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Improving road safety education (RSE) in developing countries: India

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Executive Summary

Road traffic accidents are a major health and social problem and this is especially so in developing countries where accident rates can be up to 20 times higher than in developed countries. In many of these countries the accident rate is increasing rapidly. It is estimated that as many as 70 per cent of all fatal road accidents happen in developing countries, and that fatal accidents alone represents a financial cost in excess of US$ 36 billion each year for such countries. Accident statistics show that in many developing countries pedestrians are a particularly vulnerable group of road users, providing as many as 40 per cent of all road accident deaths. This is twice the proportion found in Europe and the United States. Additionally, certain types of pedestrians, such as the young, are especially at risk; one fifth of pedestrian fatalities in developing countries are children under the age of 16. Traffic accidents involving young children are therefore a major road safety problem. Predominantly, the injured children come from the poorest sectors of their community. Their injuries or deaths cause considerable suffering and grief, and often bring financial hardship to their families.

A major contributory factor in many of these accidents is a general lack of road safety knowledge leading to children adopting unsafe behaviour. If children are to behave safely when near traffic they must have an adequate knowledge of traffic rules and regulations and understand how to cope with the dangers caused by traffic. Teaching children road safety as part of their normal school timetable is arguably the most effective way of providing children with such knowledge. However, surveys in many developing countries have found that little road safety education (RSE) takes place, and that which does is often ineffective.

Road safety education courses and materials must be designed to take account of the ages of the children for which it is developed, the cultural context and the child's traffic environment. The development should include effective training for the teachers who will be using the materials in the classroom. Finally, the process should aim to persuade senior administrators and curriculum development authorities to make road safety education a continuous and sustainable educational subject. The achievement of these aims is both tested and supported by objective evaluation of the effectiveness of the new programme.

This report describes the development in the Indian State of Maharashtra of a road safety resource (called 'Safe Feet'). It is for use by teachers of children, whose age is about six and who are in their first year of primary school. A detailed analysis of accident data in India had revealed that this age of child pedestrians were particularly vulnerable to injury as pedestrians.

The study was funded from the overseas aid budget provided by Britain's Department for International Development (DFID) and received help from the Central Institute of Road Transport (CIRT) in Pune. It was designed to follow the elements of the competency based curriculum and 'joyful learning' approach to teaching that was recommended in *The National Policy on Education* published in India in 1986. The resource was produced in English and translated into Marathi (the principal language in Maharashtra). TRL has already been involved in developing similar materials for use in the UK and for children aged 11 – 12 in Ghana and Uganda.

The resource was designed to increase the children's observational skills and their knowledge and understanding of traffic. It ensured that they could recognise the dangers of traffic, behave safely as pedestrians and know what they needed to do to keep themselves and others safe.

The resource was evaluated in two ways. The first method examined whether or not the materials improved the children's road safety knowledge while the second involved a survey of the teachers who had been required to use the materials in the classroom. Both evaluations revealed that the materials were very effective in achieving their goals. There was a marked increase in children's road safety awareness and knowledge, and the teachers found the resource both effective and enjoyable to use for the children and the teachers themselves. However, the teachers did suggest a number of ways they felt the materials might be improved.

In addition, a small number of informal interviews were held with the head-teachers of the schools where the materials had been introduced. They were supportive of both the research and the use of the materials in their schools. They felt that teaching road safety was a valuable and necessary activity and was something that had not been attempted in their schools before this project. All reported that they would continue to use the materials in their schools. At the conclusion of the study, many had passed the materials on to neighbouring schools. They also felt that similar materials were needed for older children and that the materials needed to be disseminated more widely throughout India.

For maximum benefit to children in Pune, Maharashtra and India it is judged important that 'Safe Feet' becomes a permanent part of the primary school curriculum. Towards this aim, a Road Safety Education Awareness Seminar and Workshop was held at the end the project for senior education administrators, police and other important safety decision makers and practitioners. While they were supportive of continuing the programme, they considered that assistance, for future development and research, as well as financial help with dissemination, would be required.

1 Introduction

Road accidents continue to be a major health and social problem for both developing and developed countries. World-wide at least 500,000 people are killed in road accidents every year, with about 70 per cent of these accidents occurring in developing countries. These countries have a serious - and usually growing – road safety problem, with fatalities per 10,000 licensed vehicles up to 20 times higher than the rates in developed countries. The financial cost of fatal road accidents in developing countries every year is estimated to exceed US$ 36 billion.

In many developing countries, pedestrians are a particularly vulnerable group of road users. In Asia, Africa, the Caribbean and the Middle East, more than 40 per cent of reported road accident deaths are pedestrians, compared to 'only' about 20 per cent in Europe and the United States. Furthermore, certain types of pedestrians, such as the young, have been identified as being especially at risk in these road accidents. Accidents involving children less than 16 years of age on average contribute to 20 per cent of pedestrian fatalities in developing countries making them a major safety problem and cause for concern.

Many children, who have been injured as pedestrians, require long-term medical treatment and care. This can be a considerable economic burden for the injured child's family. Young pedestrian casualties generally come from the poorer sectors of the community. In these sectors, the loss to the family is twofold: firstly the cost of caring for the injured child and secondly loss of the income that the child earns or will earn. Loss of income means that the death of a child can bring a poor family lasting financial hardship as well as grief.

A major contributory factor in many of these accidents is a lack of road safety knowledge leading to unsafe behaviour by children. Research in developing countries has shown that in general children's road user knowledge is poor when compared with children in developed countries such as the UK (Downing and Sayer, 1983). If children are to be safe when near traffic, they must have adequate knowledge, understanding and skills to cope with the dangers of traffic. Teaching children road safety as part of their normal school timetable can be an effective way to provide them with such knowledge and understanding. Practice and exercises outside school help them to apply their knowledge and develop skills. This type of education both helps children avoid road accidents when they are young and makes them safer when they become adults.

Many children receive no road safety education. A survey of over 1000 schools in selected developing countries revealed that less than half taught road safety (Sayer and Downing, 1996). This failing can be addressed, in part, by raising the awareness of the importance of road safety education among Ministers of Education, teachers, senior decision makers and within the general community. However, simply raising awareness of the need for improved road safety education is not enough. There is also the accompanying need to provide teachers with effective materials and ways for teaching road safety. Alongside the provision of teaching materials, there is the need to train teachers in their use. To sustain these activities, senior administrators and curriculum development authorities must be aware of the necessity of road safety education.

There are significant cultural and infrastructure differences between the developing and developed countries. These encompass differences in educational systems, teaching practice, traffic regulations and road use. It is important that the road safety teaching methods and materials used in such countries have been researched and developed in the country where they are being used - or at least in similar countries. Simply attempting to transfer strategies and practices for road safety education from developed to developing countries is unlikely to be effective. For this reason, the UK's Transport Research Laboratory (TRL) has been working in developing countries to research and develop road safety education materials and approaches that do provide models of good practice for schools in the host country. The programmes in Ghana and Uganda have been very effective in increasing children's road safety knowledge (Sayer and others, 1997).

The study reported here continues this TRL policy of researching and developing RSE materials in the particular country where they will be used. The research aimed to improve road safety education for very young children (aged about six years), just starting school in Pune, in the Indian State of Maharashtra.

Britain's Department for International Development (DFID) financed the research from the UK overseas aid budget.

2 Objectives of study

The long-term aim of DFID and TRL in this research is to bring about a sustained reduction in injuries to child pedestrians in developing countries by the use of road safety education.

The study in India had four main objectives. These were:

- to investigate India's child pedestrian accident problem;
- to create, develop and evaluate a road safety education resource for primary school teachers and pupils;
- to develop training for the Indian primary school teachers, who were to use the road safety education materials;
- to alert Indian educational administrators and teachers to the importance of road safety education in their schools.

Although all four objectives are considered in this report, it mainly concentrates on the design and evaluation of the teaching resource.

3 The context of the study

This study was conducted in India. There were three reasons for choosing India:

- India has a serious, and worsening, road accident problem. Road traffic kills more people in India each year than in any other country in the world.

- TRL and the Indian authorities, including the Central Institute of Road Transport (CIRT) and other counterpart organisations, have a long and ongoing history of co-operative road safety research.
- India provided a good opportunity to investigate the development of a road safety education resource in a language other than English, but in a context where most administrators and teachers had a good understanding of English.

On the advice of the Indian authorities, the research was undertaken in Pune. Pune had a population of almost 2½ million people in 1991. It lies in the state of Maharashtra in Central India and is one of the principal cities of India. Marathi is the official language of Maharashtra, and is spoken by about 30 million of the state's 86 million people (1994 population estimate). English and Hindi are also common.

3.1 Road accidents in India

In many developing countries, detailed information on road accidents is often poor and fragmentary in terms of the areas covered, the information collected and the under reporting of many types of accident. This is generally the case in India where there is no detailed national accident database; and even in areas where accidents are recorded in detail, such as Delhi and Bangalore, a degree of under-reporting is likely to occur.

What information is available suggests that India has a serious and worsening road safety problem. Over the 30 years between 1961 and 1991, deaths from road accidents rose thirteen-fold from 4,500 to 60,000. Over the same period motor vehicle registrations increased 25 fold, from 600,000 to 15,000,000. In 1991 India had 44 fatalities per 10,000 licensed vehicles: the figure in Great Britain was two fatalities per 10,000 licensed vehicles (Downing, 1994).

Accident statistics also suggest that pedestrian accidents are a particularly serious problem in India. In the urban areas of India in 1992, 80 per cent of accident fatalities were either pedestrians or riders of two-wheel vehicles. In Madras in 1980, pedestrians made up about 45 per cent of road accident victims, while in Delhi in 1985 pedestrians comprised 38 per cent of reported road accident deaths (Mohan, 1985).

There are various reasons why pedestrians are a high-risk group of road users in India:

- exposure - there are large numbers of pedestrians, sometimes walking long distances (Maunder and Fouracre, 1989);
- poor infrastructure - a lack of footpaths to walk on, inadequate crossing facilities and dim or non-existent street lighting;
- poor road user knowledge and behaviour also have an important role: it is estimated that these were responsible for 55 - 60 per cent of road accidents in India (Road Safety Digest, 1992).

Indian Education Advisors, consulted about this research, thought that road safety knowledge was completely lacking in the general population.

The accident data available for Pune were not sufficiently complete or detailed to allow an in-depth analysis of pedestrian accidents. However the traffic police in Bangalore, a city similar to Pune, collect detailed accident statistics and record them on a computerised database[1]. The Bangalore data showed that there has been a steady rise in the number of accidents, with pedestrian casualties increasing from about 1300 in 1980 to nearly 2200 in 1996, an increase of 69 per cent (W S Atkins, 1998). Figure 1 shows how the number of pedestrians injured varies with age. There is a marked peak in the proportion

[1] *The Bangalore Police use the TRL Microcomputer Accident Analysis Package (MAAP), which provides database and accident analysis functions. MAAP is widely used in both developing and developed countries.*

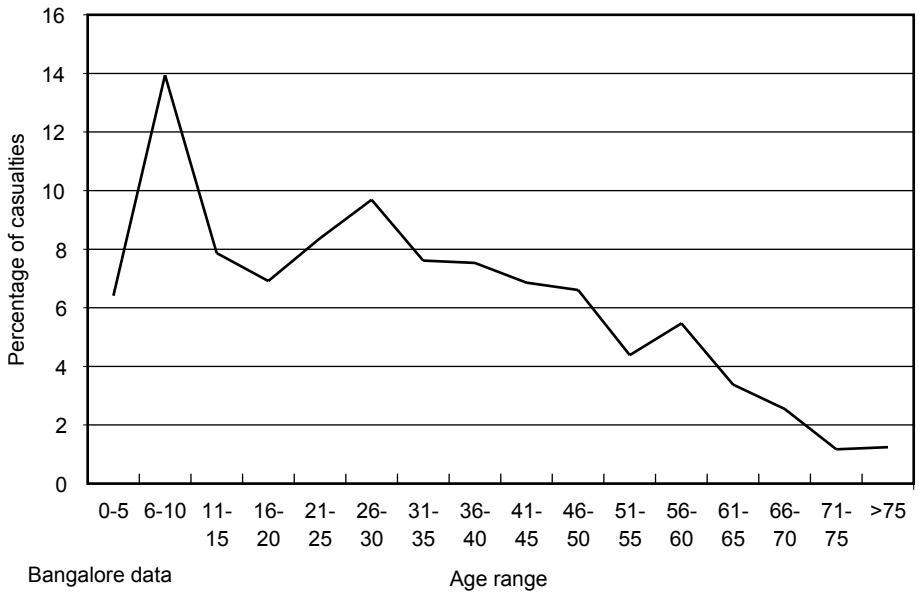

Figure 1 Pedestrian casualties by age

of casualties that falls in the age range six to ten years old. Thereafter casualty numbers decline very slowly with increasing age.

Over two-thirds of the child casualties were injured in mid-link accidents away from junctions. Fifty per cent of the children were injured on or near a pedestrian crossing facility.

Overall, 48 per cent of the children were injured by a motor cycle. Two per cent of these were fatally injured.

Cars, station wagons, light goods and small pickup vehicles accounted for 19 per cent of the reported pedestrian casualties involving children. Five per cent of this group were fatally injured.

3.2 Education in India

The casualty data show that children in the age range six to ten years old are most at risk of injury as pedestrians. The children in this age range are eligible to attend primary school and the materials developed within this project are aimed at children in the first years of primary education.

The Indian Constitution directs that 'the State shall endeavour to provide … for free and compulsory education for all children until they complete the age of fourteen years.' Elementary education is provided from six to fourteen years, at Primary Schools for ages six to eleven years and at Upper Primary Schools for ages twelve to fourteen years.

The State and Union Governments share responsibility for education. The Department of Education estimates that about 98 per cent of eligible boys and 81 per cent of eligible girls are enrolled for the Primary Schools. About 40 per cent of both sexes drop out during the primary education stage (Ministry of Education, 1999). Although primary education is compulsory, it is not practicable to enforce compulsion when the reasons for not attending are largely socio-economic.

At primary schools, children are usually taught in their mother tongue or the regional language. In Pune, each school studied used either Marathi or English as the language of instruction. Hindi speaking children attend Marathi schools or go to separate Hindi schools.

The primary schools' data indicate quite large primary class sizes. In the Pune schools studied, the class size was about 70 pupils. With such classes, teaching was generally didactic with a tradition of concentrating on imparting knowledge rather than skills. However, the syllabi for the first two school years in Maharashtra have recently been revised to come into line with India's National Policy of Education (1986 and 1995). This states that the basic learning needs and levels of attainment should be identified, and any syllabus or textbook should fulfil those needs. The approach advocated by this policy was one of 'joyful learning', which means that learning should be enjoyable, interesting, participatory, child-centred and activity oriented. This development of the Maharashtra syllabi greatly facilitated the introduction of the road safety training described below.

3.3 The safety intervention and target population

The main findings from the review of the study context that pointed to the need for a pedestrian training resource were:

- India has a serious, and worsening, road accident problem;
- pedestrian accidents are a particularly serious problem in India;
- poor road user knowledge and behaviour play an important role in accident causation;
- pedestrian accidents peak between ages six and ten;
- about 90 per cent of children (99 per cent of boys and 82 per cent of girls) aged between six and eleven are enrolled for primary education.

Following discussions with Education Officials and the Traffic Police in Pune and Bangalore, it was agreed that pedestrian training should begin in Standard I of the Primary Schools. This would reach most boys and a significant proportion of girls. The training should help the children to avoid pedestrian accidents at a time when the risk of injury was highest. This beginning could form a base for further work to establish progressive road safety education at all stages of education. Widespread sustained implementation of this sort of training would signal the intent of the State and National Governments to reduce the number of pedestrians injured in India and begin to alert adults to the need for improved pedestrian behaviour.

The style of teaching used previously by TRL, in both Africa and the UK, was essentially participatory and focussed on the development of practical skills. As such it seemed to match closely the aims of the revised primary syllabi in Maharashtra, that learning should be enjoyable, interesting, participatory, child-centred and activity orientated.

All these findings led to the following aim for the main research in this project; that the research would create, develop and evaluate a pedestrian training resource for use by primary teachers with children in Standard I.

Table 1 Primary school statistics

1996-1997	*Number of schools*	*Enrolled students*	*Teachers*	*Students per school*	*Teachers per school*	*Students per teacher*
All India[1]	598,000	110,000,000	1,790,000	184	2.99	61.7
Maharashtra[2]	41,000	11,700,000	—	285	—	—

[1] *Ministry of Education 1999 (estimates)*
[2] *Turner, 1999*

4 Development of the resource

4.1 Resource aims

An initial information gathering trip was undertaken to study the Indian curriculum and school system. Having decided to target Standard 1 children (aged 6), the next stage was to determine the aims and the content of the materials to be delivered by the teachers. The aims were to:

- increase the children's observational skills;
- increase their knowledge and understanding of traffic;
- help them to recognise the dangers of traffic;
- improve their behaviour as pedestrians;
- teach them to know that they can keep themselves safe.

Using these aims, the first of four rounds (modules) was written for use in the pilot study. This allowed discussion and development of the ideas and materials with teachers and educationalists in order to achieve the most effective, educational programme.

4.2 Piloting the resource

In the pilot study, six schools were selected from the Pimpri Chinchwad, Pune district. They were both private and government schools that used Marathi, English or Hindi as their instructional language.

In a workshop forum, fourteen teachers from the pilot schools were consulted about the concept, content and practical implications of the scheme. Visits had been made to the six schools and this provided additional information, particularly on how the potential resource might be used by teachers, which enabled the design of a more effective resource.

The schools visited were varied and very different from schools in the west. Few had desks, chairs or teaching resources apart from the chalkboard and issued books. Children sat on the floor, there was no electricity and few had telephones. Some schools encouraged their pupils to attend by a monthly payment in rice for their family. This was a Government initiative. Most schools were two storey, had shutters rather than glass, and approximately 70 pupils per class. Taking into consideration these conditions the resource had to be designed to rely on basic, available materials e.g. chalk, exercise books, stones and other simple things to hand.

4.3 Resource content and appearance

The format follows closely the elements of the competency based approach curriculum which was recommended by India's 'The national Policy on Education 1986'. This policy states that the basic learning needs and levels of attainment should be identified, and any syllabus or textbook should fulfil those needs. As already stated, the approach advocated by this policy was one of 'joyful learning', which means that it should be enjoyable, interesting, participatory, child-centred and activity oriented.

The materials were written after consultation and discussion with a number of educational experts in India. TRL made a decision to make the text appear in the same format as Indian English language books, giving a familiar feel to the teachers who would deliver the RSE. It was written in English and translated into Marathi for delivery in six English medium schools and six Marathi schools engaged in the main study. No translation was made into Hindi after TRL took advice, because Marathi is the regional language understood by the minority of Hindi speaking people.

The resource was given the title 'Safe Feet'. The teachers and advisors consulted thought that this title was succinct, memorable, and encapsulated the idea of being a safe pedestrian. It is a progressive scheme divided into four modules called rounds were called:

- Road environment.
- Pedestrian rules.
- Traffic rules.
- Safe survival.

The rounds themselves consist of a number of lessons called activities. Each activity page follows the layout of an Indian English language lesson, i.e. statement of competencies (objectives), preparation boxes, teacher's notes. After a number of classroom based activities each round culminates in a series of linked practical activities outside near roads. This was a novel approach used in India for the first time. A test sheet accompanies each round, and is in a familiar form used in Indian curricula. Pictures within the text were of local scenes, and the whole resource was designed so that it could be photocopied.

Appendix 1 shows a full copy of the English language version of 'Safe Feet'.

It should be noted that 'Safe Feet' did not require children to learn how to cross the road. It was considered that this age of child should not be encouraged to engage in such behaviour as it was considered too dangerous for such young children to attempt to cross the road unsupervised or unaided. Nor did the resource encourage children to use zebra crossings. The authors considered it too dangerous to teach Indian children (at least in Pune) that zebras are the safe place to cross because drivers take very little notice and rarely stop for pedestrians at crossings. In addition, zebra crossings are often situated at traffic lights and vehicles either stop on the crossing or creep forward onto it. In many cases the zebra crossing markings were faded and dirty and were not very visible either to pedestrians or to drivers.

4.4 Teacher training

One of the problems in providing road safety education in India is the lack of knowledge of the teachers themselves. Thus, distributing the 'Safe Feet' resource to teachers without proper instruction would not achieve its educational objectives. To overcome this problem teacher training workshops were prepared. All board notes, student notes and teaching materials were translated into Marathi, and the workshops were conducted simultaneously in Marathi and English.

The workshop method of training teachers was successful in Ghana and adopted for India. Teachers

enjoyed the strong element of discussion, the sharing of ideas and the first hand experience of the practical nature of the resource. Teaching road safety and taking children outside the classroom near roads were new experiences for most of the teachers. With encouragement, they became enthusiastic and realised that teaching 'Safe Feet' was an achievable goal for them.

The teacher training workshops consisted of four two-hour sessions that were undertaken after school. Workshop sessions covered raising awareness, accident facts about children and India, key points in the teaching of RSE, detailed instructions on how to use 'Safe Feet', and how to deliver the practical sessions. In this training, the teachers took part in some of the outside work playing the role of the pupils.

These workshop experiences and notes were used by TRL to produce 'Teaching the Teachers' (see Appendix 2). This is a guide providing a tutor with all that is required to run more teacher training workshops. It has details of structured sessions with large board notes to highlight major teaching points - the only assumption made is that the person using the guide has lecturing or teaching experience, preferably in education, health or social studies. These tutor notes should allow teacher training without further TRL involvement, thus ensuring that the 'Safe Feet' training is established as a sustainable programme.

5 Evaluation

'Safe Feet' was developed for teachers to use in the classroom to educate their children in road safety. It was therefore considered necessary to evaluate it in two ways:

- the first method (see Section 5.1 below) examined whether or not the materials improved the children's road safety knowledge;
- the second evaluation method (see Section 5.2) involved asking the teachers who had used the materials in the classroom whether they thought they 'worked' and whether they were a useful teaching aid. Teachers were also asked to suggest any ways they felt that the resource could be further improved.

5.1 Measuring improvements to children's RSE knowledge

5.1.1 Method

This evaluation involved introducing the materials into a small number of schools and seeing if this increased the children's knowledge and appreciation of road safety. This meant that it was necessary to assess the children's knowledge before and after being taught the materials. This type of research design (a 'before and after' study) typically employs the use of both 'experimental' and 'control' subjects (the children). The intervention (being taught RSE) is introduced into the experimental schools but not the control schools. Before and after measures are obtained in both types of school. This technique can separate any improvements attributable to the 'Safe Feet' training from other changes that may have arisen because the children grew older during the experiment and also from changes that may be a consequence of the pre-testing.

The pre-test interviews were conducted over a three day period in November 1998 and the post-test interviews just over four months later in March 1999. It should be noted that while the materials were designed for use over the whole school year, the limited time available for evaluation required the teachers to reduce the teaching period to about three months. Despite this concentrated teaching the teachers reported that the children found the materials interesting, enjoyable and valuable (see Section 5.2.2).

The children's knowledge and attitudes towards road safety were assessed using interviews of the children in twelve schools. Although the schools were selected at random from all the primary schools across the District, certain constraints were imposed on the sample. Half of the schools were to be English speaking and half to be Marathi speaking. In addition, the Marathi schools were selected so that there were two mixed sex schools, two girls' schools and two boys' schools (All the English speaking schools were mixed sex schools). This sample was split into matching halves. In six schools the 'Safe Feet' resource was taught (the experimental schools) and in the other six it was not taught (the control schools).

The interviews were conducted by specially trained primary school teachers (see Section 5.1.2) using a 'questionnaire' (see Section 5.1.3) that was developed to be suitable for very young children.

5.1.2 Selection and training of interviewers

The pre- and post-testing of the children were carried out by twelve specially trained primary school teachers. These twelve teachers (six Marathi speaking and six English speaking) were recruited from the teachers who had helped to pilot the resource. They did not teach at the experimental or control schools.

Prior to carrying out any interviews with children, all the interviewers attended a four-hour training Workshop where they were introduced to the overall objectives of the project and trained in conducting the interviews. The interviewers also conducted several 'practice' interviews with children in two schools (one Marathi and one English speaking). Neither of these schools played any other part in the study.

During their training it was impressed upon the interviewers that they:

- should recognise they were dealing with very young children who might find the exercise stressful;
- should always tell the children that they were not being examined or tested;
- were not to say that the children's answers were 'right'; or 'wrong' or to give them 'correct' answers;
- were trying to identify what the children knew - not what the teachers thought they should know;
- should not try to suggest that the children knew more than they actually did;
- were not to use the interviews as an opportunity to teach the children road safety.

The teachers were divided up into four teams of three teachers each. Each team visited a particular school for the whole school day and tested as many children, individually, from a particular class as possible. Children interviewed were selected at random.

The teachers, who conducted the pre-test interviews, also conducted the post-test interviews. Because there was about three months between the pre- and post- testing a 'reminder' workshop was held with all the interviewers immediately before the start of the post-testing. The teams attended the same schools for the pre- and post- testing. During the post-test, the interview teams were not informed whether they were visiting a control or an experimental school.

To ensure that the interviews were being conducted correctly all the teams were monitored daily. Interviewers were paid a small daily fee and any travelling expenses in addition to their normal salary.

5.1.3 Questionnaire and interview

All the interviews with the children were conducted individually. It was recognised that the children taking part in the evaluation were young and that a structured, formal interview would not be suitable. It was also judged that the evaluation interviews would provide a better understanding of the children's knowledge of road safety if a model of the road scene was used to supplement the questions. Therefore as well as answering questions and pointing to different parts of the model, children were required to 'role play' a trip walking (with their parent) from their home to school. The procedure had been developed and tested during the pilot study visit. The use of a model method was first developed in the UK by Ampofo-Boateng and J Thomson (1990) and further developed by TRL for work in the UK and Africa. An English version of the questionnaire and photographs of the model are shown in Appendices 3 and 4 respectively.

In each of the schools, children were withdrawn from the classroom individually and the interview conducted orally by a member of the trained interview team. A second member of the team recorded responses. The third member of the team was responsible for supervising any children waiting to be interviewed and any other children who became 'over' interested in what was going on. Very little disruption occurred to the children's normal schooling.

Pupils were randomly selected from the Standard 1 class. Upon meeting the interviewer they were made welcome, the task explained and it was made clear that that the interview was not a test or an exam and that it was acceptable to give a 'don't know' answer.

The evaluation interviews were designed to provide information on the children's road safety knowledge and included questions that investigated the children's:

- basic road safety vocabulary;
- appreciation of the concepts of safe and dangerous with regard to traffic;
- knowledge of safe walking rules.

The above three topics are closely related to the three subject areas identified by Rothengatter (1981), as 'constituting essential road safety knowledge'.

5.1.4 Results

This evaluation examined whether there had been a significant improvement in the children's knowledge in the experimental schools over and above any improvement that might have been observed in the control schools. This could have been done by simply comparing all the experimental schools (three Marathi and three English) with all the control schools (again both Marathi and English). However, before this was done it was decided to see if there were any notable differences between the Marathi and English schools. An additional reason for this, other than the language in which the children were taught, was that all the English schools were mixed, while the Marathi schools were either boys, girls or mixed.

In total, 377 pre-test and 383 post-test interviews were conducted. Slightly more interviews (54.8 per cent) were conducted in Marathi schools than in English schools. Table 2 shows that 44.7 and 50.8 per cent of the tested children attending Marathi and English schools respectively, were boys.

Table 2 Percentages for different ages and gender in Marathi and English pre-test schools

Marathi schools					*English schools*				
Age in years			*Sex*		*Age in years*			*Sex*	
5	*6*	*7*	*Male*	*Female*	*5*	*6*	*7*	*Male*	*Female*
74.9	24.1	1.0	44.7	5.3	1.7	96.0	2.3	50.8	49.2

Unexpectedly, the surveys found that there were marked differences in the ages reported by the children in the Marathi and English schools. Table 2 shows that nearly three-quarters of the Marathi children (74.9 per cent) were aged five, and just less than one-quarter (24.1 per cent) were aged six. Nearly all of the children in the English schools (96 per cent) said they were aged six.

When considering these results and indeed those reported later, a number of points should be noted. These are:

- the interviews were carried out with relatively young children (some of whom may not have known their age);
- in some of the English speaking schools, the children's level of comprehension (in English) was quite low, and some children had difficulty understanding the English used in the interviews;
- the Marathi interviewers were concerned that the language used in the questionnaire was somewhat 'formal' for some of the children.

Because of these concerns, and also the variation of child age and the gender differences between schools, it was decided to analyse the results of the English and Marathi schools separately. This decision was supported by a finding from the pre-test evaluations (not reported in detail here), that there were statistically significant differences in the initial 'vocabulary' responses for Marathi and English children.

Questionnaire information, where a respondent's answer can be right or wrong, is usually tested for significance

using non-parametric (distribution free) statistics. The individual pre- and post-test percentage scores (for correct responses) are compared by computing a *z* score, to determine whether any differences are significant or not. In this study, an improvement, rather than just a change (either getting better or worse) was being sought, thus a one-tailed test (one direction) was used. A difference is reported as significant if the test result could have arisen just by chance in 5 per cent or fewer trials. In the tables presented below, statistically significant differences (between the pre- and post-test scores) are shown in bold.

Tables 3 – 8, show percentage scores reflecting the differences between the pre- and post-test performance for both the experimental and control schools. There are separate tables for the children's knowledge of road safety vocabulary (Tables 3 and 4), the children's understanding of the dangers related to traffic (Tables 5 and 6) and their knowledge of walking rules (Tables 7 and 8). In each case, the first table presents the findings for the Marathi schools while the second table of each pair shows the results for the English schools.

Numbers in the tables refer to the percentage of children whose responses, by either pointing or giving a verbal response, suggested they knew the word(s) or understood concepts such as 'safe' and 'unsafe'. In all the results, a higher score shows a higher level of knowledge.

Table 3 shows that, at the pre-test stage, nearly all of the Marathi children had an understanding of simple words such as 'people', 'road' and 'cycle'. This had been expected following the piloting of the questionnaire. The items were still included in order that the children were able to give correct answers early on in the interview, making them feel more confident, comfortable and involved. However, at the pre-test stage, very few of the children knew words such as 'pedestrian' or 'traffic'. This was clearly not the case at the time of the post-test evaluations: both the experimental and control children showed marked improvements. However, the improvements of the experimental children were larger than those observed with the control children.

Table 3 Children's road safety vocabulary: Marathi schools (Percentages)

	Experimental		*Control*	
	Before	*After*	*Before*	*After*
Child understood (could point to):				
People	97.0	100.0	100.0	100.0
Car	**71.3**	**99.0**	**77.6**	**97.6**
Truck	**79.8**	**100.0**	**88.8**	**98.3**
Pedal cycle	96.8	100.0	100.0	100.0
Road	92.6	99.0	97.2	97.5
Footpath	**35.1**	**89.9**	**46.7**	**76.7**
Traffic lights	**54.3**	**83.9**	**69.2**	**80.8**
Child knew the word for:				
Pedestrian	**3.2**	**91.9**	**2.8**	**45.8**
Traffic	**0.0**	**31.3**	**5.6**	**28.3**

NB Figure in bold denote significant difference at 5 per cent level (1-tailed test)

The tables also shows that children in the six randomly selected control schools initially had a better safety vocabulary than those in the six experimental schools. This shows that the differences in the children's standard of knowledge attending the different schools were much more marked than had been expected. Ideally, the pre-test performance of all the schools would have been similar. However, the effect was reversed in the post-test interviews.

Table 4 suggests that the vocabulary and/or comprehension of the children in the English schools were lower than that in the Marathi speaking schools. This probably results from many of these children having had very little experience of the English language prior to attending school. However, some children were much more proficient English speakers than others. This explains why the pre-test performance was generally higher in the control schools than in the experimental schools; a situation which reflects that found in the Marathi schools.

Table 4 Children's road safety vocabulary: English schools (Percentages)

	Experimental		*Control*	
	Before	*After*	*Before*	*After*
Child understood (could point to):				
People	**50.0**	**75.9**	85.6	94.7
Car	**79.1**	**98.9**	88.9	98.7
Truck	**67.4**	**80.5**	76.7	88.3
Pedal cycle	**88.4**	**100.0**	96.7	98.7
Road	**58.1**	**85.1**	80.0	85.7
Footpath	**26.7**	**73.6**	**53.3**	**76.6**
Traffic lights	**41.9**	**83.9**	74.2	84.0
Child knew the word for:				
Pedestrian	**0.0**	**57.4**	0.0	0.0
Traffic	**11.6**	**71.3**	**38.9**	**68.8**

NB Bold denotes significant differences (see note after Table 3)

Table 5 shows that initially, a majority of children attending Marathi speaking schools had limited understanding of concepts such as 'safe', 'dangerous', or 'traffic causing accidents'. After being taught the resource materials, the majority of children appeared to understand these issues. The study also found that a significant improvement had occurred in the control schools, perhaps

Table 5 Appreciation of risk associated with traffic: Marathi schools (Percentages)

	Experimental		*Control*	
	Before	*After*	*Before*	*After*
Child knew:				
Safe to play away from traffic	**26.6**	**85.9**	**50.5**	**8.3**
Unsafe to play near traffic	**45.7**	**88.9**	**61.7**	**90.8**
Traffic is dangerous	**20.2**	**88.9**	**43.0**	**65.8**
Traffic causes accidents	**5.3**	**64.7**	**15.0**	**29.2**
A safe place to cross	**36.1**	**77.8**	**52.3**	**68.3**
Running into a road causes accidents	**70.2**	**91.9**	93.5	95.8

NB Bold denotes significant differences (see note after Table 3)

as a result of taking part in the pre-test evaluation. However, any improvement found in the control schools was much less than was found in the experimental schools.

Table 6 shows that the results from the English schools were similar to that found for Marathi schools. However, the children started from a much lower and, typically, did not reach the final level found for the Marathi children. Again, the initial comprehension of the control schools was higher than for the experimental schools.

Table 6 Appreciation of risk associated with traffic: English school (Percentages)

	Experimental		*Control*	
	Before	*After*	*Before*	*After*
Child knew:				
Safe to play away from traffic	**1.2**	**54.0**	**15.6**	**48.1**
Unsafe to play near traffic	**9.3**	**54.0**	**42.2**	**59.7**
Traffic is dangerous	**37.2**	**90.8**	68.9	**74.0**
Traffic causes accidents	**10.5**	**75.9**	**40.0**	**61.0**
A safe place to cross	14.0	17.7	26.7	26.0
Running into a road causes accidents	**41.9**	**78.2**	64.4	71.4

NB Bold denotes significant differences (see note after Table 3)

Table 7 shows that the resource was very successful in teaching the children in the Marathi schools safe 'walking rules'. The table shows that the control children were more 'advanced' than the experimental children were at the time of the pre-testing. However, the difference appeared to be much less pronounced with regard to detailed knowledge of (untaught) 'rules' than was found for abilities that were more general.

Table 7 Children's knowledge of walking rules: Marathi schools (Percentages)

	Experimental		*Control*	
	Before	*After*	*Before*	*After*
Child knew to:				
Hold hands	**39.4**	**81.8**	**49.5**	**78.3**
Look after younger children	**2.1**	**39.4**	**12.2**	**28.3**
Don't run near roads	**5.3**	**34.3**	3.7	15.0
Stop before crossing	**5.3**	**34.3**	**4.6**	**33.3**
Look before crossing	**10.6**	**39.4**	**12.2**	**40.0**
Listen before crossing	**4.2**	**36.4**	**5.6**	**36.7**
Listen out for vehicles	**76.6**	**98.0**	85.1	98.3
Take care near parked vehicles	**18.1**	**64.5**	**21.5**	**42.5**
Wear light clothing at night	**0.0**	**30.6**	**0.0**	**19.2**

NB Bold denotes significant differences (see note after Table 3)

Table 8 shows that the knowledge of walking rules at the pre-test stage was lower for the children at the English speaking schools than for the Marathi speaking children. Again, this probably reflects the lower familiarity with the teaching language at the English speaking schools. Nevertheless, the children's appreciation of how to behave safely when walking did improve significantly after they had been taught the rules in class.

Table 8 Children's knowledge of walking rules: English schools (Percentages)

	Experimental		*Control*	
	Before	*After*	*Before*	*After*
Child knew to:				
Hold hands	**0.0**	**44.8**	0.0	5.2
Look after younger children	4.7	0.0	0.0	0.0
Don't run near roads	0.0	4.6	2.2	5.2
Stop before crossing	**0.0**	**10.3**	0.0	0.0
Look before crossing	**0.0**	**27.6**	**0.0**	**14.3**
Listen before crossing	**0.0**	**28.7**	**0.0**	1.3
Listen out for vehicles	**9.3**	**70.1**	**34.4**	**53.3**
Take care near parked vehicles	2.3	46.0	**21.1**	**37.7**
Wear light clothing at night	4.7	0.0	**0.0**	0.0

NB Bold denotes significant differences (see note after Table 3)

5.2 Survey of teachers' experience of using resource

5.2.1 Method

For any educational materials to be effective, it is important that children find them interesting and stimulating, as well as being instructive. Additionally, teachers must think the materials are worthwhile and that they work well; and that they should enjoy using them. This type of information can only be obtained from teachers after the materials have been used in the classroom and in this study, for the practical activities, in the playground.

All teachers who had been responsible for teaching the road safety education materials were required to attend a 'debriefing' workshop to discuss (within a group) their experience of using the materials. They were also required to complete a simple questionnaire on their, and the children's, experience of the materials. This involved providing a rating (from: 'Worked well', 'Satisfactory' and 'Did not work well'), plus provide comments on each separate component of the syllabus.

These workshops were held separately for Marathi and English teachers.

5.2.2 Results

The main objective of this evaluation was to see whether the teachers liked the resource and felt it worked in the classroom. These workshops clearly revealed that the teachers felt that the materials had been very successful; as well as being 'fun to use'. They reported that they particularly enjoyed the strong element of discussion, the sharing of ideas and experiencing at first hand the practical nature of the resource. Some said it was their first experience of teaching road safety. They all reported that teaching road safety outside the classroom, near roads was a completely new experience.

During the interviews with teachers it became clear that:

- before the programme very little road safety education was provided for children in Maharashtra Sate schools;
- children found the materials interesting, fun and instructive;
- teachers enjoyed using the materials;

- teachers were very enthusiastic about the project and felt that it would be valuable to extend it both within the State and the whole country;
- some of the teachers reported that their head teachers also approved of the materials. The heads acknowledged that road safety education was an important subject that had not been given sufficient attention in the past;
- teaching road safety to their children was now an achievable goal for them;
- the road safety resource should be introduced into more state primary schools.

The results of the detailed survey on each element of the programme are summarised in Table 9.

Table 9 shows that most of the teachers considered that the materials worked well or were satisfactory. The teachers using the English language materials were more likely to say that they worked well than the teachers using the Marathi materials. Interestingly, the Marathi teachers felt that the class activities worked slightly better than did the practical sessions, while the opposite was the case for the English teachers.

The lowest satisfaction score (5 per cent of Marathi teachers responding 'Did not work well' for the practical) was associated with a single element of the materials. This involved children having access to a motorcar (to name parts, etc.) which proved to be impossible for these teachers.

The teachers were also given the opportunity to suggest ways in which the materials could be improved. Their suggestions included:

- having larger, more colourful and interesting pictures in the form of posters (which could then be put on the wall) or a dedicated 'flip chart';
- the language used was occasionally too complicated and sometimes too 'formal' for children;
- a traffic model, with roads, a footpath and vehicles could be made available, making it easier to explain some of the safety ideas;
- a few tasks could have been made more relevant to road safety and more focussed on traffic issues.

In addition to the formal interviews with the teachers, a small number of informal interviews were held with head-teachers of the schools where the materials had been tested. In every case, the head-teacher recognised that road safety education was a very valuable and necessary activity for schools to offer to children. It was something that had not been done previously. The head-teachers said that they would continue using the materials in their schools and were very interested in the prospect of additional materials, suitable for older children. Following the completion of the evaluation phase one head-teacher asked for permission to reproduce the materials so that they could be distributed more widely than in the evaluation.

6 Discussion and conclusion

A serious, and worsening, road safety problem is unfortunately typical of most developing countries. The accident statistics generally show that pedestrians are particularly at risk. Pedestrian accidents in developing countries account for between 35-65 per cent of all road accident fatalities, about twice the percentage in developed countries. Typically, younger pedestrians are found a particularly vulnerable group. For example, in Bangalore, 22 per cent of the injured pedestrians were less than 16 years old.

In India poor road user behaviour and knowledge have been identified as an important factor in road traffic accidents. Without an adequate knowledge of traffic rules and regulations, and how to use roads safely, young lives are spoiled or lost, vital resources are wasted, and the country's development suffers.

Research has demonstrated that both knowledge and behaviour can be significantly improved by education programmes. It is critically important that child pedestrians receive safety education and training, tailored both to their age and to the local traffic conditions. This means that it is necessary to develop, and evaluate, any materials before they are introduced on a wide scale. It is also necessary to consider how to train the teachers before they start to use the materials.

Accident patterns, the educational culture and teaching practices vary from country to country. Simply transferring a training scheme from one country to another without heeding these differences is unlikely to be satisfactory. In recent years the Transport Research Laboratory, supported by the UK Government (DFID) has been using experience gained in developing educational materials for the UK to develop materials suitable for use in developing countries. The project reported here is part on that ongoing programme.

The aim of the research was to help reduce pedestrian casualty numbers in India. An analysis of road accident statistics revealed that pedestrian injuries peak among children of primary school age. Road accidents in India are very much a consequence of poor behaviour and inadequate knowledge of what constitutes safe behaviour. The accident analysis points to the need to start road safety education with some pedestrian training in the very first year of primary education.

The main objective of this study was to provide a road safety education resource to improve road safety knowledge

Table 9 Marathi and English teachers' ratings of the materials (Percentages)

	Worked well		*Worked satisfactory*		*Did not work well*	
Number of activities	*Marathi*	*English*	*Marathi*	*English*	*Marathi*	*English*
27 classroom activities	54	80	45	20	1	0
14 outdoor practical activities	49	85	46	14	5	1

of Indian children, about six years old, who were in Standard I, having just started their primary schooling. The study was conducted in Pune (in the State of Maharashtra), where the research could be assisted by staff from CIRT. The materials were based on the current teaching practices as well as a detailed accident analysis of child pedestrian accidents collected in Bangalore. The resource also included detailed 'trainer notes' so that teachers could be trained in how to use the resource and the process would be on-going long after the departure of the TRL teachers. For the first time in this kind of educational programme, the materials were translated into the local language Marathi and used in local schools, i.e. not just English speaking schools. This aided the success of the programme, including reaching groups of the urban poor.

The resource, called 'Safe Feet', was developed with the objective of providing children in Standard 1 with the practical training needed to increase and develop their observational skills, knowledge and understanding of traffic and its dangers. Importantly, 'Safe Feet' followed closely their style of the Indian competency based curriculum. It was also developed so that it was inexpensive to produce and copy and tailored for use in an Indian classroom (which typically had no high-cost teaching aids such as a TV, video recorder or computer). It was hoped that teachers, usually untrained in road safety education, would find the materials easy to use because they were similar to existing Indian educational materials.

A critical part of the production of road safety educational materials is to demonstrate that they are effective. This means carrying out an in situ evaluation. The materials making up 'Safe Feet' were introduced into six experimental schools following a short training programme for the teachers who would be using them. The evaluation involved both measuring any improvement in children's road safety knowledge following exposure to the resource and conducting a qualitative and quantitative survey of the teachers' experiences with the programme. The evaluation showed that the materials worked well and produced significant improvements in the children's road safety knowledge. The teachers judged the resource very effective as well as enjoyable for the children. Importantly, the teachers themselves enjoyed using the materials. As a result of taking part in the study, they recognised that providing road safety education was a vital part of their children's education. Most expected to continue the 'Safe Feet' training even though the research had finished.

The research has demonstrated the effect of the 'Safe Feet' training. The benefits are available for all children in India if 'Safe Feet' becomes a permanent part of the Standard 1 curriculum. Towards this aim, the TRL staff ran a Road Safety Education Awareness Seminar and Workshop in Pune for senior education administrators, police and other safety decision-makers.

Clearly, if child pedestrian accidents are to be reduced using educational means, maximum benefit will come from road safety curriculum providing a gradual progression of lessons leading from total protection to total independence. The research carried out by TRL in India, Ghana and Uganda is an important beginning. The more demanding challenge is ensuring that newly developed road safety education materials are disseminated throughout the countries concerned, adopted by all schools and become a permanent feature of their work programmes.

The results of this study are encouraging. There is no doubt that a large scale implementation of the 'Safe Feet' resource would bring about long-term benefits in terms of improved pedestrian behaviour and reduce the number of injuries to child and probably adult pedestrians.

Given the high pedestrian casualty rates in India and many other developing countries, further research to create, evaluate and develop road safety education resources and training seem long overdue.

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Abstract

This report describes the results of a study into developing a road safety education resource for primary school children in Pune India. Particular attention was paid to ensuring that the safety education courses and materials were designed to meet the ages of the children being instructed, the culture in which the children are educated and traffic environment in which they live.

Special training was given to the teachers using the trial materials and the importance of road safety education as a continuous and sustainable educational subject was impressed on senior administrators and curriculum development authorities.

The teaching resource (Produced in both English and Marathti) was designed to increase the children's observational skills and their knowledge and understanding of traffic. It concentrated on teaching children to be able to recognise the dangers of traffic, behave safely as pedestrians and knowing what they needed to do to keep themselves and others safe when using roads.

Evaluation of the resource showed that there was a marked increase in children's road safety awareness and knowledge, and that resource was both effective and enjoyable to use.

At an end of project workshop, senior education administrators, police, important safety decision makers and practitioners, expressed their support for continuing the programme and emphasised the need for future development research and the funding to help with disseminating the developed materials.

Related publications

TRL265 *Improving road safety education in developing countries; Ghana* by I A Sayer, C J Palmer, G Murray and J Guy. 1997 (price on application)

TRL247 *Socio-economic aspects of road accidents in developing countries* by C Ghee, D Silcock, A Astrop and G Jacobs. 1997 (price on application)

TRL227 *Pedestrian accidents and road safety education in selected developing countries* by I A Sayer and A J Downing. 1996 (price on application)

ORN17 *Overseas Road Note - Road safety education in developing countries - guidelines for good practice in primary schools*. 1997 (price on application)

CT43.2 Accident prevention measures update (1996-99). *Current Topics in Transport: selected abstracts from TRL Library's database* (price £20)

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Appendix 1
The ‘Safe Feet’ resource
(English version)

Appendix 2
Teachers' guide to using 'Safe Feet'

Appendix 3
The ‘Safe Feet’ resource
(Marathi version)

Appendix 4
Evaluation questionnaire

(REF: ARQ/TRL/11/98)

TRL/CIRT ROAD SAFETY EDUCATION RESEARCH: EVALUATION QUESTIONNAIRE

Write in: Name of School: _____

Date: _____

Interviewer(s): _____

PLACE THE VEHICLES - BUT NOT THE 'PLACES' - ON THE MAP (WHERE INDICATED) AND THE PEOPLE AT THE EDGE (WHERE INDICATED).

THE MAP AND 'TOYS' SHOULD BE POSITIONED WHERE THEY ARE CLEARLY VISIBLE TO THE CHILDREN AND SO THAT THEY CAN POINT TO THE DIFFERENT LOCATIONS AND CLEARLY SEE ALL THE MODELS.

'Good morning/hello, my name is ..... , what is your name?'

'Well (child's name), I am going to ask you a few questions about getting to and from school and about playing.'

'Before we start can you tell me how old you are and whose class you are in?'

(WRITE IN:)

Name: _____

Age: _____ years

Class: _____

Gender (TICK ONE BOX}: Boy [ ] Girl [ ]

'Now, I want you to look at this model with me ....'

'I'm going to put a few pictures of different places on the model ....'

'We will put a school (SHOW PICTURE AND PLACE ON MODEL) **here ....'**

'Lets pretend this (SHOW PICTURE AND PLACE) **is your house ....'**

'and we'll put this shop (SHOW PICTURE AND PLACE) **here ....'**

'we'll put a park here (SHOW AND PLACE) **....'**

'and lastly a hospital here (SHOW AND PLACE)**.'**

1**. 'Now, can you point to: the....'**

(READ OUT EACH IN TURN AND TICK ONE BOX FOR EACH)

People:	Correct [ ]	Incorrect [ ]	No response [ ]
Cycle:	Correct [ ]	Incorrect [ ]	No response [ ]
Truck:	Correct [ ]	Incorrect [ ]	No response [ ]
Car:	Correct [ ]	Incorrect [ ]	No response [ ]
Ambulance:	Correct [ ]	Incorrect [ ]	No response [ ]

2. **'OK, now can you show me...'** (READ OUT EACH IN TURN AND TICK ONE BOX FOR EACH)

A road:	Correct [ ]	Incorrect [ ]	No response [ ]
A footpath:	Correct [ ]	Incorrect [ ]	No response [ ]
Some traffic lights:	Correct [ ]	Incorrect [ ]	No response [ ]

3**. 'Do you know what is the special name given to people who walk?'**

(TICK RESPONSE, OR WRITE IN THE ANSWER GIVEN)

Don't know [ ]

Pedestrians [ ]
Walkers [ ]

Write in_____

4. **‘People should walk on the footpath or side of the road. This is a walking rule. Can you think of any other walking rules?’**

   ‘...Anything else?’

   ‘...Any more?’

(TICK ALL RESPONSES GIVEN AND WRITE IN ANYTHING ELSE MENTIONED. PROMPT UNTIL NO MORE RESPONSES OFFERED)

No/don’t know	[ ]
Hold hands (if with someone)	[ ]
Go with older person	[ ]
Look after younger/smaller children	[ ]
Don’t run near roads	[ ]
Always stop before crosssing	[ ]
Look (before crossing)	[ ]
Listen (before crossing)	[ ]
Wear light clothing at night	[ ]
Write in	1)_____
	2)_____
	3)_____

5. **‘On our model can you show me where is a safe place to play?’**

   ‘... anywhere else...?’

(TICK ALL RESPONSES, OR WRITE IN ANSWERS GIVEN, PROMPT UNTIL NO MORE RESPONSES OFFERED)

No/Don’t know [ ] GOTO Question 7

(Possible ‘Correct’ answers):

Near house	[ ]
In park	[ ]
School playground	[ ]

(Possible ‘Incorrect’ answers):

Footpath/side of road	[ ]
Road	[ ]
Hospital	[ ]
Other answers given	1)_____
	2)_____
	3)_____

6. **‘Why do you think that it is safe to play there?’**

‘...any other reason?’

‘...anything else?...’

(RECORD UP TO FIVE RESPONSES)

Don’t know [ ]

Response 1: _____
Response 2 _____
Response 3: _____
Response 4: _____
Response 5: _____

7. **‘Now can you show me where it is unsafe to play?’**

‘... anywhere else?’

‘... anywhere else?...’

(TICK ALL RESPONSES, OR WRITE IN ANSWERS, PROMPT UNTIL NO MORE RESPONSES OFFERED)

No/Don’t know [ ] GOTO Question 9

‘Correct’ answers:
Footpath [ ]
Road [ ]
Shops [ ]
Hospital [ ]
Other 1)_____
2)_____
3)_____
4)_____

8. **‘Why do you think that it is unsafe?’**

‘...any other reason?’

(RECORD UP TO FIVE RESPONSES)

Dont know [ ]

Response 1: _____
Response 2 _____
Response 3: _____
Response 4: _____
Response 5: _____

9. **'What is traffic?'**

(WRITE IN ANSWER)

Don't know [ ]

Write in: _____

_____

10. **'Do you think traffic is dangerous to you?'**

Yes	[ ]	
No	[ ]	GOTO Question 12
Don't know	[ ]	GOTO Question 12

11. **'Why do you think that traffic is dangerous?'**

'...any other reason?'

(RECORD UP TO FIVE RESPONSES)

Don't know [ ]

Response 1: _____

Response 2 _____

Response 3: _____

Response 4: _____

Response 5: _____

12. **' Now I want you to help me tell a story using the model and these toys. Let's pretend this is you** (TAKE BOY/ GIRL DOLL AS APPROPRIATE), **and this is your father** (TAKE ADULT-MALE DOLL) **both of you are at your house.** (PLACE DOLLS 'AT HOME' (Point A)). **Lets tell the story of him walking you to school.'**

(MOVE DOLLS TO HOUSE 'EXIT' AND STAND ON FOOTPATH)

'What will you do to keep safe whilst you are walking along?'

(TICK RESPONSES GIVEN, OR WRITE IN, AND PROMPT UNTIL NO MORE RESPONSES GIVEN)

'Anything else?'

'Anything else?...'

Hold hands	[ ]
Walk on footpath(side of road)	[ ]
Don't run	[ ]
Be with older person	[ ]
Stop (before crossing)	[ ]
Look (before crossing)	[ ]
Listen (before crossing)	[ ]
Write in	1)_____
	2)_____
	3)_____

13. **'Before you can reach your school you will have to cross the busy road.... can you see a special safe place to cross the road?'**

[READ OUT AND TICK BOX]

Yes	[ ]	GOTO Question 14
No	[ ]	GOTO Question 15
Don't know	[ ]	GOTO Question 15

14. **'Can you show me?'**

[TICK ONE RESPONSE]

Child indicates safe place (traffic lights)	[ ]
Child indicates other (unsafe) place	[ ]

15. **'Now, lets walk them down towards the traffic lights** (MOVE DOLLS DOWN TO POINT 'B'**). As you are walking down to them, a car comes up behind you...** (MOVE THE CAR FROM IT'S STARTING POSITION AND MOVE IT SLOWLY TOWARDS THE FIGURES FROM BEHIND)... **how will you know the car is behind you?'**

[RECORD RESPONSE OR WRITE IN]

Don't know	[ ]
You will hear it	[ ]
Write in	_____

16. **'If you were walking along the road at night what do you think you could do so that you could be seen more easily by car drivers?'**

Don't know	[ ]
Carry a light	[ ]
Wear something light	[ ]
Write in	_____

17. **'When you are walking along there are often parked cars and trucks. Why do you think these may be dangerous to you?'**

Don't know	[ ]
Force you to walk in road	[ ]
May 'hit' (etc) you when they are leaving/joining road	[ ]
Make it hard for you to see	[ ]
Make it hard for drivers to see you	[ ]
Others	1) _____
	2) _____

18. **‘You and your father continue walking until you come to the traffic lights. He will help you cross the road safely’**

[MOVE PEOPLE ALONG TO TRAFFIC LIGHTS AND MOVE CAR ALONG THE ROAD OUT OF WAY]

‘I want you to take yourself and your father across the road and tell them what to do...’

‘Anything else?’

‘Anything else? ...’

[TICK RESPONSES OR WRITE IN ANSWERS]

Stop before you cross	[ ]
Wait for the lights to change (to stop traffic)	[ ]
Stop/Wait for the traffic to stop	[ ]
Look out for cars/traffic	[ ]
Listen for cars/traffic	[ ]
Hold hands	[ ]
Don’t run	[ ]

19. **‘What do you think would have happened if you had just run out into the road?’**

[WRITE IN ANSWER]

Response_____

_____

‘You must remember when you are out to always be safe. Now lets walk you and your father into school...’

[CHILD, OR YOU, MOVES FIGURES INTO SCHOOL]

20. **‘Finally, have you ever done this exercise before?’**

Yes [ ]
No [ ]

Thank child.

Write in any comments you may have about the interview or child:

_____

_____

_____

_____

_____

Notes for interviewers:

It is important that you:

1) Use exactly the same words and questions each time.

2) Record what the child says - not what you think they should say.

3) Do not 'lead' the child to give answers you think will show they know more than they actually do.

4) Do not tell the child they are 'right' or 'wrong'... or what the correct answers are. Some of the children will be required to repeat the exercise after they have been taught about road safety as part of the project.

5) This is not your opportunity to 'teach' them about road safety.

6) You should conduct the interview in a friendly but 'businesslike' way. Avoid letting the child change the subject or chatter on without saying anthing relevant; but do prompt as required.

7) **The first survey, conducted in November 1998, will be repeated , probably in February 1999, using the same questionnaire and interviewers**.

These two surveys make up the 'pre' and 'post' stages of the evaluation. We hope to demonstrate that the childrens knowledge of road safety has improved as a result of the teaching that took place between the two surveys.

Appendix 5
Picture of model of road used in evaluation