Ayrton and J. Walker. The Centre for Health Promotion Research, Faculty of Health, Leeds Metropolitan University prepared for the Department for Transport.

Date: December 2008

Format: Pdf

Link:

<http://webarchive.nationalarchives.gov.uk/20121105134522/http://www.dft.gov.uk/publications/child-parent-interaction-in-relation-to-road-safety-1/>

Free / priced: Free

Objectives: The purpose of this review was:

- To identify and provide a critical review of the research and literature concerned with parent child interaction in relation to road safety education; and
- To consider the published evidence for the effect of strategies that parents use in training their children to be safer road users and to consider ways of engaging parents in road safety education.

Methodology: The review was based on conventional systematic review methodology, with articles required to meet specific criteria for inclusion with regard to addressing interaction between parents and children; ways in which parents encourage children to become safer road users; consideration of factors influencing risk or parents' perception of risk, and how parents' attitudes and behaviours towards their children's road safety are formed.

The review was guided by the Centre for Reviews and Dissemination guidelines on undertaking systematic reviews and the Health Development Agency's (HAD) Evidence Base Process and Quality Standards Manual for Evidence Briefings, with articles scored on a number of criteria, including:

- Quality
- Appropriateness
- Level of effect

Outcomes were then summarised in terms of their evidence level (sufficient, some, insufficient, none).

Key Findings:

- Holding hands is the most common form of parent/child interaction when crossing roads.
- Children, when in the company of an adult, rely on the adult for safety. On the other hand, unaccompanied children seem to be more likely to do road safety checks than accompanied children.
- The review found conflicting evidence regarding parents' understanding of their children's level of experience and ability, and regarding the effectiveness of traffic clubs and other similar interventions.
- 'Edutainment' in the form of an educational video may not be effective, despite parents considering it a useful tool.
- There was some evidence to suggest that an educational booklet using an error-avoidance perspective was effective in increasing traffic skills and traffic awareness, although there was insufficient evidence of the effect of traffic clubs. However, earlier evaluation studies suggested that traffic clubs are effective in promoting road safety.

Themes: Road safety studies, Review

Comments: Literature review.

Title: Child-Parent Interaction in Relation to Road Safety Education: Part 2 – Main Report (Road Safety Research Report No.102)

Author / organisation: J. Green, R. Ayrton, J. Woodall, J. Woodward, C. Newell, M. Cattam and R. Cross. The Centre for Health Promotion Research, Faculty of Health, Leeds Metropolitan University prepared for the Department for Transport.

Date: December 2008

Format: Pdf

Link:

<http://webarchive.nationalarchives.gov.uk/20121105134522/http://www.dft.gov.uk/publications/child-parent-interaction-in-relation-to-road-safety-2/>

Free / priced: Free

Objectives: The main objective of this study was to explore the way parents influence children and young people aged 0-16 years old to be safer road users.

Methodology: The research took a three-pronged approach focusing on:

- Observation of roadside interactions between parents and children;
- The parent's perspective; and,
- Children's and young people's perspective.

Key Findings:

- Parents are aware of the risks on the road and protecting their children is a major priority.
- Most parents do not have a deliberate strategy for teaching children to be safe on the roads (but usually through control of behaviour physically or verbally).
- Parents are not fully aware of the effect of the role model they present and tend to provide an inconsistent role model in relation to their behaviour on the roads.
- Parents should be supported in the important role they play in the road safety education of their children by appropriately targeted interventions beginning at the ante-natal stage.
- Parents should be encouraged to be actively involved in local road safety initiatives to reinforce messages and to keep them updated with current good practice.
- Children felt the most effective way for parents to teach road safety education was to start young, teach rules with explanation, set a good example and provide opportunities to develop skills at the roadside.

Themes: Child road safety, Parental influence

Comments: Robust and based on the observation of activity in real life, although it is unclear whether parents knew they were being watched, as this would affect their behaviour.

<p>Title: Bringing children into the social contract of road use: Final report (Road Safety Research Report No. 33)</p>
<p>Author / organisation: S. Wood, S. Thornton, E. Arundell and L. Graupner, University of Sussex prepared for the Department for Transport. Date: April 2003 Format: Pdf Link: http://webarchive.nationalarchives.gov.uk/20100203035403/http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/bringingchildrenintothesocia.pdf</p>
<p>Free / priced: Free</p>
<p>Objectives: Develop and evaluate a booklet for parents to support them in teaching traffic skills and comprehension to their own children (targeted at 5-8 year olds) and also induce an error-avoidant perspective and consistent spontaneous deployment of traffic skills.</p>
<p>Methodology: The project was divided into two stages: Stage 1: Pilot studies in 'contrived naturalistic' environments to investigate the effectiveness of the scheme as a whole. Stage 2: Large scale surveys to investigate the scheme's success under 'more naturalistic' (i.e. real life) conditions.</p>
<p>Key Findings:</p> <ul style="list-style-type: none"> • The obvious resource for road safety training is the child's own parent. Parents are, de facto, the primary educators in this field; they are the child's main companion on the roads, the model from whom the child learns by observation and the arbiter of road safety strategies. • Use of materials previously developed for the parents of younger children can yield up to a 20 per cent fall in 'dart-out' RTIs. • The scheme developed for this project has been successful. Evaluation has demonstrated that it provides a practical method for parents (of 5-8 year olds) to help improve their children's road safety skills and hazard awareness. • Initial feedback on the booklet used during the pilot studies indicated that the scheme offered a child-orientated perspective on road safety issues that was new to parents. Parents reported an appreciation of the road safety task from the child's perspective, understanding how this might differ from the problem for the adult, and many said that subsequently they would actively involve their children in decision-making at the roadside. The results from the surveys demonstrated that, overall, children's traffic skills and hazard awareness improved significantly, and the clear age difference in traffic and hazard awareness skills levels that existed before the schemes had been eradicated.
<p>Themes: Parents, Road safety, Booklet</p>
<p>Comments: Robust and conducted within real life conditions.</p>

Title: Evaluation of the National Child Pedestrian Training Pilot Projects
(Road Safety Research Report No. 82)

Author / organisation: K. Whelan, E. Towner, G. Errington and J. Powell.
Centre for Child and adolescent Health, University of the West of England,
Bristol, prepared for the Department for Transport.

Date: March 2008

Format: Pdf

Link: <http://assets.dft.gov.uk/publications/national-network-of-child-pedestrian-training/82-main-report.pdf>

Free / priced: Free

Objectives: To assess the impact of the National Child Pedestrian Training Programme (*Kerbcraft*), in both England and Scotland, in areas of high deprivation and high child pedestrian casualty rates. The *Kerbcraft* programme is firmly based on learning theories and educational evidence and was designed to enhance 3 pedestrian skills in 5-7 year old children over a period of 12-18 months. It also sought to identify the most effective ways of establishing and sustaining practical child pedestrian training schemes at the local level.

Methodology: Across the lifespan of the project, approximately 82,443 children received some training in *Kerbcraft* skills. Telephone interviews, questionnaires and face-to-face interviews were conducted. Ten case study schools were randomly selected to illuminate issues related to deprivation, ethnicity and rurality. A pedestrian skills assessment of a randomly selected sample of trained children and a matched sample of untrained children was conducted at the roadside before, and immediately after, training and again two months later.

Key Findings:

- The impact on behaviour – the study shows strong statistical evidence of the positive impact of training in all three *Kerbcraft* skills.
- Schools are more supportive towards road safety training when it actively links to, and reinforces the national curriculum.
- Costs were below £100 per child in all seven local authority schemes sampled.
- Success and failure of the scheme was often dependant on motivation and ability of the co-ordinator. The supply of volunteers was also another important factor.
- Securing funding to continue pedestrian safety training beyond the timescale of the national *Kerbcraft* pilot has presented a challenge to all participating local/unitary authorities.

Themes: Child, Road safety, Training, Evaluation

Comments: Robust, using sound experimental design and samples sufficient to measure impacts.

<p>Title: Building on Success: Improving the Delivery of Road Safety Education, Training and Publicity (Road Safety Research Report No.99)</p>
<p>Author / organisation: MVA Consultancy for Department for Transport Date: February 2009 Format: Pdf Link: http://assets.dft.gov.uk/publications/improving-the-delivery-of-road-safety-education/report-99.pdf Free / priced: Free</p>
<p>Objectives:</p> <ul style="list-style-type: none"> • To identify ways to improve the quality and delivery of Road Safety Education (RSE), Training and Publicity, especially in schools, and raise the status of RSE. • To identify how Road Safety Officers (RSOs) and educators can work together better to maximise the delivery of high-quality road safety education.
<p>Methodology: Twelve month study with five components:</p> <ul style="list-style-type: none"> • Comprehensive literature review to identify gaps in understanding; • Questionnaire survey of RSOs to explore the attitudes of Road Safety Managers and those working at operational level; • Questionnaire survey of teachers to identify how road safety education can be made more appealing to educators; • In-depth case-study interviews with RSOs, other stakeholders and policy-makers from local and central government; and, • Stakeholder workshops to bring together road safety professionals and other key stakeholders to discuss the findings from the research and explore future ways of working to improve the delivery of RSE.
<p>Key Findings:</p> <ul style="list-style-type: none"> • Immediate gains may be achieved in increasing the amount of training currently provided by RSOs to their partners in delivery (such as fire officers who are now required to take a more active role in road safety education). • Casualty data and statistics are playing a key role in determining how Road Safety Teams decide how their resources should be targeted. • There is little awareness among educators of many of the existing schemes and tools that are available for schools to use in promoting road safety. • Greater access to, drama productions, interactive information technology software, lively and interactive presentations by outside agencies, hard-hitting videos and better quality and more up-to-date facilities were considered useful in making road safety education more accessible and user-friendly for both teachers and pupils. • There appears to be a lack of material aimed at older school-aged pupils. • Secondary school staff considered areas such as sex and relationships education, drugs and alcohol education and healthy eating to be of greater importance than road safety education. • The most frequently cited barrier to more effective road safety education was insufficient funding.
<p>Themes: Road Safety Education, Training, Publicity</p>
<p>Comments: Robust, however based on self-reported views of professionals.</p>

<p>Title: <i>THINK!</i> Education Materials Evaluation: Final Report - Stage 2</p> <p>Author / organisation: EdComs, prepared for Department for Transport</p> <p>Date: 18 July 2011</p> <p>Format: Pdf</p> <p>Link: http://webarchive.nationalarchives.gov.uk/20120606112243/http://assets.dft.gov.uk/publications/think-research/110822-stage-2-report.pdf</p> <p>Free / priced: Free</p>
<p>Objectives: The study sought to evaluate the following areas:</p> <ul style="list-style-type: none"> • Awareness of the resources – how aware are schools, out-of-school groups and RSOs of the THINK! Education materials. • The uptake of the resources – how many resources have been ordered and the extent to which teachers and RSOs have used them with young people. • The quality of materials produced – how do those who have used the resources rate their usability, credibility and relevance, and how engaging are they for young people, teachers, out-of-school groups and RSOs.
<p>Methodology:</p> <ul style="list-style-type: none"> • Stage 1: qualitative and consisted of case study visits to observe usage of the resources in Early Years and Upper Primary settings, as well as requester database and web traffic analysis. • Stage 2: intended to focus on gathering comparable data relating to Lower Primary settings in addition to quantitative data to place these findings in a broader context.
<p>Key Findings:</p> <ul style="list-style-type: none"> • Awareness of the “THINK! Education” resources was high, particularly among RSOs while Teachers were less likely than out-of-school group leaders to have previously visited the website. • The resources were seen as appropriate for the age groups they were aimed at in the settings for which they were developed, but perception of how engaging they were varied between teachers / group leaders and RSOs. • Teachers were more likely to have access to computers and the internet during education sessions than out-of-school leaders. RSOs also generally could not rely on computer or internet access during education sessions. • “THINK! Education” resources were viewed very positively by teachers and group leaders, with the vast majority finding them high quality or easy to use. RSOs were also positive about the quality of the resource.
<p>Themes: Child road safety, Education resources, Evaluation</p>
<p>Comments: Robust, but doesn't show the effectiveness of the resources in changing the behaviour of children.</p>

<p>Title: Attitudes to Road Safety and Think! Road Safety Campaigns</p> <p>Author / organisation: M. Ratcliff and S. Bouchier-Hayes, MURMUR prepared for the Department for Transport</p> <p>Date: [no date]</p> <p>Format: Pdf</p> <p>Link: http://webarchive.nationalarchives.gov.uk/+http://think.dft.gov.uk/pdf/332982/332986/2007-02b.ppt</p> <p>Free / priced: Free</p>
<p>Objectives:</p> <ul style="list-style-type: none"> • To review existing road safety communications aimed at children and teenagers and investigate possible methods/routes for improving communication. • To explore the need for a separate marketing approach for 10-11 year olds during the transition from primary to secondary school. • To ensure the key messages in current and future campaigns appeal and resonate. • To explore the possibility of linking cycling and pedestrian safety into a single campaign that would be flexible enough to work with both children and teens and within that males and females.
<p>Methodology: The methodology was based on interviews and immersion studies as detailed below:</p> <ul style="list-style-type: none"> • Interviews with a number of road safety experts (Police, Road Safety Officers and Royal Society for Prevention of Accidents). • 30 group interviews were undertaken amongst a variety of children of different ages across the country.
<p>Key Findings:</p> <ul style="list-style-type: none"> • 'Camera Phone' is a very successful piece of road safety advertising, a scene filmed on a camera phone depicts the protagonist being run over and consequent harrowing screams. It elicits enormous empathy with its depiction of teenage life and delivers a genuine and visceral shock which stays with respondents, especially under 15s. • Teens tend to live moment to moment, they are not future focussed 'Don't Die Before You've Lived' is too future focussed for teenagers to truly engage; it's far more resonant among parents. • Graphic illustration of catastrophe should not be shied away from when depicting the impact and consequences of RTIs. Significant numbers from 8-11 year olds and the vast majority of those over 11 can cope with it.
<p>Themes: Teen road safety, Education Campaign, Evaluation, Impact</p>
<p>Comments: Highlights a number of pieces of research.</p>

<p>Title: Code of Everand: Final Evaluation Report</p> <p>Author / organisation: I. Dunwell, S. Christmas and S. de Freitas. Serious Games Institute (SGI) and Simon Christmas Ltd for Department for Transport</p> <p>Date: September 2011</p> <p>Format: Pdf</p> <p>Link: http://assets.dft.gov.uk/publications/think-research/code-of-everand-2011.pdf</p> <p>Free / priced: Free</p>
<p>Objectives: The main aim of the study was to evaluate the impact of The <i>Code of Everand (CoE)</i>, a multiplayer online game for 9-13 year olds. The game was commissioned and developed in 2009 as part of the DfT's THINK! Campaign to improve road safety. <i>CoE</i> introduced a fantasy land called Everand, criss-crossed by spirit channels inhabited by dangerous creatures. The world integrates a model for learning by asserting the need to look left and right in advance of crossing a channel. The game also aims to encourage children to plan safe routes and avoid more dangerous channels. The objectives of the study were to:</p> <ul style="list-style-type: none"> • Baseline attitudes amongst the target audience (9-13 year olds); • Establish the various ways in which we expect the game to effect attitudes and behaviours around pedestrian road safety practice; • Capture and measure the effects of the game (at various levels of participation) on these various indicators; and, • Produce recommendations on altering or adding features to the game to improve its efficacy.
<p>Methodology: The report details the findings of a mixed-method approach which combined a range of data sources to gain both qualitative and quantitative insight into the reach and efficacy of the game. This included collecting and analysing:</p> <ul style="list-style-type: none"> • Data from the game engine including data on the players and their in-game behaviours; • Response and behaviour data from a sample of children who were introduced to the game; and, • Data from a survey of 1,038 CoE players and 1,108 children who did not play the game.
<p>Key Findings:</p> <p>The principal finding of the work is that game based learning, deployed and promoted on a large scale, was able to reach and engage a sizable audience representing a hard to reach demographic.</p> <ul style="list-style-type: none"> • An estimated total of 62,000 UK children in the 9-15 year old age bracket played the game. • Although only 20 per cent of players were girls, the game reached a broad range of areas and ethnicities. • While the game reached a large number of children, half of all players only spent 30 minutes or less in the game which is a limited amount of time to convey important information/skills to children. • Self reported attitudes of children towards the game showed a broadly positive attitude towards serious gaming in a road safety context.

- Quantitative evidence showed that respondent children who played the game self reported safer behaviour than the national sample.
- The game worked in reaching a large number of children in the target age group, and received predominantly positive feedback. However, due to a number of factors (such as self reporting, indirect nature of the game) it is difficult to conclude that the game had a concrete impact of road safety behaviours across the player base.

Themes: Road safety, Computer gaming, Evaluation

Comments: Rather inconclusive regarding the real effect of the game. Players may be competent within the game but might not necessarily transfer these skills into the real world.

Title: Comparative Safety of European Child Pedestrian Exposure and Accidents
Author / organisation: P. Bly, M. Dix and C. Stephenson. MVA Limited in association with ITS prepared for The Department of the Environment, Transport and the Regions (DETR) Date: 1999 Format: Pdf Link: http://webarchive.nationalarchives.gov.uk/20110509101621/http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/comparativestudyofeuropean.pdf
Free / priced: Free
Objectives: The aim of this study was to understand the differences in exposure and RTI rates of 5-15 year olds within similar road environments and, by identifying the factors that may explain higher RTI rates in Great Britain, compared to those in France and the Netherlands.
Methodology: <ul style="list-style-type: none"> • An 'Exposure Survey' measured children's exposure to different road environments using household interviews with a representative sample of children 5-15 years old. • An 'Accident Site Survey' examined the sites of a representative sample of RTIs where a child pedestrian was killed or seriously injured, collecting the same range and detail of information on the road environment as was collected for the walks undertaken by children.
Key Findings: <ul style="list-style-type: none"> • Total exposure cannot explain the higher overall RTI rate in Great Britain. • On a like-for-like basis the RTI risk in many of Great Britain's road environments is significantly greater than in France or the Netherlands (UK children more likely to be near or cross major roads, wider roads, roads with higher flows and speeds). • Behavioural differences apparent (UK children more likely to use unmarked crossings, cross 'mid-block' and be accompanied by other children). • This study suggested that road safety policy could focus on the following as the main aspects of policy and design of the road environment where risk might be reduced: <ul style="list-style-type: none"> ○ Traffic calming and lower speed limits; ○ The design of local distributor and residential roads especially, to provide a more forgiving road environment where mistakes by child pedestrians are less likely to result in RTIs and injuries; and, ○ Road crossing activity at junctions.
Themes: Child, Pedestrian, Exposure, Road Environment
Comments: Examination of RTIs and comparison with other countries.

Other works

Title: Child Casualties Report 2010: A study into resident risk of children on roads in Great Britain 2004-08
Author / organisation: Road Safety Analysis Ltd Date: 2010 Format: Pdf Link: http://www.roadsafetyanalysis.org/wp-content/uploads/sites/13/2010/08/Child-Casualty-Report-2010.pdf Free / priced: Free
Objectives: To assess the extent of child casualties on UK roads between 2004 and 2008.
Methodology: Analysis of STATS19 data using MAST online.
Key Findings: <ul style="list-style-type: none">• There are large differences in recorded child casualty rates across Great Britain ranging from 1 in 206 children injured per year to 1 in every 1158 children per year. The average GB rate is 1 in 427, significantly lower than the national risk for all people, 1 in 231.• There is a general increase in risk of being a casualty as the age of the child increases.• Boys were more likely to be injured than girls in all age groups.• In common with the rest of the population, risk is highest on Fridays. The next highest day is Saturday, unlike the rest of the populations. Sundays are the day when the fewest number of casualties are recorded.• Casualties are 25 per cent more likely to occur in the summer months than during the winter.• Children as pedestrians (40 per cent) have the highest chance of being involved in an RTI.
Themes: Child casualties, Statistics
Comments: Robust but data is not up to date.

Title: Child Safety in the UK, VOICE Fact Sheet
Author / organisation: European Transport Safety Council, VOICE : Vulnerable Road User Organisations in cooperation across Europe Date: November 2005 Format: Pdf Link: http://www.etsc.eu/documents/Fact_Sheet_VOICE_UK.pdf Free / priced: Free
Objectives: To increase awareness of issues related to child safety in the UK.
Methodology: Literature review and compilation of what works best from Europe and beyond.
Key Findings: <ul style="list-style-type: none"> • Even though the United Kingdom had the best overall road safety record in the EU at the time of publication of this FactSheet, its performance in terms of protection of vulnerable road users, particularly cyclists and pedestrians, was considered less satisfactory. • Speed still plays a major role. In residential areas where car speeds have been reduced from 30 to 20 mph, child pedestrian casualties have fallen by 70 per cent. • Child pedestrians from poorer households are five times more likely to be killed or seriously injured in road crashes than their richer counterparts. • Disabled children are also particularly vulnerable and highly exposed to the dangers of speeding vehicles. • Parents' fear of speeding traffic is leading to a generation of kids growing up deprived of the social and physical freedoms essential to normal development. • Although the UK has a good record in terms of campaigns and initiatives which aim at encouraging children to walk or cycle to school, in 2005 road safety education was not an integral part of the National Curriculum. • Child pedestrian (and cycling) RTIs are highest in the early years of secondary school, at around the age of 12 years old, corresponding to a period in which children, most of whom lack the experience of coping with traffic, begin to go to school unassisted.
Themes: Child, Vulnerable Road Users, Speed Limits
Comments: Fact sheet, compilation of other research.

<p>Title: Child Road Safety and Poverty Research Project</p> <p>Author / organisation: S. Wood, C. Stephenson, N. Christie, E. Towner, J. Colgan and H. Burroughs, MVA Consultancy prepared for Department of the Environment Northern Ireland (DOENI).</p> <p>Date: June 2011</p> <p>Format: Pdf</p> <p>Link: http://www.doeni.gov.uk/roadsafety/final_report_no_appendices_final.pdf</p> <p>Free / priced: Free</p>
<p>Objectives: The objective of this research was to produce a programme of measures which aim to reduce RTIs involving children in deprived areas of Northern Ireland.</p>
<p>Methodology:</p> <ul style="list-style-type: none"> • Reviewed the international evidence for evaluated interventions and approaches that aimed to tackle the link between child road casualties and deprivation (sources included academic, government and non-government organisation databases and web sites); • Identified strategic approaches from government departments responsible for road safety in both GB and Ireland and assessed the implications for road safety in Northern Ireland; and, • Engaged with stakeholders responsible for the delivery of measures, identified in the Road Safety Strategy for Northern Ireland to 2020, to seek views on the relevance of each measure for dealing with deprivation and child road casualties.
<p>Key Findings:</p> <ul style="list-style-type: none"> • The casualty rate analyses show statistically significant positive correlation between casualty rates and deprivation level. The data shows that a child pedestrian or cyclist is five times more likely to be injured in the most deprived areas of Northern Ireland than in the least deprived areas. • There is strong correlation between Multiple Deprivation Measure (MDM) based on collision location and MDM of home. The correlation is particularly strong for pedestrian and cyclist casualties which often occur close to home. • Education measures that include a 'life course' approach to education, working with parents and teachers to offer progressive, interactive education and training, using the Traffic Club (for 3-4 year olds) and Kerbcraft (practical roadside training for 5-7 year olds) models of delivery are likely to be effective in increasing pedestrian skill. • Environmental change, such as area wide traffic calming; 20 mph zones and safe routes to school supported by engineering measures may have a role to play as long as implementation involves the community. • Enforcement is needed to address the risks posed by antisocial behaviour of drivers and riders, especially targeting male drivers and riders aged 17-20 years old and 31-40 years old and at times when children play and travel.

<ul style="list-style-type: none"> Interventions are likely to be more successful in disadvantaged areas if they include comprehensive approaches (i.e. a range of different measures), involve the community, are tailored to the characteristics of the community and use local data both to understand travel patterns and risk, and in the evaluation.
Themes: Child road safety, Interventions, Evaluation, Recommendations
Comments: Robust, review of good practice.

Title: The roles of age, gender, inhibitory control, and parental supervision in children's pedestrian safety
Author / organisation: B.K. Barton and D.C. Schwebel, University of Alabama, Journal of Pediatric Psychology Vol. 32 No. 5.
Date: April 2007
Format: Pdf
Link: http://jpepsy.oxfordjournals.org/content/32/5/517.full.pdf+html
Free / priced: Free
Objectives: To examine the roles of children's individual differences (age, gender, and inhibitory control) and parental supervision in children's pedestrian behaviours.
Methodology: A sample of 85 children and 26 adults crossed a pretend crosswalk set adjacent to a real road. Safety of crossing the pretend road was determined based on actual traffic on the real road. Adults also crossed the real road.
Key Findings: <ul style="list-style-type: none"> Adults' behaviour on the real road paralleled that on the pretend road, supporting validity of the method. On the pretend road, younger children, boys, and children with less behavioural control engaged in riskier pedestrian behaviours. Children with less behavioural control responded more noticeably to increases in parental supervision. Combined with previous work, results suggest that most 5-6 year olds lack the cognitive complexity to become safe pedestrians. Children aged 7-8 years old are more likely to be capable of handling the cognitive complexities of pedestrian safety and might therefore be the ideal target group for prevention efforts based on cognitive methods. The present study suggests that the mere presence of a parent, may cause children to behave more cautiously.
Themes: Parental supervision, Child pedestrian, behaviour, cognitive complexity.
Comments: Robust but research used a pretend road rather than real life conditions.

Title: Factors influencing pedestrian safety: a literature review
Author / organisation: A. Martin (TRL) for TfL.
Date: 2006
Format: Pdf
Link: http://www.tfl.gov.uk/assets/downloads/Factors-Influencing-pedestrian-safety-literature-review.pdf
Free / priced: Free
Objectives: To investigate in what ways pedestrian behaviour might be influenced (in ways most acceptable to pedestrians and other road users) to reduce the numbers of casualties on London's roads.
Methodology: Literature review.
Key Findings: <ul style="list-style-type: none"> • There are no simple universal solutions that would reduce pedestrian casualties in London, particularly because of the large numbers of pedestrians and the high traffic flows on London roads. The problem should be addressed at a strategic level and a hierarchical approach based on hot spots but also aimed at systematically improving pedestrian safety is needed. • As far as possible, 20mph zones should be located around schools. Other possibilities are the use of intelligent road studs or vehicle-activated signals that work on 30mph most of the time but 20mph at school times, or pedestrian priority signals. • The literature reviewed has shown that the school journey is also associated with a high risk for children, as a high number of collisions amongst school age children occur on the journey to and from school. • The literature demonstrated that family circumstances can have an effect on the risk of child pedestrian collisions: children with unemployed parents, single parents, and children living in crowded accommodation are all more likely to be involved in a collision. • Research has shown that children, particularly teenagers, perform a number of potentially unsafe pedestrian behaviours. The frequencies with which those behaviours are performed tend to increase with age during childhood as children become more independent and capable road users. • School children are reported to be very influenced by peer group pressure which encourages them to disobey pedestrian signals. This has an impact on how to influence children; parents may be the most useful channel for younger children whereas peers may be more influential on older children. • Research suggests that road user education can help to promote desirable attitudes and behaviours in child pedestrians.
Themes: Pedestrians, road safety, evaluation.
Comments: Comprehensive review, primarily focussed on London.

Title: Streetsense, A road safety education resource for primary schools
Author / organisation: Road Safety Scotland
Date: [No date]
Format: Pdf
Link: http://www.streetsense2.com/
Free / priced: Free
Objectives: To provide assembly ideas for primary school teachers.
Methodology: Not applicable.
Key Findings: Not applicable.
Themes: Crossing the road, Being seen, education, resources.
Comments: Gives teachers an indication of where road safety can be included within the national curriculum.

<p>Title: Evaluation of the Stepping Out pedestrian training scheme</p>
<p>Author / organisation: L. Hillyard, Brainbox Research Ltd prepared for Staffordshire County Council</p> <p>Date: October 2010</p> <p>Format: Pdf</p> <p>Link: http://www.roadsafetyknowledgecentre.org.uk/misc/userDownloadProtected.php?context=attachedFile&zone=knowledgeItem&file=122&filenameOverride=Stepping+Out+Full+Report.pdf</p> <p>Free / priced: Free</p>
<p>Objectives: Stepping Out is a road safety pedestrian training scheme for 7-9 year olds comprising three phases:</p> <ul style="list-style-type: none"> • Teacher-led classroom training; • A 60-90 minute practice walk during which children learn to walk a route on roads near to their school; and, • An observed walk which assesses skills the children have learnt on the scheme, during which children independently walk the route they learnt. <p>This study sought to undertake an independent evaluation of Stepping Out to provide evidence around the changes in children's road safety knowledge and behaviour and the long-term impact of the scheme.</p>
<p>Methodology: Quantitative and qualitative methods (interviews, questionnaires and focus groups) were used at intervention and control schools to test road safety knowledge before and after intervention. Parents and teachers were also questioned to investigate the quality of Stepping Out materials, teaching methods and the effect the scheme has on children.</p>
<p>Key Findings:</p> <ul style="list-style-type: none"> • The research revealed that Stepping Out has been successful in improving children's knowledge of road safety. • The research also revealed that children clearly understood the road safety messages and were able to put their newly acquired road safety knowledge into practice. • Feedback from children, parents and teachers during focus groups and interviews was positive, with comments noting that the scheme had raised both knowledge and awareness of road safety issues, and that the quality of the training was high. • The scheme has helped to increase children's and parents' awareness of potential dangers on and around roads, in particular driveways, and has helped children to understand the potential consequences of their actions.
<p>Themes: Child road safety, Education, Evaluation</p>
<p>Comments: Robust, using real life skills as an indicator of success.</p>

Title: Crossing roads, crossing boundaries: Empowerment and participation in a child pedestrian safety initiative
Author / organisation: R.A. Kearns and D.C.A. Collins, Space and Polity, Vol.7 No.2. Date: August 2003 Format: Pdf Link: http://www.tandfonline.com/doi/abs/10.1080/1356257032000133937 Free / priced: Priced
Objectives: To critique the Walking School Bus (WSB) phenomenon, with particular reference to the initiative adopted by a primary school in Auckland, New Zealand.
Methodology: <ul style="list-style-type: none"> • Review of ideas regarding children’s political participation and schooling. • Outline the development of the WSB concept. • Presentation of a case example, reviewing the development and outcomes of a WSB in Auckland.
Key Findings: <ul style="list-style-type: none"> • WSBs are a potentially attractive alternative to car travel for many parents, as they offer adult supervision at the same time as they tap into frustration over traffic congestion and many children’s desire for active travel and an increasing awareness of the benefits of exercise. • For children, the benefits of the walking bus appear to centre on sociability as well as fulfilling internalised expectations regarding good health and safe behaviour, while for adults the benefits are perhaps more subtle. • For the school, it satisfies a concern for safety that extends beyond the school gate as well as a desire to be seen as concerned with safety.
Themes: School, walking, safety, traffic.
Comments: Interesting information on WSBs but little reference to the associated safety benefits.

Title: What Works In Preventing Unintentional Injuries In Children And Young Adolescents? An updated systematic review
Author / organisation: E. Towner, T. Dowswell, C. Mackereth and S. Jarvis, Community Child Health, Department of Child Health, University of Newcastle upon Tyne prepared for NHS Health Development Agency. Date: June 2005 Format: Pdf Link: http://www.nice.org.uk/niceMedia/documents/prevent_injuries.pdf Free / priced: Free
Objectives: An attempt to answer the question: 'How effective are health promotion interventions in preventing unintentional injuries in childhood and young adolescence?' To examine the role of education, environmental modification and legislation and combinations of these approaches in injury prevention in the road, home and leisure environments.
Methodology: A systematic review of studies published between 1975 and 2000, summarised in table form with accompanying commentary and a guide to effectiveness. While research relating to a variety of hazards and injuries was looked at, the majority (61 per cent) concerned the prevention of injuries in the road environment. The target population was children aged 0-14 years old.
Key Findings: <ul style="list-style-type: none"> • There is now good or reasonable evidence that the implementation of 20mph zones and area-wide urban safety measures are effective in reducing injuries and effecting behavioural changes (slower speeds) , and cost-effective. There is reasonable evidence that education measures aimed at the child or parent are effective in changing behaviour and reducing pedestrian injuries in the road environment. • The presence of school crossing patrols may reduce the number of RTIs involving child pedestrians. • Pedestrian skills training programmes have been shown to improve children's skills (such as timing and finding safe places to cross), provided that they are specifically targeted. • Practical roadside experience is an essential ingredient of pedestrian skills training. • More evidence needed to show that pedestrian skills training reduces child injuries. • Traffic clubs using age-paced materials designed to promote parental teaching have been shown to be more effective than school based traffic clubs in effecting behaviour change. • Road safety programmes combining educational and environmental measures in an integrated package show some potential but more rigorous research is required. • Young people are hard to reach and more user involvement in programme design could be beneficial.
Themes: Child road safety, Behavioural change.
Comments: Review of research conducted.

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