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CHAPTER 1. AN OVERVIEW OF THE STUDY

1.1   Introduction

Road accidents are a major and growing cause of death and injury to children in developing and transition countries (Zeedyk, Wallace, Carcary, Jones & Larter, 2001; Roadsafe, 2006; Road Safety Manual, 2003). A Global Road Safety Partnership (GRSP) paper (2001, p. 2) titled *Road Safety Education: Saving Young Lives and Limbs* asserts that twice as many pedestrians are killed in road accidents in these countries compared with European countries and the USA. The paper further states that a high proportion of these accidents involve children of schoolgoing age. The grim scenario of children of schoolgoing age being fatally injured is also addressed by The Danish Road Safety Commission (2000). Thomson, Tolmie, Foot and McLaren (1996) add that with regard to children, the problem is so severe that child pedestrian accidents are widely regarded as the most serious of all health risks facing children in developing countries.

In order to rectify this situation, educational measures have long been advocated as a means of teaching children how to cope with traffic, and substantial resources have been devoted to the development and provision of such measures (Jacobs & Aeron-Thomas, 2000; Guldbrandsson & Bremberg, 2004; Odero, 2004; US.Department of Transportation, 2004).

Currently, there seems to be a widespread view that education on road safety has not achieved as much as had been hoped for and that there may even be quite strict limits to what can be achieved through education. This might shift the emphasis away from education altogether towards engineering or urban planning measures aimed at creating an intrinsically safer environment in which the need for education might be reduced or even eliminated (Mohan & Muhlrad, 1998, p. 118-125; Thomson, Tolmie, Foot, & McLaren, 1996; Zeedyk *et al.,* 2001; Ribbens, 2002; Forjuoh, 2003).

In South Africa and other developing countries where engineering interventions are very expensive to implement, education is the only feasible intervention to curb the deaths of pedestrians, especially children, on the roads. This study addresses the subject of road safety education (RSE) in South Africa, which takes the following trajectories:

- Formal education for children attending school;

- Non-formal education for outside educational institutions, and

- Informal education using mass media and publicity communication to convey traffic safety messages (Davis & Quimby, 2003).

Chapter 1 offers an overview of the study. Firstly, I describe the background to the study by highlight factors influencing road safety and the role of education. Then I elaborate on the problems concerning road safety and road safety programmes. I further define key terms in order to contextualise the study. The chapter concludes with an outline of the research design and the methodology I intend to use. In the conclusion of the chapter, I acknowledge anticipated limitations and briefly outline the organisation of the study.

1.2   Rationale

Worldwide, the epidemiology of road traffic deaths shows that traffic deaths account for almost 2% of all deaths among children. There are significant geographic variations which are important for the contextualisation of this study. The World Report on Child Injury Prevention (2004) indicates that in the South East Asia region, the proportion of childhood deaths due to road traffic injuries is 1,3%, while in the Americas it is as high as 4,7%. Some 93% of child road deaths occur in low-income and middle-income countries.

In 2004, low-income countries in the South East Asia and African regions and the low-income and middle-income countries of the Western Pacific Region accounted for two thirds of all road traffic deaths among children. Globally the road traffic death rate among children is 10, 7 per 100 000 population. However, the geographic variations are stark. In South East Asia the rate is 7,4% per 100 000 while in the African region it is 19,9% per 100 000. Although the mortality rate is not as high in Europe, road traffic injuries still account for around a fifth of all childhood injury deaths across the European Union.

A country's roads infrastructure is the nerve centre of that particular country's economic development and growth. However, as the road infrastructure is improved and expanded, with increased traffic, more people are injured and die in traffic accidents. The size of the traffic safety problem throughout the world is daunting. Worldwide, over a million people including children are killed and 50 million people are injured in road accidents each year GRSP, n.d., p. 6; Commission for Global Road Safety, 2006; Turner, 2006; The Guardian, 2006).

In South Africa, even though large amounts of money are spent on RSE for children of schoolgoing age, they remain vulnerable road users as they engage in risky behaviour when using the roads. The GRSP report titled *Keep Death off our Roads* (n.d., p. 8) indicates that in many Asian, African, and Middle Eastern countries between 40% and 50% of people who are killed on the roads through traffic accidents are pedestrians. The report further shows that 20% of those killed on the roads are children. People from low-income groups are at great risk from road crashes, as they are more likely to be pedestrians or public transport passengers (The Danish Road Safety Commission, 2000; Jacobs & Aeron-Thomas, 2000; McComas, 2002; Road Safety Manual, 2003; World Health Organization, 2004; Sukhai, 2004; Commission for Global Safety, n.d.).

In South Africa alone 12 000 people die on the roads each year costing the country well over R36 billion (Department of Transport, 2001; Department of Transport, 2004). Forty percent of this number are pedestrians of which 10% are children. The literature review done for this study in the context of road safety indicates that there is an agreement that this situation need not be the norm (World Bank Group, 2002; Achara, 2001; North Lanarkshire, 2002; Ndebele, 2004; Carvin Goldstone, Mercury, 29/09/04; Cape Argus, 29/09/04, Cape Times, 28/09/04; Kostyniuk, n.d; World Health Organisation, 2004; Danish Road Safety Commission, 2005; Department for Infrastructure and Economic Cooperation, 2006).

Countries like South Africa can reverse the scenario described above by a strong political will and effective strategies and training measures. South Africa invests millions of rands in road safety in an attempt to arrest the situation. Table 1.1 shows the trend and the extent of the problem of road accidents and fatalities in South Africa. Ten

percent of the fatalities indicated in the table are children. What Table 1.1 clearly illustrates is that despite all the efforts to reduce the number of deaths of road users either as pedestrians or drivers, fatal crashes and deaths on the roads increase exponentially every year.

Table 1.1: **Annual number of fatal crashes and fatalities on South African roads from 2001–4. (Road Traffic Management Corporation, 2005)**

Annual number of fatal crashes and fatalities				
Year	Fatal crashes	% change	Fatalities	% change
2001	8 802		11 201	
2002	9 973	13,30	12 198	8,90
2003	10 246	2,74	12 348	1,23
2004	10 523	2,70	12 709	2,92

The number of fatalities has continued to rise. In 2005 and 2006 there were 14 135 and 15 393 deaths respectively. Most of the accidents on the Moloto road are widely reported on local radio stations. The purpose of the *Arrive Alive* campaign, which is the Department of Transport's road safety campaign, is to reduce deaths and serious injuries on the roads of South Africa, by means of a multi-disciplinary approach to road safety. This approach includes communication (education, advertising and public relations) together with enforcement to reduce the offence rate for primary offences (speed, alcohol abuse and not wearing seat belts), as well as general law enforcement, in an effort to change behaviour and attitudes, which cause more than 90% of crashes (Road Traffic Management, 2005). The campaign alone spends R50 million sponsored by the Road Accident Fund (RAF) on road safety annually (*Arrive Alive* Business Plan Phase 9; National Road Safety Strategy, 2006 Onwards, 2006; Motzopoulous, 2002; Sukhai, 2004; Herald Reporter, 2004; Quimby, n.d.; Chiduo & Minja, n.d.).

The money for the *Arrive Alive* campaign is used to run road safety programmes in schools and on the SABC's School TV channel. Together with advertising on TV and

Radio, the *Arrive Alive* campaign is used to support law enforcement in provinces, municipalities and metropolitan councils. During all major holidays massive road safety advertising is run on both television and radio. A study conducted by the University of Nasal's Interdisciplinary Accident Research Centre (UNIARC) indicates that the *Arrive Alive* brand was recognised by 85,56% of the respondents nationally and correctly understood by 81,1% nationally. Although massive resources and effort by both government and the private sector are put into road safety, the death and crashes on our roads persist (Haarhoff, 2003, p. 14).

Road safety is a political and socio-economic issue. Many adults in South Africa and in developing countries do not own cars. Hence, many people are pedestrian road users. This study therefore will also investigate the role that the socio-economic environment plays in children's learning of road safety (Forjuoh*, 2003;* World Health Organization, 2004, p. 10).

In addition, the majority of pedestrians, including children, live along the highways that go through informal settlements. People gravitate towards the highways in search of a means of earning a living. Many hawkers sell their products along the highways. This leads to the establishment of settlements near these people's source of income – the highways. The problem manifests itself along most major routes in South Africa. The Moloto road is one such road. Others are the N4 east at the Clewer interchange in the Mpumalanga Province, the N4 West near Majakaneng settlement in North West Province, the N1 North in Hammanskraal, the N1 South near the Grasmere tollgate and the N28 near Diepsloot in Gauteng, to cite a few examples (Ribbens, 2002).

Wolfensohn, president of the World Bank (1999), illustrates my decision to investigate socio-economic factors as well:

> *Road safety is an issue of immense human proportions; it is an issue of economic proportions; it's an issue of social proportions and it's also an issue of equity. Road safety very much affects poor people.*

As a result of the socio-economic situation of many households most children from poor backgrounds do not have an opportunity for observational learning which takes place in the home environment.

RSE has been part of my life since 2002. I work as a RSE practitioner with special focus on RSE among children, particularly in areas devoid of resources. I was interested in the Moloto area as a research site as a result of the industrial theatre that I once took to a primary school in the area. The fascination and interest among children on the topic of road safety inspired this study. I believe that if road safety is taught effectively, it might assist in helping schoolgoing children and school leavers to gain a reasonable knowledge of road safety which will translate into safer behaviour when using the road infrastructure. In short, I believe that road safety and road user competency should be taught to children throughout the school system. This will make road safety a comprehensive and coherent programme in schools. The net effect will be that school graduates will leave school as competent road users either as pedestrians or as drivers of vehicles.

My stance is based on the World Bank Report titled *Road Safety* (2004, p. 5). The report points out:

> *Teaching safety skills to children can provide lifelong benefits to society, but should be seen as long term intervention strategy. Experience in many countries has shown that reliance on individuals or organizations visiting schools to give talks on road safety are not effective on their own. Children may remember the messages in the short term, but effective and sustainable development of positive attitudes towards road safety are best achieved by inclusion in the core curriculum, either as a compulsory subject in its own right or as a cross-curricular theme.*

Assum (1998) and Odero (1995) also support this view.

The World Bank report (2004) further states that it is essential that education inputs are incremental (building on previous skills) and linked to the child's physical and psychological abilities. Training is best done in schools by professional teachers who have themselves been trained in the safety issues relevant to children. However, the literature states that despite RSE, statistics show alarming numbers of pedestrian deaths on the roads of South Africa. Questions come to mind like: Why is there this contradiction? Can it be rectified? What can be done to prevent child pedestrian deaths on the South African highways and roads?

The academic rationale for this study seeks to explore the response of rural primary school children to the RSE programmes that are offered to them through the national school curriculum, road safety officers and mass media like television and radio, and the inputs from the broad community. The study will focus on the age group 9 to 14 years as this is the stage when the child assumes more responsibilities and independence. Receiving RSE as part of their normal school curriculum is recognised as being one of the most effective ways of providing children with this type of knowledge and skills (Jacobs & Aeron-Thomas, 2002; Forjuoh, 2003). This was informed by the need to establish whether the amount of money invested in road safety programmes was having an effect.

The study also seeks to investigate whether the attitudes of children translate into a safe behaviour on our roads after the children were exposed to RSE programmes. Linked with this will be an investigation of behavioural contributors to road safety related to children's accidents. Vavirk (1989, p. 24), a curriculum designer at the Insurance Corporation of British Columbia's Traffic Safety Research and Planning, highlights the importance of attitudes:

> *Attitudes can be characterised as learned, enduring and highly generalised predispositions, which underlie many specific behaviours. A better understanding of how attitudes are learned and how in turn they influence learning is essential to designing an effective curriculum or a programme for road safety training.*

The Scottish Executive (2004, pp. 8-16) confirms Vavirk's statements.

The study will also suggest interventions that will enhance the effective teaching of RSE programmes in order to master the road safety competencies as outlined in the National Curriculum Statement (Department of Education, 2002).

1.3 Contextualising this study

1.3.1 Factors affecting road safety

A literature review on road safety in Europe, the United Kingdom and Africa (including South Africa) shows that road safety is an attitudinal issue. Children learn attitudes from their parents. Vavirk (1989, p. 24) stresses this argument:

> *Attitudes about driving and even road safety develop early through a process of observational learning in a social context. Long before they get a license, adolescents observe their parents drive. The strength of such indirect learning depends on four key elements:*
> *Attention.*
> *Retention.*
> *Reproduction.*
> *Motivation.*
>
> *Recent data from research on young drivers, particularly when interpreted in terms of the attention and motivation components, suggests that the social context of the family represents a very effective observational learning environment acquiring attitudes about driving.*

Parents and the community have a role to play in teaching road safety to children. The Oregon Driver Education Parent Involvement Resource Guide (10/11/02, p. 2) highlights this important factor:

> *Traffic Safety Education programmes need to involve family intervention and must take advantage of the families' strengths in influencing early driving behaviour. Parents and guardians need to take a more active and effective role as their children learn to drive. A major challenge for traffic safety education is to discover how to motivate parents to become more realistic about their children. The philosophy of traffic safety education in the schools includes the idea that the more time parents spend in the car with their student driver, the better prepared that young person will be to become a safe, licensed driver on the public roadways.*

Literature and my own observations show that in developing countries road safety is not a priority issue for politicians. There are other pressing issues that governments in these countries are focusing on, like the fight against poverty, provision of water, health, roads and housing (The Star, 17/02/2005; Downing *et al.*, 1991; Sayer & Downing, 1996; Van Vuuren, n.d.; Thomson *et al.*, 1996; Odero, 1996).

1.3.2 Road safety and education

Several studies have been conducted in the developed countries about the effectiveness of education as an intervention measure in mitigating the deaths of children as pedestrians on the roads (see Jacobs & Aeron-Thomas, 2000; The Danish Ministry of Transport, 2000; World Report on Road Traffic Injury Prevention, 2004; Commission for Global Road Safety, n.d.). Unfortunately, this kind of knowledge and information about how education can be used to teach road safety is patchy and not comprehensive in developing countries like South Africa. It is this lack of information and knowledge about the effectiveness of education for teaching road safety that further prompted the undertaking of this study in the province of Mpumalanga in the Moloto rural area.

A recent study by Davis and Quimby (2003, p. 1) in the United Kingdom concluded that education and communication professionals have long recognised the need for a holistic education approach to influencing the behaviour of community members, especially the young. It is estimated that world-wide between 65% and 95% of road accidents are caused by "road users". However, many of these accidents could be prevented if road user behaviour could be improved by raising awareness and knowledge by means of education programmes. Therefore, one aspect of the study will be to determine whether the rural environment, which seemingly lacks resources, impedes the effective teaching of road safety in rural schools like those in the Moloto area in Mpumalanga (Davis & Quimby 2003, p. 14).

A report by the GRSP entitled Road Safety Education in Schools: Saving Young Lives and Limbs (2001, p. 5) makes a strong case for RSE in schools especially in developing and transitional countries. The report says children from age eight to 12 should master the following learning outcomes/competencies:

- Identify and recommend to smaller children safe places to play;

- Understand the need to be seen (visibility) near and in traffic and judge the hazards of stationary vehicles and how to play or cross the road near them;

- Understand traffic lights, road signs, road markings and signals given by drivers and the police;

- Understand the concept of differing by observing traffic, know when and how to summon help in an emergency;

- Understand which road signs must be obeyed, which are warning and which provide information;

- Understand about visibility, conspicuity, adverse weather, vehicle control and braking,

- Be made aware that traffic rules are not always observed by other road users;

- Understand needs of special groups – the very young, the old and disabled;

- Understand problems of alcohol, drugs and fatigue in relation to road accidents;

- Understand immediate and long–term consequences of road accidents;

- Be aware of importance of planning safe school routes when going to school;

- Understand problems caused by domestic and wild animals near roads;

- Set a good example to other children.

The environments in which children live also influence the effect of RSE. Therefore, this study explores the effects of the environment on children's response to the learning of basic road safety skills. A North Lanarkshire Council study (2002) shows that pedestrian crash statistics peak around 13 years of age. There may be a number of reasons for this, such as overconfidence, travelling greater distances, peer pressure, unfamiliar surroundings and others. The Lanarkshire study goes on to show that young people are becoming independent in travel at this stage and will soon commence learning to drive. This stage of a young person's development therefore has important implications for road safety (see also World Health Organization, 2004).

Wittink (1998) sees RSE as the teaching of skills, knowledge, understanding and behavioural patterns, to enable road users to prevent accidents. It takes place at primary and secondary schools, driving schools and courses. He cautions, however, that road users learn more by themselves in practice. Therefore, education needs to be directed at providing a basis for the learning process in traffic. Safe behaviour cannot be learnt without practice. If education is not adjusted to the learning process of road users in a practical way, it might not be very effective.

Although road safety is implemented in developed countries, as the studies and literature cited above indicate, there are still deaths on the roads of developed countries. Education has thus been used to stabilise the situation (Mohan, 2003), but has not eliminated road deaths. Research is therefore needed to see whether there are impediments to children's responding positively to these road safety inputs. If this problem persists in developing countries where there is no dearth of resources and teaching aids, one may as well assume that the situation in the developing countries might be worse. This calls for more research in the developing countries, hence this study.

From an African perspective, the literature indicates that much attention has been given, by both national organisations and national donors, to instilling safe road use habits in children. Most of the efforts have focused on the formal education system with the development of materials and the inclusion of traffic safety in the school curriculum. Progress has been made in Ghana and the Department for International Development/Transport Research Laboratory materials are now being expanded to Uganda. The challenge in this regard for the study is to explore the responses of the children to the various road safety programmes that they are exposed to. A further literature review in the African context shows that road safety is still on the conceptualisation level and not on the implementation level in communities and schools. In short, there is a need to move from conceptualisation to implementation (The World Bank Group, 2002; McComas *et al.,* 2002, Odero, 2004; Zeedyk *et al.,* 2001; Forjuoh, 2003; Ribbens, 2002).

The kind of child that is envisaged in the National Curriculum Statement (Department of Education, 2002) is one who will be inspired by values that are very much different from those that underpinned apartheid education, and who will act in the interests of a society based on respect for democracy, equality, human dignity, life and social justice. The curriculum seeks to create a lifelong learner who is confident and independent, literate, numerate, multi-skilled, compassionate, with a respect for the environment and the ability to participate in society as a critical and active citizen (ibid.). In South African schools, according to the National Curriculum Statement (Department of Education, 2002) road safety falls within the LO learning area. It is against this background that the study seeks to investigate and explore the response of children to RSE and advocacy. Ideally, a positive response should lead to road safety literacy and road user competency among the children.

According to the LO learning area children have to master the following road safety learning competencies in the context of the National Curriculum Statement (2002):

- Grade two – the child should be able to identify road signs relevant to pedestrians and explain their meaning.

- Grade three – the child should be able to explore expressive movements using contrasts of speed, direction, body shape and position.

- Grade four – list and explain traffic rules relevant to road users.

- Grade five – explain the individual health and social effects of substance abuse.

- Explore and evaluate ways of responding effectively to violent situations and contexts.

- Apply children's rights and responsibilities to a range of problem situations.

Commenting on the impact of road traffic education on children in schools during the 16th International Cooperation on Theories and Concepts for Traffic Safety (ICTCT) Workshop, Van Vuuren (circa 1999) states the aim of this functional area is to educate school children to become safe road users. In South Africa education departments at

some tertiary institutions specialise in training teachers to introduce and operate road traffic education at schools (see also Guldbrandsson & Bremberg, 2004; Forjuoh, 2003; McComas *et al.,* 2002). Although the time spent on structured or formal RSE in schools is limited, the effect could be invaluable for those children who are exposed to such education (Van Vuuren, circa 1999; see also Zeedyk *et al.,* 2001; Commission of the European Communities, 2003; Quimby, n. d.).

I am mindful that road safety practitioners, not to say experts, are divided as to what really works in the field of road safety in the reduction of injuries and accidents on the roads. A literature review on this topic reveals that those who propagate the use of engineering measures for the reduction of accidents are of the view that such measures are more effective in creating an intrinsically safer environment (Mohan & Muhlrad, 1998). Thomson *et al.* (1996, p. 1-2), in a report titled Child Development and the Aims of Road Safety Education: A Review and Analysis, warn about the counter-productiveness of such divergent views:

> *Unfortunately, there seems to be a widespread view at the present time that education has not achieved as much as had been hoped and that there may even be quite strict limits to what can be achieved through education. This would, of course, shift the emphasis away from education altogether towards engineering or urban planning measures aimed at creating an intrinsically safer environment in which the need for education might be reduced or even eliminated. However, whilst engineering measures undoubtedly have a major role to play in the effort to reduce accidents, this outlook is overly optimistic about the benefits of engineering and overly pessimistic about the limitations of education. At the same time, a fresh analysis is clearly required both of the aims and methods of contemporary road safety education.*

On the other hand a systematic study conducted by Duperrex, Bunn and Robert (2002) shows that RSE for pedestrians could improve children's knowledge and change their observed road crossing behaviour.

Teaching road safety could provide lifelong benefits to society, but should be seen as a long-term intervention strategy. Studies in many countries show that reliance on individuals or organisations visiting schools to give talks on road safety is not enough. Children may remember the messages in the short term, but effective and sustainable

development of positive attitudes towards road safety is best achieved by the inclusion of road safety teaching in the core curriculum (World Bank Group, 2002, p. 5; World Health Organisation, 2004, p. 138; Van Vuuren, n.d.).

On the other hand what is of critical importance to this study is the response of children to road safety interventions in both the formal (school) and informal (community) environment. In the formal environment (school) the focus will be on the Intermediate Phase i.e. Grades 4-6. This is the phase when most children seem to understand that they have to take responsibility for their own safety on the roads (Road Safety Manual, 2003).

South Africa has got both urban and rural features. The urban settings have more resources than the rural ones. A study of this nature which seeks to explore the response of rural children to the learning of road safety in a developing country like South Africa characterised by a dearth of resources could increase understanding of the needs of rural children in learning road safety as compared to their urban counterparts who are exposed to helpful resources.

The study seeks to explore the response of rural primary school children to RSE programmes that they are exposed to, whether in school or at the home environment.

1.4 Explanation of core concepts

The concepts emanating from the topic are the responses of rural primary school children to a road safety programme. The process of learning indicates that children respond to teaching input in various ways. To understand the expectation that the study has in respect of the children, I seek to understand the constructivist theory which states that children construct their own knowledge informed by their circumstances. For the purpose of this study, there are certain expectations from children who receive RSE to consider. These expectations are already outlined above in section 1.3.2. Road safety education is taken as one of the three "E's" i.e. education, enforcement and engineering. In the context of schools it is a structured programme offered as part of the school curriculum. RSE includes the facilitation of all aspects of road safety such as pedestrian skills and safety.

1.4.1   Response of rural primary school children

As children grow and develop their world extends beyond the home and out into local roads, they are exposed to hazards and risks**.** In a rural environment like the Moloto village, the site of this study, children walk and play on the road. This exposure, along with other risk factors inherent to childhood, makes them particularly vulnerable in traffic (World report on child injury prevention, 2003). Despite the fact that children use roads as pedestrians and cyclists, it seems as if their responses to road safety issues and programmes are seldom documented, which directed me to ask the following questions:

Who are the children in the rural environment? Can we rely on their responses? Can their responses inform RSE? According to United Nations Convention on the Rights of the Child, Article 1: "A child means every human being below the age of 18 years" (Peden *et al,* 2008). According to the South African Constitution and the African Charter on the Rights and Welfare of the Child, a child is any person under the age of 18 years. However, I am mindful of the fact that as the study focuses on a rural area in terms of customary law, there is no clear definition as to when childhood ends and adulthood commences. Transitions are marked by phases such as initiation, marriage or the formation of a separate household, as well as physical and intellectual maturity (The Presidency, 2001). In the context of this study, a child is defined as a person aged between 0 and 14 years. The definition is informed by the fact that the study aims at children who are still at primary level; at the Intermediate Phase (ages nine to 13) (Christie *et al.,* 2004b).

The contextualisation of the response of rural primary school children was informed by the constructivist developmental theorists which states that a child constructs their own knowledge informed by the environment around them. For Piaget, learning proceeds from context-bound actions towards increasingly generalised conceptual understanding. This Piagetian emphasis on learning as a bottom-up process of construction from specific actions in specific contexts stands in marked contrast to the practice in many road safety programmes, where knowledge is taught at a general level in the belief that this will then transfer to the many specific situations to be faced at the roadside (Schwebel & Raph, 1973). This approach of learning as a bottom-up process ties up

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with the work of Vygotsky's work on the zone of proximal development, which emphasises that the child can acquire more knowledge if working with a competent adult (Department for Transport: no. 6; Biehler, 1974, pp. 119-120). The study also considers that to understand the response of rural children, we have to understand the environment they live in. The rural environment seemingly lacks the resources that are critical for the understanding of RSE input. The children in the study exist in an environment where they live with parents who generally commute forty kilometres from Moloto to the city of Pretoria.

The cognitive developmental level of the children was also considered as Piaget asserts that it determines the understanding of children in the learning process. Vygotsky goes further to say the child's cultural milieu and interaction with other members of the community help him to construct meaning and develop his education. The response of rural primary school children in the context of the study will therefore mean the way the rural child understands the road safety inputs from his school and his surroundings. In short, the social cognitive theory underpins the understanding of how children learn about road safety (Schunk, 2000, pp. 78-88).

1.4.2   Road safety education programmes

I define the RSE programme in this study as the structured road safety competencies that are taught as part of mainstream curriculum and as part of the LO learning area. These are a set of road safety skills that the children are supposed to master after they have been taught. The competencies are aimed at addressing the children's road safety skills, attitudes and behaviour. These programmes include the unstructured inputs from road safety officers who visit schools to address children on road safety issues and the inputs that children are exposed to through the mass media like television and road as part of the Department of Transport's *Arrive Alive* campaign

Based on the evaluation of RSE programmes in the literature review, I will also consider what such programmes can achieve and what limitations they have. A survey of the VicRoads traffic safety education programmes raised important questions about the effectiveness of these materials (programmes), in particular relating to the method of

providing the materials to schools, the way in which materials were used by schools and the general level and type of support provided to teachers and schools that were interested in using the materials (Harrison, Penman & Pennela, 1997).

Finally, my definition of a RSE programme is informed and underpinned by the British Department for Transport's Research report which states that a road safety education programme should be developed with key partners such as parents, and members of the wider community, and that road safety education is most effective when integrated through the refocusing of teacher awareness (Department for Transport report, Report No. 99, 2009; Road Safety Manual, 2003).

1.4.3   Rural environment

I define the rural environment as an area that does not have the resources that are taken for granted in an urban environment. It is an area characterised by a low quality of life, poverty and unemployment. About 12,7 million people (13,4% of the population) live in rural areas in the former homelands of South Africa. Ninety-three per cent of these households engage in subsistence farming and do not generate significant resources. Only 3% of the households rely on farming as their source of income. The households receive other income, such as salaries and wages, mostly from members of the households (The Presidency, 2001).

Most families in the Moloto village, which is a typical rural area, depend on social grants from government and they supplement their income by selling snacks and other goodies to children at school gates. This helped to inform me on the family background of the children and informed my understanding of their responses.

1.5   Research questions

The preceding discussion illustrates that education has its place in the teaching of road safety. Research on RSE supports the inclusion of RSE in the mainstream curriculum. What is also clear is that the environment for learning RSE is critical for the mastery of the road safety competencies set for young children. In the developing world, studies indicate that a lack of resources and inclusion of RSE into mainstream curriculum are

some of the impediments to the learning of road safety. The study therefore sets out to answer the following main question:

- What is the response of rural primary school children to the RSE programmes?

1.5.1 Sub-questions

In order to understand the children's responses, a number of sub-questions were also examined. These are:

- What are the views of the parents in the broader rural community in inculcating RSE to their children?

- What are the views of the teachers on teaching road safety as part of the mainstream curriculum in the rural community?

- How appropriate are the methods used by the teachers for the teaching of the RSE programme?

- What is the impact of the rural environment on the learning of road safety?

1.5.2 Aim of the study

The aim of the study is to explore and understand the response of rural primary school children and to provide ideas for a possible intervention to the teaching of road safety to rural primary school children. The rural environment seemingly puts the children at a considerable disadvantage, first as children and later as adolescents.

1.5.3 Objectives of the study

The objectives of this study are the following:

- To establish the state of RSE in a rural primary school in the province of Mpumalanga, South Africa.

- To establish whether appropriate facilities are available to enable the teachers to teach road safety effectively.

- To establish whether the rural environment affects the children in learning road safety competencies as it lacks the infrastructure that is taken for granted in an urban environment.

- To establish whether the rural environment supports both the children and the teachers in the learning and teaching of road safety.

- To establish what road safety teaching methods/or strategies are suitable for the teaching of road safety in a rural environment.

- To investigate whether the children and the teachers have the right attitude for the learning and teaching of road safety.

- To establish the role that the parents can play and whether they play this role to help both teachers and children in their endeavours to learn and teach road safety competencies.

- To analyse and describe through a review of literature the importance of RSE as one of the interventions to mitigate deaths on the roads, particularly in developing countries.

1.6   Significance of the study

The study is underpinned by two assumptions, namely that RSE will improve the road behaviour of children from rural environments to such an extent that when they go to an urban environment they will still be safe, first as children and later as adolescents. The second assumption is that RSE has the potential to reduce pedestrian fatalities on any road. The findings will hopefully help people involved with RSE. These are road safety practitioners in the Department of Transport, non-governmental organisations planning effective approaches for the implementation of road safety education, curriculum designers in the Department of Education responsible for compiling road safety competencies to be taught as part of LO in the mainstream school curriculum and other researchers who are interested in further developing the field of road safety and road safety programmes, particularly in rural areas.

Government is losing in the region of R50 billion annually as a result of deaths on the roads. According to literature, RSE can help to alleviate this situation. However, the effective implementation of RSE can be directed by research in this field. The researcher is mindful of the fact that before road safety can be taught effectively, teachers will have to be educated. The central thesis of RSE is that the focus is on the children and, the teacher only facilitates their learning process. In summary, the whole educative infrastructure should be conducive to the learning of road safety.

1.7 Unit of analysis

I chose a case study, namely the school in the village of Moloto in the Nkangala district in Mpumalanga. The school is situated forty kilometres outside the Tshwane metropole. Moloto is a village that has two ethnic groups as residents, namely the Ndebele and the Northern Sotho. The school is a Northern Sotho school – a legacy of the apartheid system of separate development when the various ethnic groups were separated. Fourteen years after democracy, the village still has two separate schools adjacent to each other, one Northern Sotho and the other one Ndebele. Because the people are living together in the village, some children are fluent in both Northern Sotho and Ndebele.

Parents who are employed in the Tshwane metropole commute daily from the village to their places of employment. They leave as early as 04:00 and return at around 20:00 when most children are already in bed. They use buses as the principal mode of transport as they do not have private vehicles. The Moloto road runs through the village and is very busy.

This school in the study is a typical rural school with the inherent characteristics of overcrowding and lack of resources, particularly teaching aids. Ten children in the Intermediate Phase were chosen randomly to take part in interviews while two classes were used in the drawing and message writing activity. Two teachers were chosen as participants as they were involved in the teaching of LO which includes the road safety competencies. The Intermediate Phase children were chosen purposefully as they would have had a considerable input of RSE in the preceding Foundation Phase. The

idea was that they would serve as relevant participants for assessing the possible effects of RSE as taught in a typical rural school.

Children in the two classrooms took part in two tasks of drawing a road environment in their area and the writing of road safety messages. The idea was to assess the overall picture of children's understanding of the RSE in the school.

When assessing the children's response I was to a large extent guided by Piaget's theory that development and grasping of issues does not only depend on maturation but also on the individual's previous experience and above all on the social milieu which can hasten or delay the appearance of a stage, or even prevent its manifestation (Rosin, 1973, pp. 50-51).

1.8   The study

I chose to do the study through the interpretivist paradigm in order to explore and investigate. The study is based on the qualitative interpretivist paradigm.

Denzin and Lincoln (1998, pp. 195-200) see paradigms as basic belief systems based on ontological, epistemological and methodological assumptions. They represent a worldview that defines, for its holder, the nature of the "world", the individual's place in it, and the range of possible relationships to that world and its parts. The beliefs are basic in the sense that they must be accepted on faith (however well argued). There is no way of establishing their ultimate truthfulness. A paradigm is therefore like a crystal ball that the inquirer uses to seek the truth about any phenomenon. The paradigmatic world is a contested terrain because people see things differently and each person wants his/her type of inquiry to hold sway.

Maykut and Morehouse (1994, p. 4) see a paradigm as a set of overarching and interconnected assumptions about the nature of reality. One must make assumptions, for example, about the nature of reality. The paradigm, like the postulates it is based on, cannot itself be tested; the paradigm provides the basis on which we build our verifiable knowledge (see also Mouton & Marais, 1992, p. 144-151).

The interpretivist paradigm has always argued for the uniqueness of human inquiry. Denzin and Lincoln (1998) point out that proponents of this paradigm have crafted various refutations of the naturalistic interpretation of the social phenomenon (roughly the view that the aims and methods of the social sciences are identical to those of the natural sciences).

The choice of the interpretivist paradigm is also underpinned by the understanding that qualitative research places emphasis on understanding through looking closely at people's worlds, actions and records. Qualitative research looks to understand a situation as it is constructed by the participants. It tries to capture what people say and do, that is, the product of how people interpret the world. The task of the qualitative researcher is therefore, to capture this process of interpretation (Maykut & Morehouse, 1994, pp. 17-18). One of the basic assumptions of this research approach is that meaning is embedded in people's experiences and that this meaning is mediated through the investigator's own perceptions (Merriam, 1998, p. 6).

The choice for this approach is in addition undergirded by the realisation that the qualitative approach is holistic in orientation, treating the phenomenon as a whole system and searching for patterns that lie within its bounds. This again is in line with Haddon's systems approach to road safety which sees road safety as an interconnected system (in World Health Organization, 2004, pp. 12-13). Cupchik (2001, p. 1) argues that this search for meaning is exhaustive and incorporates as many episodes as possible to appreciate the ways in which the different parts of the structure affect each other. A coherent account of the dynamics of a social process is one that accommodates the greatest number of individual episodes. It reflects an empathetic understanding as if the structure of the social world is seen through the eyes of its participants. Taking the roles of others lends a phenomenological grounding to understanding the dynamics of the social world. The process is constructive in that meaning is generated from a world that is observed and understood by scholars who generally come from outside it.

According to Denzin and Lincoln (1998, pp. 195-200), the basic beliefs that define inquiry paradigms can be understood on three levels. The first level is the ontological

question which seeks to establish the form and nature of knowledge and what there is that can be known about it. The second level is the epistemological question which seeks to establish the nature of the relationship between the knower or the would-be knower and what can be known. The third level is the methodological question which tries to find out how the inquirer (would-be knower) can go about finding out whatever he or she believes can be known.

The three levels of understanding reality as outlined above are relevant to the study as it seeks to explore the response of rural primary children to the RSE programmes that they are exposed to at school or community level. The study also seeks to investigate the attitudes and views of children on road safety. The study reflects the relationship between the interviews and the observation methods used in the study.

The qualitative interpretivist paradigm is appropriate for this study as it seeks to establish, explore and construct the reality regarding the response of children to RSE in primary schools with a view to assessing its effectiveness for equipping children with basic skills in road safety. This paradigm will enable the researcher to understand through interaction with the research partners (teachers and parents) the response of children to road safety programmes in primary schools.

This approach is also informed by the researcher's ontological assumption that the world is constituted by a myriad of realities. In a quest to achieve the objectives of the study I explored the views, the literature, the actions, attitudes and accounts of the research participants on the issue of RSE. I believed that once I had all this information collated and analysed, I would then be in a position to suggest possible interventions.

In this chapter I give an explanation of my methodology when presenting the evidence. This study used the observation, interviews and participatory data collection methods. Non-participant observations such as the taking of photographs were conducted together with data from child participants. The non-participant observations provided me the opportunity to observe the participants in their natural setting when using the roads. In-depth interviews were conducted with the child, parents and teacher participants. The participatory methods used were drawings and written messages by the child

participants. The photographs were taken during the non-participant observation. An array of all the methods used is discussed in Chapter 4.

1.9 Data analysis

I applied the guidelines for constructivist grounded theory analysis (Field & Morse, 1985, pp. 110-111; McMillan & Schumacher, 2001, p. 396) in the analysis stage of this study. Using this approach, each piece of data is compared with every other piece (the constant comparison). As an interpretivist, I applied a deductive data analysis approach. I studied the authentic data gathered and through the constructivist grounded theory analysis I identified the concepts which emerged from all the data sources. I then coded them and I grouped the relevant concepts together to form different themes and categories which helped me to understand the children's response to the road safety programmes taught in the classroom and the ones through TV and radio as part of the *Arrive Alive* campaign.

1.10 Anticipated research constraints

I was aware that my background in the field of RSE, as a road safety practitioner, might cloud my judgement during the data gathering process and influence the participants in one way or another. I accordingly attempted to stay clear of influencing the participants when I was interviewing them. Rather, I gave them the opportunity to express themselves and share with me their life experiences, as I did not make the participants aware of my background in this field.

The interviews with the children were conducted in Northern Sotho (Sepedi) as I was aware that their second language, viz. English, would have prevented them from expressing themselves freely and giving as much information as possible. When interviewing the two teachers I allowed them to complete the interview schedule while they were offering their views orally as well. This was a technique for obtaining as much information as possible and to ensure that they were not misquoted or misunderstood. Writing and talking ensured a degree of authenticity and originality. Parents were interviewed in their own languages as well. This made them feel more comfortable, since they were not proficient in the language of the study (English). In order to observe

realistic road safety behaviour among the participants, namely the children, I resorted to non-participant observation. This ensured that there was no posing and grand standing when pictures were taken. I tried to ensure that children on the road after school hours were not aware that they were being photographed.

Another concern was the selection of one site of investigation. While this limited the opportunity for generalisability, it was done purposefully in order to explore and obtain a holistic but deep understanding of children's experiences with regard to the RSE programmes. I described the case thoroughly for possible application by other researchers.

1.11   Organisation of the study

Chapter 1
Chapter 1 sets the background to the study and outlines the features of the research project. It includes the research questions to be investigated. The paradigmatic perspective underpinning this study is discussed and contextualised. The methodology and the data collection methods are also outlined. This chapter explains how the research questions are going to be investigated; data collected to answer the research questions and offers a justification for the methods used in the collection of data.

Chapter 2
Chapter 2 discusses the literature review. This chapter sets the basis and context for the study. Road safety literature from both developed countries and developing countries is reviewed. The object is to indicate the work that has already been done and to avoid duplication. The literature review also focuses on the best practices from countries that have made significant advances in the reduction of pedestrian fatalities in their countries. For this study the literature reviewed in the chapter contextualises the study and points out the areas requiring research particularly in developing countries struggling with high pedestrian deaths as a result of road accidents.

Chapter 3

Chapter 3 discusses the literature with special emphasis on child development and its relevance to RSE. The effective teaching of road safety skills, according to the literature review in this chapter, also hinges on the developmental level of children.

Chapter 4

Chapter 4 elaborates on the research design and methodological choices for the study. Key features of the chapter are the justification for and the discussions of the strengths and weaknesses of the data collection methods. Interviews and participatory methods were used in the data gathering process. The chapter also discusses the advantages and disadvantages of using the participatory methods of data collection.

Chapter 5

Chapter 5 presents a discussion of the results of the data and key themes that emerged from the data gathered through the methods discussed above. The results are analysed according to the themes. An interpretation is offered for each theme that is discussed to offer a holistic understanding of the results and the findings.

Chapter 6

Chapter 6 offers recommendations for teachers, policy makers and schools. The recommendations are discussed in detail as the study has intervention to offer to improve the situation as its purpose. The implications for the various role players mentioned above are also discussed to contextualise the findings and their relevance to the various role players. Further findings are indicated in Chapter 6 to highlight areas that need further research in order to understand the road safety phenomenon particularly in a rural setting like the case study.

1.12   Summary

Chapter 1 has introduced and outlined the state of RSE in the world and the challenges facing South Africa as part of the developing world. There are two discernible trends: a stabilisation in the highly developed countries and a continuing increase in the number of fatalities in the developing world. The chapter shows that South Africa can learn a lot from the developed world in the area of road safety. It also indicates that there are certain requirements with which the country has to comply before a significant impact

could be made in reducing the deaths of pedestrians (including children) on the roads. The effective implementation of RSE in schools is one of them.

The chapter also outlines the aims and objectives of the study, and the theoretical framework underpinning the study. In the broader context, it illustrates the possible contribution to the body of knowledge, namely RSE.

As the geographical comparative analysis in 1.1, 1.2 and 1.3 shows, in many parts of the world the majority of children injured or killed on the roads are pedestrians, particularly in low-income and middle-income countries like South Africa and India. Specific physical and cognitive developmental factors (discussed in Chapter 3) increase the risk of road traffic crashes among child pedestrians, especially among younger children, where physical stature and cognitive limitations restrict their ability to make safe decisions as described in the literature. In low-income and middle-income countries children use roads for playing and for conducting small roadside businesses, both of which increase their exposure significantly. Risk-taking behaviour and peer pressure from the environment may increase risks taken by children.

CHAPTER 2. ROAD SAFETY EDUCATION IN THE GLOBAL AND SOUTH AFRICAN CONTEXT

2.1   Introduction

The literature review provides an overview of road safety and aspects related to RSE. The chapter illustrates how the developed countries like Sweden, Norway and the Netherlands use road safety education as an intervention measure to educate children of schoolgoing age on road safety. The literature review will also describe best practices that developing countries like South Africa can implement in the context of their individual dynamics and specific needs. Best practices from the developed world could serve as a point of reference for the development of programmes and approaches for local conditions without the uncertainties and cost of "reinventing the wheel".

A developing country is defined as a country that has an annual per capita gross national product (GNP) of less than US$9 361 based on 1998 figures from The World Bank (Nantulya & Reich, 2002, p. 1139). This chapter will indicate South Africa's current position as a developing country regarding RSE. A report from the Commission of the European Communities (2003, p. 4) points out that "road safety directly affects all of the territory of the European Union and all its inhabitants". With the advent of motorised vehicles and the rise in vehicle population accidents became part of the developed world (Petersen, 2006, p. 10; U.S Department of Transportation, 2004). This is the reason why the developed countries use education as one of the intervention measures to ameliorate the situation, supporting my reasoning that developing countries may benefit from these examples.

In the first half of the chapter I discuss extensively previous research on RSE. I also describe issues related to RSE like human rights, road accidents as a global problem and children as vulnerable road users. In this chapter I locate and utilise the relevant literature and I will use this work as a plan to conduct observations in the setting or as an outline for interviews (Field & Morse, 1987, p. 35). The second half of this chapter deals with my theoretical framework.

The literature review in this study will cover countries that are regarded as developed, like Sweden, United Kingdom, Norway and the Netherlands. I will concentrate on best practices from which the developing countries like South Africa can learn. The literature review will also focus on what the developing countries in Africa, South East Asia and Brazil are doing. I will include any literature that illuminates the topic even if it does not fall within the classical categories of developed and developing countries. The literature review consists of reports, road safety programmes, books, newspaper articles, conference papers and internet documents. This demarcation is influenced by the need to use the achievements that have been realised by the developed world as a framework for the developing countries in order to avoid reinventing the wheel, as stated above. I am convinced that if the programmes implemented by the developed countries are modified for the conditions of the developing countries, much could be achieved in reducing child road fatalities in the developing countries as well.

The study seeks to describe and interpret the responses of rural children to RSE programmes, using children from rural Mpumalanga. This is a case study of one school located in the Moloto area in the Mpumalanga Province. The study is located within the qualitative and interpretivist paradigm in exploring the children's responses from the hermeneutical approach. This approach enables me to describe in detail the conditions pertaining to the rural area of Moloto in Mpumalanga, which I did in Chapter 1. Key concepts that are used in the study are explained in Appendix B. The explanation of the concepts will assist in the understanding of the meanings of the concepts as used in the context of the study.

2.2   Road safety as a human right

In May 2002, the 6th World Conference on Injury Prevention and Control was held in Montreal, Canada. An outcome of that conference was the finalisation of a draft charter on the People's Right to Safety. It was recognised that this issue of health and human rights with its special focus on violence, health, and human rights, provided an opportunity to bring together a group of health and human rights experts with diverse opinions and perspectives on the value of recognising this new right (Mohan, 2003).

In 1948, the General Assembly of the United Nations (UN) adopted and proclaimed the Universal Declaration of Human Rights (UDHR). Article 3 of this Declaration states: "Everyone has the right to life, liberty and security of person." The legal obligations of governments under international human rights law have been used effectively all over the world in many areas: the rights of the child, the rights of women, the rights of workers and the rights of people in development in general. These rights have been enshrined and strengthened in international human rights instruments like the International Covenant on Economic, Social and Cultural Rights, the Convention on the Rights of the Child, the Declaration on the Elimination of Violence against Women, and the Employment Policy Convention (Mohan, 1998).

By adopting these instruments, civil society is able to demand safer products, safer living conditions and safer environments. Although the right to a life safe from debilitating injuries may seem implicit in the right to life, decision-makers and the public at large have yet to use this right to influence policy in this respect. It has become even more imperative to promote in clear and explicit terms the right of people to live in a world safe from harmful injuries as a fundamental human right (ibid.; Proudlock & Mahery, 2006).

The South African Constitution, which incorporates the Bill of Rights, guarantees the right to safety and dignity for every individual (South African Constitution, 1996; Moson, Hall, Smith & Shung-King, 2006, p. 32). However, if the state cannot create an environment that makes it possible for the individual citizens to enjoy the right that is guaranteed in the Constitution, that right becomes unimportant. It is one thing to guarantee certain rights, quite another to create an environment that will make it possible for that right to be a reality (Kollapen, 2006). Ramphele (2006, p. 22) puts the issue into sharp focus:

Injury and safety issues are matters of concern for both rich and poor countries. It is however important to draw a distinction between the particular circumstances and levels of safety in the two settings. Most rich countries have set standards and elaborated practices that create a climate for higher levels of awareness and commitment to the prevention of injuries, and the promotion of safety for the citizens and others living within their territorial spaces. Their citizens are also assertive in securing performance against those set standards of safety. Citizen activism ensures that acts of omission and

commission by public and private entities are kept to a minimum to avoid costly litigation and other enforcement mechanisms.

What the paragraph above illustrates is that in developed countries issues of safety are part of the culture of the community. Communities play an active role to ensure that they enjoy the rights promised in their constitutions and they hold the state to account.

Ramphele continues to show that in developing countries communities are unable to force the state to ensure that the citizens enjoy the rights promised in the constitution like the right to safety:

In a developing country like South Africa although the right to safety is enshrined in the constitution there are no resources to enforce or create an enabling environment for enjoying the right to safety. Children are exposed and injured on their way to and from schools. Poor developing countries are by and large struggling with many more challenges of effective policy-making and implementation, development of appropriate regulatory frameworks, and building of institutions that focus on safety issues may seem like a luxury. Citizens of poor countries are often uneducated, disempowered and lacking institutional capacity to assert even those rights that are their entitlement. Levels of mobilisation of public support for the enforcement of set standards to meet constitutional and legal obligations are often weak in resource-poor settings. Without this, public civic pressure performance by both private and public entities suffers (ibid., p. 23; *see also* Kollapen, 2006, p. 30; Museru, Leshabari & Mbembati, 2003; Monson, Hall, Smith & Shung-King, 2006; SIDA, 2006; Mohan 2003).

Knowledge among citizens is not a guarantee that citizens will use that knowledge to ensure their safety. Policy differences among the various departments and working in isolation make the fight against road crashes and deaths an impossible task. Finally, even when the right values, policies and enthusiasm are there, incoherence remains a stumbling block to performance between and within sectors. Incoherence between policy and practice leads to unsafe environments for citizens.

For instance, when we reflect on road accidents, we understand that modern technology has delivered safer and more reliable motor vehicles. Modern technology has also delivered a means to monitor and enforce adherence to road safety measures including insistence on roadworthy vehicles on the road. Yet, in many developing countries including South Africa, there is a culture of impunity with respect to disregard for traffic rules. The carnage on our roads is a classic case of the gap between what we know to contribute to safety, and what we do in our conduct as drivers, passengers,

pedestrians and citizens. Greater coherence in enforcing the rules between education, health care, road transportation, law enforcement, and the judiciary in signalling zero tolerance of unsafe road conduct could go a long way to reducing this carnage (Ramphele, 2006, p. 26; Monson *et al.,* 2006; Quimby, n.d.; Mutabazi & Bishanga, n.d.).

In the case of South Africa in particular, 95% of road accidents that happen are preceded by human error and disregard for traffic rules. The Department of Transport is in the process of setting up two agencies that will focus on issues of law enforcement. The agencies are the Road Traffic Management Corporation and the Road Traffic Infringement Agency. The concern, however, for this study is that unless RSE is entrenched in school, particularly in primary schools, the culture of impunity and disregard for road rules described above might not be arrested.

2.3   Road safety education and road accidents

Since the invention of motorised vehicles, road accidents and fatalities have been the feature of this scientific evolution. Invariably, this development is characterised by deaths and injuries, which are a feature all over the world. Some countries have managed to reduce the number of pedestrian deaths and accidents on their roads particularly using a variety of interventions ranging from engineering, enforcement and education in the developed world but in the developing world, the problem has reached alarming proportions.

In studying the literature on road safety, education is considered as one of the interventions that seems to be important in mitigating the deaths that are taking place on the roads, together with engineering and enforcement. Although there is consensus that education is very important and has been used successfully in developed countries as the literature shows, there are other writers who are sceptical about the virtues of education (Mohan, 2002; Department for Transport, 1996; Department for Transport, 2003; Department for Transport, 2009; Johanson, 2004). Mohan (2002) states that education alone would not solve road safety problems.

The literature review in this chapter elaborates in detail on literature about RSE in the teaching of road safety. In Chapter 3 I discuss the significance of child development and

the relevant teaching and learning theories that could be used as the basis for teaching RSE. In Chapter 3, the focus will be on the child, the child's construction of road safety and how communities play a crucial role in developing children who will be safer road users.

The World Report on Road Traffic Injury Prevention (Commission for Global Road Safety, 2004, p. 45) indicates that road traffic injuries and deaths (including pedestrian casualties) are a worldwide problem. Research reports on this subject (A Review of Pedestrian Safety Research in the United States and Abroad, 2000; Collins, 2006) indicate that well over 70% of pedestrian injuries and deaths are the result of either improperly crossing intersections or dashing out in the street between intersections.

The Danish Road Safety Commission (2002) indicates that road accidents are one of the most frequent causes of deaths among children and young people. In 1998, 40 children and young people under the age of 18 were killed on Danish roads. As a result, developed countries turned to education as an intervention measure to alter the situation. The approach for best practice was (The Danish Road Safety Commission, 2002, p. 20; Downing, 1991; Downing *et al.,* 1991; Quimby, n.d.; Thomson *et al.*, 1996; Van Vuuren n.d.):

- Road safety for children must be viewed as a whole, where parents, schools, institutions, and the children themselves must participate and be active.

- Parents are responsible for teaching their children "road manners" and how to respond to traffic, and as road users they are also responsible for the safety of all children, including their own.

- Schools and institutions – including the boards of governors elected by parents – can help teach children how to behave in traffic in collaboration with parents. Such collaboration can also extend to school routes, choice of transport, use of safety equipment, and "road manners".

The United Kingdom's Neighbourhood Road Safety Initiative (NRSI) which has been set up to find fresh and innovative ways to reduce road casualties, particularly those

involving children, also follows a holistic approach, like the Danish approach explained above. Most members of the European Community follow this holistic approach when using education as an intervention measure (Petersen, 2006; Department for Transport, 2007; Sayer & Downing, 1996; Harrison *et al.*, 1997; Department for Transport, Road Safety Research Report No.56, 2005). The Neighbourhood Road Safety Initiative was born out of the realisation that children from disadvantaged backgrounds are five times more likely to be killed or seriously injured on our roads than their peers from the least deprived areas (Collins, 2006, p. 2; Department for Transport, no. 1; Ribbens, 2002; Mutabazi & Bishanga, n.d.).

Although countries, especially in the developed world, have made some strides in the prevention of road accidents the problem is far from being solved. In the developing world, the problem is greater. The World Report (2004, p. 33) reports as follows:

> *The vast majority – 90% – of road traffic deaths were in low-income countries and middle-income countries. Only 10% of road traffic deaths occurred in high-income countries. Road safety interventions to address the problem of road accidents could be done on three levels: engineering, enforcement and education. Furthermore, a wide spectrum of literature review and a systematic analysis of the prevention research for pedestrians injuries found that preventive measures utilised to date include educational programs, environmental modifications, vehicle modification, daylight savings time, community campaigns and reflective clothing.*

Education can help bring a climate of concern and develop sympathetic attitudes towards effective interventions (Peden *et al.*, 2004, pp. 137-138, see also U.S Department of Transportation, 2004, p. 115; Van Vuuren, n.d.).

While education alone cannot be credited with the success of the developed countries in bringing fatalities down, in developing countries like South Africa where scarce resources pertain, education could be a very effective measure in the absence of resources to improve roads and law enforcement. The reality of the situation, though, is that in the Southern African Development Community (SADC) countries like Tanzania, Mozambique and others depend on aid to balance their books (Baffour, 2007; Quimby & Davis, 2003). As such they are left with very little money, if any, for road safety. It is against this background that the study argues that if education is incorporated in the

mainstream curriculum children will exit the education system better informed about road safety.

According to the South African Constitution, section 29 (1), everyone has the right to basic education, including adult education, to further education, which the state, through reasonable measures, must make progressively available and accessible. The child has a right to education and the state's duty is to ensure that primary school is free and compulsory, to encourage different forms of secondary education accessible to every child and to make higher education available to all based on capacity (South African Constitution, 1996). Since the advent of democracy in 1994, South African enrolment rates compare favourably with other African countries, and many developing countries in other parts of the world. A high proportion of public expenditure is allocated to education. The South African Schools Act (Act 84 of 1996) provides that basic education is compulsory for all children from the age of seven to 15 (or Grade1 to Grade 9) (Presidency, 2001).

RSE will help to complement other aspects that work to ensure that the deaths on the roads are minimised, like vehicle safety features that are built into vehicles from the factory floor. Education will also complement engineering and law enforcement as interventions that are aimed at curbing the carnage on the roads. The implications for the country are:

- RSE as an intervention measure could be a step in the right direction for children of schoolgoing age.

- A holistic approach involving parents, teachers and road safety officers could be a suitable approach based on the best practice model indicated above.

2.4 Children as vulnerable road users

The focus for this study is RSE for young schoolgoing children as a vulnerable group of road users and their response to the RSE programme. Accidents in the developed world present significant differences from those in the developing world. A Transport Research Laboratory (TRL) Report by Downing *et al.* (1991, p. 4) indicates that in the

developing countries (see Table.1) a relatively high proportion of fatalities are pedestrians and children under 16 years, and many fatal accidents involve trucks, buses, and other public service vehicles. In Table 2.1 below the pedestrian fatalities refer to children below the age of sixteen.

Table 2.1   Pedestrian fatalities as percentage of all road accident fatalities

Region	Percentage
Europe and United States of America (14)	20%
South East Asia (4)	29%
South America (1)	31%
Asia (3)	42%
Africa (9)	43%
Caribbean (3)	44%
Middle East (5)	51%

() = number of countries: Source: Downing *et al.*, 1991

As the global figures in Table: 2.1 show, the developing world accounts for higher numbers of casualties than the developed world comprising Europe and USA. It therefore confirms what the literature shows, namely that accidents severely affect the poor. Although a significant number of children are still outside the school loop in the developing world, the impact of RSE on those who are attending school might be considerable.

A study by the United Kingdom Department for Transport (2007) shows that road traffic accidents are one of the main causes of death and injury to children of schoolgoing age. As a major countermeasure to this threat, RSE seems to be an essential part of a child's education. The study further gives a profile of a typical child who is more likely to be involved in an accident:

- Accidents in general and road accidents in particular are a serious threat to the health of children and young adults. On average, out of a class of 30, two will be killed or injured in a road accident before their seventeenth birthday.

- Children over the age of 11 are more likely to be involved in a road accident on major roads.

- Child pedestrian casualties peak at age 12, the age at which most children move on to secondary school.

- Child cyclist casualties peak at age 14.

If the picture painted above applies to the developed countries like the United Kingdom, then a conclusion could be made that the situation in the developing world is even more dire.

As vulnerable road users, children are at particular risk. Children in low and middle-income countries are much more likely than children in high-income countries to be involved in a road crash or accident. As pedestrians, children and professional drivers constitute such a large proportion of the accident problem, it is clear that many developing countries need to give priority to improving the safety of these particular three groups.

The literature review further indicates that in the developing world a significantly large percentage of children under 16 years are victims of road accidents as Table 2.2 shows (Downing *et al.,* 1991).

Table 2.2   Road accident fatalities

Country	Percentage of fatalities of children under 16 years	Percentage of fatalities involving buses and trucks
Botswana (1988)	16	25
Egypt (1984)	12	37
Ghana (1989)	28	50
Pakistan (Karachi) 1988	14	44
Papua new Guinea (1987)	20	37
Zimbabwe (1989)	11	45
United Kingdom (1988)	9	21

The data in Table 2.2 supports the information in Table 2.1 that in developing countries the percentage of children who die on the roads is high, as is the number of people who die on the roads. In South Africa for example, more than 26 child deaths per 100 000 population occur as result of road traffic crashes compared to 1,7 per 100 000 population in the European Union (EU) as a whole (Commission for Global Road Safety, n.d., p. 8). Overall, 96% of child road fatalities occur in low and middle-income countries.

Adamson (Commission for Global Road Safety n.d., p. 8) warns of the consequences of failing to act on road traffic injuries:

Without being alarmist you can see that there will be millions of young children killed on the roads of the world in the years ahead. There is so much that could be done by developing countries at their current stage of economic development, and it could prevent so much misery and tragedy. It would be outrageous if it were allowed to continue in the years ahead.

The graph in Figure 2.1 shows the pattern of road accident deaths for both developed and developing countries. While the developing countries have a rising trend of accident fatalities on roads, the developed world on the other hand is reflecting a decreasing trend. The information on the graph corroborates what has been discussed and analysed above in Tables 2.1 and 2.2.
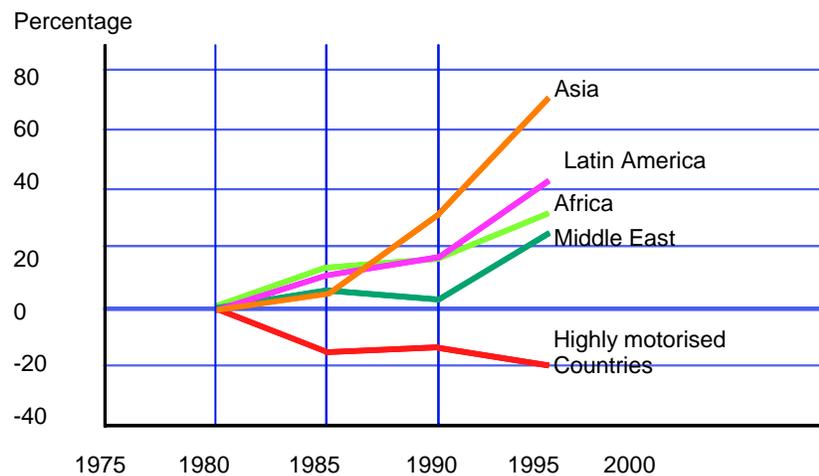
Figure 2.1   Percentage in number of fatalities in 1980
Source: Global Road Safety Partnership (2003)

As indicated in the introduction section and on the graph in Figure 2.1, countries that have made remarkable progress in reducing the number of deaths on their roads implemented a range of intervention measures including RSE in schools (Smit, 1990; McComas, MacKay & Pivik, 2002; Department for Transport, 2004; Christie, Towner & Cairns, 2004). Conversely, those countries with a high number of deaths on their roads do not have RSE as an intervention at school level; or where they do have it, it is sporadic and unstructured as Table 2.3 clearly illustrates. To illustrate the point: in Sierra Leone there is no RSE in schools and in South Africa until the introduction of the national curriculum it was partly compulsory (see also Van Vuuren, n.d.a; Van Vuuren, n.d.b; Kobusingye, 2004, pp. 119-200).

Table 2.3 Road safety education in different countries and accident rate per 100 million km travelled

Country	Accident rate (deaths per 100 million km travelled)	Road safety education
USA	1.8	Compulsory
Canada	2.9	Compulsory
Denmark	2.6	Compulsory
Finland	2.0	Compulsory
France	2.0	Compulsory
West Germany	3.8	Compulsory
Great Britain	2.1	Compulsory
Luxembourg	3.5	Compulsory
Norway	2.29	Compulsory
Israel	4.2	Compulsory
Turkey	12.0	Compulsory
Sierra Leone	23.6	None
South Africa	16.8	Partly compulsory

Source: Chiduo & Minja: Accident rates obtained from report of International Road Federation, 1986

All the countries listed in Table 2.3, except South Africa and Sierra Leone, have RSE as a compulsory part of the school curriculum and have low accident rates per 100 million kilometres travelled. Road accidents are ranked second in the causes of deaths in those developing countries that do not have RSE in their curriculum.

Table 2.4 shows the leading causes of death in low and middle-income countries where road safety was not yet part of the curriculum and compulsory in 2000 for the two age groups most affected.

Table: 2.4   Leading causes of death in low and middle-income countries

Age 5-14 years	Age 15-29 years
Childhood cluster diseases (200 131)	HIV/Aids (852 793)
Road traffic injuries (114 087)	Road traffic injuries (317 654)
Drowning (112 512)	Tuberculosis (237 757)
Lower respiratory infections (112 307)	Self-inflicted injuries (196 246)
Diarrhoeal diseases (88 411)	Interpersonal violence (178 651)

Source: Mock et al., 2005

The progress that has been made in the developed world supports the view that the road safety problem can be turned around. We should avoid falling into a defeatist mode in tackling this problem as RSE can help reverse the situation. Although there are people who believe that the pressure of accident increase is so strong that there is no way to push the toll down, I do not share this defeatism because the view to my mind is not true.

For the situation to be turned around I think that the current safety activities should be revised and redirected towards more efficient implementation of more effective measures in order for us to reduce the toll again.

My view is that education could be a catalyst in turning the situation around particularly in developing countries if properly coordinated and supported by a home environment that is conducive to the learning of road safety. Ideally, the home environment should support and reinforce what is leant at school. As already indicated, South Africa has a high number of pedestrian deaths seemingly because the children are not exposed to effective RSE in both the home and the school environments.

The study does not discount other factors but argues that literature shows that an effective, well-structured RSE in the school supported by a home environment that lends itself to road safety might improve the situation. However, most families in the

developing world do not have vehicles and depend on public transport for their movement and this is not an ideal way of fostering a sense of road safety awareness and education in children (SIDA, 2006: Christie *et al.*, 2004a; Christie *et al.*, 2004b; Organisation for Economic Co-operation and Development, 2004).

2.5   Theoretical framework

This study's assumption is that education can play a very important role in the developing world in reducing the accident rate and educating young road users about road safety if implemented in a structured and comprehensive way at primary school level when the children are still young and impressionable. The study moves from the premise that road safety is a social activity for children, for learning from peers, teachers and parents. Children are part of a community (Davis & Quimby, 2003; Department for Transport, 2007). Learning should therefore take a dialogical approach where the child and the facilitator have mutual respect for each other and discover new knowledge together.

The study's theoretical framework therefore moves from the basis that road safety is a socio-economic issue and the environment of the children is critical in their effective learning of RSE. My theoretical framework also deals with how children learn RSE. This part of the theoretical framework will be addressed in Chapter 3. I reason from the premise that there is an overlapping relationship between the way the child develops (Child Development), RSE and learning theories related to the child (Department for Transport, n.d.). This triangulation is illustrated in Figure 2.2. In the rest of the chapter I elaborate on theories related to RSE and the different aspects thereof.
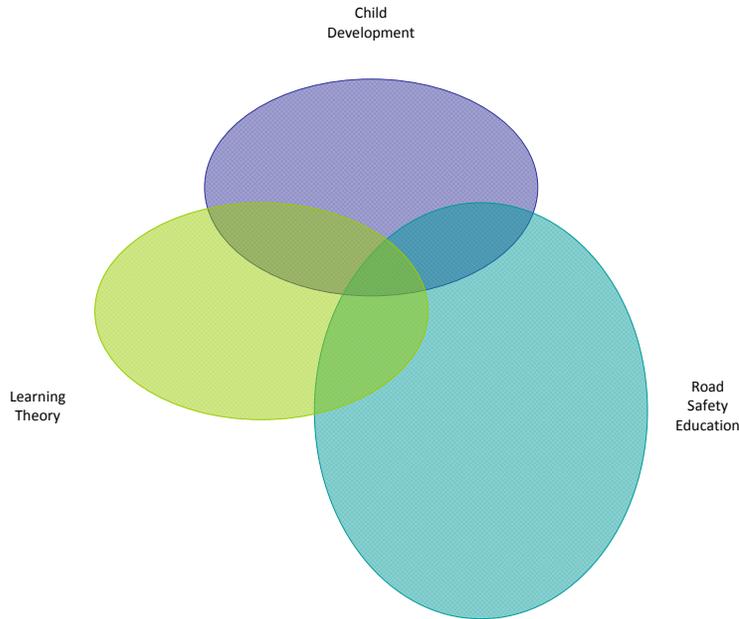
Figure 2.2   The triangulation of the relationship between, child development, road safety education and learning theory

Education has always been one of the measures that were employed in developed countries together with engineering and law enforcement to address the problem of children of schoolgoing age dying in road accidents. The literature indicates that education is as important as engineering and law enforcement. The three complement each other. Thomson *et al.* (1996) argue that educational measures have long been advocated as a means of teaching children how to cope with traffic and substantial resources have been devoted to their development and provision. At the same time, they argue that a fresh analysis is clearly required of both the aims and methods of RSE.

Clear, achievable, practical and explicitly stated objectives are a *sine qua non* for an effective road safety programme. All this should be stated in the school curriculum. Teachers who are to implement the road safety curriculum should be thoroughly trained before they embark on teaching the road safety competencies. A holistic approach should be followed in order to address a range of fundamental psychological skills of the child in order to interact with traffic, together with the ability to deploy these strategically

in different traffic situations. The curriculum should target to change the child's behaviour. In short, the overall training should be practical.

In a report commissioned by the UK Department for Transport (n.d.), one of the implications drawn from the research is that a narrowly knowledge-based style of training of pedestrian skills is likely to be inadequate. In order to gain expertise in the pedestrian task children need to acquire a complex range of sophisticated understandings and strategies which they are able to apply appropriately in the many and varied road traffic situations they are likely to meet. Such is likely to be related to development in the metacognitive processes of awareness and strategic control. A style of training is therefore required which encourages children to be more reflective and self-regulating in relation to the pedestrian task.

The literature review in this chapter indicates that most developed countries have RSE as a compulsory subject within the mainstream curriculum. Although RSE alone cannot be credited for the low numbers of children who die on the roads of these developed countries it does make a significant contribution to the low number of fatalities, especially among children.

Conversely, in developing countries where there is no or very little RSE the number of road accident fatalities for children of schoolgoing age is very high. This makes a compelling case for the introduction of RSE in the mainstream curriculum and making it compulsory for all children.

The introduction of RSE in sub-Saharan countries and other developing countries should be preceded by the training of teachers who will be able to teach the road safety competencies. The challenge, however, is that in most African countries some children remain outside the formal education system (Jacobs & Aeron-Thomas, 2000, p. 25). A holistic approach involving parents and community-based organisations will nevertheless see to it that RSE reaches a significant number of children, even those outside the school setting.

RSE is not a high priority issue in African countries. Despite Africa's serious road safety record, the region has other more important causes of premature mortality. RSE is

unlikely to become a top medical, educational and political priority in these developing countries. As a result, limited resources can be expected to be allocated to RSE (ibid., 2000, p. 1).

2.6 Mainstreaming road safety education as an intervention measure in the school curriculum

UNESCO, quoted by Tight (2002, p. 17), views education as "organised and sustained instruction designed to communicate a combination of knowledge, skills and understanding valuable for all the activities of life". Wittink (1998) sees RSE as the teaching of skills, knowledge, understanding and behavioural patterns, to enable road users to prevent accidents.

These definitions of education indicate that at the very least it should transfer skills and knowledge to the children in order to prepare them for life, in this case to prepare them to face the challenges of using public roads safely. The role of the home environment therefore should be to reinforce and transfer values, skills and knowledge of any given society. As the rural nature of the environment at both school and home environment does not expose children to skills and knowledge that will prepare them to face the challenges of using the road infrastructure safely, children are therefore a danger to themselves and other road users.

UNESCO's definition of education presupposes that education in the formal setting i.e. school setting is based on a curriculum – an organised framework for instruction to paraphrase the definition. According to Wittink (ibid.), education takes place at primary and secondary schools, driving schools and courses.

As education is based on a curriculum in the formal environment, it is imperative to explain what curriculum is and what it seeks to achieve. This will help contextualise the argument presented here. There are a number of definitions of curriculum provided by various writers. A useful definition for this study is provided by Marsh and Stafford (1988, p. 3) who see curriculum as "an interrelated set of plans and experiences which a student completes under the guidance of the school". Marsh and Stafford (ibid.) further provide an extrapolation of their definition:

The phrase "interrelated set of plans and experiences" refers to the point that curricula which are implemented in schools are typically planned in advance but, almost inevitably, unplanned activities also occur. Therefore the actual curricula, which are experienced by the students consist of an amalgam of plans and experiences (unplanned happenings). The phrase also refers to the importance of both actors (teachers and students) and the resulting interactions which occur between them to produce the "lived" curriculum.

Johnson (in Zais, 1976, p. 9) provides a short but apt definition of curriculum as "a structured series of intended learning outcomes". According to the above definitions, curricula are produced on the assumption that the children will complete or master certain tasks, activities and skills or competencies that have been predetermined over a period of time.

An analysis of the literature on the subject of RSE shows that there is an agreement that road traffic accidents, deaths and serious injuries are to a great extent preventable, since the risk of incurring an injury in a crash is largely predictable and many countermeasures, proven to be effective, exist (Peden, 2004, p. 109; Keep death off our roads, PIARC/DFID/GRSP, n.d.; Forjuoh, 2003; Zeedyk *et al.*, 2001). In developed countries, road traffic accidents and deaths of children because of motor vehicle accidents are reasonably low compared to those in countries in the developing world where road traffic accident numbers are very high. It could be concluded therefore that RSE works to arrest the situation. RSE is an integral part of the school curriculum and is compulsory in most developed countries (see Table 2.3).

In the United Kingdom RSE and training is provided for all age groups and classes of road user from pre-school to secondary school (North Lanarkshire Council, 2002). The United Kingdom Department for Transport runs a programme throughout the country called the Child Development and Road Safety Research Programme, which is concerned with the development of pedestrian skills in 4-11-year-old children. The intention of the programme is to improve the effectiveness of road safety training for children in the Primary school age range (Department of Transport, n.d.).

In the European Union and United States of America, receiving RSE as part of their normal school curriculum is recognised as being one of the most effective ways of providing children with the necessary knowledge and skills that will allow them to deal

with the hostile traffic environment GRSP, 2001; U.S Department of Transport, 2004, pp. 115-116; Organisation for Economic Cooperation and Development, 2004).

I conclude by stating that education is based on a curriculum and a curriculum in the main consists of the "overt" and "covert" parts. The overt parts of the curriculum would be what the child learns in the classroom but the "covert" part of the curriculum would be what he learns around him, both consciously and unconsciously – the live experiences. Thus, education in both the school and the home should provide the children with role models. The parents should serve as role models for road safety and the teachers as well. It is this element that the children are sorely missing in both the home and the school environment because in countries that have not yet introduced RSE in the curriculum it means the teachers are not ideal role models either. In the case of South Africa where road safety awareness and safe behaviour on the road is very low as attested by the high number of deaths through traffic accidents, 13 000 per annum, the situation is far from being satisfactory.

2.7   The purpose of a road safety curriculum and RSE in schools

Education has a purpose. Conversely, curriculum is purposeful too. In the case of South Africa, road safety competencies have been identified that have to be part of the curriculum. Road safety curriculum designers move from the assumption that education pervades all our activities. We are educated informally in our homes, at our work, in the streets and countryside, and with our friends (Mathews, 1989, p. 2; Wittink, 1998, pp. 107-125; Muhlrad, 1998, p. 128).

Where education is non-existent or just not enough it places the child in a dangerous situation. As far as RSE is concerned this is the context of the rural South African child. The study attempts to show that the exposure of children to RSE is not enough to prepare them for the hazards presented by the road infrastructure if used without safety knowledge.

Road traffic accidents and deaths among children of schoolgoing age is a worldwide problem. Forjuoh (2003) makes this observation:

While traffic-related injuries take a very huge toll in almost every country around the world, particularly in low-income and/or less industrialised countries (LICs), significant progress toward prevention and control has been limited to high-income and/or highly industrialised countries (HICs). Much of the progress in HICs is attributable to the combination of interventions, strategies, and policies that have been developed mainly in these high-income settings over the past few decades. Such factors as high health budgets, adequate numbers of researchers, high levels of health and safety awareness, and near universal literacy, have also catalyzed this progress.

Developed countries make provision for RSE to address the problem of children of schoolgoing age being killed in road accidents. This is a sound investment as children are going to graduate from being pedestrians to being drivers. If they were not taught road safety principles from a young age they are going to graduate into drivers who have no knowledge of road safety whatsoever. This accounts for the low level of safe behaviour on our roads.

Mathews (1989, p. 14-23) identifies five bases of curriculum content: knowledge base, subject base, culture base, employment base and child base. Literature from the developed countries on the subject indicates that in their road safety curricula they address the aspects of knowledge and culture for the child. Wittink (1998, p. 125) expresses the importance of curriculum as follows:

It is very important that schools provide a curriculum about traffic. When children are e.g. 12 years, they should know about the main characteristics of roads and of the different traffic modes and about traffic rules. They also should understand how to fulfil mobility needs and also know about characteristics of behaviour of different modes of transport and different road user groups.

The Swedish school curriculum states, inter alia, that traffic knowledge and skills shall be established at an early age and developed later during the children's school. At all stages, the knowledge gained should be regularly applied in a realistic traffic environment (Ryhammar, 1988, p. 14; Muhlrad, 1998, p. 233).

In the United States of America, the state of Oregon's Driver and Traffic Safety Education (DTSE) curriculum aims to provide learning experiences, which equip students with the knowledge, thought processes, insights, and motivations needed so that they may become safe and efficient drivers. These qualities are instilled through

classroom and laboratory learning activities, which are guided by measurable objectives. The curriculum stipulates that the best results are obtained when student experiences in the classroom and behind the wheel experiences are closely correlated in philosophy, content, methods, and scheduling (see also U.S Department of Transport, 2004, p. 115-116; Muhlrad & Wittink, 1998, pp. 246-256). RSE works well when the local tier of government is taking the initiative and organising the programmes.

The GRSP (2001) identified the following as key design elements of RSE:

- A RSE programme should begin at the pre-school level and educate continuously throughout the child's school life.

- Base the education on practical training in a realistic road environment.

- Use teaching methods which follow the principles of child development – for example, under 6 years of age children cannot put themselves in someone else's position and under 11 they find it difficult to only focus on what is relevant.

- Training needs to be regular, frequent and must be combined with practice.

- It should be tailored to take account of education, cultural, transport and financial circumstances.

- RSE should have a formal place in the school curriculum ideally, schools programmes should be reinforced by community safety schemes.

(The complete curriculum proposed by the GRSP is given in Appendix A.)

Quimby (n.d., p. 224) cautions that child development and RSE should always be factored into the curriculum as a child can only be taught what he or she is able to comprehend. Therefore, RSE needs to take account of their cognitive and social development. This development is usually related to their age so that a road safety curriculum (and the rest of what is being taught in school) can be based on their age and/or the number of years they have attended school (see also Fowler, 1991, pp. 24-27; Schunk, 1991, pp. 265-282; Saad, 1998, p. 50; Wittink, 1998, p. 125; Patel *et al.,* 1998, p. 217; Muhlrad & Wittink, 1998, p. 246; Department for Transport, n.d.).

Research conducted in more developed countries on child development and RSE (Molen, 1981; Rottengatter, 1981, DETR, 1999a, 1999b, Schunk, 1991) could be used as reference points in designing a road safety curriculum for schools in developing countries but it should be recognised that what works in one country is not necessarily transferable or even relevant in another country. This means that local conditions should be the basis for any road safety curriculum. In the rest of this section, I shall address RSE in sub-Saharan Africa as well as the contribution of the different role players to the teaching and learning of RSE.

2.7.1 Road safety education in sub-Saharan Africa

Most, if not all, countries in Africa can be categorised as developing or transitional countries. Similarly, such countries are less motorised compared to the developed countries of Europe and the United States of America. However, in the field of road safety The Africa Road Safety Review Final Report (2000) indicates that much emphasis has been placed, by both national organisations and donors, on instilling safe road use habits in children. Most of the efforts have focused on the formal education system with the development of materials and the inclusion of traffic safety in the school curriculum. Progress has been made in Ghana and the DFID/TRL developed materials are now being expanded to Uganda.

Many children in Africa however, remain outside the formal school system. In Ethiopia, Radda Barnen (Swedish: *save the Children*) has included traffic safety lessons as part of their proposed syllabus for non-formal education. Few publicity campaigns appear to be conducted, if ever, and the evaluation of the effectiveness of the *Arrive Alive* campaign in South Africa was the only example of where a campaign's impact was evaluated. Assum (1998) conducted an appraisal of road safety initiatives in five selected countries in Africa (Benin, Cote d'Ivoire, Kenya, Tanzania and Zimbabwe) and found that children were receiving traffic education in all countries, except Tanzania. In some countries it is part of the curriculum; in others *it is an option for interested teachers*. Lack of funding may limit the number of schools reached by the traffic education efforts of the programmes. Education seems to emphasise road signs, which

may not be the most important aspect, considering that the lack of road signs is a problem in the five countries.

In South Africa, progress has been made in the area of RSE since 1994 when different education departments were amalgamated and a new curriculum formulated. In the New Curriculum Statement 2002, road safety competencies have been included in the curriculum to be part of the LO learning area. These competencies are outlined in Chapter 1 of this study. The formalisation of RSE in most schools is a fairly new development to address the problem of road traffic casualties.

Smit (1990) sketches a path for the development of introducing road safety as part of mainstream curriculum. He writes:

> *In order to reduce the high fatality rate due to road traffic collisions in South Africa the South African government appointed various committees and commissions at different times since the 1930s to investigate the problem. Almost all of them emphasised the necessity and importance of training teachers and other relevant occupations in traffic safety education to combat this problem.*
>
> *As a result the National Road Safety Council (NRSC) who is designated to manage and coordinate road traffic safety in the Republic of South Africa (RSA), decided in 1985 to sponsor an investigation as to what form, function and level of operation a unit for traffic safety education should have when executing such leadership and training functions. As a result it was decided to establish the Division for Education and Traffic Safety (DETS) at a university because of the academic nature of teaching, research and community service it has to undertake in the field of road traffic safety education.*

The literature review indicates that there is an emerging road safety curriculum in African countries like Ghana and South Africa with potentially positive content (see Ribbens, 2002, Odero, 2005).

2.7.2 The role of the school with special reference to the teaching and learning of road safety education

Road safety literature views RSE as a continuum. What the child learned and learns at home is complemented by what s/he learns in the formal environment of the school. The school should provide a safe environment and encourage safety awareness among

both children and teachers. According to the United Kingdom Department for Transport, a school should develop safe practices and include RSE in the curriculum. Schools should also develop a road safety policy which may be discrete or part of a more general policy on health and safety (Department for Transport, 2001; Saad, 1998, p. 50). In UK schools, the school helps the child to identify a safe way to and from school.

The school should purposefully and consciously teach the child road safety skills and knowledge in order to equip them with the required knowledge for them to become safe road users. The role of the school in the context of this study is therefore to provide the child with an environment that will enable him/her to learn RSE effectively. The school should also provide a holistic learning environment catering for both theoretical and practical aspects of learning RSE.

2.7.3   The role of the teacher with special reference to the teaching and learning of road safety

Apart from the home environment, there are other factors that influence the child's performance and happiness at school. A primary factor is the teacher's attitudes and actions on a daily basis. Unfortunately, because of the rise in school population in the past few decades and the attendant demand for teachers, not all persons entering the educational field have been well prepared, or are personally suited to teaching or happy in their occupation. Regardless of the physical facilities of the school, the type of teaching materials available, the class size and schedule, the teacher is the main factor or player in a child's educational experience. The conclusion drawn is that if the teacher is not well adjusted and does not have the welfare of each child in the class in mind as plans are made and executed, learning and growth will not be maximised. The teacher has the best opportunity to inspire and prepare the leaders of tomorrow for the nation and the world (Williams & Stith, 1974, p. 118).

In the European Union and the United States of America teachers who are responsible for teaching RSE have been trained in it themselves (Christie *et al.*, 2004b). These teachers therefore act as role models for the children. They serve as a link between the

school and the parents. Teachers have the responsibility to instil the appreciation and significance of road safety in the children.

In South African schools, RSE has recently been included in the national curriculum but most teachers are not knowledgeable enough to teach it effectively. Given the low morale of teachers because of exogenous factors like low salaries and unavailability of resources, the temptation would be not to teach road safety at all.

Discussing the contribution or role of the teacher in the imparting of road safety skills in RSE, Smit (1990, p. 15) indicates that teachers are seen as professionals who, based on their expertise, are charged by society with making leading inputs with regard to the planning, implementation and evaluation of educational programmes. The latter refers to matters such as setting realistic goals; recommending the essential content; developing and selecting the appropriate processes, teaching materials to be utilised; helping in defining and creating the environment for purposeful learning; motivating people to learn; and setting sound criteria for determining the outcome and quality of the programmes. A very important contribution is the input to lobby and persuade decision-makers to create opportunities and make the necessary funds available to implement the programmes within various structures in society (see also Mohan 1998a, b; Mohan & Tiwari, 1998, p. 1).

2.7.4 The role of the community and parents in road safety teaching and learning

Children start to learn about traffic before they even go to school. They look around, see what others do, make their interpretations, listen to what others tell them, feel the fear, pleasure, aggressiveness and other emotions of people who accompany them. They understand more than we think and it is therefore right to show them how to keep control of traffic situations and to teach them early on in a simple way about right behaviour (Wittink, 1998, p. 125; see also Carnelley Rangecroft Consultancy, 1992). From age 0 to 4 parents have to teach children about the importance of road safety. They should lay a good foundation for the appreciation of road safety, which teachers could build on in later years.

RSE is grounded on observational learning. Parents should serve as role models too to instil the right behaviour and attitude to their children. Parents should also work with teachers to ensure that there is continuity in the child's learning of road safety.

Bloomfield (quoted by Shrader, 1990, p. 6) makes some succinct and pertinent points:

> *Parents will play a more important role in tomorrow's education. Today's parents are smarter; they have more education…parents are the key to maintaining strong traffic safety education programs. If you do not have parent involvement in your traffic safety education program, get started.*

A number of writers point out that road safety is grounded on the observational learning theory. This presupposes that parents should set good examples for their children in order to influence their attitudes and behaviours (Vavirk, 1989, p. 24; Mohan, 1998; Muhlrad & Wittink, 1998).

Cullen (1998, pp. 40-41) underlines the importance of parents and the community thus:

> *Community-based approaches that have yielded positive outcomes include the involvement of crossing guards (parents) in a training programme designed to improve the quality of safety instruction and feedback with young children…and involving parents in a pedestrian training programme for children* (see also Saad 1998, p. 110).

The child in a rural environment (like the one the study is based on) is at a disadvantage as parents, if they are available, might be working in the city of Pretoria and commuting daily. There is therefore little interaction between parents and children on all matters of life, let alone road safety.

Rothengatter (1984) shows that parents can play a critical role in behavioural training programmes implemented by parents and teaching assistants, which are aimed to improve independent road-crossing behaviours of 4-6-year-olds. However, the impact and effectiveness of this approach could be maximised by embarking on driver education as well. This would fall in the realm of inculcating the sharing of the road among all road users (Fildes & Lee, 1993).

2.7.5 The role of the child in road safety learning in the post-modern era

A key aspect of RSE is the interaction between the child and the teacher. In this relationship, the children must have a predisposition to learn. Their attitude towards both the teacher and RSE should be such that they are receptive to both. The child should be able to learn from his peers as RSE is a social activity which involves interactive learning, i.e. the learning that takes place through social interaction (Thomson *et al.,* 1996; Wittink, 1998).

In the post-modern era where everything is relative, the child is the focus of the educational programmes. He needs to be convinced that RSE is indeed in his best interest, otherwise the need to learn it will not develop and this will affect the whole process of RSE.

2.8 Conclusion

There is an agreement among commentators on this subject that education is an important intervention for equipping children with road safety skills. In some countries in Africa, RSE forms part of the mainstream curriculum. African countries can learn from developed countries where research is available to indicate what works and what does not when teaching RSE in schools. The literature review of this chapter points out that in African countries, RSE lacks a coherent theoretical base to guide the learning process. In addition, parental involvement and clear understanding of road safety is very weak in African countries because of high levels of illiteracy.

This study's conceptualisation and design was informed by the reality that young schoolgoing children are exposed to traffic dangers as a result of their environment. The study concludes with the theory that RSE can contribute to the general educational goals of the whole curriculum by promoting moral, cultural, mental and physical development and preparing children for the opportunities, responsibilities and experiences of adult life (Mohan, 1998, p. 200). I subscribe to the theory that RSE can play a very important role in raising the level of awareness amongst young children, particularly in developing countries where resources for building safer roads (engineering) are not readily available.

I am mindful of the fact that in a developing country like South Africa a significant number of children of schoolgoing age are still outside the school environment. However, on the other hand, a significant number of children are in schools because of the advent of democracy from 1994. The constitution of the country states that the state has to provide primary education and that every child has the right to access this education without discrimination. RSE as part of mainstream curriculum has to reach all children of schoolgoing age.

CHAPTER 3. LEARNING THEORIES: THE YOUNG CHILD AND ROAD SAFETY EDUCATION

3.1   Introduction

In Chapter 3, I expand the literature review with the focus on possible theories related to the young child, possible learning theories and RSE. This study focuses on children in the Intermediate Phase who are between the ages of 9 and 14 years. In this age range children in South Africa have been introduced to RSE in the formal setting of the school since Grade 1. These theories will provide an understanding of how children acquire and internalise their attitudes and behaviour towards RSE. The chapter is therefore an extension of the theoretical framework described in Chapter 2. In addition, I comment on factors that might influence the learning of road safety skills in this chapter.

The central focus of the chapter is the description of theories applicable to children learning road safety skills. These theories relate to the focus of the study, namely investigating the response of children to RSE with special reference to a rural environment which is characterised by a lack of resources and poverty. This background served as the basis for developing an observation schedule and other research tools to be used in the data gathering process. The information in this chapter also served as a framework for suggesting a teaching or facilitation approach that could be appropriate for the teaching of road safety to young children who are still in the process of maturation.

The study is informed by the assumption that the child is a totality of all his or her experiences. The various theories discussed in this chapter serve as a mind map or point of reference for appreciating the various processes and stages of the development of the child and how these stages impact on their development and learning capacities (Biehler, 1974, p. 105; Bergan & Dunn, 1970, pp. 15-16; Mayer, 1987, p. 18-44). The development theories assisted me in suggesting an instructional theory for road safety.

3.2 Profile of the target group participating in the investigation

The target group for this study is children from a rural primary school in the Moloto area along the R573 road, 40 kilometres east of Pretoria, in Mpumalanga. The area has been chosen as the school is close to the busy road which exposes the children to danger when going to school in the morning and returning home in the afternoons. The children are mostly from working class families. Most parents commute daily to Pretoria, where they work. The children are then left on their own to negotiate the roads to and from school. The home environment does not offer the children an opportunity to acquire basic road safety skills before they start their schooling. Most families do not have family cars. The mode of travel is mostly by bus (National Household Travel Survey, 2003; Museru *et al.*, 2003; Van Vuuren, n.d.; Downing *et al.,* 1991). Ndungane (2006, p.8), former Archbishop of Cape Town, refers to the children from such communities as "the most needy sector of our population – a sector that has so little voice within the political and decision-making structures of our country" (Monson, Hall, Smith & Shung-King, 2006).

The National Household Travel Survey (2003, p. 19) indicates that in South Africa the vast majority, 76%, of children and students walk to their educational destinations. Almost three million of the children spend more than one hour a day walking to and from the education centres. An analysis of the walking times for pedestrians (including children) per province is given in Table 3.1.

Table 3.1   Walking time for pedestrians to educational centres and the number of people walking to these centres, by province

Province	Number walking	Percentage of walking trips				
		1 – 5 minutes	16 – 30 minutes	31 – 45 minutes	46 – 60 minutes	>60 minutes
Western Cape	759 000	62,8	30,6	3,6	3,7	2,1
Eastern Cape	2 226 000	39,8	33,6	10,5	10,9	5,2

Province	Number walking	Percentage of walking trips				
		1 – 5 minutes	16 – 30 minutes	31 – 45 minutes	46 – 60 minutes	>60 minutes
Northern Cape	182 000	49,6	38,7	9,3	2,0	0,4
Free State	736 000	49,7	33,3	7,7	5,6	3,7
KwaZulu-Natal	2 731 000	23,7	36,4	16,8	13,9	9,2
North West	996 000	36,3	38,3	12,1	8,6	4,7
Gauteng	1 305 000	41,6	40,3	10,8	5,4	1,9
Mpumalanga	973 000	37,6	36,8	11,8	8,8	5,0
Limpopo	2 045 000	43,1	37,7	9,3	7,3	2,6

Source: National Household Travel Survey, 2003

The implication for road safety is that these children that walk to school on their own are exposed to the dangers of crossing busy roads by themselves while their parents are at work. Parents in these rural communities do not accompany their children to school even if they are at home. An article titled "Boy, 16, killed in 'high-speed' bus crash" (Shonisani, 2004) illustrates the point clearly:

> *A speeding bus ploughed into a group of school children in Atteridgeville west of Pretoria yesterday, leaving a 16-year-old boy dead and two others seriously injured.*
>
> *The children had been waiting to be taken to school at 8 am, when they allegedly saw the bus moving at high speed towards them.*

Table 3.2 shows walking times to educational centres by type of establishment. Some 25% of primary school children who walk to school (1,7 million) walk for longer than 30 minutes in one direction. Considering all children who walk to school, there are 560 000 who spend more than two hours per day walking to and from school. The purpose of the data is to illustrate the level of exposure for children to roads as pedestrians.

Mpumalanga has the second smallest share of the South African population according to Statistics South Africa (2004, p. 30), with 7% of the total population residing in this province. Of this population, 973 000 are children who walk to school – thus a large number. The relevancy of this information is that such a large number of children are daily exposed to the danger of being knocked down by vehicles on their way to school, as can be seen in Table 3.2 (see also Chiduo & Minja, n.d.).

Table 3.2   Walking time to educational centres, by type of establishment

Establishment type	Number walking	Percentage of walking trips				
		1 – 15 minutes	16 – 30 minutes	31 – 45 minutes	46 – 60 minutes	>60 minutes
Pre-school	1 018 000	55,6	34,6	4,2	4,3	1,2
Prim. school	6 912 000	39,0	36,5	11,4	9,0	4,1
High school	3 824 000	33,5	36,0	13,2	10,2	7,1
Post-matric	103 000	29,1	41,6	17,7	9,0	2,4
Other	88 000	53,6	32,0	5,1	7,1	2,2
Total	1 1945 00	38,7	36,2	11,4	9,0	4,8

Source: National Household Travel Survey, 2003

In a situation where the level of RSE is low, such a high level of exposure could be very dangerous for children. This therefore makes out an even more compelling case for RSE to be understood and prioritised in the South African context. The growing economy is bringing a new dimension into this scenario as more people are buying cars, which means there are more drivers on the roads.

3.3   Child development and the learning of road safety

Children's development has a bearing on their uptake of educational programmes (Quimby, n.d.; Van Vuuren, n.d.; Fontaine *et al.,* 2006; McInerney, 2005; Piaget, 1973; Mayer, 1987; Slavin, 2000, p. 29). Munro (1969, p. 92) sees development as a

continuous series of adjustments between changing self and changing environment which of course does not stop abruptly when bodily growth stops. Adults, like children, are constantly altering in order to achieve satisfaction of needs in accordance to the present level of development (Slavin, 2000, p. 28).

The UK Department for Transport (2006) indicates that a child's development in the field of road safety must include two levels, i.e. the cognitive and the metacognitive. The argument is that the intellectual development of the child will lead to behavioural development. To internalise the road safety educational messages, the child should have reached a particular development level both cognitively and socially (Eloff *et al.,* 2006; Chunk, 2000; Hansen & Zambo, 2005). Piaget (in Rosin, 1973, p. 50-51) argues that the stages of intellectual development do not necessarily follow a chronological order but are informed by the previous experiences of the child or individual. It also depends on the social milieu which could hasten or delay the manifestation of a certain stage of development (Slavin, 1994; Glover & Bruning, 1990; Schwebel & Raph, 1973).

RSE in the developed world is offered as a compulsory part of the mainstream curriculum. As indicated in the literature review in Chapter 2, in these countries children's deaths as a result of road accidents have been reduced dramatically (Collins, 2006; Petersen, 2006; The Road Ahead, 2006; The Danish Road Safety Commission, 2000; Mohan & Tiwari, 1998). Studies show that the overall purpose of RSE is to teach children safe road behaviour in order for them to become safe road users either as pedestrians or as young adult drivers (Department for Transport, 2006, p. 1; Wittink, 1998).

With the advent of outcomes-based education (OBE) and the introduction of the National Curriculum Statement in South Africa, RSE became part of the mainstream curriculum (Mock *et al.,* 2005; Van Vuuren, n.d.; Kobusingye, 2004; Sayer & Downing, 1996, p. 8-9). An evaluation of the South African road safety campaign, *Arrive Alive*, shows that although people are regularly exposed to RSE messages they do not necessarily translate that knowledge into safe road user behaviour (Road Traffic Management Corporation, 2005). The challenge is therefore to look at ways that RSE within the mainstream curriculum can influence children to learn and internalise safe

ways of using roads. In the context of the South African situation the problem is exacerbated by the unplanned informal settlements developing along the major routes, especially in the rural areas.

The World Report on Child Injury Prevention (2008) indicates that as children grow and their world extends beyond the home and out into the local roads their level of exposure to danger, hazards and risks increases. In rural settings children play or live on the roadside and this exposure along with other risk factors inherent to childhood such as lack of knowledge and poor perception of speed, make them particularly vulnerable in traffic. Table 3.3 illustrates the stages of cognitive and psychosocial development described by Piaget and Erikson (in Biehler & Snowman, 1997; Eggen & Kauchak, 2001, p. 92; Mayer, 1987, p. 23).

3.4   Children's developmental phases

Young children were the focus of this case study. I therefore give some defining characteristics of the developmental phases of children as described in the literature. This information will assist my understanding of the children's response to RSE. I discuss these under the following phases: cognitive, social and emotional. I then relate these phases to the young child in the Intermediate Phase (see 3.4.4-3.4.6). Ausubel and Sullivan (in Bergan & Dunn 1970, p. 16) define development as change that occurs as a result of time. In their view development presupposes that some degree of lawful continuity prevails between successive stages of an ongoing growth process and that the properties of prior phases contribute in part to the form and substance of subsequent phases. This understanding of development is informed by the acknowledgement that both the hereditary and environmental factors are interactive contributors to development. The concepts of nature and nurture are used by developmentalists to refer to the complementary role that nature and nurture play in the process of development. Nature refers to the influence of genetic factors on development and nurture refers to the influence of the environmental factors (ibid. 18).

3.4.1 Cognitive development

Between the ages of five and seven, children's thought processes change significantly (Slain, 2001, p. 84). This is a phase of transition from the stage of preoperational thought to the stage of concrete operations. In this stage, the child is able to do things mentally rather than physically. Not all children make this transition at the same age. When a child moves to the next stage the characteristics of the previous stage are maintained and the characteristics of the next stage build on those of the previous stage (Mayer, 1987, pp. 25-27). At around the age of 11 years the child moves from the concrete to the formal operations. This is the stage of hypothetical-deductive thought. This stage is characterised by the child's ability to deal logically with the possible as well as with the actual, namely with hypothetical as well as real situations (Slain, 2001; Mayer, 1987, pp. 33-34). The implication for learning is that teachers should arrange their learning programmes in such a way that they consider the child's level of development. Because not all children develop at the same pace, those who have not yet reached a particular stage of development should be catered for in the learning programme.

3.4.2 Social development

According to Eggen and Kauchak (2001, p. 85), social development describes the advances young people make in their ability to interact and get along with other people. People are social beings and classrooms are social places that require children and teachers working together cooperatively. Once teachers understand how social development works, they will be in a better position to guide the child towards becoming a better social being (ibid.). As children develop socially they will be able to work with other children and benefit from peer education and gain more from the learning programme. They will also appreciate their particular group of friends. Two characteristics influence effective interpersonal relations, namely perspective taking and social problem solving.

Perspective taking is the ability to think about and understand the thoughts and feelings of others. It is a stage that develops slowly and is likened to Piaget's stages of cognitive

development. This stage is critical because it enables children to work with other children. Children who have mastered this stage display more empathy and compassion. Children who are poor at perspective taking are quarrelsome and resort to arguing and fighting. They display antisocial behaviour and mistrust other children.

Social problem solving, on the other hand, refers to the ability to resolve conflicts in a way that are beneficial both to oneself and others. It is a stage characterised by the following phases:

- Observing and interpreting social cues;

- Identifying social goals;

- Generating strategies.

This stage, like the perspective taking stage, develops gradually (Eggen & Kauchak, 2001, p. 86). In the teaching of road safety skills it means that the teacher has to understand the personality of the children in order to understand and assess their learning capabilities. Teachers must understand the social groups in their classes so that they can group children who belong to the same group to facilitate the learning of the road safety skills they are teaching. Because children are social beings, they learn from each other. This knowledge is invaluable in teaching skills that depend to a large extent on the practical aspects of real road situations.

3.4.3 Emotional development

During the elementary grades, between the ages of five and 14 years, children develop a global and moderately stable self-image. At this age they develop a mental self-portrait of themselves which is characterised by a description of their physical, social, emotional and cognitive attributes, referred to as self-concept; and the evaluative judgements they make about those attributes is called self-esteem. Children compare themselves with others. The self is described in terms of emotions and how well they can be controlled.

Rejection and disruptive family relationships may lead to poor performance at school (Seaman & Biehler, 1997, p. 97). Parents of such children administer harsh and

inconsistent punishment. The affected children are rejected by their peers and become distracted when doing their school work. They show very little interest in what they do. For teachers, academic self-concept – the component of general self-concept that deals with students' perception of their competence as children – is most important (Eggen & Kauchak, 2001, p. 100).

The implication for teachers is that teachers who teach road safety skills should understand and address the motivational development of their children so that children who are emotionally disturbed may be helped. I argue that there should be a working relationship between all role players in the teaching of road safety skills, particularly between parents and teachers, so that teachers could have an understanding of the factors that might be create an emotional imbalance in children. As the literature shows, children who are emotionally disturbed perform poorly in class and get distracted from their work. Learning road safety skills requires that the children should be attentive all the time as one mistake could cost them their lives.

During the interviews with children and parents I realised that most of the children were from single-parent families. Although this was not the focus of the study, it came to my attention that most children were staying with their mothers, with no fathers in the family. As this was an emotional subject I did not ask either the mothers I interviewed or the children from these single-parent families about their relationship with their fathers or the fathers of the children. Teachers who teach road safety skills in these settings should consider this factor before being judgemental about children's learning or slow uptake of road safety skills. Nevertheless, the absence of either parent did not seem to affect the self-esteem of the children. I observed during the interviews that the children were cheerful and eager to learn, an aspect that I conclude boded well for the learning of road safety skills.

Table 3.3   Stages of cognitive and psychosocial development described by Piaget and Erikson

Piaget's stages of cognitive development			Erikson's stages of psychosocial development		
Stage	**Age range**	**Characteristics**	**Stage**	**Age range**	**Characteristics**
Preoperational	2 – 7 yrs	Develops schemes primarily through sense and motor activities. Recognises permanence of objects not seen.	Initiative vs. guilt	4 – 5 yrs	Ability to participate in many physical activities and to use language to set initiatives. If not appreciated they feel guilt.
Concrete operational	7 – 11 yrs	Gradually acquires ability to conserve and decentre but not capable of operations and unable to mentally reverse actions.	Industry vs. inferiority	6 – 11 yrs Elementary to middle school	Behaviour dominated by curiosity and performance. Develops a sense of industry. If his efforts are unsuccessful or he is derided inferiority sets in.
Formal	11– Adulthood	Able to deal with abstractions, form hypotheses, solve problems systematically, engage in mental manipulations.		12 – 18 yrs Middle through high school	Develops meaningful identity and roles and skills that prepare them for adulthood. If this fails it results in role confusion.

Sources: Biehler & Snowman, 1997; Eggen & Kauchak, 2001, p. 92; Mayer, 1987, p. 23

3.4.4 The cognitive development of children in the Intermediate Phase (9-14 yrs)

At the intermediary stage as described by the National Curriculum (2002) as the Intermediate Phase the primary school child aged between nine and 14 years is able to think logically, although such thinking is constrained, unstructured and insistent (Biehler & Snowman, 1997). According to Piaget's stages of development, children in the 9-14-year age range are concrete, operational-stage thinkers. Most children will have attained enough mastery of logical schemes that they can understand and solve tasks like reading maps as long as the tasks refer to tangible ideas that the child has experienced or can imagine. Their knowledge base is still elementary and contains a lot of misconceptions which may lead to illogical behaviour.

During this stage differences in cognitive style become apparent. According to Biehler and Snowman (1997, p. 98) cognitive styles are tendencies or preferences to respond to a variety of intellectual tasks and problems in a particular fashion. Some children might be impulsive while others are more reflective (Slavin, 1994, p. 70-76). The perception and thinking patterns of the children are influenced by the surrounding context. Helping teachers to become aware of different cognitive styles will help them understand and appreciate the need for using different teaching methods and approaches so that all children benefit from the learning and teaching process.

3.4.5 The emotional development characteristics of children in the Intermediate Phase

During the Intermediate Phase, children develop a global and moderately stable self-image (Biehler & Snowman, 1997; Slavin, 1994; Mayer, 1987). Children have made an extensive study of their self-image at this stage. A mental picture or self-portrait of themselves is made up of a number of components, i.e. a description of their physical, social, emotional and cognitive attributes which is referred to as self-image. Children start to compare themselves with others. The child's sense of self is influenced by the information and attitudes communicated by parents, teachers and friends. They are at a stage when they are impressionable (Eggen & Kauchak, 2001, p. 99). Self-esteem and self-worth, according to Eggen and Kauchak (2001, p. 99) refer to the affective or

emotional reaction to the self. Self-esteem is important because children with high self-esteem are confident, curious, independent and motivated and do well in school (ibid.).

If the home environment remains stable the child's self-image will remain stable. Disruptive family relationships, social rejection and school failure may lead to delinquent behaviour. Delinquents have few friends and are easily distracted and not interested in schoolwork, and by and large lack basic skills (Biehler & Snowman, 1997).

3.4.6 The social developmental of children in the Intermediate Phase

People are social beings and classrooms are social places that require students and teachers to work together cooperatively. Eggen and Kauchak (2001, p. 85) describe social development as the advances children make in their ability to interact and get along with other people. At this social developmental level of the child, the peer group becomes powerful and begins to replace adults as the major source of behaviour standards and recognition of achievement (Biehler & Snowman, 1997; Eggen & Kauchak, 2001, pp. 80-85). Children are drifting away from the influence of parents and are beginning to influence each other as children. The downside of this is that children in this phase realise that the rules of peer groups are different from the rules of parents. In order to be accepted by the peer group, they do not oppose group rules and norms, and they end up engaging in unbecoming behaviour. Friendships become more selective and gender-based. These relationships are based on common ideas, outlooks and impressions of the world (Eggen & Kauchak, 2001).

An understanding of the social development of this age group is important because an increased understanding helps us guide the children in their attempts to become effective social beings. As children's social skills advance, their abilities to work effectively in groups improve, improving both how much they learn and their satisfaction with the learning situations (Eggen & Kauchak, 2001, p. 85).

3.5 Content of road safety education in schools at the Intermediate Phase

The RSE Programme of the Road Traffic Management Corporation (RTMC), the Department of Transport's agency tasked with the implementation of road safety

programmes, is currently being implemented in schools. The programme outlines the learning outcomes (LO) and assessment standards (AS) of learning areas that have to be taught to children. In the Intermediate Phase the LOs and ASs which are relevant to RSE are outlined in Table 3.4.

Table 3.4   Learning outcomes and assessment standards linked to Road Safety Education

Topic: Safety near roads

Links to the National Curriculum (Department of Education 2002)

Learning area	Assessment standards: The child will be able to ….
Life Orientation LO 1: Health promotion – The child is able to make informed decisions regarding personal, community and environmental health.	Life Orientation Grade 4: Lists and explains traffic rules relevant to road users.
LO 3: Personal development – The child will be able to use acquired life skills to achieve and extend personal potential to respond effectively to challenge in his or her world.	Grade 4: Considers and interprets the emotions of others.
LO 2: Social development – The child will be able to demonstrate an understanding of and commitment to constitutional rights and responsibilities, and to show an under-standing of diverse cultures and religions.	Grade 5: Applies children's rights and responsibilities to a range of problem situations (right to safety).
Language: Home language 3: Reading and viewing – the child will be able to read and view for information and enjoyment, and respond critically to the aesthetic, cultural and emotional values in texts.	Grade 6: Reads for information: follows instructions, recipes, maps and plans.

Source: Road Traffic Management Corporation RTMC, 2006

The training manual for children predating the national curriculum and OBE emphasises that any training of children on road safety should consider the developmental level of the child. The manual was developed by the National Road Safety Council, the predecessor of the RTMC.

The manual has two broad aims which tally with the purpose of the new curriculum, viz. to develop children who will be able to understand their role in society and be responsible for their safety. The aims of the manual are:

- Short-term: to make the child aware of problems relating to pedestrians and vehicular traffic.
- Long-term: to contribute to the development of the child as a whole. It therefore encompasses not only a method aimed at ensuring the immediate safety (of the child), but also in fact paves the way to responsible adulthood (NRSC, 1985).

The programmes that are followed in South Africa are based on the Social Learning Theory (NRSC, 1985). The children must simulate good road use behaviour in a simulated road environment with teachers as models and mentors. Modelling is key in this approach (NRSC, 1985). The challenge for the rural school as indicated in Chapters 1 and 2 of this study is that rural schools do not have Junior Traffic Training Centres (JTTC) in their vicinity; neither do they and they have the portable centre which could be built in the class. The second element of the programmes is that they aim to encourage the child to discover his environment on his own and construct the reality that the environment presents. The child is taught to negotiate his way to school safely.

In the context of this chapter, both the present RSE programmes and the previous programmes compiled by the National Road Safety Council, emphasise the importance of grading teaching programmes in order to accommodate the developmental stages of children. The layout of the JTTC must be adapted according to the specific age groups that will use the centre. In this way children will benefit optimally from the road safety inputs (NRSC, 1985; Child and Traffic, 1980; Children and Roads: A safer way, 1990).

3.6 Theories of child development and their relevance for the learning of road safety

Child development refers to the physical, intellectual, social, and emotional changes that occur from birth to adolescence. Although people change throughout their lives, developmental changes are especially dramatic in childhood (Child Development, 2009;

Cole, 2004; Slavin, 1994; Mayer, 1987). During this period of development the child grows into a capable young person who has mastered language, is self-aware, can think and reason with sophistication, has a distinctive personality, and socialises effortlessly with others (Child Development, 2009; Slavin, 1994; Mayer, 1987, pp. 19-22). Many abilities and characteristics developed during childhood determine how one learns skills like road safety. Many road safety programmes like the behavioural programmes implemented in the Netherlands and the United Kingdom are based on the principles of Social Learning Theory, which emphasises the acquisition of new behaviours via the imitation of actions modelled by others. These learning theories are based on the developmental theories. The purpose of this chapter is to discuss some aspects of the major theories of child development and the learning theories to see what light they can shed on the learning of RSE (Thomson, Tolmie, Foot & McLaren, 1996; Child and Traffic, 1990; Department of Transport, 1990).

The literature indicates several theories of child development, learning and teaching relevant to RSE (Schunk, 2001; Thomson *et al.*, 1996; De Cos, 1997). For the purpose of this study four theories of development are discussed to illustrate the possible relevance for RSE and the 9-14-year-old child. The four theories are: maturationist, behaviourist, constructivist and the social development perspectives of development (Powell, 1991; Woolf, 1998). When discussing each theory I shall elaborate on the possible application of the theory to this study.

3.6.1 Maturationist theory

The maturationist theory was advanced by the work of Gesell (Child Development, 2009; Theories of Child Development and learning, n.d.). Maturationists believe that development is a biological process that occurs automatically in predictable, sequential stages over time (Hunt, 1969). Gesell was among the first to implement a quantitative study of human development from birth through adolescence, focusing his research on the extensive study of a small number of children. He began with pre-school children and later extended his work to ages five to 10 and 10 to 16. From his findings, Gesell concluded that mental and physical development in infants, children, and adolescents are comparable and parallel orderly processes (Bates, 1989).

Gesell was guided by a maturational conception of development. "Growth", he said, "is a process so intricate and so sensitive that there must be powerful stabilising factors, intrinsic rather than extrinsic, which preserve the balance of the total pattern and the direction of the growth trend. Maturation is a name for this regulatory mechanism" (Bates, 1989). As for the influence of exogenous factors (e.g. environment) on development, Gesell commented that they "may play a screening or selective role determining which of competing potencies are to be realised ... but the basic mechanism of realisation is one of maturation..." (Bates, 1989).

As a psychologist, Gesell realised the vast importance of both nature and nurture. He cautioned others not to be quick to attribute mental disabilities to specific causes. He believed that many aspects of human behaviour, such as handedness and temperament, were heritable. He understood that children adapted to their parents as well as to one another (Developmental Norms, n.d.).

Development, according to Gesell, followed what he called developmental norms. Developmental norms are defined as standards by which the progress of a child's development can be measured. For example, the average age at which a child walks, learns to talk, or reaches puberty would be such a standard and would be used to judge whether the child is progressing normally (Developmental Norms, n.d.).

This perspective leads many educators and families to assume that young children will acquire knowledge naturally and automatically as they grow physically and become older, provided that they are healthy, without any purposeful intervention (Demarest *et al.,* 1993). The thinking here is that maturity is inborn and it happens according to a sequential pattern (Munro, 1969, p. 98).

The responsibility for learning lies with the parents and as long as the child is healthy he or she will be able to master the set competencies. However, Gesell's conclusion is that a child learns whether or not an adult teaches him or her. He suggests that adult intervention is not necessary for a child to learn as the learning process and physical development are pre-programmed.

In the dualism of heredity and environment Gesell believed that heredity is key to achieving the performance of tasks. He remained doubtful whether the basic qualities of infants can be measurably altered by environmental influences, for Gesell believed that a child, even when not trained, would be able to perform a task because nature prepared them that way. He saw a very limited role for the environment.

This theory is not precisely relevant for RSE where many purposeful interventions are necessary to prepare the child for the world beyond the classroom as already described in this study. For instance in the case of road safety a purposeful intervention has to take place in the school and home environment to ensure the survival of the child not only in his community but in other settings as well. It is my understanding, derived from experience, that it would be irresponsible to release children into a dangerous environment such as busy roads without preparing them for it.

In terms of road safety I understand that learning occurs (observational learning theory) by observing other people acquire knowledge, rules, skills (road safety skills), strategies, beliefs, (speed kills), and attitudes. RSE is about attitudes and behaviour modification. Schunk (2000, p. 78) states that individuals also learn from modelling about the usefulness and appropriateness of behaviours and the consequences of modelled behaviour, and they act in accordance with beliefs about their capabilities and the expected outcomes of their actions.

The review of the literature on RSE presented in Chapter 2 strongly indicates that practical methods of instruction in pedestrian skills are the most likely to be effective. The maturation theory of development assumes that the child will be able to perform the road safety skills even when not taught. I argue that intervention is critical for teaching the child road safety skills, and that the maturation theory of development is not supported by the literature on the acquisition of these skills.

3.6.2 Behaviourist theory

Theorists such as Watson, Skinner, and Bandura contributed a great deal to the environmentalist perspective of development (Glover & Bruning, 1990, pp. 300-303).

Environmentalists believe the child's environment shapes learning and behaviour; in fact, human behaviour, development, and learning are thought of as reactions to the environment. This perspective leads to the conclusion that young children develop and acquire new knowledge by reacting to their surroundings (Slavin, 2000). This developmental theory is called behaviourism. It is characterised by experimental methods and underpinned by variables that can be observed, measured and manipulated. It avoids whatever is subjective, internal and unavailable, i.e. mental or cognitive aspects of the child. One of Bandura's tenets is reciprocal determinism which states that the individual and the environment influence each other (Boeree, 1998; Mayer, 1987, pp. 87-88).

Behaviourism is a worldview that assumes a child is essentially passive, responding to environmental stimuli. The child starts off as a clean slate (i.e. *tabula rasa*) and behaviour is shaped through positive or negative reinforcement (Eggen & Kauchak, 2001; Mayer, 1987; Glover & Bruning, 1990). Both positive and negative reinforcement increase the probability that the antecedent behaviour will happen again. In contrast, *punishment* [emphasis mine] (both positive and negative) decreases the likelihood that the antecedent behaviour will happen again. Positive antecedent behaviour indicates the application of a stimulus; negative antecedent behaviour indicates the withholding of a stimulus. Learning is therefore defined as a change in behaviour in the learner. Earlier behaviourist work was done with animals (e.g. Pavlov's dogs) and generalised to humans (Slavin, 2000; Biehler & Snowman, 1997).

Behaviourism precedes the cognitivist worldview. It rejects structuralism and is an extension of Logical Positivism (Learning Theories, 2008). According to behaviourists, learning is a relatively enduring change in observable behaviour that occurs as a result of experience (Eggen & Kauchak, 2001, p. 214; Slavin, 2000). This theory is underpinned by the following variables: attention, retention, reproduction and motivation.

3.6.2.1   Attention as a variable for learning in behaviourism

According to behaviourists, learning depends on paying attention to the model. In the context of the study the model would be the teacher and the parents. If a child has a problem paying attention their learning will suffer. This implies that if the child has no interest in what they are learning or they are distracted by other factors their learning progress will decrease. Some aspects of the teacher or the model might affect the child's learning. In other words, if the presentation of the lesson is boring or dull this will affect the child's learning (Biehler & Snowman, 1997; Mayer, 1987).

In the context of this study it means that if the teachers or parents are not competent in the teaching of road safety skills this will affect the learning process according to the behaviourist. The implication for the learning of road safety skills is that the focus is more on the model (teacher/parent) than on the child because the child imitates the teacher or model. Parents as community members should therefore provide a positive role model for the child by using the road in a safe way so that the child could internalise this behaviour.

3.6.2.2   Retention as a variable for learning in behaviourism

Retention refers to the process of internalising what has been learnt. What it means is the child should be able to act out what they saw the model or teacher doing. This, according to the behaviourists, will mean that the learning process has been successful. According to the behaviourist this manifests itself through language and mental images. This entails because one stores what has been learnt through mental languages. One brings out these mental images or descriptions through one's own behaviour to show that one has learnt what the model has showed (Biehler & Snowman, 1997; Learning Theories, 2008).

3.6.2.3 Reproduction as a variable for learning in behaviourism

The reproduction theory refers to the statement that what has been learnt previously has to be reproduced. The child has to translate what he internalised i.e. the images or descriptions into actual behaviour. Ability is the determinant in this stage of learning. A

child can watch a model performing a task but if they do not have the ability to reproduce the act nothing will happen. The ability to reproduce or imitate improves depending on practice. Another important factor about reproduction is that our ability to imitate improves with practice at the behaviours involved. It is against this background that all the RSE programmes that have been implemented in the Netherlands and the UK are characterised by a strong element of practice at the actual road environment (Slavin, 2000; Bergan & Dunn, 1976, pp. 136-140). This theory could prove valuable for this research project.

3.6.2.4 Motivation as a variable for learning in behaviourism

The key to learning according to this theory is motivation which takes place when the child has a positive role model worthy of being imitated. Conversely, threats of punishment and lack of a positive role model demotivate the child and affect their learning. The child must be motivated to imitate. There must be an incentive or reason for doing the activity. The implication for road safety is that the child must understand the fundamental aspect of road safety, that if they are not learning they will be killed on the roads. This should serve as their ultimate incentive. In contrast to motivation, punishment can affect the learning process negatively (Slavin, 2000; Mayer, 1987; Bergan & Dunn, 1976, pp. 136-140; Boeree, 1998).

School readiness, according to the behaviourists, is the age or stage when young children can respond appropriately to the environment of the school and the classroom (e.g., rules and regulations, curriculum activities, positive behaviour in group settings, and directions and instructions from teachers and other adults in the school). The ability to respond appropriately to this environment is necessary for young children to participate in teacher-initiated learning activities (Biehler & Snowman, 1997; Mayer, 1987).

My understanding of the shortcoming of the behaviourism theory is that the environment in some schools might not lend itself to the learning of road safety. Teachers and parents have to intervene consciously and inculcate road safety consciously in the learner. Leaving the children to their own devices to experiment in a dangerous road

environment might cost them their lives. A well structured curriculum on road safety has to be followed and sustained to prepare the child for the outside world. A realistic environment has to be created as road safety is best learnt in a real road safety environment. The child learns safe road user behaviour through experience.

The success of the behaviourist theory in teaching road safety skills to children presupposes the availability of positive role models in the form of teachers and parents and might not be applicable in total in this study. As indicated in Chapter 2, children imitate their parents and if parents and teachers are not positive role models, any programme based on the Social Learning Theory will not yield the required results. The simulation training skills applied at the JTTC are based on this learning theory (NRSC, 1985; Department of Transport, 1990; Child and traffic, 1980). The major weakness of this learning theory is that it places greater emphasis on the teachers and parents as role models. Millions of rands were spent on advertising by *Arrive Alive* in an attempt to change people's behaviour, but given the number of pedestrian deaths on the roads the success, if any, is minimal. The assumptions of the theory that the child knows very little and has to be spoon-fed information are diametrically opposed to the outcomes-based education (OBE) approach used in schools in South Africa. It encourages children to depend on teachers for information rather than seeking the information themselves. Another weakness of this learning theory is that it focuses on the teacher or the model rather than the child. The success of the learning programme depends on the teacher. This will eventually create a dependency syndrome where children depend on the teacher for every facet of their learning experience rather than taking the initiative and responsibility for their own learning. This theory therefore undermines the child's metacognitive skills – the thinking and study skills. Metacognition refers to knowledge about one's own learning (Department for Transport, Report No.6, n.d.). Learning road safety skills is based on the assumption that the child should be empowered to make critical decisions when they are alone in the road. Another weakness of behaviourism is that learning does not necessarily depend on incentives (positive reinforcement) and threats of punishments.

3.6.3 Constructivist theory

The constructivist perspective of readiness and development was advanced by theorists such as Piaget, Montessori and Vygotsky (in Slavin, 1994; Mayer, 1987; Glover & Bruning, 1990). Although their work varies greatly, each articulates a similar context of learning and development. They are consistent in their belief that learning and development occur when young children interact with the environment and people around them (Campbell, 1997; Hunt, 1969). One of the most important principles of educational psychology is that teachers cannot simply provide students with knowledge. Students must construct knowledge in their own minds (Slavin, 1994). The essence of constructivist learning theory is that children must construct, discover and transform complex information if they are to make it their own. The constructivist theory sees children as constantly checking new information against old rules and then revising the rules when they no longer work. This view has profound implications for teaching, as it suggests a far more active role for children in their own learning than is typically executed in the majority of classrooms (Slavin, 1994, p. 225). While cognitive constructivism focuses on the individual and the construction of knowledge, social constructivism suggests that knowledge exists in a social context and is initially shared with others instead of being represented solely in the mind of an individual (Eggen & Kauchak, 2001).

Learning as a bottom-up process which begins with contextualised action was identified as common to both Vygotsky and Piaget (in Department of Transport, 1996). Although they have many elements in common, the point of departure is that for Piaget learning is seen as a process of internal construction (in Schwebel & Raph, 1973; Slavin, 2000). For Vygotsky learning takes place through the internalisation of socially constructed or guided behaviour (in Slavin, 2000). Vygotsky's theory is one of the foundations of constructivism. It states three main themes: Social Interaction, the More Knowledgeable Other and the Zone of Proximal Development. These themes are described in the following sections.

3.6.3.1 Social Interaction in the process of cognitive development

According to Vygotsky Social Interaction plays a fundamental role in the process of cognitive development for the child (in Slavin, 2000). In other words, for the child to develop cognitively they need to be socialised with other people. For Vygotsky learning could take place only when the child has been in an interactive process to learn from other people. Once this has been done, social learning can then begin. RSE is a social activity where people learn and interact with each other. Social interaction therefore forms the basis for the learning of road safety skills. Ideally, the people that the child socialises with have to serve as positive role models to the child. In contrast to Piaget's understanding of child development (in which development necessarily precedes learning), Vygotsky felt social learning precedes development. An isolated child will not develop cognitively; they need the intervention of other people to develop to their full potential.

3.6.3.2 The More Knowledgeable Other: Teachers and parents as role models

For the child to develop to a stage where they can learn, they have to be in the company of the role model, what Vygotsky calls the More Knowledgeable Other (MKO) (in Mayer, 1987). This could be anyone who has more knowledge and experience to serve as a model to the child. The More Knowledgeable Other could be the teacher, parents and any other community member who has a positive behaviour that could be emulated by the child. This is pertinent to road safety as the child has to adopt road use behaviour from teachers, parents and peers who serve as role models. If their road use is unsafe the child is going to internalise this behaviour to his detriment. The most important people as the MKO in the context of this study are the parents and the teachers. If they do not serve as positive role models the child will never develop safe road user behaviour as they imitate their models.

3.6.3.3 Learning takes place in the Zone of Proximal Development

For Vygotsky learning takes place in the Zone of Proximal Development (ZPD). The ZPD is the distance between a child's ability to perform a task under adult guidance

and/or with peer collaboration and the student's ability to solve the problem independently. According to Vygotsky, learning occurred in this zone (in Slavin, 2000).

Vygotsky focused on the connections between children and the sociocultural context in which they act and interact in shared experiences. Children use this environment and opportunity to develop language which is critical for their future learning. According to Vygotsky, humans use tools that develop from a culture, such as speech and writing, to mediate their social environments. Initially children develop these tools to serve solely as social functions, ways to communicate needs. Vygotsky believed that the internalisation of these tools led to higher thinking skills. According to this theory, human being use speech and other human capabilities to help them understand the surroundings and learn. Therefore, without language the child will not learn. Therefore, teachers and parents intervene in the child's development and learning through language.

3.6.4 Social development theory

Vygotsky is one of the proponents of the social development theory (in Eggen & Kauchak, 2001, pp. 60-61). The major theme of Vygostsky's theory is that social interaction plays a fundamental role in the development of cognition. A second aspect of Vygotsky's theory is the idea that the potential for cognitive development depends upon the ZPD: a level of development attained when children engage in social behaviour. Full development of the ZPD depends upon full social interaction. The range of skills that can be developed with adult guidance or peer collaboration exceeds what can be attained alone. In short, in the social development theory "socialisation is key". Two principles emerge from the social development theory: socialisation and cognitive development. For children to fully develop cognitively they require social interaction. Furthermore cognitive development is limited or is dependent on the age range of the child (Schunk, 2008, pp. 242-246; Social Development Theory, n.d.; Rosin, 1973; Eggen & Kauchak, 2001, pp. 56-57; Riddle & Dabbagh, n.d.).

Vygotsky's work complements the work of Bandura on social learning and is a key component of situated learning theory. His focus was also on cognitive development,

just like Bruner and Piaget. For the purpose of this study, the relevance to Piaget's theory on cognitive development is given very cryptically. For Piaget cognitive development happens in stages. Cognitive development is gradual as is physical development. In each phase there is a repetition of processes of the previous level in a different form of organisation (schema) (Rosin, 1973). Each child is unique and progresses at his own rate in this realm of development. The three phases of cognitive development according to Piaget (in Rosin, 1973) are:

- Period of sensorimotor intelligence (0 to 2 years)
  During this period the infant moves from a neonatal, reflex level of complete self-world to a relatively coherent organisation of sensorimotor actions vis-a-vis his immediate surroundings. This organisation does not involve symbolic manipulation, but only perceptual and motor adjustments.

- Period of preparation for and organisation of concrete operations (2-11 years)
  This period is characterised by egocentric thinking expressed through transductive reasoning, juxtaposition, syncretism, realism, artificialism, animism.

- Period of formal operations (11-15 years) (Williams & Stith, 1974, pp. 287-289; Logic, Programming, and Robotics for non-technical students, 2002; Mayer, 1987, p. 23; Rosin, 1973).

During this period the adolescent learns with pure possibility, abstractions, prepositional statements. Where the concrete operational child can deal effectively only with the reality before him, the formal operational individual is not bound in this way.

Social development theory is an elaboration of constructivism. It places emphasis in cognitive development and social interaction as the *sine qua non* for learning. Studies from the developed countries show that cognitive development and social interaction form the basis for RSE. In road safety teaching and learning the cognitive development of the child has to be considered to ensure that he has developed to the level that he will be able to internalise the new knowledge (Schunk, 2008, p. 253).

In the final analysis of this study, an appropriate approach or approaches could be identified. If the rural community (social interaction) offers the child very little to imitate then he is not going to behaving in a responsible manner in the roads. An implication for the study is that teachers who are involved in the teaching of RSE, involving skills like the safe crossing of the road, have to understand the principles of development as articulated by the various developmental theorists like Piaget, Vygotsky and Bruner. This is an aspect I intend to research when collecting data from the teachers.

In the following paragraphs I elaborate on the possible applications of Vygotsky and Piaget's theories of social development in the learning of road safety skills. Many schools have traditionally held a transmissionist or instructionist model in which a teacher "transmits" information to children. In contrast, Vygotsky's theory promotes learning contexts in which children play an active role in learning. This sets the social development theory apart from the behaviourist theory in that it places emphasis on the learner. The child therefore has to take responsibility for his/her learning. Roles of the teacher and children are therefore shifted, as a teacher should collaborate with his or her children in order to facilitate the construction of meaning. Learning therefore becomes a reciprocal experience for the students and teacher. Vygotsky's emphasis on the socially directed nature of learning, in common with Piaget, characterises it as a bottom-up, constructive process. More complex activities or functions build upon the simpler constructs, and the range encompassed by the Zone of Proximal Development moves forward as learning progresses (Eggen & Kauchak, 2001; Thomson *et al.*, 1996).

The key to developmental progression within Vygotskian theory is mastery. Whilst the child may be capable of more advanced activity when working under the direction of another person, learning will not occur until they begin to take upon themselves the responsibility for directing their own behaviour. Over time many of these behaviours will become internalised as covert mental operations. As this happens new insights become possible and generalised understanding begins to emerge. This is the basis of true mastery. Language plays a critical role in learning, according to Vygotsky. The interaction that takes place between the child and the educator during and within the Zone of Proximal Development is guided by language through dialogue.

For Piaget all knowledge is a result of a process of internal construction directed towards ever better representations of the world in terms of the activities that could be carried out within it and the objects to which those activities applied. This basic building block of the process of learning is called a scheme. Subsequent learning occurs through the operation of three interrelated processes – assimilation, accommodation and equilibration. Learning, according to Piaget, takes place through the accommodation, differentiation and coordination of schemes which detail specific actions towards specific objects; and it constitutes a direct response to perceived discrepancies or conflicts between those schemes and experience (Department for Transport, 1996). To summarise Piaget's learning process, it means that the child will evaluate the environment and construct a reality that is based on the new set of circumstances. In the case of road safety skills the child will evaluate the new variables and accommodate them in his schemes or skills of crossing the road and adjust the performing of the task to suit the new challenges or circumstances (in Eggen & Kauchak, 2001, pp. 294-296).

Constructivism as indicated above therefore gives the child the respect and human dignity to construct their own understanding of reality. As opposed to behaviourism in constructivism the child takes the learning process as his responsibility. They use the environment to help them build up their knowledge. It is against this background that social interaction is critical to the learning as they learn from other people.

This implies that children are not just passive recipients of the learning content but rather they take part by making their own knowledge using the surroundings and the available resources. They can either accept or reject what they think is not essential to them. In conclusion, constructivism empowers the child to make his own decisions based on what they regard as important. Children continuously test what they have learned through social negotiation i.e. whether what they are doing is accepted or rejected by the general public. Each person has a different interpretation and construction of the knowledge process.

Constructivism does not mean that teacher's role is diminished or the teacher is relegated to the background what is means though is that all knowledge is constructed

from the children's previous knowledge. In other words what the child already knows serves as the basis for more learning. The child does not come to the learning situation empty-handed; they come with a useful knowledge that they use to build on (Learning Theories Knowledge base, 2009; Constructivism at Learning-Theories.com, 2009).

In contradiction to the maturationist theorists' position, Piaget according to Schwebel and Raph (1973) does not see development as a linear process but as stages that are not pre-determined but are informed by various variables like milieu and experiences. He divides intellectual development into three categories: The period of sensorimotor intelligence; the period of preparation and of organisation of concrete operations of categories, relations and numbers; the period of formal operations. To Piaget and other cognitivists like Bandura learning is underpinned by intellectual (Piaget) and cognitive (Bandura) development within a social milieu. Therefore, according to the social cognitivists, they focus on the idea that much of human learning occurs in a social environment (Eggen & Kauchak, 2001). In the RSE realm physical maturity of development does not necessarily mean that the individual will learn the road safety skills needed for their safety.

In the realm of RSE Piaget's theory of instruction holds some light in that cognitive and language development are at the centre of learning. The relationship between the LO and Languages learning areas has already been given in Table 3.4. This is supported by the role of the community which serves as a point of reference for the individual to learn beliefs and attitudes (Schunk, 2000; Biehler, 1974). This instructional theory is apt for the road safety realm where a lot of purposeful interventions are necessary to prepare the child for the world out there. For instance, the literature review in Chapter 2 indicates that best practices are that purposeful intervention has to take place in the school and home environment to ensure the survival of the child not only in his community but in other settings as well. It would be irresponsible to release the child into such a dangerous environment without preparing them for it (WHO, 2008; Towner & Errington, 2004).

Constructivists view young children as active participants in the learning process. In addition, constructivists believe young children initiate most of the activities required for learning and development. Because active interaction with the environment and people are necessary for learning and development, constructivists believe that children are ready for school when they can initiate many of the interactions they have with the environment and people around them (Schunk, 2008, pp. 236-237).

Constructivist-influenced schools and educators pay a lot of attention to the physical environment and the curriculum of the early childhood classroom. Classrooms are often divided into different learning centres and are equipped with developmentally appropriate materials for young children to play with and manipulate. Teachers and adults have direct conversations with children, children move actively from one centre to another, and daily activities are made meaningful through the incorporation of children's experiences into the curriculum. At home, parents engage their young children in reading and storytelling activities and encourage children's participation in daily household activities in a way that introduces such concepts as counting and language use.

When a young child encounters difficulties in the learning process, the constructivist approach advocates individualised attention and customisation of the classroom curriculum to help the child address their difficulties. The implication for the teacher is that they have to be resourceful in adjusting their teaching approaches to suit children who are not coping with the normal classroom teaching. I, as a researcher, see a challenge in this regard as the school used in the case study is situated in a rural environment and schools in this areas struggle to attract the best teachers.

Although the modern understanding of child development and the learning process is based on constructivism (Slavin, 2000) in a rural community like the Moloto area, their understanding of a child is still that the child must follow the teachers' and parents' examples. Maturity and school readiness is measured by the ability to follow instructions from teachers and parents. Any initiative outside this understanding is not tolerated. Literature shows that this view is widespread even in communities that are not

necessarily rural (Biehler & Snowman, 1997; Glover & Bruning, 1990; Schwebel & Raph, 1973; Eggen & Kauchak, 2001). The implication of this for the learning of road safety is that any child who takes the initiative in the learning process will be frowned upon and be reprimanded. He is expected to follow instructions from elders and teachers. A major drawback for constructivism is that it is based on the assumptions that parents are active participants in the education of their children.

In the Moloto area which is the site for this study the level of education among parents, if any, is very low, such that they cannot contribute meaningful academic input to children's education. Most teachers are not competent to teach road safety competencies and they are not in a position to structure learning programmes that will be meaningful to the child. In a developed world where children's parents can teach their children road safety skills this could be an appropriate teaching approach. Constructivism presupposes that the child who is not coping has to be given individual attention and an individual learning programme. But in the context of this case study this is impossible because of the large classes as the average class has sixty children. Therefore it seems like the environment might have huge implications for RSE in this specific case.

3.7   The impact of the rural environment on children's learning of road safety

The research site where the target group resides is a typical rural environment. The common mode of transport consists of minibus taxis and buses. The environment does not expose the child to a variety of road safety scenarios like their urban counterpart. There are no robots, pedestrian crossings and other speed calming measures. This type of environment puts the young child at a disadvantage compared to his/her urban counterpart. Literature on road safety indicates that the environment is the best teacher. If the child is in an environment that does not prepare him to negotiate his way to school the chances of being involved in an accident are very high. Chapter 2 illustrates this point clearly by indicating that in general the South African public is highly exposed to road traffic accidents as they walk to school and other institutions (Fourie, 2009; Rademeyer & Isaacs, 2009).

Munro (1969, pp. 152-154) underscores the importance of the environment in education and development in the following way:

Individual personality becomes adjusted to the environment by experience of people and things, from which are crystallised meaningful ideas of how the world is arranged. In this process by far the most effective external agent is language. If adults are subject to environmental stimulation, then surely it must be even more effective during maturational period, the more so the further back we go. In other words a bright child (genetically bright, that is) will get brighter if socially and environmentally stimulated and a dull child not so stimulated will get progressively duller. The pattern of growth in fact is not fully pre-determined.

The child's family prepares him/her for success in the outer world. For children to learn and internalise road safety skills the family must play a very important role in setting the foundation for their success. Smith (1974, p. 79) asserts that:

Consideration of the child's family is as basic to understanding his development as is that of his society in general. This littlest world has provided his first encounter with the challenges of identity, acceptance, relationships, and achievements. The family can either prepare him for success in his ever-expanding world, or it may handicap him - perhaps irreparably. The family environment just like the community environment can prepare or hinder the child's success in later life.

Quoted in Emerging Voices: Policy Considerations (2005, p. 2) Nelson Mandela said the following about the rural environment:

I have often said that the most profound challenges to South Africa's development and democracy can be found in its rural hinterland. These areas, systematically and intentionally deprived of the most basic resources under apartheid, continue to lag behind the rest of the country in the post-apartheid era.

In the context of RSE the rural child is more likely to be in an environment that does not have simulated road safety settings called the JTTC such as in an urban environment. The JTTC facility established by the GRSP and a non-governmental organisation (NGO) called *Drive Alive* for the schools of Eldorado Park south of Johannesburg come to mind.

Emerging Voices (2005, p. 2) offers some dichotomies of urban and rural settings. It starts though by cautioning about the difficulty of providing a correct definition of these concepts in the South African context. It reads:

> *What counts as rural or even urban are extremely difficult to define. This is especially so given the deep, continuous and intertwined relationships of urban and rural in South Africa. Rurality highlights: isolation, vulnerability, lack of opportunity … It also represents: a sense of community and a commitment to traditional values. Descriptions of poverty and rurality are seen in relation to urban as that which denote, on the one hand, opportunities and wealth and on the other a sense of deficit and strength.*

In the context of this study and the teaching of road safety in rural primary schools "advocating for quality rural (road safety) education that is responsive to the realities of rural communities does not imply that rural communities (children) should be prepared solely for rural livelihoods. If anything, rural (road safety) education has to prepare young people for a complex and interspersed world of rural and urban life. And thus seeing rurality and urban as part of a continuum of complex relationships challenges us to rethink and re-imagine what that education might look like" (Ibid, p. 5; Quimby, n.d.).

Another challenge facing the rural child is the unavailability of adequate resources that are necessary for effective and quality education. Multichoice Africa Foundation (n.d.) points out that:

> *As the national and provincial departments of education strive to provide quality education which is relevant, cost-effective and accessible to all, rural areas continue to face the disadvantage of distance. Just as getting to school is no guarantee of quality learning, rural schools' distance from cities also militates against teachers and children having access to up-to-date educational materials.*

Kollapen (2006, p. 32) brings into sharp focus the contrast of the rural and urban settings and their differences in terms of opportunities and benefits.

> *…. One of the gravest challenges we face as a nation in this regard is the matter of bridging the divide between the two worlds, which is South Africa. These two worlds have been differently described but, in the main, they represent one that is affluent, resourced and largely white, while the other is poor, under-resourced and largely black. There is thus much to be accomplished in efforts to close this gap.*

These two worlds enjoy different levels of safety, and indeed the efforts that go into realising some of the socio-economic rights referred to are undermined when critical matters of safety are not dealt with decisively. A few examples may illustrate this point. The state has invested considerable resources in building schools, and to provide much needed education to the children of South Africa. Yet too many children have to navigate a high-risk route to school in order to access this education. Un-roadworthy vehicles, the lack of adequate public transport, resulting in children walking long distances across dangerous terrain to get to school, and crossing rivers all place the young child at great risk (see also Museru *et al.,* 2003; Monson *et al.,* 2006).

In the South African context the rural and peri-urban environments share similarities in the unavailability of resources. Peri-urban areas are areas outside the formal boundaries and urban jurisdictions. They are between the urban and the rural areas. They are in the process of urbanisation. Peri-urban areas have some of the following characteristics:

- Fast and unplanned growth resulting in, among other things, negative environmental health issues and environmental degradation;

- Service infrastructure is inadequate to meet even basic needs;

- A significant proportion of residents are in lower income categories;

- Social infrastructure does not meet basic needs (Draft peri-urban Growth strategy Policy, 1997; Rural Development Strategy of the Government of National Unity, n.d.)

In the context of the study peri-urban areas are those areas that are outside the towns and cities; and the settlements are mainly squatter camps being tied to the economies of the contiguous urban areas. As a result of long distances to schools and other facilities in rural areas, road accidents involving children are a major problem in many developing countries. Sayer and Palmer (1997, p. 3) found that rural accidents are a serious problem in many developing countries (Odero, 2004, p. 5; Ribbens, 2002). Their study found that:

Few drivers reduce speeds through villages or give way to pedestrians. Houses and facilities such as schools and shops are often found on the opposite side of the road, creating many pedestrians crossing movements. In villages where street lighting is seldom found, crossing a busy road at night

can be particularly dangerous. Poor pedestrian facilities and houses built directly onto the roadside potentially contribute to the pedestrian accident situation.

The situation described above is akin to the one facing the child in the Moloto area, the site for this study. This background on the environment is essential for the study as it provides a holistic understanding of the environment which a typical child in the area faces. The road running through the village is used by motorists who are rushing to work in the Tshwane Metropole.

Studies show that the problems of safety on rural roads have been neglected in comparison with those in urban areas (Peden *et al.,* 2004; Thomson *et al.*, 1996). It was further found that in rural areas compared with urban areas, causal factors are distinctively different and the countermeasures are insufficient, especially in terms of resources for engineering and enforcement. Some distinctive rural crash causal factors found were:

❖ Higher travel exposure (in deaths per 100 million vehicle kilometres travelled);

❖ Fewer alternative modes of transport;

❖ Greater driver fatigue and boredom;

❖ Wider variety of road conditions (width, sealing, alignment, divided);

❖ Many narrow, unsealed roads;

❖ Larger number of roadside hazards and uncontrolled animals;

❖ Greater speed variation, caused by stretches of single lanes and the presence of buses, heavy trucks and agricultural vehicles, generate more crashes through risky overtaking, than on urban roads, enforcement of traffic laws by traditional methods is more difficult and expensive, and there are longer response times to provide emergency care and trauma recovery for crash victims also.

All other variables notwithstanding the main common denominators contributing to children dying on the roads in the Moloto area are lack of education, together with the

culture of impunity and total disregard for road rules. This situation calls for a paradigm shift in the way we teach road safety in South Africa in both the formal and the informal environment. We need to find an effective way of teaching road safety to children in order to inculcate the culture of safe road use in primary schools.

Studies show that there is a general consensus among decision makers in various countries on the urgent need to control and stabilise morbidity and mortality particularly as injuries and deaths resulting from road accidents are ranked as one of the highest causes of loss of life in most countries around the world (Lopez & Murray, 1996; PIARC Technical Committee on Road Safety, 2003).

Proponents of the right to safety, however, differ on the priorities for action: the relative role that organisational structures and powerful elites play in producing hazardous systems; the effectiveness of approaches that give priority to technological fixes over behavioural change; the relative role of interventions by the state and government and by civil society organisations; and the need for creating regulations, setting a standards, and ensuring police enforcement. Mohan (2003) argues that it is very difficult to resolve these issues in the absence of a basic ethic that gives a strong underpinning to the debate. Current efforts to reach consensus on a document that spells out the rights of people to live lives safe from harmful injury are expected to help reduce the differences in ideologies and priority setting (Monson *et al.,* 2006).

3.8   Conclusion

The theories described in this chapter align with the theoretical framework given in Chapter 2. The theoretical framework for the study as elaborated in Chapter 2 is that education as an intervention measure to reduce the deaths on the roads particularly for pedestrian is the viable measure in areas that are rural in nature like the Moloto area. The literature review in Chapter 2 indicates that for this to work, parents, community, teachers, road safety officers and children have to work for the same goals using the same approach so that their efforts complement each other.

The continuation of the literature review in this chapter indicates that the education programmes that were implemented in developed countries like Sweden and the

Netherlands and the United Kingdom were aimed at behaviour modification. The teaching approach used in schools that implemented the programmes was based on the social learning theory of the behaviourists. This was based on the assumptions that underpin the learning of road safety skills that children have to learn through modelling using teachers and parents as role models. What this chapter illustrates is that child development is critical for the implementation of road safety skills as teachers have to understand how children learn and the developmental process of children. This should then guide them to grade the learning content according to the capacity of the children (Department for Transport, 1996; Department of Transport, 1990; NRSC, 1985). This approach is also followed in South Africa, evidenced by the fact that most road education programmes are based on the use of JTTC which are areas for simulation of authentic road safety environments.

A RSE programme has to consider the developmental phases and the relevant theories concerning the young child such as the cognitive development for its sustainability and effectiveness. Road safety is best leant through experience in a real road safety environment. The introduction of road safety at home by parents or elders and pre-school level by the teacher is crucial as it forms a continuum for the child when he goes to primary school. In developing countries this is critical as children are considered "adults" who can negotiate their way to school unaccompanied (WHO, 2006). In the next chapter I discuss the research methodology, the methods and data collection strategies applied during the investigation.

CHAPTER 4. RESEARCH METHODOLOGY, METHODS AND DATA COLLECTION STRATEGIES APPLIED DURING THE INVESTIGATION

4.1   Introduction

This chapter explains the design and methods that I used in this study. All the steps I followed during the process of data collection and the key philosophical and methodological issues underpinning the study are discussed. The methods I used for gathering data are outlined; together with my strategies to improve the validity and reliability of the data.

I also discuss the challenges that I experienced when collecting data and how I attempted to overcome them. With the data collected I intend to illustrate the response of rural children to the road safety inputs that they receive with a view to understanding the RSE phenomenon and to offer recommendations that could help in the teaching and learning of road safety. The interpretative paradigm enabled me to interpret the voices of the children, the teachers and the parents in an attempt to understand the RSE phenomenon.

4.2   Research design

Labovitz and Hagedorn (1981, p. 42) describe a research design as a set of logical procedures that, if followed, enables one to obtain the evidence to determine the degree to which one is right or wrong. Thus, the research design helps to provide possible answers to research questions while minimising bias. A research design assists to examine specific research questions in a valid, systematic and objective manner by reducing as many rival explanations as possible and yet isolating the variables of interest to the research question (Heppner *et al.*, 1992, p. 43). To paraphrase Seaman (1987, p. 165-166), a research design is the way in which the researcher plans and structures the research process. It provides a flexible signpost or guidepost that keeps the research headed in the right direction.

This thesis is a qualitative study that focused on one school in rural Mpumalanga in a village called Moloto, forty kilometres east of Pretoria. A qualitative research design was

chosen for the enquiry as I planned to observe, discover, describe, compare and analyse the characteristic attributes of this school and underlying dimensions and variables of the RSE of this school (Seaman, 1987, p. 169; Heppner, Kivlighan & Wampold*.,* 1992, p. 194-195). The ontological assumption underlying the choice and use of the qualitative study was that the qualitative research emanates from the phenomenological perspective which tends to emphasise internal mental events as the fundamental reality of existence while the epistemological assumption for the choice of the study is that knowledge is actively constructed, not passively observed (Seaman, 1992, p. 195). The qualitative research design is therefore appropriate for this study as it seeks to explore and understand the ways that children give meaning to their understanding of RSE.

The paradigmatic position of the study is the interpretative paradigm. Interpretative research is concerned with understanding the world or reality as it is and describing the subjective reality of the participants. This paradigm uses qualitative research methods (Osman, 2007; Stake, 1995; McMillan & Schumacher, 2001, p. 504; Mason, 2002, pp.24-25). Qualitative designs require that the person making the interpretations must be in the field, making observations, exercising subjective judgment, analysing and synthesising while being aware of their consciousness (Stake, 1995, p. 41). Fox and Bayat (2007, p. 10) posit that interpretative research assembles a comprehensive collection of records related to people, actions, context and the perceptions of participants to serve as the basis for the inductive production of explanatory theory. In this study I interpreted the children's voices in order to represent their understanding of RSE.

In a qualitative design the research involves a holistic enquiry carried out in a natural setting where data is collected through field observation. Cozby (1998:p.48) notes that this field observation is sometimes called "field work" or simply "naturalistic observation". In a field observation the researcher makes observations in a particular natural setting (the field) over an extended period of time, using a variety of techniques to collect information. I chose a case study design. A case study may be a detailed examination of a single subject, a single setting, a single set of documents or one

particular event (Field & Morse, 1985, p. 87). In a case study the unit of analysis is focused. In the case of this study I focused on one school in the Moloto village. Ten children, ten parents and two teachers were used as the primary sources of data. The unit of the study – the school – was distinct and the focus was on the response of children to the RSE programmes. A case study is about choosing a case that will help to understand the phenomenon (see Mason, 2002, pp. 121-142). In my study I attempted to describe the rural community in as much detail as possible as I worked in the community for several weeks.

As humans are the primary data gathering instrument this research design demands that a researcher immerses himself or herself in the situation (see Mason, 2002, p.84). The field researcher therefore observes everything – the setting or field itself, the patterns of personal relationships and people's reactions to events that occur (Borg & Gall, 1998). The purpose is to provide a holistic picture of the field or case (Hepper, Kivlighan & Wampold, 1992, p. 198). The researcher must write detailed notes of what happened or had been observed at the end of the day. This qualitative design requires that the researcher uses a variety of techniques to gather information – observing people, and events, using key "informants" or influential people to provide inside information and talking to people (interviewing them). In this study I provided as much data as possible about the participants of my case study.

Research participants are chosen for their potential to yield rich data which will help in answering the research questions (Jackson, 1995). The qualitative design therefore uses the purposive selection. The choice of participants in this study is the children of the school. With regards to the parent and teacher participants they were selected purposively to help yield rich data for the study. The teachers were teaching road safety within LO which encompasses the teaching of road safety competencies and the parents interviewed were the parents of the children I studied.

When interpreting the data the field researcher's first goal is to describe the setting, the events and the persons observed. The second and equally important goal is to analyse what was observed. The researcher interprets what occurred, essentially gaining insight that help explain the data and make it understandable. Such an analysis is done by

building a coherent structure to describe the observations. A good field observation will support the analysis by using multiple data and confirmations. For instance similar events may occur several times, similar information may be reported by two or more people, and several different events may occur that all support the same conclusion (Merriam, 1998; Maykut & Morehouse, 1994; Mason, 2002, pp. 24-25; Gobo, 2005). The qualitative design, according to Maykut and Morehouse (1994, p. 26), is flexible enough to capture the complexity, subtlety, and constantly changing situation which makes up the human experience. In my attempt to study this case I gave as much information as possible to show the complexity of the rural environment of Moloto.

In the context of this study I attempted to understand how the children in their specific environment, as people who are exposed to danger when negotiating their way to and from school, interpret and understand this danger. I also wanted to know in the context of the constant danger facing them, how they responded to the RSE that they received at school as part of the LO (LO) learning area. This approach was informed by the knowledge that human behaviour is context-bound. Understanding this reality required that I gather a rich data set to enable me to describe the social reality that the children make of their environment.

4.3   Participants and the case study

Based on my knowledge of the subject, a case study allowed me to interpret and understand the participants yielding information to assist in addressing my research questions (McMillan & Schumacher, 2001, p. 175). I purposefully chose the two teachers as part of the case study who taught LO. The reason for the decision was that they were involved in the teaching of road safety skills and would be able to provide data that could contribute to my understanding of the phenomenon under study. In addition, I studied the parents of the children to inform me on their input of road safety skills on their children.

Cozby (1989, p. 54) states that a case study "provides a description of an individual". This individual may also be a setting such as a business, school or a neighbourhood. Depending on the purpose of the investigation the case study may present the

individual's history, symptoms, characteristic behaviours, reactions to situations or responses to treatment". To achieve a degree of validity a variety of empirical research methods were used to collect as much data as possible.

The case study method is in line with the qualitative design of the study which seeks to explore and construct an understanding of the response of rural children to the RSE programme to which they are exposed at school. This is informed by the need to establish whether the amount of money invested in road safety programmes is making an impact. Billions of rands are lost in the country due to road accidents (Road Traffic Management Corporation, 2005).

For this study one school was chosen as the case study. The choice of the school was informed by the reaction that I observed when an industrial theatre group consisting of students from the University of the Witwatersrand was taken to the school by the Department of Transport, my previous employers. The locality of the school in the centre of the village and near the Moloto road also influenced the choice of the school. This is elaborated in 4.4.3. Ten children in the Intermediate Phase were selected. Ten children were chosen randomly. The parents of these children were approached to take part in the study. The ten children were chosen randomly from two classes. Ten children in two classes in the Intermediate Phase were given the opportunity of participating in the two participatory activities that were employed to enrich the collection of data, namely the drawing activity and the writing of road safety messages.

The choice of the case study was informed by the purpose of the study, which was to explore the responses of children to road safety programmes. The participants who were purposively chosen had to help the researcher answer the following question: what work do I want my sample to do? Mason, (2002, p. 121) says that the work you are asking for your sample is to help provide you with the data which you need to address your research questions. Through appropriate data sources the sample should provide useful and meaningful empirical contexts, illustrations or scenarios. I chose this sample to give me access to data that will allow me to develop an empirically and theoretically grounded argument about something in particular – the intellectual puzzle. The strategy for the study was to use the child participants as primary sources of data.

As they are the focus group for the study they are in a better position to provide in-depth understanding of the RSE phenomenon under study (McMillan & Schumacher, 2001, p. 404; Gobo, 2005; Mason,2002, pp. 121-122).

The conduct of the children at the selected primary school in the Moloto area was observed in a real-life situation while using the road infrastructure to and from school, to observe whether they conducted themselves in such a way that they did not endanger themselves and other road users. The school campus was also observed to see whether they have a simulated Junior Traffic Training Centre (JTTC) for teaching RSE.

The movement of children in and out of the school is controlled by a security guard. The children receive a meal during the school feeding scheme at around eleven o'clock. The school was chosen as the children from the school have to cross the infamous Moloto road when going to and coming from school. Even when they are not going to school, they use the road for a variety of reasons. The road passes through the village. The school is situated in the middle of the village. The children as the main focus of the study were therefore well placed to provide rich data that will help in answering the research question.

As a researcher in the case study I hope to connect to and relate what we already know about road safety as elaborated in Chapter 2, with the findings of the study. This is the role of the researcher as an interpreter in the interpretative paradigm. My objective is to make this new knowledge as clear comprehensible, useful and as objective as possible to others in both within and outside the road safety realm. Stake (1995, p. 99-100) asserts that qualitative researchers operate under the assumption that knowledge is constructed and never discovered. Children construct their understandings of their surroundings from experience and from being told what the world is. Children as the focus of the study are described in depth. This helps to locate them within the study and facilitates our understanding of how they learn. It is against this background that child development is discussed in some detail in Chapters 3 and 4.

4.4 Research process

4.4.1. Introduction

The research process in this case study involved several phases. In this section of the process followed are elaborated on to indicate the path followed, the challenges that were experienced and how these challenges were ameliorated. McMillan and Schumacher (2002, p. 13) note that research is more an interactive process between the researcher and the logic of the problem design, and interpretations. This is true for this study as it involved non-participant observations which involved the researcher observing the activities of the child participants in a natural setting and recording their activities through a digital camera and the writing of notes.

4.4.2. Gaining entry

The provincial Department of Education in Mpumalanga was approached and granted permission for conducting the study. The permission of the school used in the case study was obtained before the commencement of the field work.

The field research was only embarked upon after the university's Ethics Committee approved that field research could be undertaken. The participants' consent was sought for them to take part in the study. Their consent was obtained in writing. The children, parents and teachers were interviewed. In the case of the parents and children, the questions were translated into their home language, Sepedi (Northern Sotho). Children were also observed when using the road when going to and coming from school.

The principal of the school where the case study was conducted allocated a teacher who served as a contact person for me and served as a link between me and the child and teacher participants. With regards to the parents, the teacher took me to the parents who formed part of the participants to get their permission and that of their children to participate in the study. Of the parents who were available no one refused to take part in the study.

Even with this overwhelming support of *carte blanche* from the Mpumalanga Department of Education, the principal, the teachers, children and their parents I was very careful to take into consideration that my entry into the field and support depended on acceptance by all the participants in the study. With this view in mind I spend some days introducing myself and bridging the power relations with the teachers and children in the school and the parents in their dwellings. This was done purposefully on my part to make the participants feel comfortable with my presence in the privacy of their spaces (Robinson & Kellet, 2004, pp. 82-84; Alderson, 2004, pp. 97-98). It was critical to do this with parent participants as they might feel uncomfortable with a stranger in their dwellings – some were makeshift structures (shacks or mekhukhu as they are called). I spent these days discussing the problem of road safety in the village and answering their questions. In this interactions some parents wanted to know whether after this exercise there will be help for their children's education. I explained to them that government offers free education for parents who are unable to pay school fees in school fees paying school.

With regard the non-participant observation method of obtaining data used in the case study I spend days observing child participants and the larger community in their use of roads in the Moloto area including their use of the dangerous Moloto road. The reason for this was to observe the children in their everyday road use to compare this data with their expressions about the use of roads as pedestrians. In this activity the participants were not aware of my presence and existence. I ensured that they do not realise my presence and purpose as this would have compromised my research. I observed the children in the morning when going to school and in the afternoon when they were going home. I repeated the same procedure with the general community. All the data recording was done in the privacy of my car to avoid my activity being exposed or recognised.

In-depth interviews were conducted with the child participants. They were semi-structured and encouraged them to express themselves in a narrative terms and as freely as possible. They were also encouraged to elaborate on RSE issues of importance to them, with the researcher taking or adopting a non-judgemental and self-

affirming approach (see Pattman & Kehily, 2004, p. 132-134). Kellet & Ding (2004, p. 166) point out that the rapport that develops between researcher and child is important for encouraging more forthcoming responses and trust with regard to confidentiality. They proceed to indicate that interviewers who are intimidating or impatient may inhibit children's responses (ibid).

In conclusion my experience in the case study was that gaining access to child participants has its own challenges. There are many gatekeepers (teachers, parents, guardians) who are there to protect children but they can also serve as an impediment by way of silencing them or excluding them. The ethical considerations were adhered to in order to respect people's privacy and the freedom to opt-in or opt-out of the study (see Alderson, 2004, pp. 97-97). The school environment might serve as an impediment where children are not free to talk particularly if they are to make judgement about their teachers. The multiple methods of data collection used were meant to improve on these challenges.

4.4.3   Choosing the site

The choice of the site was influenced by the experience and observation I had when as a road safety practitioner attached to the Department of Transport. I took a group of university students from the University of the Witwatersrand in Johannesburg who were working with a NGO in the field of road safety called *Drive Alive* to the Moloto village and the Moloto primary school, the site of the case study. They performed a sketch on road safety to the children. The interest that the children showed in the road safety messages and their interest in road safety issues persuaded me when I registered for the study with the University of Pretoria to use the school and the Moloto village as the site of the study. The second motivation was the series of accidents that happened in the stretch of road passing through the Moloto village over the years, which made it logical to use the site. I also held the assumption that with these headline-grabbing accidents in the area parents, children and schools would be more conscious of road safety than in other areas where they did not have such problems. Since I was based in Pretoria, which is forty-seven kilometres from the Moloto area, the site of the study and

the notorious accident zone in this area involving public transport vehicles lent themselves to the study.

4.4.4 Selection of the participants for in-depth interviews and mapping of field

Selecting participants for in-depth interviews was influenced by the attributes and profiles of participants who were in a position to yield rich information which would help me in answering the research question. The school was chosen for its location along the busy and accident-ravaged Moloto road. The children and their parents were selected for their potential to yield useful data for the case study. Two classes were chosen to take part in the participatory data collection activities. From all the drawings and written messages from the two classes ten drawings and ten written messages with rich data were chosen and used in the study. Drawings and written messages that helped to answer the research questions were chosen. In choosing the participants for the case study and gaining entry into the field I was mindful that this process requires establishing good relations with all participants (Hedegaard, 2008, p. 202). I was also mindful that research permission is not a guarantee that the participants will behave naturally before a strange outsider who takes notes and pictures and encroaches on their private space. Permission is also not a guarantee that the participants will share their views, perceptions, thoughts and feelings with the researcher (see Hedegaard, 2008, pp. 202-203; Kellet & Ding, 2004, pp. 166-167). The days I spent at the site familiarising myself with the participants and the situation is what McMillan and Schumacher (2002, p. 433) call mapping the field which according to them has the object of acquiring data of the social, spatial, and temporal relationships in the site to gain a sense of the total context. The social map made it possible for me to note and understand the kind of participants who would be taking part in the case study, the socio-economic structure of their village and the activities they engaged in. The spatial map on the other hand enabled me to locate vantage points for non-participant observations, the busy routes people use and to notice the availability or the non-availability of resources provided in the village. A temporal understanding of the village made it possible for me to understand the pattern of life in the village, the schedules and the routines and modes of transport used (see McMillan & Schumacher, 2002, p.

433).In short, this exercise made it possible for me to appreciate the holistic understanding of life in the village and to understand the rhythm of the village and their lifestyles. As road safety is a political, social and economic activity such knowledge of the site was indispensable in the gathering of rich data which was useful in answering the research questions.

My approach in the research with the child participants was informed by Pattman & Kehily (2004, pp. 132-133) who note that understanding the world from the perspective of children and young people involves researchers recognising that it is their respondents who are the "experts". The child participants who participate in the study can be seen as keepers of knowledge and insights that researchers hope to glean. I was therefore mindful of the fact that researching with young people requires or involves what Pattman & Kehily (2004, p. 134) call moments of negotiation, identification and reflection. The child-centred approach of this case study was based on the realisation that for it to succeed it requires that I forge positive personal relationships with them to the extent of becoming accepted by children to the point where they were willing to work with me as the researcher. This involves time, active listening and mutual respect. In short, the role of the researcher is a balancing act in order to cater for the aspirations of all participants (Hedegaard, 2008, p. 204).

Interviewing children requires skill and patience on the part of the researcher. A rapport between the researcher and the children is indispensable. The rapport that develops between the researcher and the children is critical for encouraging more forthcoming responses and trust with regard confidentiality (see Kellet & Ding, 2004, p. 164). As I was exploring the response of children to road safety programmes, I realised that children are the best source of information about this topic which basically concerns them and is about them. Therefore collecting data from them directly was preferred as secondary sources might not have been able to orient themselves to children's perspectives or point of view. To obviate these methodological challenges children were interviewed in their own language, Sepedi (Northern Sotho), and teachers and parents were also used in the case study to complement the child participants' inputs. Teachers and parents were interviewed in Sepedi (Northern Sotho). The teachers used both

Sepedi and English. This ensured that I got rich knowledge as the participants were used to their language preference.

4.4.5 The role of the researcher in the investigation

I acknowledge that the role of the researcher in this study should be that of an impartial and disinterested data gatherer. I steered away from actions that might influence the data generated from the respondents in one way or another. Although I have an education and RSE background, I did not make the participants aware of this, as the knowledge might have influenced the information they felt comfortable to give. In short, I adhered to a high level of self-consciousness which helped to habitually monitor my behaviour and its consequences (Peshkin & Glesne, 1992, p. 35; Stake, 1995). Being an adult researcher in a children's world has its challenges. An obvious challenge is: what role does an adult need to adopt to gain access to the children's world? The power relations if not managed properly can affect the research negatively. In this case study I adopted a realistic approach which is suggested by Mayall (2000) quoted by Kellet & Ding, (2004, p. 169) that the way forward is to invite children to help us to understand their perspective rather than adopt an approach based on pretensions. This approach suited my research with children in a Black village because no amount of pretending would change the power relation between me as an adult and the children. Children are taught from early childhood to respect adults and to regard every adult as a parent. There was just no way would the children regard me as their equal. My role was to create an atmosphere that would enable them to be forthcoming and open up.

As I indicated above the relationship between the researcher and the children has to be one based on trust. It is a relationship where the researcher is an experienced person. I was aware of the possibility that how far the children would let me go would depend on their stage of development (see Hedegaard, 2008, p. 204). I therefore, before the interview, spent some time explaining the purpose of the case study and its theoretical foundation. This helped the child participants to relax before the interview began. I also made them aware that the discussion would be recorded and the recording could be stopped and played back if necessary. The idea was to make them understand that they did not have to recite their answers; they could present them in a narrative and

discussion format. After this explanation the children looked relaxed and ready to help and their participation was enthusiastic. As I was dealing with road safety issues I was perceived from the children's perspective as a traffic law enforcement officer. This conception of me by the children had some influence on their answers.

In the participatory activities, the drawings and writing of road safety messages there was such a strong enthusiasm among the children that I allowed two classes to take part but only selected ten as projects in each class. The selection was based on the quality of the project and the rich content in it. The rich data gleaned from the participatory activities enriched the study immensely and helped in solving the intellectual puzzle.

My relation to the other professionals in the school was to work with the teachers cooperatively. I spent some time interacting with the teachers who were to take part in the study explaining to them the theoretical background to the study and the aim of the study. This gave me the opportunity to reassure them of the confidentiality of the study and how their inputs were to be used (see Hedegaard, 2008, p. 206; Mason, 2002).

In a more structured way my role also included the compiling and administering of the interview schedules with the research participants. One-on-one individual interviews were conducted with all the research participants. Non-participants observations were carried out in the real natural setting. An inductive data analysis was used in this case study which was informed by the patterns, categories and themes that emerged from the data (see Braun & Clarke, 2006). The multiple methods used in the data collection were meant to enhance the trustworthiness of the findings and results of the study.

Children's rights are acknowledged by the UN Convention on the Rights of the Child (Stake, 1995). In view of this I took great care when dealing with the children who took part in the study to ensure that I did not violate their rights in any way (Bayden & Ennew, n.d.). Permission was sought from parents for their children to take part in the study. I was guided by Seaman (1987) who points out that the first right of human subjects is not be harmed physically, psychologically, or emotionally. Other rights include self-determination, privacy, confidentiality, the right to maintain self-respect, the

right to refuse to participate in research or to withdraw from participation without any penalty, and the right to services.

The children participated with informed consent as their parents were provided with the full explanation of the following: The purpose of the project and its general value; All procedures used in the study, with reasons; The children's part in the study; How privacy, confidentiality, and anonymity would be guarded and the manner in which data would be used.

I engaged the children's parents as children fall within a group of vulnerable subjects and they have to be protected. My goal was to develop a fair, clear, and explicit agreement with the children's parents so that the participation of the children became voluntary, and they participated knowingly and intelligently (Heppner *et al.,* 1992, p. 90).

4.4.6 Dealing with ethical questions or considerations

The required ethical considerations for a qualitative research design were adhered to. Permission was sought from all participants and their participation in the study was voluntary. When taking pictures of a class or children permission was sought from teachers. The consent to take part in the study was given in writing. Even when using photographs care was taken to ensure that the pictures were not used to damage the reputation of the participants but for the good course of the study (see Olivier, Wood & de Lange, 2007, p. 19). When pictures were taken during the non-participatory observations, care was taken to ensure that they were used in such a way that they did not compromise the dignity of the participants or people observed. I also worked within the ethical framework required by the University of Pretoria.

4.5   Data collection instruments

The qualitative phases of data collection are interactive research processes that occur in overlapping cycles. A variety of data collection instruments were used as qualitative research encompasses multiple data collection technique (Field & Morse, 1985, p. 65).

Observations, visual methods, drawings and writings and interviews were used in the study. The instruments were chosen for their relevance to the study. They are appropriate to the age of the participants in providing rich information for the study.

I was mindful of the fact that the quality of the research project relies heavily on two skills of the researcher. First is the researcher's ability to obtain information, using both interview and observation methods. Second, perseverance and sensitivity are critical in order to elicit information from the data during the process of analysis (Braun & Clarke, 2006). In the following section I discuss the different instruments. In Table 4.5 all the methods and instruments that were used for the data collection process are described. The table also indicates the type of methods that were used and how the data was captured.

Table 4.1   Instruments used to collect data and the capture of the data

Method of data collection	Type	Instruments assisting data collection	Prompt	Data capturing method: Textual data
Observation	Non-participant observation	Researcher observations	None	Photos from a digital camera; Researcher field notes
Interviews	Individual interviews	Interview schedule with questions	Reassurance that they should feel free to contribute	Tape recorder; Researcher field notes
Interview schedule	Open-ended	Interview schedule	Teachers asked to provide as much information as they could and where they felt they still had more to say, to supplement orally rather than in written form	Questionnaire; Transcription of discussions; Note-taking
Participatory data collection		Drawings	Children given a task to draw the Moloto road with all the aspects that they would like to see on the road to ensure safety	The drawings were submitted to the researcher. All children taking part were given old year planners to draw on

Method of data collection	Type	Instruments assisting data collection	Prompt	Data capturing method: Textual data
		Writing of road safety messages	Children given a task to write road safety messages on A4 sheets or any other piece of paper	Written messages on pieces of paper
Visual images		Pictures	Pictures were taken from the road environment and on the school campus and in the classroom	Pictures were taken during the observations

4.5.1 Observation

Observation, according to Nisbet (in Bell, 1999, p. 156) is not an easy option as it takes practice to get the most out of this technique. However, once mastered, it can often reveal characteristics of groups or individuals that would have been impossible to discover by other means. The observational method relies on the researcher's seeing and hearing things and recording these observations as field notes, rather than relying on subjects' self-reported responses to questions or statements (McMillan & Schumacher, 2001). Qualitative field observations are detailed descriptive recordings as field notes of events, people, actions, and objects in settings (ibid.). In this study I observed the school surroundings to see whether they had JTTC, and the general conduct of children when using the road especially in the mornings and afternoons during peak traffic. The idea was to observe how competent the children were when using the road and to check the road safety skills that they employed when using the roads. The sites for the observations were along the Moloto road and on the roads in the village.

Commenting about the efficacy of observation as a data collection technique, Livesey (n.d., p. 2) says the argument here is that by observing people we can get an insight into the way people actually behave (rather than simply taking it on trust that what people tell us is "the truth" as they believe or remember it). Observation, therefore, gives the researcher a more valid picture of reality.

Non-participant observations were used. Non-participant observation is very effective in the sense that it adds a new dimension to the research process, through the ability to "see for yourself" the behaviour that people describe in an interview or questionnaire. A diary was used for all the data recording (ibid.; Field & Morse, 1985, p. 76-77; Heppner *et al.*, 1992, p. 264).

The advantage of this method was that the presence of the researcher did not influence the behaviour of the people being observed. Pictures and field notes were taken without the people being observed being aware of the process. In an observation process, someone is observing and there is something to observe. Treece and Treece (1986, p. 332-333) list the following as some of the advantages of the observation technique as a method of collecting data:

- It is an important technique for observing human behaviour;

- It is relatively inexpensive;

- All subjects are potential respondents. The researcher does not depend on the respondents for answers;

- Subjects are usually available;

- It is ideal for using tape recorders and cameras;

- It is very simple to develop;

- It gives the researcher the opportunity to view the situation at first hand;

- It can be begun and stopped at any time;

- Events are recorded as they happen;

- It can be recorded by any person other than the researcher.

The technique assisted me to observe the children in a situation where they would behave as children without the interference of adults (Cosby, 1989, p. 48). The people in the community became participants in the real setting. I was able to take pictures as I saw fit and select as many scenes as I could without the children being aware of it. My observation was therefore neutral; it did not influence the children as they were not aware of the activity.

I personally controlled the process of observation from beginning to end. I observed the situation at first hand. I chose areas that were critical for me for observing the extent of the road safety skills of the children. The observation took place for a period of two weeks. The first week was dedicated to observation only. I observed both the children and other community members in their use of the roads in the Moloto area particularly in their use of the roads in the village and the Busy Moloto road. I observed children in the morning when they were going to school and after school when they were going home. As I used the non-participatory approach the people were not aware that they were being observed. I used a digital camera to capture data or events observed and also wrote notes to document my observations. During the observation I was mindful of the ethical considerations pertaining to observations and ensured that whatever I captured did not compromise the safety and dignity of the participants. In all my observations I ensured that the participants were not aware of my presence as this would have compromised my data gathering process.

4.5.2 The use of visual tools and methods

Galvaan (2007, p. 153) points out that visual images present a powerful collection of techniques to assess and gain insight into people's lives and environments. My study lent itself to the use of photography in data collection as I had to observe people or child participants using the road in a real situation the way they would use it in their daily lives. This offered me the real representations of child and adults as they use the road in their everyday life compared to their experiences on their road use behaviour (see Rose, 2007, p. 2). In this regard Ebersöhn and Eloff (2007, p. 203) state that photographs offer the distinctive quality of visually affording the researcher a perspective of a phenomenon often vastly differing from and enriching written and verbal accounts. Ebersöhn and Eloff (2007. p. 203) add that "differing" or different and diverse accounts, perspectives and views therefore enrich and substantiate a study's evidence base (see also Tambo, 2010). The power of visual images helps to form a concrete image in the mind of the reader and to come to a holistic understanding of the phenomenon under study (see Mail & Guardian, 2010, p. 4; Gqola, 2010).

My use of photography or pictures was influenced also by the nature of my work as a road safety practitioner and educator where we are required to capture accident scenes through photography for future reference or to use as evidence for documentation and police purposes. The power of pictures in qualitative research cannot be overemphasised. The researcher cannot take from or add to a visual image but can only offer an interpretation. Mixing methods and using visual methodologies like photographs is a way of widening the empirical focus of a research project (see Rose, 2007.p.2000). In post-modern societies characterised by the proliferation of visual technologies like film, cameras, movies, TV programmes, and newspaper pictures, the construction of the reality that we see is based on pictures. Jenkins (1995, pp. 1-2) quoted in Rose (2007, p. 3) concludes that "the modern world is very much a 'seen' phenomenon". Thus, seeing is believing! The use of photography as a data collection tool lends itself to a social research design as I already indicated as it deals with human realities (Ebersöhn & Eloff, 2007, p. 204; Rose, 2007, p. 3; Olivier, Wood & De Lange, 2009, p. 14).

4.5.3 Advantages of using photography

Photo voice or the use of photography is becoming a popular qualitative tool for data collection (Olivier, Wood & De Lange, 2007, p. 15-16; De Lange, Mitchell & Stuart, 2007. pp. 1-5; Rose, 2007, p. 3-5). A picture does not lie (see Mail & Guardian, 2010, p 4). There is no other method of depicting reality than a photograph (Ebersöhn & Eloff, 2007). From an academic and research perspective it demonstrates that the researcher was at the site of the action and has actually observed the phenomenon under study. Photography as data collection methods enables the researcher to use the camera magic to capture the reality as it unfolded in a natural setting. This opportunity therefore provides the researcher with some kind of lived experience as he experienced the reality unfolding first hand. The product of this process i.e the picture or photo offers the researcher a sense of security and control of the data as the photos or pictures could be there for posterity.

Observing and taking pictures of a scene or an event unfolding with the research participants while using the road as the normally would drew me as a road safety practitioner emotionally into the private spaces of the research participants. This data

collection method made it possible for me to capture the setting of the study – a rural environment bereft of resources. The pictures provided the evidence and the trail of this setting without my having to describe it secondhand. The evidence and background setting is there for everybody to see. The rurality of the setting is depicted on the photographs.

The significance of the use of photography for this study was the unintrusive nature of the way the photographs were taken. The non-participant observation method was used. As discussed in section 4.4.2 the research participants were not aware that they were under observation and photographed. As a result, the authenticity of the photograph and the data it provides is beyond reproach. It cannot be doubted. Photographs are used in the study as part of the audit trail – documenting and illustrating the research process for the study.

The choice of the methodology was also influenced by the fact that in South Africa, by and large, the university is an urban institution and the use of photography made it possible for me to bring the rural setting of the case study to my supervisor so that she could have a holistic picture of the site of the case study. This might have helped her to navigate through the data analysis process with an appreciation of the setting of the case study. In short, photography made it possible for me to bring a rural reality to an urban setting (see Ebersöhn & Eloff, 2007, p. 216). In conclusion, the inclusion of photographs in my study apart from intensifying the academic rigour of the study made it possible for me to facilitate the understanding of the study by any reader of the field of road safety which might not be their field of expertise. Prinsloo (2007, p. 128) cites an aspect that is critical to this study and road safety by indicating that visual methods as a research tool can provide the opportunity to go beyond just answering the research puzzle to include a process of intervention to improve the situation revealed by the research (see also Moletsane & Mitchell, 2007, p. 132). Above all, photographs can be used as the framework and the basis for policy formulation with a view to social change, as Pithouse and Mitchell (2007, p. 141) point out (see Galvaan, 2007.p. 152).

4.5.4 Disadvantages of photography as a data collection method

The use of photography as a data gathering method presented ethical challenges or dilemmas for me as the researcher as the power relations were stacked in my favour. However, as I used the non-participatory observation I mitigated the situation by the fact that the participants were not aware that they were being observed and photographed. I did the observation, photographing and note taking in the car which I ensured was parked at a distance. I ensured that my presence was never felt or observed, to prevent people from realising that there was an intruder or feeling that their privacy was invaded.

The difficulty of analysing photographic data is that one photo could present different categories thus lending itself to different interpretations (see Tambo, 2010, p. 20; Gqola, 2010, p. 10). This leads to the temptation to use one photograph more than once for different categories. The risk of being immersed in the unfolding scenario or phenomenon is high. Too many pictures present both advantages and disadvantages: the dilemma being which picture is most appropriate and which one is not.

4.5.5   The use of participatory methods

In order to ensure that I obtained rich data and improved the validity and reliability of the data, other instruments were used to complement the observation and the interviews. A diversity of data sources is preferred in qualitative research to increase the validity of the data (Treece & Treece, 1986, p. 370; McMillan & Schumacher, 2002, p. 185). I used drawings from the children and written messages. With regard to the drawings, children were requested to draw or design the Moloto road in the way they would like to see it. The purpose of this participatory data collection task was to see what road safety features the children would include in the road design to ensure the safety of pedestrians and other road users. However, the focus was on pedestrians as the children were mostly pedestrians.

Drawings were used in this study as a data gathering tool. The rationale was to attempt to give the child participants a voice or tool to provide a visual representation of an ideal road with the necessary road safety infrastructure or furniture which would be safe for them to use as pedestrians. For this study the participatory methods are critical in the

sense that the research is child-centred and the focus is on the children. Their voice has to be heard rather than other people either as parents or guardians speaking for them. The bulk of the data used has to come from children. I was influenced by the imperative that the knowledge that emerged from the study had to be produced by the children themselves. In this regard I was influenced by Oliver, Wood and de Lange (I2007, p. 15) who assert that participatory methods like the drawing exercise used in this study facilitate the process of knowledge production as opposed to knowledge gathering as is the case with other methods like interviews or surveys. Data gathered through participatory methods is first-hand data which enhances the trustworthiness of the study and the findings.

The rural setting also influenced the choice of this method of using drawings. Barnes and Kelly (2007, p. 221) point out that the use of this technique within the visual methodologies is economical, requiring minimal supplies and it is highly generative in nature. In this case study I only supplied the children with old year planners that were lying unused at my place of employment. As indicated above the rationale for the use of the drawings was to give the rural child participants an opportunity to conceptualise an ideal Moloto road instead of the dangerous road actually passing through the village. The purpose was to encourage what Walker (2001) quoted in Barnes and Kelly (2007, p. 222) calls free imagination. The brief for the child participants was: "To draw the Moloto road as they would like to see it".

In the context of the study the participatory drawing exercise was meant to provide the researcher with a window on how the child participants saw themselves in their respective rural spaces characterised by the inherent danger on the roads and their hopes for safer roads (see Barnes & Kelly, 2007. p. 223). The drawings from the child participants validated the data from the interviews and provided insights into unexplored areas during the interviews (see Stuart, 2007.p.229). On the part of child participants this data collection method gave the child participants control over what they wanted to say. Still in this participatory activity child participants were asked to write a short description of their drawings. The purpose was to ensure that chances of

misinterpretation were minimised during the interpretation and analysis of the drawings or visual images.

The advantages of this method in the context of the study was that it gave the child participants an opportunity to focus on their experiences and their exposure to danger on the roads, and to express their feelings and attitudes towards road safety education. This method provided a platform for child-centred assessment of the roads in the Moloto village. For child participants who were dealing with an outsider this method is unthreatening; they could do the drawing in their own time and space without any pressure. Besides, it is fun for the child participants to find an opportunity to draw. It was taken into account that the children would draw generalised pictures, but this was intended because I wanted as much information as possible (see Toomela, 2006; Gobo, 2005).

Another instrument I used to assess the children's repertoire of road safety messages was to request them to write a list of road safety messages as part of participatory data collection. Each participant was encouraged to work alone, but working in pairs was not discouraged. This activity assisted me in evaluating the extent to which the children were receiving road safety messages from outside the school, from the mass media – either radio or television. This also assisted in analysing the patterns that emerged from the common messages that the children provided. Table 4.6 illustrates the instruments used in data collection, their limitations and how they enriched validity. These messages were juxtaposed with the drawings to see if patterns emerge. Just like the drawing method this method (Writing messages) allowed the child participants to express themselves in the comfort of their own spaces without any pressure from the researcher. I gave each one half an A4 page to write road safety messages that they regarded as important to them.

4.6   Interviews

Monash (2004, p. 1) defines an interview as a method where on a one-on-one basis, the researcher attempts to collect data from the interviewee using open questions, semi-structured questions or structured questions (or a combination of all three).The

interview is focused upon the interviewee in the sense that the interviewer's own views on the topic are not particularly important. The views, knowledge and other input of the interviewee comprise the primary data for the research.

The interview was used as one of the data collection techniques in this study. It was preferred because of its potential to enable the researcher to source relevant information and to enhance the study's chances of attaining its set objectives. The flaws of interviewing as a data collection technique are outweighed by its advantages. It permits the researcher to follow up leads and thus obtain more data and greater clarity. The interview situation usually permits much greater depth than the other methods of collecting data (Borg & Gall, 1989, p. 446). The interview was used to complement observation, the other data collection techniques used in the study. Individual or one-on-one interviews were conducted. The interview schedules are provided as Appendix B.

The semi-structured interview is an interview whereby the focus of the interview is decided by the researcher and there may be particular areas that the researcher is interested in exploring. This technique uses both closed and open-ended questions. The basic objective of a semi-structured or focused interview, therefore, is to understand the respondent's point of view – how and why they do things for example – rather than to make generalisations about people's behaviour (although this may be possible). As such it is a technique that involves the extensive use of open-ended questions, some of which are suggested by the researcher and some of which arise quite naturally during the course of the interview (Livesey, n.d., p. 2). The interview enables the researcher to gain explanations and information on material that is not directly accessible, such as perceptions, attitudes and values, which are difficult to obtain by alternative methods Heppner *et al.,* 1992).

Semi-structured interviews were conducted with the research participants in order to get their perceptions, opinions, and attitudes regarding the teaching of road safety in schools and communities. For the purposes of this study, the semi-structured technique was preferred and appropriate, because questions are normally specified, but the interviewer nevertheless has more freedom to probe beyond the answers in a manner which would appear prejudicial to the aims of standardisation and comparability.

Information about age, sex, occupation, type of household, and so on can be asked in a standardised format. Qualitative information about the topic can then be recorded by the interviewer who can seek both clarification of and elaboration on the answers given. This provides the interviewer with greater latitude for probing beyond the answers and entering into a dialogue with the interviewee (May, 1993, p. 111; Bell, 1999, pp. 135-143; Robson, 1993, pp. 227-242).

A semi-structured interview contains both open and closed questions. I used this form of interview with the child participants. The semi-structured interview allowed me to ask a few specific questions but beyond that I was free to probe as I saw fit, guided by the responses from the participants (Treece & Treece, 1986, p. 300). I recorded the responses and took notes where necessary. Working with both transcriptions and notes ensures that nothing has been missed.

Unstructured or in-depth interviews (also called the open-ended interview) were conducted with parents and teachers in this study because this method provides qualitative depth by allowing interviewees to talk about the subject in terms of their own frames of reference (ibid., p. 113). This technique distinguishes itself from the semi-structured interview in the sense that the interviewer works from a list of general topics but has greater freedom to explore areas of interest. It permits full exploration of ideas and beliefs, and is therefore a more valid account of social life.

I used this form of interview as I was exploring new territory or information with the parents. The advantage of this form of interviewing is that as the process of exploration develops, the interview may be directed by the informant's responses into previously unanticipated areas (Field & Morse, 1985, p. 65). I had a set of questions that guided the interviews with the parents but if new information emerged I pursued it to get more clarity and a clear perspective. I recorded the responses using a tape recorder and also took notes. This was helpful as most parents could not write beyond their names and surnames and it enabled me to get data that helped me in understanding the factors facing children in learning road safety skills and the role of their parents in this process.

Ten interviews were done with ten child participants. This was followed by ten interviews with the parents of the child participants. These were all one-on-one individual interviews. Two teachers who teach LO which encompasses the road safety competencies were also interviewed.

The interviews with the child participants and the teachers were conducted in my car parked on the premises of the school. This was done to avoid distractions and the background noise which was interfering with the recording of the interviews. I would call them one after the other when each had finished with the interviews. This ensured that there was minimum disruption of the school programme. The use of the car was because there was no spare room that could be used for the interviews. In the primary school all the classes were occupied. The school premises were being used by high school students and the new primary school was being built to relocate the Moloto primary school. The administration block of the Moloto primary school and 80% of the classes were allocated to the secondary school which was relocating from their terrapin premises. I therefore had to use the car as there was no room to be allocated to me. When I initially went to seek permission it was still the primary school and there was a spare room in the administration block and I was allocated the room that I was to use. When I went to do the actual research, the situation had changed and became more challenging. Hence I had to use my car.

The lower grades had relocated to the new primary school premises but what I observed was that the teachers who were still at the old school which has been allocated to the secondary school were not happy because their offices were occupied by the teachers from the secondary school. This meant that they were using the classes as offices as well. The new arrangement inconvenienced the primary school teachers as there was an acute shortage of space and the classes had large numbers of children. On overage each class had sixty children. I assured my facilitating teacher and the principal that I would use my car for the interviews.

The use of the car was a challenge for me as I also had to write notes and it was no convenient to write notes in the car. But I had to make do. With the interview with the parents I went to their houses and some were selling food at the school gates along the

street. The challenge here was that there were no chairs for me particularly from parents who were hawkers near the schools. I would sit in the wheelbarrows which they used to cart the food articles that they were selling mainly to the school children. All the logistical problems notwithstanding the parents respected me. I think this was due to the fact that I dressed like the teachers as I was to work from the school. Their construction and perception of me was that I was a very "important person from government". My explanation of my background and the purpose of what I was doing underpinned their construction of me as an "important person from government".

The children's interview schedule consisted of four sections, A to D. Section A sought biographical information of the child participants. Section B sought information about the inputs that child participants received at home from parents regarding. Section C sought to establish the road safety competencies that the child participants were receiving form the school environment. Section D focused on what road safety inputs the child participants were receiving from the broader community.

The interview schedule for parents focused on the role that they played in the RSE of their children. It also sought to establish their parents' views and attitude to RSE particularly as it pertained to their children. The teacher interview schedule on the other hand focused on establishing their experience and competence in teaching road safety competences as outlined in the curriculum, the teaching aids they needed to teach the road safety competencies effectively and the used they were using in teaching RSE (see Appendix B).

The teachers completed the questionnaires in English, and while they were doing so, I conducted interviews with them. My presence enabled them to ask me for clarification of questions and in turn I asked them questions about the answers they provided. This strategy had advantages. The teachers could ask me not only what they did not understand but also ask follow-up questions. I recorded the discussions I had with them. The recordings were characterised by long pauses, as where they understood the questions they would write in silence.

I was well aware of the strengths and weaknesses of the various instruments used, which is why I used various instruments to complement or triangulate the data. To maximise data from the participants the interview schedules consisted of both closed and open questions (see Bayat, 2007, p. 89). In my attempt to gather rich data I addressed the limitations of each instrument to increase its validity.

Table 4.2   Instruments used to collect data, limitations of each instrument and the enhancement of the validity of the study

Instrument assisting data collection	Limitation	Enhancement of validity
Observation	Children do not necessarily behave in a predictable way. It requires a great amount of patience from the researcher.	It happened in the actual setting and children were not aware of the process. The data captured was authentic.
Interviews	Participants get carried away telling the researcher what they think he wants to hear. Participants want to show how much they know about the subject, not necessarily responding to the question.	It gave me the opportunity to control the process and direct the interview by constructing the interview schedule.
Questionnaire	Misunderstanding the questions occurred frequently without the respondents making the researcher aware.	The questionnaire enabled me to follow up where information was scanty as a result of misunderstanding the question and to offer clarity where the respondents were not sure.
Drawings	There is always a danger of misinterpreting the message of a picture.	It provided the opportunity for me to assess the understanding of road safety among children, what they wanted for improving the safety of pedestrians; the road safety features that they want on the Moloto road to improve safety along the road.
Road safety messages	They might have memorised the road safety messages without understanding and internalisation of the meaning thereof.	It offered the opportunity to evaluate their knowledge of road safety – what they knew and what not.

4.7   Data analysis

Data analysis in this study is based on a descriptive framework. Possible answers to research questions were organised, selected, described, analysed and interpreted (Robson, 1993, p. 378). Maykut and Morehouse (1994, p. 121) point out that the process of qualitative data analysis takes many forms, but is fundamentally a non-mathematical analytical procedure that involves examining of people's words and actions. Qualitative research findings are inductively derived from this data. The idea is to understand more about a phenomenon under study. Writers like Belenky (quoted by Maykut & Morehouse, 1994, p. 122) refer to this approach as "interpretative-descriptive" (McMillan & Schumacher, 2001, p. 463).

In order to understand the participants' actions the use of observation, visual images, participatory methods and interviews in data collection were key in this research study. Photographs have the power to provide an element of trustworthiness and reliability. For this research study photographs were used as a medium to provide the rural setting of the site of the case study. In analysing the photographs the method I used was informed by my perspective of children as active participants in meaning making or the construction of reality and as opposed to a perspective that sees children as passive souls who have to be protected and guarded (Fraser *et al.*, 2004. p. 85; Olivier, Wood & De Lange, 2009, p. 14). To understand the meaning and realities depicted by the photographs I move from the premise that no picture stands in isolation (Prinsloo, 2007, p. 121-122). A holistic approach informed by the context, setting and culture was the framework for the analysis of the photographs. The pictures used in this study serve as a societal commentary and serve as a window to the cultural practices of the community they come from (see Moletsane & Mitchell, 2007, p. 131).

The repertoire of photographs taken during the two-week observation period was grouped according to category of children or adults. Once this has been done all photographs were evaluated in relation to the intellectual puzzle. They had to answer the question: How is the action depicted helping to solve the intellectual puzzle? i.e., how is the photograph showing the response of children to road safety programmes? These visual representations were then categorised according to the themes that

emerged from the other data collection methods (Braun & Clarke, 2006). The most relevant photographs were used. The visual images were used as both the primary data and additional data to triangulate the textual data in order to enhance the academic rigour (Galvaan, 2007, p. 153). Although the photographs are an important part of the study their position in the study was to support and triangulate the textual data.

The photographs were analysed using the inductive analysis in that there were evaluated and pigeonholed to the themes that they were relevant to emanating from the textual data. This was done in line with the way there were helping to solve the research question or the intellectual puzzle. Although the child participants were not involved in the analysis of the visual images I moved from the premise that acknowledged the children's significant contributions as social and cultural actors.

When interpreting the photographs the object was not to make a moral judgement but to find reasons that could be behind the behaviour of the child participant and parents within the setting. To the study this was critical because I had to find out whether the environment or setting accounted for the behaviour of the participants or not. Photographs were chosen on the rich data they provided and their representativity (see Moletsane & Mitchell, 2007, p. 133).The triangulation of the data analysis was also strengthened by the use of the participatory methods like the use of photographs.

In order to give child participants a voice, the participatory methods used were the drawings and the road safety messages by the child participants. The strength of these participatory methods is that they are not threatening and child participants can work at their own pace. The drawings as a participatory method gave the child participants free imagination and creativity. For the research it served as a window into the mind of the child participants. I was able to analyse the child participants' thinking regarding road safety using their drawings. The analysis of the drawings was based on the content or information they contained in relation to answering the research question. The first step in the analysis was to assess the drawing for information relevant to the research question. The drawings were then categorised and coded and then described to look at similarities. From the descriptive data from the drawings themes developed and were discussed in relation to how they help in understanding the intellectual puzzle (see

Rose, 2007, p. 61-64). Rather than follow a particular approach to visual analysis a holistic approach was followed were any bit of information was considered in analysing the drawings. To enhance understanding and minimise subjectivity the descriptive notes attached to the pictures were also considered and formed part of the analysis (See Rose, 2007, p. 141; Olivier, Wood & De Lange, 2009, pp. 15-16). In this approach I was inspired by Berger (1972) quoted in Rose (2007, p. 8) who calls this holistic visual assessment as ways of seeing, referring to the fact that "we never look just at one thing; we are always looking at the relation between things". In interpreting the drawings I was mindful that one picture could be interpreted from different perspectives (see Prinsloo, 2007; Rose, 2007, p. 7). As a result, I used the framework below to guide the analysis of the drawings.

Framework used to guide the analysis of the drawings.

What messages are depicted on the drawing?
What is the significance of the messages depicted in relation to the research question?
What motivated the child to draw this picture?
Why are the messages depicted on the drawing so important to the child?
Are there similar messages depicted in the other drawings?

Once a narrative has been developed from this framework I highlighted the themes that emerged and proceeded to do the thematic analysis in Chapter 5. Using the constant comparison approach the drawings were juxtaposed and compared with the other visual medium; the photographs. This yielded rich data which could not have been obtained using any other method. These visual data was then used to analyse and strengthen the thematic narrative discussed in Chapter 5. The drawings and the photographs were analysed to illustrate the themes discussed.

The other participatory technique used was the writing of road safety messages. This was used to assess the road safety messages that child participants know and their thinking about RSE. In the choice of the participatory activity of child participants drawing road safety messages I was influenced by the constructivist approach where

participants actively construct their own knowledge of road safety (see Lesley, Wood & De Lange, 2007, p. 15). The object was to give the child participants an opportunity to create road safety messages from their own perspective. Intellectually this offered me an opportunity to assess the programmes that had influence on the child participants as most messages came from the Department of Transport's road safety programme called *Arrive Alive* through mass media like Radio TV and the print media.

The messages were transcribed on an A5 sheet of paper according to categories. On the second level the narratives that emerged were explored further to look at common occurrences and emerging patterns in the messages. The third level was to contextualise the messages in relation to the study by arranging the narratives according to the themes that emerged. The children's road safety messages were used unedited in the study in Chapter 5 to maintain their originality and immediacy. As this is a qualitative research the use of the messages in their original form contributed to enhance the reliability and validity of the study (Olivier, Wood & De Lange, 2007. p. 19; Braun & Clarke, 2006.).The road safety messages were then used as part of the narrative in the study to argue evidentially, interpretively or narratively, evocatively and reflexively (see Mason, 2002, pp. 176-177). Common messages were categorised to identify the core concepts and to see the patterns that emerged. In the analysis the messages are discussed unedited to retain their originality and authenticity. Although the child participants use English as a second language they wrote most of their messages in English. In some instances the messages might have been translated in brackets for clarity. In the study the messages are used to present an argument for the themes that are discussed. They form part of the triangulation of the data collected. While the visual data provided an opportunity to understand the actions of the participant the written messages provided an opportunity to understand the words of the child participants.

The constant comparative method of categorising and coding data was used in this study in order to develop a set of categories that will provide a reasonable reconstruction of the data collected (Lincoln & Guba, 1985, p. 347). The prepositional rule approach was used to cluster the coded information that fell within one theme.

I followed the immersion/crystallisation style which collapses segmenting, categorising and pattern seeking into an extensive period of intuition-rich immersion within data. This entailed questioning and analysing the data for subtle nuances of meanings and patterns in the data. By and large, because the study was a qualitative study, I leaned towards the interpretivist method of analysing the data (McMillan & Schumacher, 2001, p. 263). In organising and analysing the data I needed to answer the question of what count as data or evidence in relation to my research question. In other words, I used the data that helped me answer my research question (see Mason, 2002, p. 148). In the process of data analysis the data collected through interviews and the participatory methods and the photographs were analysed.

4.8   Validity and reliability

Validity refers to the degree to which the explanations of phenomena match the realities of the world. It includes both internal (causal) and external (generalisability) inferences and issues of objectivity and reliability. The validity of qualitative designs is the degree to which the interpretations and concepts have mutual meaning between the participants and the researcher (McMillan & Schumacher, 2001, p. 407; Stake, 1995, p. 107-109).

The triangulation of the methods that I used to collect data like interviews and observations enhanced the validity, trustworthiness and reliability of the findings in this study. I used a variety of methods and instruments to broaden the data capturing process which provide "thick" data. The observation was unobtrusive and provided an authentic data set in an actual setting, where the children where captured on camera. In qualitative research, the protocols followed to improve the validity of data are called triangulation.

This aspect of data triangulation was informed by the observation of children at different times of the day, when going to school or after school. I also observed them during non-school days to see whether they would behave in the same way even when they were not in a hurry on their way to school or from school. The idea was to improve the credence of my data gathered when observing the children under different

circumstances. Another protocol I followed to improve the credibility of my data was methodological triangulation. I compared data gathered from the observation with data obtained from teachers, parents and children to determine whether there were similar observations or whether their observations corroborated what I observed. This is also called investigator triangulation (Stake, 1995, p. 113). I used it to confirm whether the teachers as investigators had observed aspects similar to what I observed.

In addition, the limitations of this study are clearly detailed to indicate what I was able to do. Glesne and Peshkin (1992, p. 147) assert that continual alertness to your own biases, your own subjectivity, assists in producing more trustworthy interpretations.

In qualitative research the validity and reliability involves conducting the study in a highly ethical manner. The research in this study adhered to the ethical requirements as stipulated and required by the University of Pretoria (2009). Although qualitative research is not meant for generalisation, valid and reliable findings can help "assess local events accurately, to improve short-run control", provide perspective rather than truth, empirical assessment of local decision makers' theories of action rather than generation and verification of universal theories, and context-bound extrapolations rather than generalisations (Cronbach quoted in Merriam, 1998; Patton, 1990, p. 491).

In a quest to improve the validity and reliability of the results triangulation was used in a form of different methods for data collection i.e observations, visual images, participatory methods and interviews when comparing the findings of each. The purpose was also to use the different methods to complement each other. The combination of both participatory methods and interviews ensured that rich data was obtained during the data collection. The use of multi-method was informed by the understanding that multiple strategies yield different insights about the topic under study and increase the credibility of the findings (McMillan & Schumacher, 2001, p. 408). Although multiple methods were used for data collection the in-depth interviews were the central method while the participatory methods were complementing the interviews.

The interview schedules used in the study are attached as part of the audit trail in the addendum. Chapter 5 discuses the data and provides the evidence of the data collected

as part of the audit trail. The drawings, the photographs are used to support the thematic narratives. The written road safety messages have been typed but retained in their original form to maintain their authenticity and trustworthiness.

Multiple data sources were used. Child participants were used as key source of data as the focus of the study is on child participants. However, in order to get a rich data to help in the answering of the research data parents and teachers were used as secondary sources of data. The research question was then answered from data sourced from three perspectives.

The study employed the interpretative design that followed a hermeneutic cycle whereby what was learned in the field was based on what was already known to a certain extent as a result of the literature review as analysed in Chapters 2 and 3 and the experience of the researcher in the field of RSE, since 2002.

4.9   Ethical considerations

Research ethics requires that willing unpressured consent should be sought before research commences (Alderson, 2004, p. 97). Ethical guidelines in research cover aspects such as informed consent, deception, confidentiality, anonymity, harm to subjects and privacy (McMillan & Schumacher, 2001, pp. 420-421). Cassell and Jacobs (quoted by Glesne & Peshkin, 1992, p. 110) observe that a code is concerned with aspirations as well as avoidance. It represents our desire and attempt to respect the rights of others, fulfil obligations, avoid harm and augment benefits to those we interact with. Punch (1986) puts it aptly when he says research codes of ethics address individual rights to dignity, privacy, and confidentiality, and avoidance of harm.

Treece and Treece (1986, p. 128) have classified research procedures into five categories looking at the effect of participants. They are: no effect, temporary discomfort, unusual levels of temporary discomfort, risk of permanent damage and certainty of permanent damage.

My study fell under the no effect category (see documentation in Appendix B). In this category there is neither positive nor negative effect on the participants. The approach I

used with these children was that I took them as human beings with rights that are accorded to every human being. I did not treat or regard them as "human becomings" (Boyden & Ennew, n.d., p. 36; Cosby, 1989, pp. 187-189). As the study is a participatory research I was mindful of finding ways that would enable expression of children's ideas and perceptions, for instance by using an interview with the children so that they could express themselves in their own languages without hindrance. I considered the power relations between me and them by assuring them that they should feel free and behave as in any normal situation.

In pursued of the principle of 'good' research this study was underpinned by the following ethical frameworks: the principles of respect and justice concerning doing 'good' research because it is the right, correct thing to do, such as respecting children as sensitive dignified human beings and trying to be fair and considerate. Rights based research involves respecting the rights of children. Participation rights that are vital during ethical research include children being well informed and having their own views being respected and listened to by the researcher (Robinson & Kellet, 2004,pp.81-85;Pattman & Kehily, 2004, p.134. In rights based research the researcher listens to children and their views on what is 'good' research rather than relying wholly on adults' principles and values. Lastly, best outcomes ethics means working out how to avoid or reduce harm and to promote benefits (see Alderson, 2004, p. 98). In this study I strove not to embarrass, harm or prejudice the participants in any way.

4.10 Expected limitations of the study

Road safety has been included as part of the mainstream curriculum according to the National Curriculum Statement (Department of Education, 2002). The capacity of teachers to teach road safety competencies at the primary school level might be hampering the teaching of these competencies. One limitation of a case study is that the single case selected might not be representative for the whole of South African schools. Generalisations made from a single case study may also be questioned (Treece & Treece, 1986, pp. 199-200). I therefore described the case in depth for possible applicability. In the literature review of Chapter 3 I did not fully study the teaching of RSE but concentrated more on the children's learning of RSE and the

teachers' response to their own teaching. Another limitation was that I became involved with the participants so it became difficult to remain objective.

The low level of literacy amongst the parents in the study posed an inhibiting factor in getting rich and relevant data. People who had been identified to participate in the study were no longer available. This posed a dilemma as new participants had to be found. The lack of generalisability in a case study notwithstanding, this study gives an understanding of how RSE, including road safety skills and safe pedestrian behaviour, is taught and the response of children to such teaching.

4.11 Conclusion

In this chapter I discussed the methods and instruments that I used to collect the data and the possible limitations of these methods and instruments. I also discussed how I attempted to improve the validity and reliability of the data collected by using instruments that complement each other. The choice of the criteria used to analyse the drawings was also influenced by the need to improve the validity and reliability of the data collected through the drawings. The various methods were chosen for their suitability for the study. In Chapter 5 I discuss the data analysis and results of my exploration of the data.

CHAPTER 5. DATA ANALYSIS AND RESULTS: THE LIVED EXPERIENCES OF CHILDREN AND THEIR RESPONSE TO ROAD SAFETY EDUCATION

5.1 Introduction

In Chapter 4 I discuss the research design and the methods that I used to collect the data for this study. Chapter 4 also provided a rationale for the chosen methods and the data analysis procedures. In Chapter 5 I offer an analysis of the data collected about the experiences of children and their responses to the road safety inputs that they receive. This chapter offers an understanding and interpretation of the children's voices.

The interpretivist paradigm of the study enabled me to move from the premise that reality could be created from multiple inputs or realities, hence the various instruments used to collect the data. The purpose of this chapter is to make meaning of the data collected through various instruments and to understand the linkages and interrelatedness of the data. A variety of instruments like interviews, activities, field notes and photos were used in order to ensure that the data collected helped in answering the research questions as set out in Chapter 1. The purpose of the study is to understand the RSE phenomenon as it unfolds in the school of the case study.

I used a constructivist grounded theory analysis in the analysis of the data, which means that I moved from the specifics to more general information. This makes the approach used inductive (McMillan & Schumacher, 2001). The constructivist grounded theory analysis aligns with the distinguishing feature of qualitative data analysis, emphasising the systematic process of selecting, categorising, comparing, synthesising and interpreting data to provide explanations of the single phenomenon of the study (ibid.). Through the constructivist grounded theory analysis, concepts emerged.

In true constructivist grounded theory analysis tradition (Glaser, 2002), the concepts that emerged from the data were noted. Through the data analysis, categories of information emerged and these were grouped together according to themes. The common themes were coded and marked during the process of data analysis with different colours in order to identify the emerging patterns and themes. The themes that emerged from this process were studied with the research questions. My intention was

to understand in depth the phenomenon of RSE in the Moloto primary school (McMillan & Schumacher, 2001; Field & Morse, 1985; Seaman, 1987, p. 169; Fox & Bayat, 2007). From the responses given by children I attempted to evaluate how many road safety concepts children knew, and their applicability in a real road environment situation (Field & Morse, 1985).

5.2 Process used in the analysis of data

As indicated in Chapters 1 and 2, children suffer proportionately more pedestrian road traffic accidents than adults. In part this reflects basic skills needed in interacting with traffic, such as the ability to identify safe places to cross the road (Thomson *et al.,* 1996). Educating to remedy such deficits must be prominent in RSE.

The children who took part in the study were in the age category of 9-14 years in the Intermediate Phase. The teachers' voices were analysed as interesting ideas emerged in their interviews. The questionnaire data also helped in understanding the children's responses to the teaching of RSE in the school. Parents' interviews input were also analysed and enriched this study as their views and ideas were used in the analysis of the children's responses.

Participants' data were recorded with a tape recorder. The information was then transcribed in A4 format. This first transcription was done by way of paraphrasing the children's views in order to make sure that I understood them. Where the responses were in Sepedi, they were translated. The second phase was to transcribe the information onto larger A3 sheets to assist me in making the analysis more visual and understandable. The third phase was to colour code the participants' responses and see which categories and themes were emerging. If the same ideas or concepts were being repeated by participants, I decided on a colour and coded that specific idea with the same colour. I then categorised the ideas with the same colour in groups, to form overarching themes. Emerging themes were identified and coded with different colours. The same process was followed with all the other data collected from parents and teachers. During the analysis, a constant comparison was done with all the data

collected once all the colour coding and categorising was done, until saturation was reached regarding the themes and categories.

The themes that emerged from the three sources of data have been summarised in Figure 5.1. The process followed could be graphically demonstrated as follows:

| Data collection |
| Transcribing |
| Coding |
| Categorising |
| Memoing |
| Constant comparison |

Writing up

Presenting data
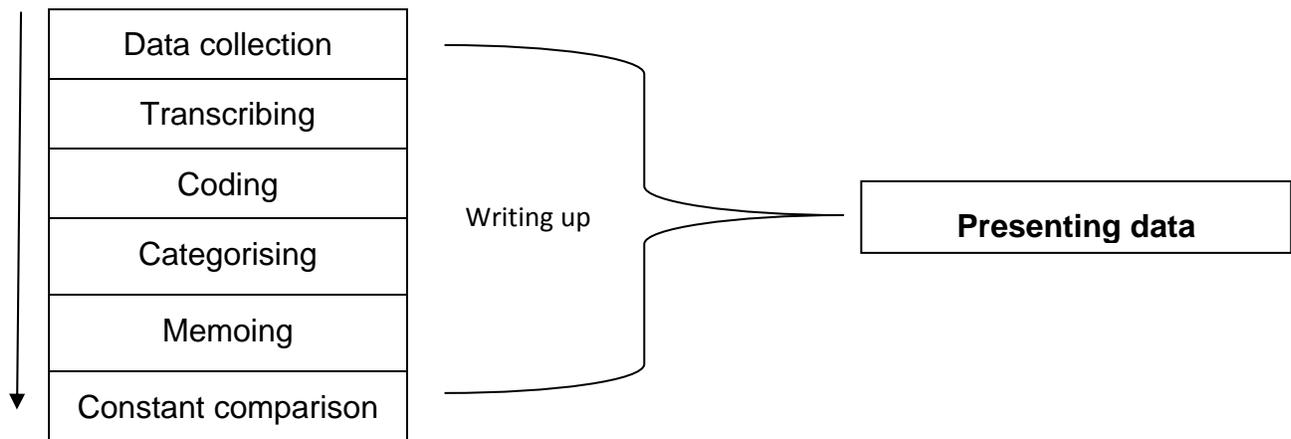
Figure 5.1   Data analysis process

The process involved writing the emerging categories from the data on 76 x 127 record cards. The constant comparison phase included the data collected through observation where photos were taken from children crossing a road to assess the relationship between practice and theory (Cozby, 1989, pp. 48-49; Treece & Treece, 1986, pp. 332-333).

The themes that emerged from these processes were summarised in Table 5.2. below. The children's data are presented in the form of tables or blocks presented and analysed to answer the research questions. The photos of children and other community members taken in the real road environment are presented as evidence to support the themes. They form part of the analysis of the data. A large number of photos were taken but only those relevant to the study have been used.

Two classes were given a drawing task in order to get rich data. Ten drawings that provided rich data for the study are used and they also form part of the analysis. Two teachers were used in the study. They took part unstructured interviews. This helped me to clarify questions they did not understand and for me to ask clarity on the issues

they were raising while answering the questions. Their voices were also recorded. Ten parents were interviewed. The interviews conducted with all participants were individual face-to-face interviews.

In terms of children's responses to RSE (RSE) the following key themes areas emerged from the data:

- Children's development of pedestrian skills;
- Children's' construction of road safety knowledge and their value of life;
- Children's being influenced by an unsafe "road environment";
- Children's attitudes to road safety.

Table 5.1   Summary of themes and categories

Themes	1. Children's development of pedestrian skills	2. Children's construction of road safety knowledge and their value of life	3. Children being influenced by the unsafe 'road environment'	4. Children's attitudes to road safety
Category of themes	Look right, look left, look right again; waiting for oncoming cars to pass before crossing	Do not leave your child alone on the road; obey the signs that tell them how to cross the road	Children walking in groups in the middle of the road	Road safety in South Africa is stay alive, arrive alive
	1.1 Road safety skills for pedestrians	**2.1 Road safety rules**	**3.1 Children's ignorance of road safety rules**	**4.1 Children's positive attitude to road safety**
		2.3 Children's understandings of the importance of road signs	**3.2 Adults setting negative example regarding road safety rules**	

Themes	1. Children's development of pedestrian skills	2. Children's construction of road safety knowledge and their value of life	3. Children being influenced by the unsafe 'road environment'	4. Children's attitudes to road safety
	Do not cross the road when wearing black Do not cross the road when wearing black clothes; walk carefully look at the signs		Parents are using the roads in an unsafe way by walking in the middle of the road, walking in a file and crossing where there are no pedestrian crossings	
	Cross at stop sign or robots	Do not talk while driving.		Do not leave children alone on the road
		Do not drive when pregnant Going to school alone as a sign of being clever.		

5.3   Results of the theme analysis

In the following sections I present the themes which emerged from the data analysis and the subsequent categorisation. I commence with theme 1 and provide evidence for the emergence of the children's development of pedestrian skills and the related categories that supported this theme in the context of RSE.

5.3.1 Theme 1: Children's development of pedestrian skills

Accidents arise from daily, routine behaviour. Pedestrian skills are important to children as they are exposed to traffic when they go to school or coming back from school. It is this level of exposure that makes the teaching of pedestrian skills to children critical so that they could be able to negotiate their way to and from school safely.

The data showed that there was significant development of pedestrian skills among children, in that they indicated what was required of them before they crossed the road to ensure that they crossed safely. Many children showed that they understood the basic rule that they should observe before crossing the road. The rule is: *Look right – look left and look right again before you cross.* Below is a discussion of categories under this theme from child responses.

5.3.1.1 Road safety skills for pedestrians

From the responses of the children during the interviews the category that emerged to support the theme of road safety skills was the children's understanding of what they had to do to cross the road safely. The children's responses are presented in the study as they were given to capture the sense of authenticity and originality.

"I stop look both sides and then I cross" (C1)

"I look left and right and runs across the road" (C2)

"I look left and right and right again then I cross" (C3)

The basic principle of crossing the road is understood, although to varying degrees. The correct procedure to follow will be: *Look right, look left, look right again and then walk across the road.* On the basic level, children knew that they had to stop and look at both sides of the road to assess whether there was *danger* in the form of oncoming cars before crossing. This skill is internalised among most children. The disturbing behaviour is that children stated that they had *to run* in order to be safe when crossing the street. To them, running fast meant avoiding the danger by crossing fast and quickly. This is not safe behaviour. If they fell, the oncoming vehicle would injure them, perhaps fatally.

Photo 1: Children crossing road in unsafe manner

What the children showed when answering the question about the way they crossed the road is that the development of the pedestrian skill of stopping, looking left and right and right again has been learnt and internalised by most children. Theoretically, this has been done.

5.3.1.2   Road crossing skills for pedestrians

Children indicated that they stopped, looked left, looked right and right again. However, they indicated that they did not know why they had to do so. Through the interviews it became apparent that this was what they learnt in the classroom but there was never an explanation as to why they were supposed to look right twice. As traffic keeps to the left of the road in South Africa, vehicles that pose immediate danger are those coming from the right-hand side of the pedestrian when crossing the road. Running across the road is not a safe behaviour or practice at all.

What became clear to me through the interviews with parents is that the children got pieces of information from different sources, e.g. teachers and parents, and then constructed their own realities in the face of danger on the road. In assessing whether parents taught their children the safe way of crossing the street, it became evident that their skills were generic, thus leaving the children to construct their own realities.

A sample of what parents said they taught their children is presented and discussed below.

"I teach my children to stop for oncoming cars" (P1)

"I teach them to be careful" (P2)

"They must cross where there are no cars" (P3)

"Wait for vehicles to pass "P7

"Be careful all the time "P9

"Take care of themselves on the road" P5

Given the high level of exposure to traffic by children it would be reasonable to expect the parents to emphasise exactly how the children should cross the road. This is not a message that came out clearly from the corpus of data from parents. When one considers that the children in this rural environment all came to school unaccompanied, the situation is less than satisfactory. Another suggestion was that parental input was not very strong. The messages are vague and generic. Furthermore, the parents themselves did not know what was the right thing to do. This is corroborated by the fact the children indicated that they learned the skill of crossing the street at school.

The other disturbing trend in the theme of developing pedestrian skills among children is that in their task to write road safety messages, the emphasis was on drivers, not on themselves as pedestrians. They thought that if drivers were to act according to the messages they wrote, then the problem of accidents would be ameliorated. The role of development in understanding children's response to RSE and behaviour on the road is captured in the Department for Transport's Research Report number 09 (2007) which states that:

> *The way we represent what we are supposed to be doing about road safety changes developmentally. The younger child understands little about how traffic accidents happen. S/he does not understand that his or her behaviour might cause an accident. S/he conceptualises "good" behaviour on the road as a matter of not damaging things, without reference to the events leading up to any damage. As the older child becomes more aware of the causes of accident, and the role his or her behaviour might play in precipitating an accident, responsibilities on the road are re-conceptualised in a new way: "good" behaviour on the roads becomes a matter of avoiding the behaviours (errors) which might lead to an accident.*

Given the view above I conclude that the children need to develop both cognitively and psychologically in order to respond positively to the RSE input. To understand the role of developmental theory, it is important to situate it within the works of Gibson, Piaget and Vygotsky (Department for Transport, Report No. 1).The views of the three development theorists are essential for understanding why the children in the six to 14 years age range behave as they do on the road. In Gibsonian terms, road crossing is a perceptual-motor skill. Therefore, according to Gibson, the road crossing task is at root a perceptual-motor problem rather than one of higher-order interpretation and cognitive construction (ibid.).

On the other hand, for Piaget all knowledge is the result of a process of internal construction directed towards ever more accurate and more parsimonious representations of the world in terms of the activities that could be carried out within it and the objects to which those activities apply. The basic building block of this process of construction is what Piaget calls the *Scheme* – a cognitive unit which defines the sequence of action to be performed towards an object in a particular context, i.e. a form of action plan (Slavin, 2000, p. 172, Mayer, 1987, pp. 18-23).

In Piagetian terms, crossing the road safely would require that the child should be cognitively developed in order to be able to read the environment or situation and adapt to changing conditions. The Piagetian emphasis on learning as a bottom-up process of construction from specific actions in specific contexts has obvious correspondences with the account of skills acquisition provided by Gibsonian theory, that learning road safety skills involves perceptual-motor skills. This in turn provides a link to the work of Vygotsky. While Piaget regards learning as a process of internal construction, for Vygotsky learning takes place via the internalisation of socially constructed or guided behaviour. For Vygotsky, whilst the child may be capable of more advanced activity when working under the direction of another person, learning will not occur until the children begin to take upon themselves the responsibility for directing their own behaviour (Eggen & Kauchak, 2001, pp. 212-246).

Despite Vygotsky's emphasis on the socially directed nature of learning, in common with Piaget he characterises it as a bottom-up constructive process. More complex

activities or functions build upon simpler ones, and the range encompassed by the zone of proximal development moves as learning progresses (Department for Transport, No. 1, 1996).

It is against this understanding that the developmental level of the child has a bearing on their understanding of what causes accidents and their responsibilities on the road that the theory of development is discussed in Chapter 3. The purpose was to illustrate that the child's behaviour is determined by his age and level of development. This makes it very important that teachers should have an understanding of this human development.

5.3.2 Theme 2: Children's' construction of road safety knowledge and their value of life

Another theme that emerges from children through the various instruments used to collect the data is that children have constructed their own knowledge about road safety. They are also well aware of the inherent danger on the roads. As has been shown, crossing the road safely requires competence in perceptual-motor and cognitive skills. Children themselves say going to school alone is an indication that they are cognitively ready to face the challenges of the roads.

5.3.2.1. Road safety rules

The following responses from the children enlightened the understanding of this category:

> "I go to school alone because I am clever" C1)
>
> "I come to school alone… I know what to do" (C3)
>
> "I know the road. I know how to cross the road" (C4)
>
> "I am big enough to go to school alone" (C6)
>
> "I am clever I have been taught about road safety" (C7)

Children took their safety on the roads as their responsibility. They expressed their confidence in using the road to school. Their sense of being clever as pedestrians was

expressed as the ability to walk to school alone unaccompanied by their parents. I observed that no parents accompanied their children to school. This means that anyone who is being accompanied by parents or relatives would be regarded as not clever and not ready to be at school. A child who was accompanied by parents is likely to be despised by other children in the school. They had reached a stage where their road use confidence was very high and they did not see the reason why they should be accompanied to school. According to them, they were confident about negotiating the road to school, to the extent that being accompanied by parents would be a sign that they were not ready to be at school among their peers. They felt that they had been taught the rules of the road and should be set free. They protected their freedom jealously.

In this theme children showed an understanding that is against the common community behaviour of walking in the middle of the road expecting the vehicles to yield for them. Children's views illustrate this point.

> "I walk on the side of the road" (C1)
>
> "I use the small space next to the road" (C3)
>
> "I walk on the side of the road. I cross at the stop sign. I wait for cars to pass before I cross". (C4)
>
> "I do not play on the road" (C10)

What came out clearly in the child responses was that there was inherent danger in walking in the middle of the road. This theme builds on the first theme about the development of safe pedestrian skills. What is critical is that the child participants knew where the danger for pedestrians was but this was not borne out by the general community behaviour, where walking in the middle of the road was the norm. The photographic data indicates that the children contradicted themselves, by not doing what they "preached" about road use. They walked in the middle of the road, as did the adults in the community. Photos 2 and 3 contradict what the children say they do when using the road above. Photo 2 shows children walking in a file and crossing where there

is no pedestrian crossing marks. While photo 3 shows children from school walking in the middle of the road.

"Do not drive when pregnant" C6

"Do not smoke and drive" C7

"Do not talk on the cell phone while driving" C7

"When you are in a car you must be sure that you now the sign of the road" C 10

Photo 2: Children walking in the middle of the road

Photo 3: Children walking in the middle of the road

Coupled with the concept of the danger of playing in the road is the acknowledgement by children that road safety is important in their lives as pedestrians and it should be taught at home and at school. Children expressed their views in the following way:

> "Yes – each child should know how to cross the and avoid being knocked down by cars" (C2)
>
> "Yes Road safety is important because people do not take care" (C1)
>
> "Yes road safety education is important because most cars drink and knock down children. Children should be careful as well." (C3)
>
> "Yes road safety is important as some people do not know the road rules" (C4)
>
> "Yes many children are killed on the road" (C9)
>
> "Yes they must teach children to look for vehicles" (C10)

In an activity where children had to write road safety messages, one child participant encapsulated this theme in this way:

> "If you get in a roid you must look at the lerft and to the rite If you not see a car coming you must go most of the people thei do n' t look at the left and to the rite please does who don't know to go at the street please Do n't live children to play at the street Because the car will bite them at the street is danger to send children to go at the roit to go and buy something at the shop" [verbatim transcription]

The above statement shows recognition that the roads are dangerous. The child respondent is making a plea that parents should not send children alone to the shops. The child is well aware that the exposure that they are going to be subjected to when out on the street might cost them their life. This is lived experience as the children pointed out that the child who was recently killed by a car in the village was sent by the parents to the shop. The level of exposure means that the child is exposed to the ever present danger of being knocked down by a vehicle.

Another value of life that came out on the road safety messages from children was that they understood family values and the importance of the family and their value of life. The following messages are instructive in this regard:

> "When you drive think about your family" (C3)
>
> "Drive carefully do not kill your family, yourself. You will cry forever" (C3)
>
> "Don't live children to play at the street Because the cur will bite them at the street is danger to send children to go at the roit to go and buy samething at the sho"(C8)
>
> Dnot send ababy like at the market and he/she is going to gross the road because the car is goind to kill the child"(C2)
>
> "your parent will cry foever and forever don't try to kill your self" (C3)

The purpose here is to understand and make sense of children's constructions of danger or the reality that faces them as pedestrians. The concern of the child is that a driver who is reckless will kill his family, and if he survives the accident he will regret his actions for ever. This shows the child's ability to appreciate the value of life and the importance of a family with all parents present.

Children did not seem to be concerned about their safety as pedestrians, but they were concerned about drivers. A sample of messages illustrates this point clearly.

> "Check your car before you go on a long trip" (C5)
>
> "Do not talk while driving" (C6)
>
> "Do not drink a black label" (C9)
>
> "Do not smoke and drive" (C7)

Of the ten child messages I used, only four children had one message each dedicated to pedestrians; the rest of the messages were directed at drivers. This is a disturbing finding in that children thought that the problem of deaths on the road was with the drivers. They did not see pedestrians as contributing to the problem of fatalities on the road. In other words, they did not take responsibility for their own road safety skills. They blamed drivers for knocking down pedestrians.

Another disturbing trend is that in the case of the four children who wrote messages to pedestrians, their messages did not go beyond the concept of *look left – right and cross the road.* The only message for pedestrians that stood out from one child was "wear bright clothes". This is an important message in the sense that the child was aware or understood that if a pedestrian was using the road and wearing dark clothes, drivers would not see him. The theme of visibility on the road is critical for pedestrians as it goes together with developing safe pedestrian skills.

In a group activity where children where required to draw a typical road environment with all the safety features, two children drew an informative picture of pedestrians crossing on a pedestrian crossing. However, when they summarised their picture, all the messages were directed at drivers, and there was no message for pedestrians.

Drawing 1:   A picture of a typical road safety environment with road safety features

The two messages from the two children accompanying this picture highlight the fact that there is a need that children should be taught to develop pedestrian skills (verbatim):

Child 1	Child 2
"Don't drink and drive because you are in ntrable"	"Don't drink and drive: *Arrive Alive*"
"Please don't drive more speed like speed 220	Speed kills people Don't drive a speed of 280
Arrive Alive"	"Do not play on way if you are a child"
"Follow rotes safe	"If you want to jump on the way please look at the robot when it say red"
And follow rotes traffic sign"	"You must stop a car and people jump roads"
"And when you drive wear belt of car because belt will safe your life when you do an accident the belt of car will safe your life"	
"If you are a drink person do nt even drive because you will surely die"	

The expectation is that the children should have focused more on the concerns for pedestrians as the picture illustrates. However, the emphasis is on what drivers should do. The conclusion drawn is that as pedestrians they see the problem as with reckless drivers. No responsibility is apportioned for pedestrians to ensure their safety by crossing at pedestrian crossings as the picture clearly shows. Children are not aware of their responsibilities as pedestrians – hence, there is a need for the development of pedestrian skills among children.

During interviews, children pointed out that they knew how to cross the road safely. .In contrast to what came out strongly in children's responses regarding the theme of developing pedestrian skills of crossing the road safely, the teachers expressed the contrary view that children had not yet developed the pedestrian skill of safely crossing the road.

5.3.2.2   Road safety rules for drivers of vehicles

One disturbing finding that emerged in the study is the shifting of responsibility by the children to the drivers to ensure safety on the roads. This confirms what I pointed out in 5.3.2.1 that children do not see their behaviour as a potential cause of an accident or

them being hit by a car. In their thinking it could only be the fault of the driver if they are hit or get involved in an accident. In this section a number of messages from children are discussed to show that they shift the level of responsibility on the road to the drivers, Most of their messages are directed at drivers as opposed to pedestrians.

Table 5.2   Comparison of messages to pedestrians and drivers

Messages for drivers	Messages for pedestrians
"Do not drink more than two beers when using the road" (CA7) – Theme: Drinking and driving "Slow down for your safety" (CA6) – Theme – Speeding "Ensure your vehicle is road worthy"- (CA) – Vehicle Fitness "Do not talk on the cell phone while driving" (CA7) Moving violation "Get rest every two hours" (CA6) – Theme: Fatigue.	"Do not leave your child alone on the road" (CA7) "Do not cross the road when wearing black" (CA7) "Obey the signs that show you how to cross the road" (C4)

One of the messages that children were asked to write summarised the impact and input of the *Arrive Alive* campaign in teaching road safety through the mass media by saying *"Road Safety in South Africa is stay alive – Arrive Alive".* On the issue of causes of accidents I noticed that the drinking and driving, speeding, lack of road signage, featured prominently on a list of children as the major causes of accidents in Moloto area, the site of the study. The following is a sample list of causes of accidents given by child participants.

"Drivers speek on cell phones" (C2)

"People go to tarverns before driving" (C3)

"Lack of traffic police, people do not follow rules" (C4)

"No road signs , people do not obey traffic rules" (C9)

"People play on the road" (C10)

"Children go to shops alone" (C2)

"Moloto road has no robots" (C7)

What I realised from all the information collected from children through the various instruments is that the theme of the role of signs in the prevention of accidents features prominently among children. They were convinced that the erection of road signs on the roads that they used would lead to a decrease in traffic accidents. This theme is discussed later.

5.3.2.3 Children's understanding of the importance of road signs

Another category of Theme 2 is children's expression of their understanding of how relevant road signs were. Road signs play a very important role in road safety. They regulate the movement of both cars and pedestrians. They warn road users of danger on the road. This theme was critically important to the children who participated in the study. This comes out in all the instruments that were used to collect the data. What is interesting is in the task where they were requested to draw an ideal Moloto road, the road signs featured. What is even more important is that the road signs that appear on their drawings were not on the Moloto road at the time of doing the study. The signs that feature prominently are the stop signs, pedestrian crossings, robots, pedestrian crossing signs, and warning signs indicating that no pedestrian crossing is allowed.
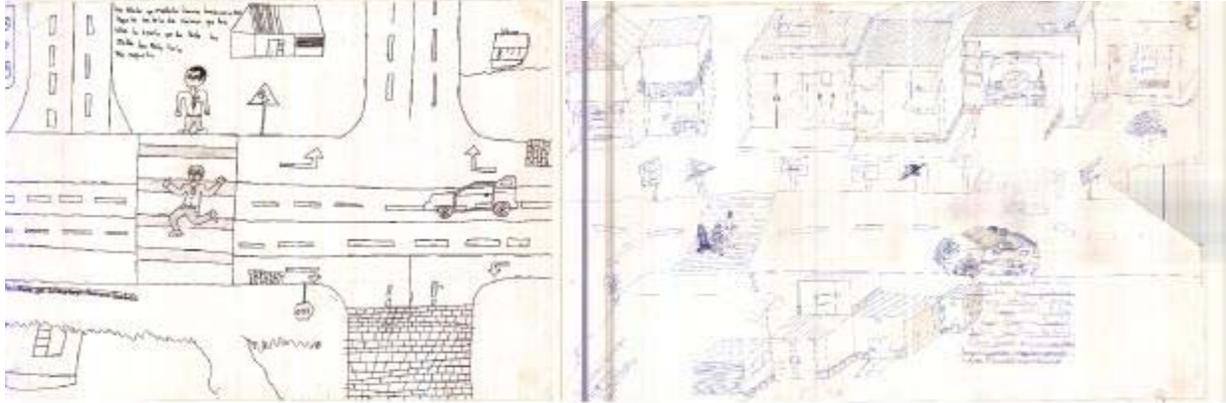
Drawings 2&3. Signage: the Moloto road

Almost all drawings indicated children's ideal Moloto road with all the features in a form of road signage which they hoped would reduce accidents. What is significant for the study is that the child participants seemed to have a clear understanding of road safety and what a safe route for pedestrians like them should be. They proposed that the Moloto road should have a four-way stop where pedestrians could cross safely. Another proposal was that it should have robots to regulate the movement of both vehicles and pedestrians and all other road users.

The theme of knowledge of road signs and their importance in road safety also featured prominently in parents' input to children's education in road safety. What I observed is that parents taught their children and schools taught the children the following messages:

> "Walk on the side of the road" (P1)
>
> "Walk on pavements – look for cars" (P6; P9)
>
> "Cross where pedestrians cross" (P10)
>
> "Face on coming traffic" P5

What I observed was that although children were taught the importance of road signs, of walking on pavements and crossing at the pedestrian crossing, the roads were

designed for cars. There were no pavements and in the whole of Moloto village, there was only one pedestrian crossing far from the school. Children or any other pedestrian would not walk a distance to cross at a relatively safe spot. They would rather take chances and cross where they are not supposed to cross. In most road infrastructures the design is for vehicles and pedestrians are supposed to fit into that design, which is not pedestrian-friendly. This is the reason why pedestrian facilities are always added after the completion of the building of the road – in most cases only when the community exerts pressure after a number of pedestrian fatalities.

Information from parents did not yield any new information that differed from what emerged from child interviews. Only aspects that did not come from the children were discussed. However, what was important about the data from the parent interviews is that parents did not relegate the teaching of RSE to schools and teachers, but saw themselves as an integral part of the endeavour to teach their children road safety. One parent said: "Batswadi ba swanetse ba tlaleletse se mathitšhere arutang bana" *(parents should complement what teachers are teaching the children).*

There were also some disturbing aspects revealed by the pictures. The first disturbing feature was children observed and photographed playing soccer by the road.

Another disturbing feature presented by the drawings data was children crossing where there were no pedestrian crossing lines.
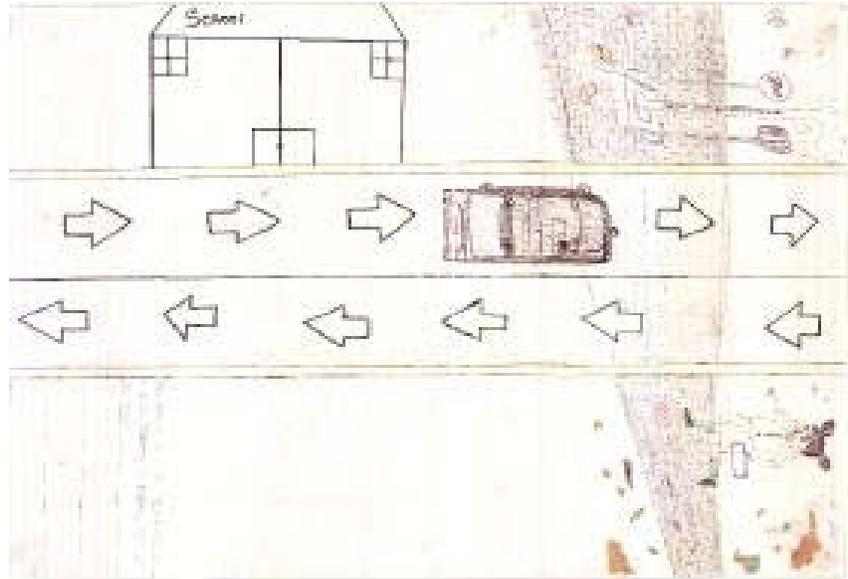
Drawing 4: Children crossing where there are no pedestrian crossing lines

This is dangerous for children as vehicles are supposed to drive at 80 kilometres per hour through the Moloto village and the observation revealed that very few drivers obeyed this speed limit. Besides, even a vehicle travelling at 40 kilometres per hour can kill a child.

What the theme of the significance of road signs in road safety shows, is that child participants in the study believed that if there were signs, drivers or all road users would obey these signs and accidents be minimised. Unfortunately, the reality is that in South Africa the level of compliance with traffic legislation on the road is very low and the law enforcement aspect very weak and disjointed. Reckless drivers are well aware that chances of being caught are very low.

Interviews were conducted with teachers. Some representative comments were:

> "Children lack knowledge of safety rules; they do not know the basics when crossing the road; they underestimate vehicle speed" (T1)
>
> "Lack of basic safety rules among children for crossing the road; they do not face oncoming traffic, they **compete with cars on the road"** (T2) [emphasis mine]
>
> "Children do not practice what has been in class they with unsafe manners taught at home" T1
>
> "Lack of supervision to ensure they practice what has been taught" T2

The concerns raised by the teachers indicate that although the children indicated overwhelmingly that they had internalised the basic skill of crossing the road safely, the teachers indicated that this was not the case. As an interpretivist, I came to the conclusion that the children, although they knew what was the right thing to do when crossing the road, in practice did not behave as they had been in taught in class. The knowledge they acquired from the class had not been translated into safe road use behaviour.

There is therefore a disjuncture between what they knew theoretically and what they did in the real road environment. This phenomenon is borne out by the fact that in the messages that they wrote in the message exercise, the children did not regard pedestrians as a source of or contributors to causes of accidents. Their messages were directed at drivers and driver behaviour, but never pedestrian behaviour. The photos taken during observations of children using the road show that the behaviour of the children did not indicate that they practiced the skill of looking right, and left and looking right again before crossing the road.

I conducted the observation during the first week of my fieldwork. I parked the car at a strategic point and observed how children and even community members used the Moloto road and the arterial roads. I chose areas mostly used by children on their way to and from school. The mornings and the afternoons were characterised by movement of children negotiating their way either from or to school.

I observed that children crossing the Moloto road everywhere. They did not cross where there were pedestrian crossings. They crossed in a file. Another unsafe behaviour observed is that children walked in the middle of the road. Children, although they knew the right skills, did what other community members were doing. This indicates an unsafe community influence. This theme is discussed later.

Photo 4: Children walking in the middle of the road

The following characteristics of pedestrian behaviour can be drawn from the data and evidence presented above:

- Children were crossing the road away from pedestrian crossings – they were crossing everywhere;
- Children knew what they should do before crossing a busy road like the Moloto road, but they did not put their knowledge into practice;
- They walked in the middle of the road as everybody did; especially in the road in the village they expected vehicles to yield for them;
- They crossed the road in a file.

5.3.3 Theme 3: Children's ignorance of road safety rules

Two distinctive categories emerged in this theme. The one is *children's ignorance of road safety rules* and the other one is *adults setting a negative example regarding road safety rules.*

5.3.3.1 Children being influenced by the 'unsafe' road environment

Photo 5: Children walking across the road in a file

Another example of unsafe road use behaviour by children is that they walk across the road in a file. This is a very dangerous behaviour when one considers that they are crossing where there are not supposed to cross. Photo 5 shows both adults and children in the middle of the road. In the long run children internalise this unsafe behaviour and becomes difficult to change it when they are adults. Pedestrians are supposed to cross safely on a pedestrian designated area as indicated by the pedestrian crossing like the one shown on photo 6.

Photo 6: A typical pedestrian crossing

The children's understanding of road safety was reasonably good, as evidenced by the data collected through the drawing activity and the children's response obtained through interviews. On the other hand, a feature of children's use of the road was that they walked in the middle of the road and expected vehicles to yield for them. I conclude this is owing to the influence of the community. My observations and the photographs I took show that it is a norm in the village of Moloto to walk in the middle of the road.

5.3.3.2   Adults setting a negative example regarding road safety rules

Another example of unsafe road use behaviour by adults is that they walked across the road in a file. This is very dangerous behaviour when one considers that they were crossing where they were not supposed to cross. Pedestrians are supposed to cross safely in a pedestrian-designated area, indicated as pedestrian crossings.

The second category of *adults setting negative example regarding road safety rules* is clearly illustrated by the photo 5. The adults are seen using the road in an unsafe way with the children, thus setting an unsafe example for the children. They are even crossing the road at a very dangerous part of the road with no pedestrian crossing. It is this kind of unsafe community influence that undermines the theoretical input that the

children might be learning from the classroom during the LO period. A concerted effort between the school and the community is lacking in the village of Moloto. In South Africa a pedestrian crossing is marked with white lines across the road.

The photos of children and community members using the Moloto road and the arterial road into Moloto road indicate that children had internalised the community practices even though they theoretically knew that they were supposed to cross at pedestrian crossings as the drawings indicate. Specifically, one of the features children recommended for making the Moloto road safer is pedestrian crossings for children and pedestrians in general. It seems, however, that there is no correlation between what children knew with regard to pedestrian safety and what they did in practice. An explanation for this anomaly is that the community as a whole uses the road in such a way that it is unsafe and children have internalised this unsafe behaviour.

5.3.4 Theme 4: Children's attitude to road safety

Two discernible categories emerged from this theme. They are *positive attitude to road safety* and *contradiction between theory and practice of road safety.* Although the children's road use was unsafe, what emerged from their interviews and the road safety messages that they wrote is that they had a positive attitude to road safety. I was heartened by this attitude as the number of road deaths on the South African roads is increasing exponentially as in indicated in Chapters 1 and 2. It gave me hope that maybe the new generation of drivers will take road safety seriously.

5.3.4.1 Children's positive attitude to road safety

The child respondents were very much concerned about road accidents as the following responses and comments in the written messages from them show (verbatim transcription). This positive attitude could serve as a foundation in which road safety teaching and consolidation could be build.

Child no. 4

Message number 1

Don't drink and drive.

If do you drive, drive carefully at the road.

If you walk walk carefull look the sign.

You must look Left and right to jump the road.

And the sign show you How to jump the road.

Child no. 8

Meassage number 2

1. Don't drive speet kill.

2. When you drink alcohol don't drave car because you are going to have problem.

3. When you go at roud you mas go slow you mas see awer sane [*sign*] at roud let say maby her you drave speet you mas drave speet when sane of the roud set her you drave slow you mas drave slow.

Don't say no dis sane he did not spoke anything you set no I drive speet you are gowing to cose a trable When you drink alcohol don't drave car at the bing [*busy*] roud let say mabe at forwehi [*fourway stop*] When you drive car you mas be caful maby dis is forwah [*fourway stop*] you mas storp and youma cherk Left and right maby you did not see anything you mas cros.

Child no. 10

Message No. 3

Road save:

When you are in the road you must be careful.

When you are in a car you must be sure that you now [*know*] the sign of the road.

When you to cross the road-you must look at the right hand and left hand.

You must not play in the road some of the car they will couse a problem to you.

You must go with some one! When you afrait.

5.3.4.2   Contradiction between theory and practice of road safety

The positive attitude of the children is contradicted by what I call the unsafe culture of road use which permeates the community of Moloto where the primary school in the case study for the study is situated. The photos taken during the observation phase of collecting data time and again show this contradiction between the enthusiasm and positive attitude to road safety and what the children do on the road. The photos show children crossing the road recklessly. They are violating the basic rule of crossing the road, *look right, look left and look right again* before crossing. They are seen crossing in a file, crossing where there is no pedestrian crossing. Not even the presence of a police vehicle deterred them from this unsafe behaviour.

I finally came to the conclusion that there was no correlation between what children learn about road safety and what the community environment and culture offered them. My conclusion is that this presents a dilemma for the children. They are modelling or imitating the behaviour of community members, who are in the general sense the parents of the children.

The general picture that emerges here is that children were confident about their use of the road as evidenced by their dislike of being accompanied by parents to school, as they regarded themselves as "clever or big enough". Children's responses could be evaluated at two levels: theoretical and practical.

On the theoretical level, children have revealed a reasonable understanding of what they had to do to ensure that they used the road infrastructure safely. They also understood and appreciated the role that road signs play in ensuring that the roads are safe for pedestrians as evidenced by the drawings of an ideal safe Moloto road. They were crying out for road signs that would improve the safe movement of children when crossing the Moloto road. They recommended robots, pedestrian crossings, and stop signs, and signs prohibiting pedestrians crossing.

On the practical level, though, child participants were observed behaving in an unsafe way on the road by crossing in a file, and walking in the middle of the road expecting vehicles to yield for them. This is a culture that could be deadly in an environment

where the child is outside his village. What they knew theoretically was not practiced in the real road safety environment.

What also emerged strongly is that children's attitude to road safety was positive as there was an awareness that using the road infrastructure in a reckless way was dangerous. The central argument is that road safety is important, as "a ba hlokomele mo di tseleng" (most people are not careful on the road) – the implication being that those who are careless on the road get killed.

The community practice of walking in the middle of the road has been internalised by the children even though theoretically they knew what they had to do to be safe. Parents were also aware that that they had a role to play in the road safety of their children. Understandably, their input was generic and limited to exhorting their children to take care of themselves when out on the road. This is a good start as it conscientises the children's about the general need for them to look out for danger in the form of vehicles.

There are a number of disturbing factors that emerged from the analysis of the responses of the child participants. They are:

- They did not use the road safely;
- There was no correlation between what they knew and what they did in practice;
- Their level of confidence in using the road safely was significantly high;
- They understood the value of receiving RSE in school.

5.4 Teacher input into the road safety phenomenon in the school

Teachers were important in the study in helping the researcher to understand teachers' views and perspectives regarding the teaching of road safety, as they were the main role players and particularly as they were in contact with the impressionable minds of the young children who were the focus of the study. Two teachers were used in the study. They were chosen as they were teaching LO, which encompasses RSE. The themes that emerged from the teacher interviews and questionnaires are discussed in this section.

Although RSE is part of the mainstream curriculum, its implementation depends both on school policy or practice and to a large extent also on the attitudes of individual teachers to the subject. Harrison, Penman and Pennela (1997) indicate that where a teacher is strongly motivated to include RSE it would be expected that this area would receive greater emphasis than might be the case when teachers are less motivated. Highly motivated teachers would be expected to include RSE resources and activities in a range of key learning areas, which in terms of learning outcomes is highly desirable.

The teacher interviews and questionnaires revealed some thematic dimensions to the understanding of the road safety phenomenon in schools as part of the mainstream curriculum. In this section I discuss themes that stood out in the data from teacher participants. The triangulation of data from children, parents and teachers gave me the whole picture of what is happening regarding road safety in the Moloto primary school. The ideas that emerged from the responses of the teacher participants are summarised in Table 5.3.

Table 5.3   Summary of ideas that emerged from the teacher participants

Ideas	Lack of training for teachers to teach road safety	Unavailability of resources	Lack of road safety skills	No co-operation between road safety officers and teachers	Road safety is not regarded as a priority by government
	No training	No media	Children crossing where they are not supposed to cross	Road safety officers no dot visit regularly	Road safety is not taken seriously by government
	More workshops	Department of transport must provide posters, newsletters	Walking in a file ; running across the road	Road safety officers do not visit schools when invited	Teachers not well trained
		No facilities for simulation			

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The data collection for the study relied on a number of instruments to enable me to understand the phenomenon of teaching road safety as part of the mainstream curriculum in schools in Mpumalanga. Data sets were triangulated between responses from the children, teachers and parents. This was informed by the premise that for a RSE to be effective it should involve the inputs of these three role players.

5.4.1 Lack of training for teachers to the teach road safety education

As indicated above, teachers are very important role players in the teaching of road safety education as they are in contact with impressionable children. An introduction of any programme that has to be taught to children must of necessity be preceded by through training of the people who are to implement that programme. Anything short of that will not succeed. Teachers were very emphatic that although they were required to teach road safety competences they had not been trained adequately where training occurred. In the case of this study one teacher pointed out that she never received any training or attended any workshop regarding the teaching of road safety. The other teacher indicated that she had attended a one-day workshop where they were workshopped on road safety rules. She felt, however, that "More follow-up workshops" were necessary to equip them with the knowledge to teach road safety competencies adequately.

By their own admission, one may conclude that whatever the teachers were teaching the children about road safety depended on what they themselves had gathered. As one teacher indicated, the children were unable to use the road safely as the road environment on the national roads and towns is different from what they have in the village. Therefore, she asserted: "more information is need on national roads".

5.4.2 Unavailability of resources

The inadequacy of the teachers in teaching road safety competencies was compounded by the lack of suitable resources. The resources for which teachers are crying out are posters, pamphlets, magazines, newsletters, and a Junior Training Centre (JTC) for road safety simulation. Teacher 1 indicated that they were fighting a losing battle, because when such resources did become available, they were soon damaged as there

was "no space to store the resources". The classes are overcrowded and there are no cupboards to store the teaching materials. As a result the children destroy them, according to Teacher 1. A typical class accommodates on average 60 children at the primary school that was used in the focus study.

The lack of resources means that whenever teachers teach RSE, their teaching remains only theoretical. According to the teachers, there were no practical activities taking place to assess whether children understood the theoretical input in the class. As one teacher pointed out, there was no supervision to ensure that children practiced what they have been taught. It is not even expected that one can measure the behavioural impact of RSE in a school when there is virtually no use of road safety resources and practical activities in teaching road safety. In this context, it is understandable why children behaved the way they did on the roads – they had not been shown safe road use behaviour in practice to support the theoretical teaching. The literature reviewed in Chapter 2 stressed the importance of RSE programmes based on behaviour rather than cognition and therefore the preference and bias towards schoolground or on-road activities over classroom activity.

5.4.3 Problem areas identified by teachers regarding reasons for children's unsafe road use behaviour

Teachers listed the following aspects as problem areas regarding the behaviour of children using the road in an unsafe way.

"insufficient road safety teaching in schools" – T1

"Children do not know the road signs – T1; T2

"Lack of knowledge of safety rules" – T1; T2

"Children do not practice what they have been taught in class" – T1

"Lack of practical input for road safety simulation" – T1

"No practical road safety activities" – T1

"Road safety is not taken seriously by government" – T1; T2

"Low level of education among parents" – T1

"Lack of training, resources" – T1 , T2

"No cooperation between road safety officers in the area and teachers."

"Lack of basic knowledge for crossing the road safely" – T2

"Lack of synergy between what is happening in schools and at home."

This data correlates somewhat with what the children and parents expressed on their road safety behaviour.

5.4.4 No co-operation or working relationship between road safety officers and teachers

The teachers bemoaned the fact that road safety officers did not visit the schools regularly. As one teacher pointed out: "They do not visit the schools even when invited". This is a major weakness in the attempt to teach road safety from a holistic point of view. Road safety officers as "experts" are ideally supposed to help the teachers, particularly with issues relating to content and resources like pamphlets, posters, road signs and other media that could be of help to teachers who teach in an environment where they do not have the luxury of a library and technology.

The sharing of expertise and best practice is the cornerstone of any RSE programme (Department for Transport, 2009, p. 62). The absence of a working relationship between teachers and road safety officers implies that there is no sharing of expertise and maximisation of resources. Maximising effective delivery of road safety in school requires the cooperation of all the stakeholders even those outside the education realm.

What seems apparent is that most road safety officers are not aware of the role that they are to play in supporting teachers to implement the road safety competencies.

There is a strong case to be made for role clarification if any sort of working relationship is to be achieved. The Department for Transport's Road Safety Research Report 99 (2009) indicates that much of road safety officers' work is hands-on, with the majority of staff involved in the direct delivery of RSE, instead of *focusing on publicity or capacity building activities.* The situation in the Moloto area calls for the road safety officers to focus on working with teachers by workshopping them on the various road safety competencies that they have to teach instead of trying to visit schools themselves in trying to deliver road safety directly.

5.4.5 Road safety is not regarded as a priority by government

As I indicated in the literature review in Chapter 2, political will is critical in successful implementation of RSE. In South Africa, RSE competes with other social needs like the provision of water, electricity and housing. In a developing country such as South Africa, road safety as a social imperative is likely to take a back seat. In the context of the teacher participants' responses, RSE is not regarded as a priority because government is not supplying materials (resources) and workshops to empower teachers to be effective in their delivery of RSE.

Curriculum 2005 requires that teachers in the new teaching paradigm should be resourceful and ingenious. The implication for the teachers in the case study was that they should look beyond the narrow learning area that encompasses road safety competencies and look for resources outside this realm if they are to manage the task at hand. Parents and the community are a better resource for teach road safety. In-service training in this regard could go a long way in broadening teachers' horizons in the road safety realm.

5.5   Summary of data from interviews

One significant theme that emerged from interviews with child participants was the development of pedestrian skills at theoretical level. During interviews child participants indicated that they have internalised the basic principle of crossing the road safely. The principle is: *look right, look left and look right again and then walk across the road.* However, there is a disturbing finding in that child participants do not know why they

have to look left, right and right again. It seems that they have just been taught but have no understanding that they look right twice before crossing the road because in South Africa we drive on the left and the vehicles coming on the right pose an immediate danger when a pedestrian is crossing the road.

What also came out during interviews with parents, teachers and child participants was that the child participants received this road safety principle from different sources without thorough practical experience. In other words, they have been told to do that as the right and safe thing to do. In short the child participants were reciting this road safety skill without comprehension. Another feature of the child participant's interviews was that they are very confident in using the road and they do not want to be accompanied by their parents. For them to be accompanied by parents means that they are not clever. Nearly all child participants commented that parents and teachers contributed to their knowledge of road safety. To a lesser extent they pointed out that brothers and other siblings contributed as well. Strangely, child participants disliked the idea of being accompanied to school. They felt that they would be ridiculed by other children as not being "clever". They guarded their independence jealously and they were surprised that during the interviews I would also bring up such an issue. An interesting finding is that child participants' road side behaviour is in direct contradiction to the theoretical knowledge that the research shows they have. For instance the research found that child participants respect road signs and value life. But the way they use the road without obeying the basic rules of using the road and obeying the road signs belies this theoretical knowledge. They cross where the is no pedestrian crossings, cross the road in file, walk in the middle of the road

On the other hand teacher interviews revealed the following themes: lack of training for teachers to teach road safety competencies, unavailability of resources, lack of a working relationship with road safety officers and road safety being regarded as no priority by the teachers. All the above aspects contribute to low morale and the ignoring of the teaching of road safety by the teachers.

With regards parents, the interviews revealed that although parents indicated that they do their bit to teach road safety to their children it does not go beyond warning their

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children to be careful on the roads. Parents were aware that their children faced danger on their way to and from school in the local environment within the Moloto village. This danger related to traffic. Although parents accepted and acknowledged the inherent danger posed by traffic to their children they strove for a balance between offering RSE to their children and encouraging independence to their children within the safety framework. What also came out among parents and observed by me was that parents in this village are hapless mainly because of a variety of reasons. Key among them are: limited knowledge of road safety and inability to read and write; their struggle for survival meant that they are away in the Tshwane metropole working as domestic workers and selling wares along the roads and near schools. As a result, parents do not have sufficient time to be with their children. They are absentee parents.

Commenting about the absentee parents in the Moloto village Muller, (2009, p.50) points out that most of the region's working people endured a long daily commute down the infamous Moloto road to Pretoria, affordable only because government subsidises the bus companies. He further says it would have been far more sensible to spent the subsidies and Development Bank of Southern Africa (DBSA) loans building houses in Pretoria. And that was before considering the quality of life of hapless workers whose working day often began at 04:00 and ended after 20:00. Interestingly the above conditions notwithstanding parents accepted their responsibility and offered what ever road safety advice they could offer to their children.

5.6 Summary of data from participatory methods

In the following paragraphs I expand on my understanding of the interviewsfrom participants. The observation of child participants and parents yielded a paradox which negated the finding of the interviews that child participants know the basic road safety principle of crossing the road safely. What the child participants indicated that they do when crossing the road i.e looking right, left and right again they are not doing it in their every day use of the road. Children of schoolgoing age and adults were walking in the middle of the road. They cross the road where there is no pedestrian crossing. Remarking about this theme de Klerk (2010, p. 16) says the following about what she observed in one of Johannesburg's roads "…Also seen on the way to school … a man

and his small son, about five years old crossing a road in heavy traffic. He had the child by the hand and was dodging the cars. Only a few metres up the road was a robot and a pedestrian crossing. Why didn't he walk the extra distance and cross safely? What kind of message and teaching is he giving his child?" They also cross in a file. Photographs and drawings as part of the audit trail are discussed in Chapter 5 to prove this.

The written road safety messages corroborated what the interviews revealed but one striking feature is that most messages from the child participants were directed at motorists. This indicates that child participants think that it is the responsibility of motorists to ensure that accidents do not happen. The child participants do not see themselves as an important variable in the causing of accidents. According to them if motorists drive carefully they will be safe as pedestrians. A sample of the messages from child participants illustrates the point.

"Drivers please drive safely" C7

"Speed kill slow protect your life"C6

 "Check your car before you go a long trip" C5

The road safety messages emanating from child participants which show that they see drivers of vehicles as being mainly responsible for accidents provide a theoretical framework within which children's roadside reasoning, actions and behaviour could be interpreted and explained. They use the road in this unsafe way because their thinking is informed by the perception that the driver sees them. In this regard one child participant summed up this thinking by saying "drivers in the Moloto village drink Nyaope" in trying to explain the reason for the number of accidents occurring on the infamous Moloto road. The child is not even aware the Nyaope is smoked not drunk. [Nyaope is explained as a mixture of low grade cocaine and dagga, it is popular in the poor Black townships particularly in the Pretoria and surrounding areas]. In the field of road safety the skills in the child's repertoire are of no use if the child does not use them. The implication is that in teaching and training children on road safety skills we

ought to foster a culture of error avoidance by the children when using the road and road user responsibilities.

5.7 Conclusion

The holistic picture that emerges is that if RSE related to children is to succeed over the long term, there has to be cooperation between parents, teachers and road safety officers. In the long term, RSE has to move beyond the school environment. There has to be some standardisation of the aims and objectives of RSE so that all the role players could work towards the same goals. The co-operation of the Departments of Education, Health and Transport is crucial for the effective delivery of any road safety programme.

The central thread that emerges is that the profile of RSE has to be raised as a first step towards achieving improved delivery, but that by itself is not sufficient. Many education professionals already have the perception that road safety is not a priority to government but they do recognise that road safety has a role to play in the nation's health and wellbeing, especially that of children and young people. However, this is seen as secondary to many other social issues which currently have a higher profile like the provision of water, houses and health care (see Department for Transport, 2009).

Raising the status of road safety education needs to be targeted at a wide number of stakeholders. It needs to encompass both those who are making decisions about budget and resources allocation and core road safety professionals, as well as staff from other organisations who are increasingly involved in road safety education delivery and who also need to ensure that they are offering integrated approaches. Raising the profile of road safety education also needs to be targeted at parents and communities who have a role to play in reinforcing messages received through formal education. Capacity building is one thing that road safety officers in the communities must recognise as a part of their brief.

CHAPTER 6. SYNTHESIS, SIGNIFICANCE AND IMPLICATIONS OF THE STUDY

6.1   Introduction

Chapter 6 offers a synthesis of the study by reflecting on the findings that were identified in Chapter 5. The chapter offers the significance of these findings for the corpus of knowledge in the field of RSE in the South African context. The findings as discussed in Chapter 5 as they relate to children and their challenges when they learnt road safety skills as pedestrians form the basis for the recommendations that could be implemented to improve the situation offered in Chapter 6. In Chapter 6 I also present the limitations to my research project that I encountered as a researcher and the limitations of the study.

To understand the findings and implications of the study and appreciate their importance and space within the RSE corpus of data, one has to understand the philosophical underpinnings of the investigation or study. This will help situate the findings and implications and to facilitate an understanding and appreciation of the conclusions reached in the study.

As indicated in Chapter 4, the philosophical underpinnings of the study were to explore meanings and patterns, inconsistencies and conflicts in people's thoughts and behaviours. I was centrally positioned in the enquiry, and immersed in my research project. This position required a high degree of reflexivity on the part of the researcher. I was aware of the importance and centrality of this position and that my prior knowledge and assumptions on the topic could impact on all aspects of the research (McMillan & Schumacher, 2001; Cugno & Thomas, 2009). I focused on the data collected and observed all activities that could help in answering the research questions without influencing the participants in any observable way. I also conducted unobtrusive observation where the participants were unaware of my presence and what I was doing. I used triangulation to corroborate in order to lend credence to my data (Stake, 1995)

Qualitative research is by its nature explicitly interpretative. The analytical process involves interpreting the meanings, values, experiences, opinions and behaviours of the

children participants. This process of data analysis is described as descriptive-inductive to distinguish it from the hypothetico-deductive means of drawing results in quantitative research (ibid.). Jaye (2002) says this interpretative and interactive quality of qualitative research is a reflection of ontological and epistemological assumptions. In short, qualitative research is informed by constructivist paradigms that view the world and its "facts" as fundamentally interpreted as constructed by individuals within social groups (ibid.; Heppner, Kivlighan & Wampold, 1992; Seaman, 1987; Tobin & Begley, 2004).

6.2   An overview of the study

The study focused on one school in the Moloto area as the central unit of analysis. Children in the Intermediate Phase were used for the study; their ages ranged from eight to 14 years. Although children were the central focus, their parents and teachers were also used as participants in the study because they were in a position where they could influence how these children responded to the road safety inputs. The RSE Programme Booklet for the Intermediate Phase prepared by the Road Traffic Management Corporation, The Department of Education and SABC Education succinctly provide the rationale as outlined in Chapter 1 for focusing on children as participants for the study:

> *Every 48 minutes a person is killed on our roads and the cost of traffic collisions in South Africa is R48 billion per year. Using the road is difficult and risky, especially for children, the elderly and people with disabilities. Children are particularly at risk when walking, riding bicycles, playing and/or travelling in vehicles. The good news is that many accidents can be prevented if children from a young age are taught the correct knowledge, skills and attitudes about road safety (Road Traffic Management Corporation, 2006).*

These children are taught the new national curriculum which has road safety competencies as part of the mainstream curriculum in order to produce children who are conscious of their own safety and the safety of others. Insights gleaned from children's responses and my observations as well as input from parents and teachers were critical in answering the research questions of the study. With the analysis of data the following themes emerged: Children's development of pedestrian skills, children's construction of road safety knowledge and their value of life, children being influenced by the unsafe 'road environment' and children's attitudes to road safety. In the following section I

pursue the insights gained in the study and findings to answer the research questions of the study.

The main research question of the study is: What is the response of rural primary school children to RSE programmes? Other sub-questions of the study were:

- What are the views of the parents in the broader rural community in inculcating RSE to their children?

- What are the views of the teachers on teaching road safety as part of mainstream curriculum in the rural community?

- How appropriate are the methods used by the teachers for the teaching of the RSE programme?

- What is the impact of the rural environment on the learning of road safety?

6.2.1 Implications of the findings for the study

Article 29 of the Constitution states that education shall aim at developing the child's personality, talents and mental and physical abilities to the fullest extent. Education should prepare the child for an active adult life in a free society and foster respect for the child's parents and his or her own cultural identity, language and values and for the cultural background and values of others (Constitution of South Africa, 1996). The National Curriculum envisages a child who will be conscious of his own safety and the safety of others. The study shows that children are at risk of being killed by vehicles when walking riding bicycles and playing. The Road Traffic Management Corporation's RSE programmes state the good news is that many road accidents can be prevented if road safety is taught from an early age. In the next paragraphs I answer the main research question by answering each of the sub-questions.

6.2.1.1 What are the views of the parents in the broader rural community in inculcating road safety education to their children?

Parents indicated that they were involved in the teaching of their children about road safety. The interviews revealed that parents' contribution was limited to teaching their children how to cross the road. Their input extended to warning the children to be careful when crossing the road. The child participants revealed that they understood the basic rule applicable when crossing the road, particularly at a place where there is no pedestrian crossing, namely that they are supposed to *Look right, look left and look right again* before they cross the road. However, the findings revealed that although children had this basic understanding, there is no correlation between what they knew and what they did in real life. De Klerk (2009) says the following about this theme and its importance to road users:

> *If there isn't a zebra the technique is: 'Look right, look left and look right again'…then, if no cars are coming, you can cross the road. I was taught these basic rules by my parents and at school. That also does not seem to happen any more – a flash etched in my memory for all time, a crumpled body in a school uniform at a busy crossing on Louis Botha Avenue, paramedics bending over, an ambulance standing by.*

I cite this article in detail to illustrate its correlation with the findings of the study that although the children of my case study have been taught this basic rule, they do not necessarily apply it on the road; in their everyday life.

I argue that this disjuncture between what the children know and what they do on the roads is a clear indication that the community as a whole should practice safe road use behaviour in order to serve as models for children. The literature review revealed that most accidents and children's deaths on the roads could be prevented if from an early age children are taught correct knowledge, skills and attitudes about road safety (RTMC, 2006; Sida, 2006). The theory of 'role modelling' also subscribes to this statement. As the study shows that the children's pedestrian skills were not developed to a level where they could make safe decisions on the road, there is a need for intensified teaching of pedestrian skills among the children in the school. This has to be a joint effort between the parents and the teachers. This is borne out by the realisation

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that some child participants indicated that they looked both ways and then ran across the road when cars were not coming. The child participants seem very confused. They think running ensures safety. On the contrary, running across the road is dangerous as they might fall and be killed by vehicles. If parents do not set a positive example to the children the children will not change their unsafe road use behaviour.

The children's behaviour on the road cannot be predicted from a child's road safety skill level per se. Children do not behave consistently on the roads. They may search carefully for traffic at one crossing, but run straight out without looking at the next (such inconsistent use of skills is typical of children in many different tasks). Thus teaching a child a given skill does not guarantee that the child will actually use that skill. Understanding how and why children use – or fail to use – their skills is critical for RSE. There are a lot of variables that may hamper the child from practicing the skill taught (see Department for Transport, n.d.). It is against this background that child development is a critical factor to be considered as it shed likes on the behaviour and activities of children in the growing process. The child has to be cognitively, socially and emotionally developed in order to learn and benefit from the road safety teaching process.

6.2.1.2 What are the views of the teachers on teaching road safety as part of mainstream curriculum in the rural community?

Teachers bemoan the lack of support from government in a form of training. As a result of this lack of training and support by providing teaching aids teachers are not enthusiastic in the teaching of road safety skills. There is admittance that they do not have confidence in the teaching of these skills. They are also not sure whether what they are doing is right or wrong as there is no cooperation or support from road safety officers. They indicated that road safety officers rarely visit the school to give support in the teaching of road safety skills. The feeling is that what the children are practising on the road is what they learnt at home. Teachers are surprised that even if they teach the children to use the roads safely when they get to the roads they still do not practise what they have been taught in class by the teachers. They blame the situation at home

or the parents for this state of affairs. What is encouraging is that there is an agreement that with the support of parents they can do better in the teaching of road safety skills.

6.2.1.3 How appropriate are the methods used by the teachers for the teaching of the road safety education programme

The study also revealed that child participants use the mass media like radio advertisements and to a lesser extent TV advertisements to construct their own knowledge and reality of the road situation. Most of the messages that emanated from children on road safety were a paraphrasing of the messages that were run by the Department of Transport's road safety campaign, *Arrive Alive*. The following examples illustrate the point:

"Rest every 02h00" *[tired – fatigue]* (C3)

"Don't drink a Black Label [beer] because you are drunk *[Drinking and driving]* (C9)

"If you walk walk carefully look the sign" *[Obey the road signs all the time]* (C4)

"Make sure your car is in safety place" *[vehicle fitness]* (C6)

(Information in square brackets mine.)

I was involved in the *Arrive Alive* campaign from 2002 and the above samples of children's knowledge of road safety messages are a construction of the road safety messages that the *Arrive Alive* campaign ran throughout the years. Children used the messages that they learned from the mass media to construct their own knowledge of road safety. This is positive. Though the messages are simplistic, they form a foundation that teachers and parents can build on. On the second level this not what the children learnt in the school environment, but what they learnt from the community through the mass media. For the purpose of this study, the significance of this finding is that children use the social setting around them to construct their own understanding and reality of road safety. What is also heartening is that the *Arrive Alive* campaign is making a positive contribution to children's understanding of road safety and their construction of road safety understanding.

Coupled with the understanding of the road safety campaigns in constructing knowledge that is applicable to their environment is the understanding that the children of the school have of the value of life. Child 2 wrote the following road safety message:

> "While you are going with your family and they stay at the back and they want to show you something don't look at the back because you are risking with your family's lifes"

What is impressive about this learner's understanding of road safety is the insight that road safety is a public health issue. If you drive recklessly you endanger not only your life but that of your family and create a burden for the public health system should they be injured (World Health Organization, 2004).

Road signs are very important in road safety. The level of importance that the children attached to road signs is impressive. This emerged in both the task in which the child participants drew their ideal Moloto road and in the messages that they wrote. However, the study revealed that whatever was taught to the children in the school was not complemented by real road environment practice. Practice is very important in the teaching of road safety skills. Theory has to be matched by practice in the real road safety environment.

> You must look left and right to jump the road and the sign show you how to jump the road.
>
> Masswao a re thusa go laola sephethephethe *[Road signs help us to control traffic]*
>
> Maswao a re thusa go thibela dikotsi *[Road signs help to prevent accidents]* (C4)
>
> When you are in a car you must be sure that you now the sign of the road (C10)

Lamenting the general lack of respect for the road signs, De Klerk (2009) writes that basically the answer is very simple. Roads are meant for cars and pavements are meant for people. But on hot summer evenings, the pavements are sociable places.

People gather, sit and chat. Groups of teenagers hang out in the streets, so busy comparing their text messages (sms messages) that they do not even look up when a car tries to pass them. What I observed was that although there was a high degree of respect for road signs and a clear understanding of the purpose of the road signs, there was no compliance with these road signs by the children or community members when using the road. This shows that children are taught the theoretical aspects of road safety but there is no practical input to enhance practical application of road safety.

The characteristics outlined above show that there is more to pedestrian competence and crossing the road safely as there are a lot of other variables at play. Having looked right and left and right again in itself is not enough. For children as pedestrians to avoid the danger depends on a number of underlying processes. Developmental and psychological factors play a critical role in determining the danger posed by vehicles on the roads. Children's safety on the road depends on their ability to co-ordinate auditory and visual skills. Unless children develop these skills, their competence to cross the road safely will be questionable. A common tendency among children is to apply what they have been taught in a rigid and blind manner without a clear understanding of why they are implementing the rule they have been taught.

The situation is even more dire where the children learn through the educational programmes that favour a rule-based approach and where children learn the rules without the context to which the rules apply. Visual timing is one of the most important skills in road crossing skills. Every pedestrian must learn to estimate accurately how much time will elapse before an approaching vehicle arrives at their intended crossing point. On busier roads it is important that children learn to identify gaps in the traffic flow that are safe to pass through and differentiate those that are not. Studies of pedestrians in traffic suggest that such skills are well developed in adults and even young teenagers (Routledge, Howarth & Repetto-Wright, 1976; Van der Molen, 1981; McLaren, 1993.) In children, on the other hand, they are not (Lee, Young & McLaughlin, 1984).

The top performing countries in the area of reducing deaths on the roads, pedestrians deaths particularly, share a common characteristic of approaching road safety in a holistic way. This is done through campaigns, through the media and in communities

and having road safety as part of the mainstream curriculum. The child participants in the study gave road safety messages that showed that they had learned these messages from the South African road safety campaign run by the Department of Transport. The *Arrive Alive* campaigns are conducted in communities through road shows and advertising through the media, particularly radio and television. The messages given by children were common messages for drivers and pedestrians that were part of the *Arrive Alive* campaign in the past. Teachers must understand the developmental stages of their children in order to structure their teaching content to the level suitable to the children as indicated in Chapter 3. I observed that this was not happening and each lesson is taught to all children. Coupled with the fact that they were not given a practical session on the road safety lesson they had learnt in the class, made it unlikely that they would practice what they had been taught in the class.

6.2.1.4 What is the impact of the road environment on the learning of road safety education

The study revealed that parents did not set a good, positive example to their own and other children. According to literature children learn road safety skills through modelling. If parents walk in the middle of the road, as shown in the study, the children will behave in the same way. De Klerk (2009) points out that in many rural communities lovers stroll down the middle of the road, so engrossed in each other they wouldn't notice a UFO, let alone a vehicle. Families with toddlers walk side by side, children spill over into the street, skateboarding, roller-skating and kicking soccer balls.

The significance of the discussion above for the study is that while the focus of the study is to assess the response of the children of my case study to RSE from the formal environment in schools, there is also a significant input of road safety education that the children are receiving from the community, in this case from the National Department of Transport's road safety campaign, *Arrive Alive*.

The sample of road safety messages taken from children's messages are the themes and messages that children heard and internalised from the electronic media particularly radio and television. These are the messages that were run by *Arrive Alive*

over the years on radio and television, particularly during Easter and Christmas holidays. This holistic approach is in line with best practice. Studies show that countries like Sweden and the Netherlands (SIDA, 2006) that have succeeded in reducing pedestrian deaths follow this holistic approach, where road safety is part of the mainstream curriculum, and there are other road safety initiatives and campaigns running parallel to complement each other. Road safety skills are learnt through modelling but in this case study the unsafe 'road environment' including parents and other community members do not do not contribute to the internalisation of road safety skills of the child participants of my case study.

The concept of attitude is defined as the overall affective reaction deriving from a set of beliefs, intentions, and behaviours, each of which involves some degree of affective response (Bergan & Dunn, 1970, p. 143). The findings of the study revealed that the children were positive about road safety and that they valued life. This is expressed in their road safety messages where they exhorted drivers and other road users to be careful on the road. In answering the question whether road safety should be taught in school, the child participants gave the following responses:

"Yes because people do not take care" (C1)

"Yes each child should know how to cross the road and avoid being knocked by cars" (C2)

"Yes most cars drink and knock down children" (C3)

What the study revealed is that the children were enthusiastic about road safety and saw the importance of its being part of the mainstream curriculum. Attitude is important in the teaching of road safety sills. My argument is that if children have a positive attitude it will facilitate their learning of road safety skills, although attitude seems not to be the only factor. In the following paragraphs I describe shortly the core of the different chapters of this research study.

In Chapter 1 I state the problem that in countries where RSE is part of the mainstream curriculum, like the Netherlands and Sweden, the number of children of schoolgoing age who are being killed on the road has been reduced significantly but in the countries that do not have this arrangement, the fatalities are very high. The study seeks to explore and understand in depth the RSE phenomenon as it occurs in a rural school, hence the choice of the one school and the children from the one school. Field and Morse (1985) point out that qualitative methods are suitable for a phenomenon of which very little is known; the problem is then approached from the "native point of view". In the case of this study the children, the teachers and parents are the "natives", the role players in this particular situation.

Chapter 2 explores the literature review in order to compare best practices and see what research has been done in this field so far. The literature review helped me in the following ways:

- Becoming acquainted with the past and latest developments in this field of study;
- Understanding the facts and theories related to road safety and RSE;
- Gaining insight into ways in which to conduct the research that is what are the best methods and techniques;
- Interpreting my research and relating it to the existing research;
- Gaining a better idea as to what could be done (Fox & Bayat, 2007; Seaman, 1987, p. 141).

Although there is not much literature related to South Africa on the subject of road safety and RSE, worldwide there is extensive literature in the field of RSE. What emerged from the literature review was that research was done in the developed world where there are ample resources available and most families own cars. In these countries child accompaniment especially to school is the norm and this reduces the child's level of exposure to or risk in traffic. From the literature review it was also evident that theories of development and learning are also critical in understanding how children learn and the role that the level of their development might play in planning RSE interventions.

From the literature review it was evident that education is regarded as one of the major intervention measures in the fight against deaths on the roads, alongside engineering and law enforcement. Education complements these other intervention measures. In countries that have made significant progress in reducing child or pedestrian deaths on the road, safety is an integral part of the school curriculum. However, in countries where pedestrian deaths are high, very little or no road safety is taught in schools. For the developing countries the other challenge is that a significant number of children of schoolgoing age are still outside school. However, for South Africa and for the school of my case study the situation is reasonably positive as primary education is relatively affordable (The Presidency, 2001). There is also an agreement that teaching road safety during the early years of the children, when they are still impressionable, is beneficial to them.

Chapter 3 delves into the understanding of the role that developmental theories play in RSE. Development theorists discussed in the chapter are Vygotsky, Bandura and Piaget. The chapter also discusses the implications of the various stages of development for the learning of RSE. The core issue that emerged from the developmental theories is that road safety learning depends on a number of variables. The key aspects are the cognitive level of children, their maturity and social interaction. What is critical for the study is that road safety learning has to be underpinned by the involvement of other community members for it to be effective in practice. Another key issue in this regard is the role that parents in the rural environment play in the construction of children's road safety skills.

Chapter 4 discusses the research design that is used in this qualitative enquiry and offers a rationale for the methods chosen for data gathering and their suitability for yielding useful data. A research design is defined as a plan for selecting participants, research sites, and data collection procedures to answer the research question and the sub-questions (McMillan & Schumacher, 2001; Treece & Treece, 1986). Seaman (1987), on the other hand, sums up a research design as the way in which the researcher plans and structures the research process. The design provides the flexible guideposts that keep the research headed in the right direction. As designs vary from

one study to another, the research design for this study was chosen for its relevance to the focus of the enquiry and the age of the participants. It was structured as a qualitative study that focused on one school in rural Mpumalanga in a village called Moloto, forty kilometres east of Pretoria.

The goal of a sound research design is to provide results that are credible. Credibility in research therefore refers to the extent the results approximate reality and are judged to be trustworthy and reasonable. In choosing the research design all the major factors that could affect the credibility of the study were considered and taken into account. I am mindful that not all errors can be avoided in research. Proper planning and following of principles such as obtaining permission from participants and not influencing participants in any way have been followed to minimise potential errors (McMillan & Schumacher, 2001; Seaman, 1987; Heppner *et al.,* 1992; Field & Morse, 1985).

Methods for gathering data in the study comprised a literature review, interviews, observations, questionnaires, drawings and photographs. The rationale for using the various instruments was to improve or enhance the validity and reliability of the study. The multimethod strategies used to gather the data assisted me in gathering rich data that enabled me to answer the research questions (McMillan & Schumacher, 2001). As an interpretivist I approached the data gathering process from a constructivist perspective or philosophy which moves from the premise or assumption that reality is multilayered, interactive, and a shared social experience interpreted by individuals. I see reality as a social construction. People's perceptions are what they consider "real" to them and what directs their actions, thoughts and actions (ibid.). It is from this perspective that I let the child participants share their experiences, while I interpreted their experiences in the context of the topic.

Informed by the above research design the data analysis was conducted inductively using concepts and constructions from the participants to reach conclusions. The constructivist grounded theory was employed.

6.3 Contribution of the study to the body of knowledge in road safety

In Chapter 5 I discussed key thematic areas that emerged from the data. The themes that emerged from the study are:

➢ Children's development of pedestrian skills
➢ Children's construction of road safety knowledge and their value of life
➢ Children being influenced by the unsafe 'road environment'
➢ Children's attitude to road safety

6.3.1 Development of pedestrian skills

The key finding in this theme is that the child participants had a theoretical understanding of the skill of crossing the road but they did not apply this skill when they crossed the road. Their road use behaviour was very unsafe. There are two contributing factors seemingly informing the children's road behaviour. The input they received in the class was not backed by practical input on the road so that the children could internalise this pedestrian skill. They did not apply their knowledge gained in school when crossing the road, like stopping to look right, left and right again. Another contributing factor seems to be that the parents' input was generic and lacks purpose. They only exhorted their children to be "safe" on the road or to "look out for vehicles". As a result, the children were bound to use opportunities and their own impressions of safety conditions to cross whenever they thought it was safe without taking the necessary precautions.

The implication for RSE is that there is a general agreement that pedestrian skills should form part of children's RSE and that this intervention should include a practical component where children are taken to a "real-life" situation or environment to teach them how to cross the road safely. This cannot be done by teachers alone. It has to be a holistic approach involving parents and teachers. With regard to policy it is my insight that it should be legislated that this endeavour has to be an interdepartmental effort between the Departments of Transport and Education.

6.3.2   Children's construction of road safety knowledge and their value of life

The study revealed that child participants recognised the importance of road signs on the road. This emerged from the task where they were requested to draw the ideal Moloto road. What emerged through this activity was that child participants suggested that there should be a number of road signs on the road. They seemed to be suggesting that this would facilitate the safe movement of children as pedestrians on the road. All the signs that they drew in their drawings along the road were standard signs for regulating the movement of both cars and pedestrians. The signs that featured prominently were robots, pedestrian crossings, speed limits and stop signs. The functions of all these road signs are to facilitate the movement of pedestrians.

Coincidentally, teachers also indicated that they did not have miniature road signs and road sign charts to help them facilitate the delivery of RSE. It is important that the children view the Moloto road on a scale model. The Moloto road is a dangerous road because the signs that the participants recommend are not available on the road to control and regulate the movement of both pedestrians and vehicles. One of the challenges cited by teachers is that they did not do practical role play or experiential teaching. with the children as they did not have the necessary equipment and JTTC to simulate the real road environment.

The implication for road safety is that when roads are designed and built they have to consider the needs of pedestrians as well. Pedestrian infrastructure should form an integral part of the entire road infrastructure from conception to completion so that pedestrian concerns and safety features should not only be added after many accidents and as an afterthought – in most cases as a result of pressure from the community – but have to be planned as a proactive safety measure. Given my experience in this field I am convinced that in future some of the recommendations from the children as they represent community concerns regarding the dangerous scenario at the Moloto road might be implemented as a result of ongoing pressure from the community.

6.3.3 Children being influenced by the unsafe 'road environment'

There is agreement in the literature that community involvement in RSE for children is critical if effective road safety delivery is to take place. What this study revealed is that parental involvement in RSE of children was too low to make any significant impact (Department for Transport, 2009). This is due to many factors. A major factor was that the parents were working in the Tshwane Metropolitan Municipality and commuted every day. Some parents worked far away from the Moloto area and only returned home during the month-end or over weekends. Lastly, it is not the norm for parents to be actively involved because of their low level of formal education.

According to the social learning theory which is based on behaviourism as described in Chapter 3, social learning is a modelling process through which observed behaviours become behaviours executed by children. From the information above it can be concluded that many human behaviours are constructed through the observation and imitation of other people such as road safety skills. There is a Sepedi proverb that summarises this process succinctly as "pinyana ge ere ping kwile ping e kgolo" meaning when a child does something they have seen the behaviour of elders or parents doing it.

What the study further revealed is that parents as community members in the Moloto settlement used the road in an unsafe manner. I observed this behaviour practised by both adults and children. They expected vehicles to yield for them. Children had internalised this unsafe behaviour and I observed them using the Moloto road, which is a national road, replicating the behaving that was prevalent in the community. Invariably, therefore, children will from a social learning theory point of view observe and copy the behaviour of their parents and other members of the community.

The implication for road safety is that parents have to be proper role models for their children. They cannot behave in an unsafe way on the road and expect their children to internalise safe road user behaviour. Herbst (2009) in her article *Model drivers the role of parents in promoting healthy driving behaviour* says children are like sponges, they absorb everything and as much information as they can at any given time. How much

they take in and how they integrate that information, depends on their level of development or developmental stage.

6.3.4 Children's attitudes to road safety

Although traffic safety education is widely regarded as an important part of the school curriculum, its implementation depends to a large extent not only on the school policy and practice but particularly on the attitudes of individual teachers and the children to RSE (Harrison, Penman & Pennela, 1997). With regard to this research project the study established that children were positive about the subject and their enthusiasm was informed by the need to be safe on the roads. In general their attitude to road safety was very positive.

The parents' attitude was also positive because they wanted their children to be safe. However, they were rather disillusioned by the lack of support from government, the lack of training and lack of cooperation from road safety officers who did not visit the school even if invited, according to one teacher. The lack of resources was also cited as an aspect that is hindering effective delivery of road safety competencies. The conclusion I draw is that teachers could be enthusiastic about RSE if the necessary support were offered to facilitate their delivery of the road safety competencies.

The implication for road safety teaching and education is that if teachers are motivated, their teaching of road safety skills and RSE will be effective and successful; but when they are demotivated, the opposite might occur. With regard to children their motivation and positive attitude to RSE was evident through their drawing tasks and the road safety messages that they constructed as road as part of the data. They knew the right decisions to make to be safe on the road.

The focus of this study was on children's responses to RSE. The findings discussed are those that relate to the research questions. However, there are other factors that impact negatively on children's uptake of RSE. They are the lack of training for teachers, the lack of resources, the lack of cooperation between road safety officers and teachers and the fact that road safety is not regarded as a priority by government.

The impact of these factors on children's internalisation of RSE is that they receive contradictory input from teachers who are frustrated, demotivated and lack resources. In addition, the teachers responded that they needed training. This in my view explains the uncoordinated RSE that children of my case study received. As a result they were confused and unable to implement the educational input that they received from teachers in the classroom environment. It is my opinion that they received RSE that is devoid of context.

6.4 Extended further findings

The research project revealed findings which I extend in the domain of road safety and RSE. My perspective of this topic is based on the findings and my personal experiences of RSE, as well as knowledge of the specific Moloto area.

The following are findings that are extended from the main findings:

- The teaching of road safety is the responsibility of both parents and teachers.
- The RSE that children receive in the classroom context is disjointed, not evaluated and inadequate to be of any help to the child in his everyday life.
- In the 6 to 14 years age category years children are prone to make a lot of mistakes when using or crossing the busy road, therefore they need road safety skills.
- Children's road use behaviour is very unsafe despite the RSE they receive in class.
- There is no cooperation or coordination between the parents, teachers and road safety officers with regard to the teaching of RSE.
- There is a dearth of teaching resources or media to assist teachers in the teaching of RSE which can be implemented.
- Teachers need training in the area of RSE and this should be done by the government agency responsible for road safety, the Road Traffic Management Corporation.
- There seems to be a paradox to be a paradox between what the children of my case study learnt at school and from campaigns and what they apply to their real

life in their rural community. Thus it seems that these children have internalised the unsafe road use skills modelled to them.

The children's road safety behaviour must be understood in the context of the developmental theories that were discussed in detail in Chapter 3. The thrust of the theories is that children behave in a particular way at a particular age. In the context of this study, although they did know the road safety skills which they should employ when using the road, they behaved in a way that endangered their lives. This type of behaviour could only be explained through the development stage of the children. It is clear from the data that teachers did not consider the age of the children in their learning of road safety. This age group has to construct their knowledge by physical experiences, which were not provided at the school.

The study shows that children can be taught road safety skills, but if the community does not provide them with an environment for practising the learnt skills, their road use behaviour will always be unsafe. According to the ages of my participants in constructing knowledge, the children need positive examples regarding road safety behaviour.

6.5   Recommendations

This study contributes to the understanding of the responses of children to the road safety input they receive at school and what needs to be done to maximise learners children's learning of road safety skills in a rural setting like the Moloto area. The following recommendations are offered as guidelines:

6.5.1 Recommendations for schools

• The development of road safety skills among children should be centred on the children. Any input should structure the learning process from the perspective of the children. Those involved in this process should therefore understand that children of this age group learn and behave in a particular way. The teaching of pedestrian skills should be structured in such a way that they are taught in a real road safety environment, at traffic parks so that they could practice what they

learned in a classroom setting. In top performing countries where pedestrian deaths are reduced to a minimum, children are consulted about road safety and encouraged to research and find more knowledge about road safety by themselves.

- Pedestrian skills education should include visual literacy. Road signs education has to be part of the education process. Children should know the signage that regulates the movement of both traffic and pedestrians. This could mean the difference between being safe on the road and being killed. Apart from just knowing the signage, it should be inculcated in them to obey the road signage. Children should know that the signs are meant for all road users – drivers, pedestrians and children.

- The approach used for teaching pedestrian skills and RSE for children should be a holistic one. Parents and teachers and all other role players should be involved and their roles clearly delineated. This will avoid a situation where parents are not consulted and they in turn leave the responsibility of teaching their children road safety skills to teachers. The role of parents should be appreciated and constantly evaluated. Child-centred planning should of necessity include parents and road safety officers.

- Children's road safety should be a community concern. Children learn the behaviour and the practices of their own communities. If the community sets the wrong example of how to use the road the children are going to internalise this unsafe use of the road and the circle will continue for ever. In other words, children's road safety education has to be complemented by community efforts. There has to be a concerted effort between the school of my case study specifically and in general and the community to ensure that there is synergy between the two environments. Parents who set wrong examples to their children cannot expect their children to behave positively on the road. The sad truth is that schools like the one in the case study have to play a parental or family role as most parents are absentee parents as a result of working far away from home.

6.5.2 Recommendations for teacher development

- Teacher development should form the integral part of the teaching of road safety skills. Teachers should be trained in the teaching of road safety competencies before they are required to teach the competencies. A once off workshop is not enough. Best practice models should be adapted from developed countries and schools should be resourced with relevant practical literature to help teachers. The success of the teaching of road safety competencies depends on competent and motivated teachers. In a country where fifteen thousand (see Chapters 2 and 3) are killed by road accidents annually road safety has to be prioritised at both Departmental and school level. Teacher training should involve the teaching of road safety modules so that the graduates are competent from universities to teach road safety competencies rather than relying on one day workshops which are not effective.

- Teachers should realise that the teaching of road safety requires a community approach where they are prepared to work with parents in empowering children with road safety skills. Interactive learning approaches are best in achieving results in the teaching of road safety skills as opposed to didactic methods. The implications for this is that they have to counterbalance theoretical inputs in the class with practical inputs taking place in a real setting at the road environment. They must be prepared to spend sometime out in the road with the children to give them real experience.

- The community approach to the teaching of road safety skills presupposes a paradigm shift on the part of teachers. They have to share space with both parents and road safety officers. Teachers will have to establish what the children are capable of achieving as success in the learning and teaching of road safety skills depend on both age and developmental stage.

- Training of teachers to teach road safety should of necessity include devolvement psychology. Children conceptualise good or safe behaviour on the

road as not damaging things. They are not aware that their actions might lead to accidents. It is against this background that they shift the responsibility for road safety on the roads to drivers. But when they grow up they realise that their actions might contribute to the causing of accidents. The understanding of child psychology should be at the core of teacher training.

- The teaching method for teaching RSE should also include or focus on group discussions to foster a spirit of peer learning among children. This approach should see the teacher taking a backseat to open up the forum to be used as an argument forming sessions among children. This approach is in line with the recommendation that in rural schools like Moloto Primary School should be child-centred so that road safety could be taught from the child's perspective. This type of collaborative group work will help children to improve their conceptual frameworks of road safety situations gained at the actual road side. The stronger children will help the weaker ones.

6.5.3 Recommendation for policy makers

- There has to be a political will at the government level to ensure that funds are dedicated to the teaching of road safety in school. Teaching road safety should be prioritised and should be part of mainstream curriculum and there has to be an incentive for the teaching and learning of road safety. Children should acquire their driver licences as part of their school programme so that when they graduate they should be having their driving licences. The introduction of the demerit system where reckless drivers eventually lose their drivers license is long overdue. More resources have to be dedicated to research to ensure that what ever programmes are implemented in schools are based on solid research and have a chance to succeed. The teaching of road safety has to be outcomes-based. South African universities are under-utilised as research institutions in the field of road safety. This is due mainly to lack of research funds.

- There has to be an inter-departmental cooperation between the Departments of Education, Health and Transport. This will ensure the sharing of resources and expertise. This cooperation will go a long way in realising a greater understanding of the aims, objectives and Road Safety Educational strategies among the key role players in delivering the road safety message, in order to appreciate the importance of each role player and to break down barriers and put in place structures to promote more coordinated working relationship. This is critical if government is to meet the Millennium Development Goa (MDG)l of halving deaths by 2014.

- Policy makers should realise that certain road safety challenges are situation specific. South Africa is vastly rural and this has to be considered when designing Road Safety Educational programmes. The challenges facing a rural child in the Moloto Primary School are different from those facing an urban child in say Pretoria. Therefore policy makers have to consider what works, for whom and where when designing road safety educational countermeasures and objectives. This process has to be guided not only by age of children but by the developmental level of children as well. In short, considerable research has to be undertaken to establish which skills are trainable and which ones are not.

- Interactive learning approaches require that time has to be made available for practical training of road safety skills. Besides, practical training is more effective but has resource implications. Schools should be equipped with video machines and TV Monitors, JTTC for simulation purposes. Practical training means that the road safety content within the school curriculum has to be clear about the road safety outcomes that have to be taught.

- Teacher training should include the teaching of road safety. Policy makers should fund research in the field of road safety to establish effective models for the teaching of road safety skills in a country with such stark contradictions where you have both first world and third world conditions existing side by side. Effective teaching of RSE is resource dependent. In South Africa RSE has to be

treated as a national emergency. Teaching road safety skills in poor schools poses challenges. The majority of schools have limited resources: large, unwieldy classes; undertrained and underpaid principals and teachers; no libraries or laboratories; few textbooks; sometimes apathetic or unskilled school governing bodies and uninvolved, absent or dead parents (Ndungane, 2010, p.47). In a situation like the one described above children are deprived in the most basic sense. They are denied the opportunity for good education let alone RSE. The constitution of the Republic of South Africa (1996) Chapter 6 guarantees children these basic rights like education and safety but without reasonable education a rural child will not access these rights.

- Policy makers should legislate speed reduction measures and signalised crossings in roads that pass through built up rural areas like Moloto village where the case study was conducted. Once this is done have legislation that assumes driver responsibility for accidents involving child pedestrians in these build-up residential areas.

- A coherent and general conceptual framework covering both rural and urban dynamics and challenges should be developed by the National Department of Transport to guide policy and recommend countermeasures that will cover even schools and areas in rural areas like Moloto Primary School the site of the case study. This will ensure inclusivity and relative successes of the programmes implemented. Universities like the University of Pretoria could be roped in to facilitate such a process. Further more Universities could be harnessed to form road safety research units like the Children's Institute at the University of Cape Town. In the absence of such framework our countermeasures are random and province specific, in most cases reactionary as opposed to being proactive. Any teaching method is as good as the teachers who are to teach through it and the content of the programme to be taught. The low level of road safety teaching skills among teachers particularly at rural schools requires that the outcomes should be clearly outlined and activities to achieve the outcomes also clearly

delineated. Rural teachers have a problem of resources and large unwieldy classes.

- The NGOs have a role to play in the teaching of RSE particularly in rural areas where well qualified teachers are loathe to go. Government should make funds available for NGOs to fund road safety countermeasures and NGOs' staff could share the work load with teachers to implement these road safety intervention measures in rural schools. Coupled with this is cooperation between teachers and road safety officers so that they could maximise efficiency in the delivery of road safety teaching.

- Incorporate parents of schoolgoing children in RSE programmes as they play an important role in their children's acquisition and application of road safety.

6.6 Recommendations for further research

The study has revealed some key 'lessons' for RSE, particularly in a rural environment. The findings have far-reaching implications for policy and legislation in the area of RSE, especially in the Moloto area. Encouraging safety practice through schools may help develop ownership of the problem and engender a safety awareness culture. 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. International practice shows that countries that are successful in the reduction of pedestrians deaths are already at this level. The study and its limitations notwithstanding shows that there is a need to conduct parallel studies in other campaigns aimed at behaviour modifications like drugs and alcohol abuse, smoking and unsafe sex to see if there are lessons that could be learned from these campaigns. The following recommendations resulted from the enquiry:

Theme 1: The learning of pedestrian skills

- How do pedestrians learn road safety skills in a rural environment?

- What competency levels should they have in order to teach pedestrians road safety skills effectively? At what age does this commence?
- Can pedestrian skills be taught in a more appropriate way to young children?
- What specific resources are required for pedestrian teaching to be effective?

Theme 2: The importance of road signs

How can road signs facilitate the uptake of RSE and road safety skills learning?

- Why are road signs not obeyed by child pedestrians?

Theme 3: Unsafe road use by the community

- How can parents in a rural community play a more prominent role in RSE?
- How can parents' input be evaluated and stimulated?
- How can the attitude of the community be changed?

Theme 4: Attitude to road safety

- Is there a correlation between positive attitudes to road safety and safe road use behaviour?
- How can attitudes to road safety be facilitated more directly in the teaching and learning of road safety?
- How can government assist in enhancing positive road safety attitudes?

6.7   Conclusion

Although the findings of the study cannot be generalised they provide insights into the learning of road safety particularly in a school that are situated in a rural setting without resources. They provide insights for teachers who are faced with the teaching of RSE with very little support if any. The findings also provide guidelines for officials in designing programmes. In South Africa officials should reflect in depth what needs to be done in terms of RSE in a rural environment and how this should be addressed. A major focus should be the safety of the child using the dangerous roads like the Moloto road.

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APPENDIX A

The Global Road Safety Partnership (GRSP) in GRSP focus proposes/suggests the following road safety education curriculum:

Age 0 – 4

Children this age are too young to be responsible for their own safety; they should be taught to:

- Hold hands with older children or adults near the road;

- Walk only on footpaths, or the edge of the road;

- Play in safe places (away from roads) designated by an adult;

- Develop a simple road safety vocabulary;

- Recognize that roads are primarily for traffic, not for people;

- Recognize that roads are dangerous;

- Know you have to stop, look and listen before walking across the road;

- Know that small children cannot always be seen by motorists;

- Know that traffic may come from unexpected places;

- Learn to use protected crossings, before learning to use others;

- Know safest places to cross the road near home.

Age 5 – 7

Children this age are given more responsibility for their own safety. They should be taught:

- Children should ideally be accompanied near busy roads;

- To extend their safety vocabulary;

- To recognize and seek people who are there to help them cross the road;

- How and where to cross safely;

- The direction of traffic by sight and sound;

- Where to stop, look and listen before crossing and to choose the shortest distance to walk directly across;

- That, whenever possible, to use marked pedestrian crossings;

- To understand and use traffic lights (with or without marked pedestrian crossings);

- How to get to and from school safely;

- About the dangers of being or not being seen, or not being able to see other traffic because of stationary vehicles;

- To develop further understanding of rules governing the behaviour of pedestrians and traffic;

- About how and why vehicles contribute to safety or danger;

- To understand problems faced by other road users and the importance of being seen in all types of weather;

- That accidents can lead to injury and death;

- That one can be held responsible for accidents.

Age 8 – 12

Children this age are often expected to deal with traffic risk by themselves. They should learn to:

- Identify and recommend to smaller children safe places to play;

- Understand the need to be seen near and in traffic and judge the hazards of stationary vehicles and how to play or cross the road near them;

- Understand traffic lights, road signs, road markings and signals given by drivers and the police;

- Understand the concept of differing speeds by observing traffic;

- Know when and how to summon help in an emergency;

- Understand which road signs must be obeyed, which are warnings and which provide information;

- Understand about visibility, conspicuity, adverse weather, vehicle control and braking;

- Be made aware that traffic rules are not always observed by other road users;

- Understand needs of special groups – the very young, the old and disabled;

- Understand problems of alcohol, drugs and fatigue in relation to road accidents;

- Understand immediate and long-term consequences of road accidents;

- Be aware of importance of planning safe school routes when changing school;

- Understand problems caused by domestic and wild animals near roads;

- Set a good example to other children.

Age 12 – 16+

Over the age of 12, children in developing and transitional countries are more likely to be treated as 'mini' adults and should learn to:

- Travel safely on public transport by themselves;

- Ride a bicycle on the road;

- Know the contents of the highway code (if there is one);

- Identify and understand causes of road accidents and how to reduce risks;

- Observe traffic and be able to judge speeds and distances;

- Learn the basic legal requirements of road user responsibilities towards fellow road users;

- Know about simple first aid

APPENDIX B

INTERVIEW SCHEDULE FOR CHILDREN

Questions for Children. Questions to be translated and asked to the children in their own language (Sepedi)

SECTION A: BIOGRAPHICAL INFORMATION

Gender	
Family Background	
Grade	

SECTION B: IMPUT FROM PARENTS [Home Environment]

1.   When you cross the road what do you do to make sure you are safe?

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………

2.   What are your parents teaching you in order to cross the road/use the road

        safely?

……

……

………………………………………………………………………………………………

3.   Why do you want your parents to accompany you to school?

……

……

……

4.   Why would you prefer your parents to bring accompany you to school?

……

……

……

5.   Where do you get your road safety education? Messages that teach you how to

      use the road safely?

……

……

………………………………………………………………………………………………

6.   What road safety education/tips are you receiving at home?

……

……

……

7.   Is road safety important to you? If yes why?

....

....

....

SECTION C: SCHOOL IMPUT [School Environment]

8.   What have you learned regarding road safety from the school teachers?

....

....

....

9.   What do you do before you cross the road?

....

....

....

10.   What do you do to make sure that you are not knocked down by cars when

using the road?

....

....

....

11.   How should teachers teach you how to be safe on the roads?

....

....

....

12. SECTION D: GENERAL KNOWLEDGE LEARNED OUTSIDE THE

SCHOOL[Community Input]

13. Tell me where you heard road safety messages apart from here at school.

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………

14. Identify the following road signs.

Stop Sign, Pedestrian Crossing, Pedestrian Prohibiting Sign

15. Tell me anything you know about *Arrive Alive*.

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………

16. Where have you heard about it?

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………

INTERVIEW SCHEDULE FOR PARENTS

SECTION A: BIOGRAPHICAL INFORMATION

Gender: Male/Female

Educational Background: Highest Standard Passed ……………………………

Marital Status: ……………………………………………………….

Income: ……………………………………………………………….

Source of Income: ………………………………………………………….

What type kind/type of transport do you use on daily basis?

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………..

When do you use this type of transport?

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………

SECTION B: INPUT FROM PARENTS

1.   How do you ensure the safety of your child when he goes to school using the

roads?

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2.   Give reasons for your answer above.

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3.   Do you have a fear that your child will be knocked down by cars, buses etc when

using the roads?

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4.   How do you teach your child to use the road safely?

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5.   What road safety skills do you teach her/him?

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6. What attitudes relating to road safety and using the roads do you teach your children?

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7. What values relating to road safety and using the roads do you teach your children?

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8. What things do you need that will help you teach the child road safety effectively?

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9. Who do you think must teach your child road safety?

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10.   How often do you discuss safety on the road with him/her?

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11.   What type of road safety information do you impart to your child?

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12.   What road safety information do you think is important for your child's safety

        when he goes to school?

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13.   What must your child do when crossing the road?

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14.   What do you think is the biggest problem in terms of road safety in Moloto area?

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15.   What do you think is the biggest problem in terms of road safety in South Africa?

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INTERVIEW SCHEDULE FOR TEACHERS

Questions for Life Orientation Teachers

SECTION A: BIOGRAPHICAL INFORMATION

Male	
Female	
Academic Qualifications	
Age category	20 -30; 30-40; 40-50

SECTION B: TEACHER INPUT [School Environment] EXPERIENCE IN TEACHING ROAD SAFETY

1.   What type of training/workshop have you received to prepare you to teach the

road safety competencies?

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2.   What skills do you still need to enable you to teach road safety?

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3.	Outline the road safety competencies that you teach your children?

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4.	Describe the type of training you need to prepare you to teach the road safety competencies?

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5.	For how long have you been teaching road safety?

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6.	Do you think road safety should be taught in school? If not why not?

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7.	Describe the present state of road safety in your school?

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8.	Why is road safety teaching important in schools?

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9. What road safety knowledge do you think is important for children?

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10. Which attitudes related to road safety do you teach your children?

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11. What values (s) do you inculcate in your children when teaching road safety?

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12. What has been your observation when children are using the road either when they come to school or when they go home?

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13. From your perception why are children using the road in a manner that is unsafe even when they receive road safety lessons?

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14. What road safety knowledge do children bring from home?

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15. Discuss the other road safety inputs which you are aware of that children receive apart from your lessons?

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16. What is your relationship with the road safety officers who work in your district?

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TEACHING AIDS/MATERIALS NEEDED

17.1. What media do you use?

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17. 2. What materials will make your teaching of road safety effective?

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18.   What support in terms of teaching aids do you need in order to teach road safety

        successfully?

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19.   What role do they play in the teaching of road safety?

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20.   Who do you think is responsible for the present state of Road Safety Education in

        schools?

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21. What training did you receive in the use of the multi media road safety education programme?

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METHOD(S) USED TO TEACH ROAD SAFETY EDUCATION

22. What practical activities involving the children do you use to reinforce the teaching of road safety?

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23. What do you think should be done to improve the teaching methods of road safety in schools?

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24. What do you think should be done to improve the teaching of road safety in schools?

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GENERAL ROAD SAFETY SOLUTIONS

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25.   What do you think is the biggest problem in terms of road safety in the Moloto

area?

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26.   What do you think is the biggest problem in terms of road safety in South Africa?

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