

ROAD SAFETY EDUCATION FOR CHILDREN - THE USE OF JUNIOR TRAFFIC TRAINING CENTRES

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ABSTRACT

Road safety in South Africa is a critical problem and a large percentage of fatal crashes include pedestrians that are children. A need exist to educate children about road safety. Educating children about road safety requires a comprehensive approach involving various role players using multi-media over several years with a lot of repetition.

The focus of road safety education of children in the age group of 7-10 years should be on their role as pedestrians in traffic. Training should be focussed on repeating the basic lessons of crossing a street, walking on the right side of the road and other basic skills.

Junior Traffic Training Centres (JTTC) is one of the means available to educate children about road safety. A JTTC is a simulated road environment where children can learn to use roads safely and responsibly without being exposed to life-threatening traffic hazards. This paper deals with the background of road safety education for children and with various design aspects of a JTTC.

1. INTRODUCTION

Road safety in South Africa is a critical problem and approximately 12,000 people lost their lives in fatal crashes in South Africa during 2003. A large percentage of these fatalities involve pedestrians. The percentage ranges between 30% and 40% each year. Significant portions of these pedestrians are children.

In many developing areas, such as Eldorado Park (south of Johannesburg) the majority of children are pedestrians who walk to school or use public transport. This increases their risk to traffic hazards significantly.

A need exist to educate children about road safety. Several means are available to educate children, one of which is Junior Traffic Training Centres (JTTC). A JTTC is a simulated road environment where children can learn to use roads safely and responsibly without being exposed to life-threatening traffic hazards. This paper deals with the background of road safety education for children and with various design aspects of a JTTC.

2. ROAD SAFETY EDUCATION FOR CHILDREN

2.1 Characteristics of Children in Traffic

Children behave different from adults in traffic. Children have physical and mental characteristics that limit their ability to handle complex traffic situations.

These include the following:

- They have limited attention span and do not have the ability to concentrate for a longer period on one specific task. This is vital when negotiating traffic say, en route from home to school. It also places a limitation on the type of route they can handle.
- Up to the age of 7, their senses are not fully developed and they do not have the same visual and hearing abilities as adults. They will not be able to judge the speed of a vehicle by for example listening to it. Children up to the age of 8 years old can in many cases not judge the distance to an object. The reason for this is that they do not understand that the size of an object differ due to the perspective thereof.
- Their observations are guided strongly by fantasies and emotions. They cannot distinguish between the “inner” world (their thoughts) and the external or real world. They may therefore not realize that it is a “real” vehicle approaching them on a street.
- They have a narrower field of vision than adults, about one-third less.
- They assume that if they can see a car, its driver must be able to see them. However, children are easily hidden from view by parked cars and other objects.
- They have a limited sense of danger.
- They imitate the (often bad) behaviour of others, especially older children.

Children are normally classified as anybody under the age of 14. Within this age group, there is a further difference between Junior Primary and Senior Primary, i.e. between the group 7 to 10 and the group 11 to 14 years of age. It is generally accepted that children under the age of 7 should not be allowed unaccompanied in traffic. Most children from ages 7 to 10 can walk to school alone. Above 10 years, children can start riding bicycle where they share the road with vehicles in some cases.

The Junior Traffic Training Centre described in this paper, focuses on educating children in the age group 7 to 10, who are mostly pedestrians and have their first experience with traffic. The JTTC does however not exclude older children from using it.

2.2 External Factors Affecting Road Safety Education

The environment in which a child lives has a significant impact on the type of transport and traffic they are exposed to and this needs to be taken into consideration when designing an education plan for children.

Children in areas with a lower income level, are typically more exposed to traffic, as they often start walking to school or using public transport alone at an earlier age. This necessitates that more effort be made with their road safety education at an earlier stage.

Other external factors include the social environment – in lower income areas with social problems, the focus of parents is on other social problems and not on educating their children about traffic safety. The experience of a place such as Eldorado Park highlighted this shortcoming in developing areas.

2.3 Media to Educate Children Road Safety

Teaching children about road safety requires a multi-medium approach over several years with a lot of repetition. A multi-medium approach is necessary as a specific medium could be effective with one child, but not necessarily with the others. The most important medium of educating children is through parents, older family members and teachers setting a good example and consistently adhering to the rules of the road.

The following media are normally used to educate children:

- Lectures in class. This is where the fundamental rules can be taught to children.
- Plays. These capture children's imagination.
- Booklets. Several booklets exist with graphics that attracts children's attention and teach them through (comic) characters about traffic safety.
- Games.
- Junior Traffic Training Centres (simulating a real life traffic scenario).
- Supervised real life traffic situations. This includes accompanying children on their route to school and is probably one of the best forms of education, because it allows the parent / senior person to set a real life example.

3. INTERNATIONAL PRACTICE

There is a vast amount of information available on the Internet on road safety education for children. In many cities over the world there are training programmes that focus on the child environment and education programmes including training play centres, traffic clubs, booklets, etc. Some of these programmes are shown in Figure 1.

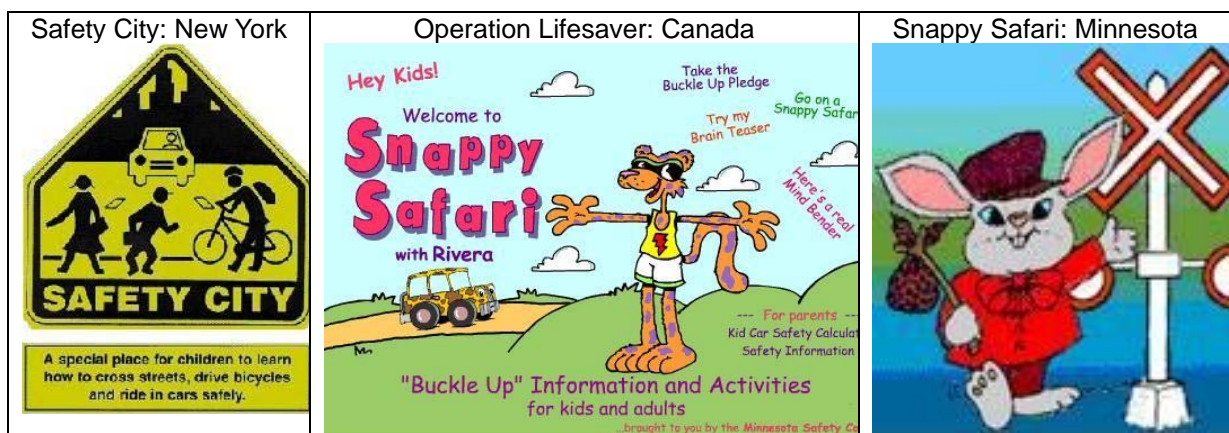


Figure 1. International child traffic training programmes.

Safety Cities in New York City consist of a street section that is closed to traffic and used for educating children in a safe, real life traffic environment. Typical practices used in other countries also include parental guidance classes where parents are taught to make their children aware of road safety. Characters are also widely used, like in the Canadian "Operation Lifesaver" – see the rabbit above. There are also programmes such as "Snappy Safari" of the Minnesota Safety Council. These characters are used to relate to the children, get their attention and teach them road safety.

4. LOCAL PRACTICE

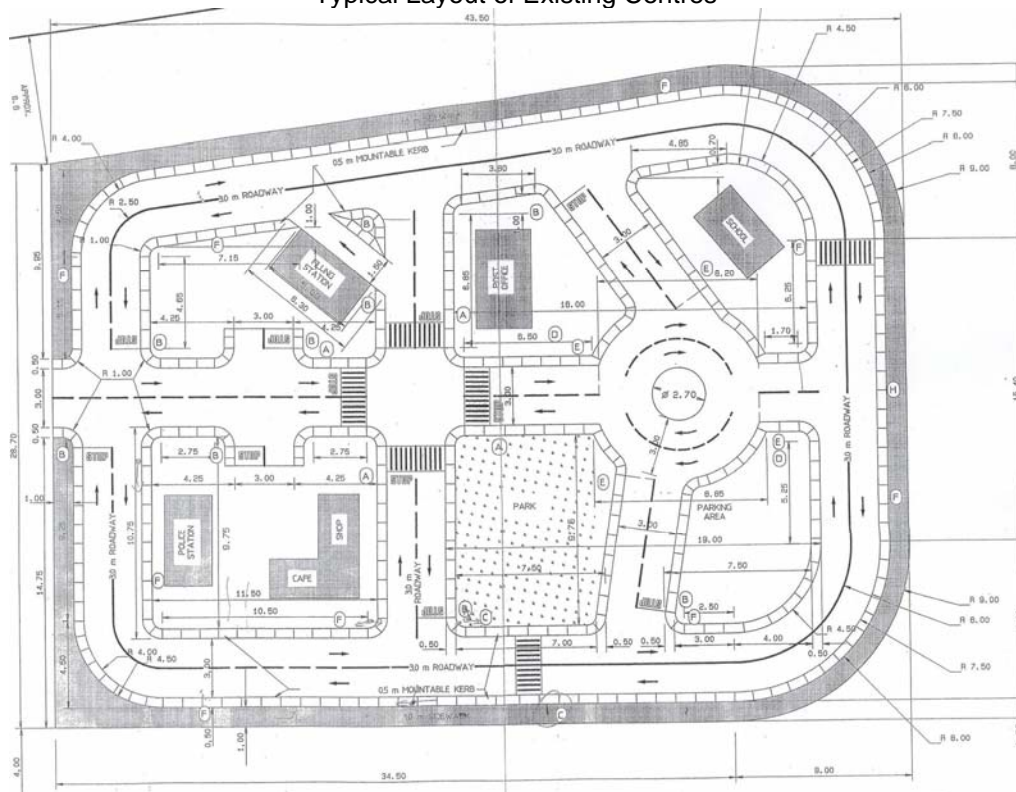
Road safety education in South Africa is addressed at several levels. Unfortunately, road safety education is not part of the formal curriculum of the Department of Education. The responsibility is with the provincial governments and is normally handled by the provincial department of community safety or traffic department.

Schoolteachers mostly use their own initiative and educate children on a few basic aspects of road safety. In most cases this is inadequate and because it is not part of the curriculum, it does not receive the attention and priority it should.

Several Junior Traffic Training Centres have been constructed over South Africa. Various forms exist. Some centres are equipped with tri-cycles, others with plastic scooters. The layout in most cases is focussed on the children driving in the road with these vehicles and learning the basics of stopping, obeying a traffic signal, etc.

A typical layout with photos existing training facilities are shown in Figure 2. The observation made at all these facilities was the fact that they all focus on teaching children driving rules and not so much road safety rules that applies to pedestrians. It was also found that the temporary training facilities that are marked out on parking areas for example, do not provide a realistic environment to function as a simulation of real life.

Typical Layout of Existing Centres



Centre in Benoni



Centre in Kempton Park



Figure 2. Existing local junior traffic training centres.

5. DESIGN OF A JUNIOR TRAFFIC TRAINING CENTRE

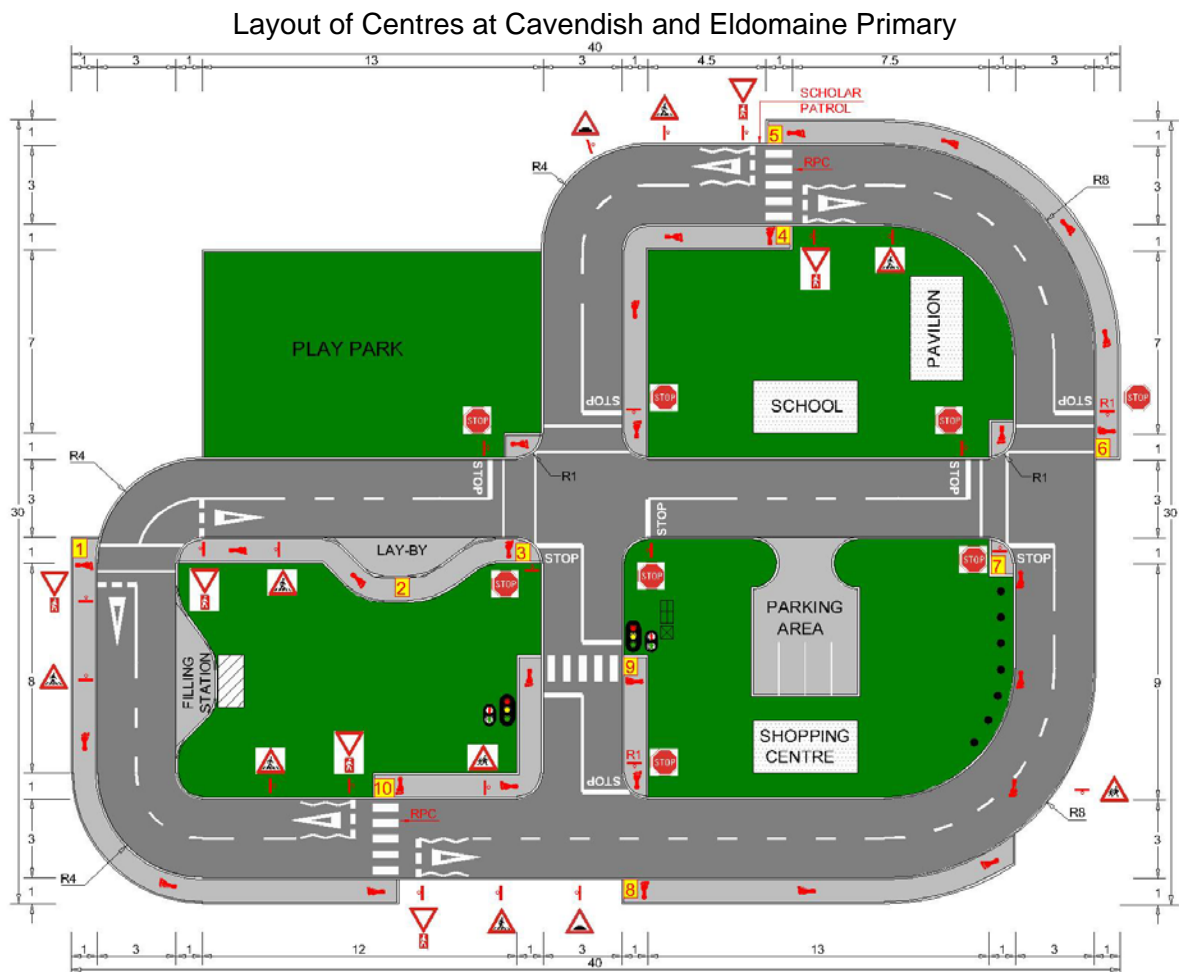
5.1 Design Principles

A Junior Traffic Training Centre is a safe environment where the road environment is simulated, allowing the child to, in a playful manner, learn the rules of the road. The Centre is aimed at children in the age group 7 to 10 (junior primary). These children should be trained as pedestrians and should learn to recognize and obey the road signs applicable to them.

Consideration should be given to the principle of providing a permanent facility as opposed to a temporary facility. A temporary facility can be erecting using temporary road signs and markings, on for example, a parking area. Providing a permanent facility has the benefit that it becomes a visible asset of the community. When situated within a schoolyard, the learners can also play in the permanent facilities during breaks.

5.2 Functional Design

The South African Department of Transport developed a lecture series called “Child in Traffic”. The 10 fundamental lessons that a primary school child should learn form the basis of this lecture series together with a range of pamphlets, booklets and play material. The lessons included in “Child in Traffic” focus on the fundamentals of walking on the right side of the road, crossing a street, understanding and recognising basic road signs and understanding a traffic signal.



Centre in Cavendish Primary: View 1



Centre in Cavendish Primary: View 2



Figure 3. Junior traffic training centres in Eldorado Park.

Table 1. Pedestrian tests at new centres in Eldorado Park.

Nr	Description of test	Objective – Teach child to
1	Crossing road at a pedestrian crossing.	Stop on side of road. Observe traffic both sides and wait for vehicles to stop before crossing.
2	Waiting for a taxi at a lay-by.	Wait at designated taxi lay-by, away from road. Ensure visibility to taxi driver. Embark taxi correctly. Do not run or walk into road behind the back of the vehicle.
3	Crossing an intersection diagonally via two pedestrian crossings.	Cross traffic streams one after the other at an intersection. Do not walk diagonally across.
4	Crossing a road midblock at a raised pedestrian crossing with scholar patrol.	Obey scholar patrol. Heed to the different signals they give. Wait in the correct position.
5	Walking on a walkway next to the road.	Be aware when walking next to non-conflicting traffic. Give way to other pedestrians.
6	Crossing at a T-junction via two crossings.	Repeat test 3, but at T-junction.
7	Walking in the road where no walkway exists and crossing where there is no pedestrian crossing.	Walk facing oncoming traffic. Increase awareness if traffic approaches. Observe traffic to both sides before crossing the road.
8	Crossing the road where no pedestrian crossing exists	Stop at side of road and observe both sides before entering. Do not run across.
9	Crossing the road at a signalised pedestrian crossing	Wait for green man before walking. Do not enter when flashing red. Clear intersection without delay when flashing red. Stop and wait if red man. Remain alert and look left and right when crossing.
10	Crossing the road at a mid-block raised pedestrian crossing.	Repeat test 1, but at raised crossing.

As mentioned above, most local training centres focus on training from a driver perspective. The layout of the design adopted for the new Junior Traffic Training Centres in Eldorado Park is shown in Figure 3. The fundamental decision was made that the training centres should be used to teach children the basics of behaving as pedestrians, as they are still pedestrians at the age 7 to 10.

The layout resembles a small “town” with streets, walkways, taxi lay-byes, a traffic signal and buildings. The focus of the training facility is on pedestrians, and a numbered pedestrian route was developed through the town with a series of “tests” where different skills of the child as pedestrian can be learned and tested. The “conflicting” traffic is generated by a different group of children that drive on small vehicles or tri-cycles on the road. They also have to obey stop signs, a traffic signal and pedestrian signs. The tests are shown in the Table 1.

5.3 Capacity and Management

The success of a facility like this is dependent on the proper utilisation thereof. Building a dedicated facility and then have it utilised a few hours per week will be a waste of resources. Unfortunately this is what happens in many cases where these facilities are built with much fanfare and then collect dust afterwards and the grass grows through the paving blocks.

To successfully educate a child in road safety, repetition is necessary and one visit to the centre in his or her primary school career will not be adequate. German literature refers to 30 hours road safety training per year per child (almost 1 hour per week). This is substantially more than what is being done in South Africa, given that it is not part of the formal curriculum.

A simplistic calculation, shown in Table 2, was done to determine how many children could be taken through a facility like this per year. A typical group will consist of 36 children at a time. The total capacity is 180 children per day or approximately 30,000 children per year.

Table 2. Capacity of junior traffic training centres in Eldorado Park.

Description	Number
Group A: Pedestrians (3 groups of 4)	12
Group B: Drivers and Assistants	
- Drivers of miniature vehicles	6
- Traffic Officers	2
- Scholar Patrol	2
- Taxi Driver	1
- Petrol Pump attendant	1
Group C: Play and rotate	12
TOTAL	36
Number of Groups per day	5
Children per day	180
School days / training days per year	170
Total children per year that can be trained	30,600

It should be noted that the concept assumed allows for three groups that are in the facility simultaneously:

- a) Pedestrians (who receive the real pedestrian education);
- b) The “conflicting traffic” of children in miniature cars;
- c) Children playing or observing what the others do.

This allows 20 minutes per child for a specific task. The idea is that they rotate, as it is assumed that the attention span of children of this age group is limited. In addition, it allows them to perceive problems from various perspectives and thus gaining more insight into traffic operations.

To maintain this capacity, it will be essential to appoint a dedicated, qualified and motivated person who liaises with schools and arranges training. The challenge of providing adequate capacity is shown in Table 3 below with Eldorado Park as an example.

Table 3. Training demand in Eldorado Park.

Description	Number
Number of Schools	23
Total learners (all ages)	20,000
Learners from ages 7 to 11 (20,000 / 12 classes x 4 age groups)	Approx 6,000 – 7,000
Frequency of 1 hour training sessions per year, where they “act” as pedestrians for 20 minutes	4 (1 per school term)
Training demand (7,000 x 4)	28,000 children per annum

In the case of Eldorado Park, two training centres were constructed, that allows larger capacity and more flexibility in the use thereof. It is critical to note that to use the facility successfully, an operational budget should be provided for the centre. This must allow for a manager/trainer, training material such as vehicles, booklets, and transport to the facility and maintenance. Without an operational budget, the success of the facility is likely to be limited.

5.4 Construction Materials and Cost

Children follow the example of their seniors in the environment within which they live. It is therefore important that the training facility resembles real “adult” life as much as possible.

The JTTCs in Eldorado Park were constructed to resemble a familiar real life “town”. The materials selected for the road surface, walkways and adjacent buildings were similar to that in the local road environment, but on a smaller scale. The streets were constructed of black slurry appearing the same as asphalt. The walkways were coloured red to distinguish it from the roads. The materials were also selected to keep the cost as low as possible.

The construction of the JTTC provided an ideal opportunity to do labour based construction by emerging contractors. The total construction value of the JTTC was R300, 000; excluding the traffic signals that were sponsored.

6. CONCLUSION

Road safety education for children requires a comprehensive approach, including involvement from parents, teachers and senior members of the community. A comprehensive approach also includes training programmes in the classroom, educating children with plays, booklets, games, and training them in real life scenarios. A recommendation should be forwarded to the Department of Transport and the Department of Education that road safety education should be formally included in the school curriculum.

The focus on road safety education for children in the age group 7 to 10 should be on their role as pedestrians in traffic. Training should be focussed on repeating the basic lessons of crossing a street, walking on the right side of the road and other basic skills.

A Junior Traffic Training Centre has the benefit that it provides a safe environment where children can be taught these basic skills in a simulated real life environment. The different skills can be taught in a specific sequence and the child can be tested repetitively. The facility also becomes an asset to the community and a visible symbol of road safety.

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