Educators' perceptions about implementing a road safety education programme in the context of curriculum change

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ABSTRACT

This study's aim was to explore the perceptions of the teachers to the implementation of the road safety education programme in five primary schools in the Pietermaritzburg Region, South Africa. The Department of Transport in collaboration with the Department of Basic Education implemented a road safety programme in primary schools. The study was done by using a qualitative research methodology framed by an interpretive paradigm. Through semi-structured teacher interviews, the researchers were able to answer the two critical questions of the study. Five teachers from five different schools were selected for the study. The data were qualitatively analysed and six themes identified. The findings indicated that teachers were positive about the road safety education programme but that they did not always have the necessary support from colleagues and resources necessary for implementing the programme successfully. They also did not have any feedback/reflections on the programme from management, colleagues or learners to help them improve the implementation process. It is recommended that schools provide resources for the implementation of the programme. The Principals must also provide an environment where discussion and reflection on the implementation process is encouraged.

Keywords: curriculum, road safety education programme, teachers' perceptions, qualitative study, interpretive paradigm

INTRODUCTION

The purpose of the study is to explore the perceptions of teachers with regard to the implementation of a road safety education programme in five selected schools in KwaZulu-Natal, South Africa. This study was conducted in five selected primary schools in the Pietermaritzburg Region, South Africa. The need to incorporate a road safety education programme in the South African school curriculum arose as a consequence of the high fatality rates on South African roads. The statistics from the Automobile Association (AA) indicated that every 48 minutes, a person is killed on South African roads (AA, 2014). The cost of traffic collisions in South Africa is about R16 billion per year. Using the roads is difficult and risky, especially for children. Children are particularly at risk when walking, riding bicycles, playing and/or travelling in vehicles (Joubert, Fraser & Sentsho, 2012). A number of academics suggest that many road accidents can be prevented if children from a young age are taught the correct knowledge, skills and attitudes about road safety (Gulbrandson & Bremberg, 2004; Jacobs & Aeron-Thomas, 2000).

Fokides and Tsolakidis (2012) refer to road safety competence as all the skills, attitudes and knowledge a person needs in order to be safe in the road environment. According to Joubert, Fraser and Sentsho (2012) there is an apparent lack of empirical research to prove that road safety education programmes improve road safety in general but the literature also does not suggest an alternative that can be used to improve road safety. In the light of this lack of an alternative, a road safety education programme in schools seems a good option to prepare children for a safer road environment.

Like all learning, road safety education needs to start at an early age and must be appropriate to the child's age. Children need to be familiar with the general road safety rules of their country. They need to be aware of the dangers on the road and learn safe ways to cope with them. Often children do not know what is safety on the road. Children need ongoing road safety education from an early age to help them develop a thorough understanding of road safety so that when they become drivers they already have a good foundation with regard to road safety. Therefore, the role of the school extends to educate children on road safety. According to research carried out by the Queensland Department of Transport, Australia (2008), road safety concepts should be taught to children from an early age and through continual exposure in the regular school curriculum (Queensland Department of Transport, 2008). Odero (2004) supports the notion of road safety education programmes when he stated that road safety education programmes have been part of many school programmes. Schools, therefore must strive to include a comprehensive road safety education programme in their curriculum.

The National Department of Transport and the Department of Basic Education in South Africa have emphasised the need for a long-term road safety strategy that includes a road safety education programme in the schools. When a new curriculum was implemented in 1994, road safety became part of the official curriculum in South African schools. One assessment standard within the Life Orientation learning area was directly related to road safety. This, however, lacks some depth and the Department of Transport then embarked on their own extensive educational road safety programme for schools (Govender, 2012). The Department of Transport developed a road safety strategy based on four pillars. The four pillars are: Enforcement of the traffic laws; Education about road safety; Engineering and road design; and Evaluation of all the interventions. The Education pillar is important for this article because the road safety programme referred to in this research is one of the four pillars (Govender, 2012).

This road safety education programme is a comprehensive programme, which is currently being used to teach road safety education in primary schools in South Africa. The programme is part of the Road Traffic Management Corporation's (RTMC) national strategy that was implemented in all primary schools across South Africa. The programme was developed in consultation with the National Department of Basic Education. Representatives of the National Department of Basic Education contributed to the improvement of the Learner Support Material. Resource materials have been developed, tested, produced and distributed to the provinces. The RTMC has also proposed that research be carried out to evaluate the effectiveness of this project.

Lovat and Smith (2003) stated that if teachers are positive towards new programmes it will benefit the implementation of any intervention programme. Researchers (e.g. Govender, 2012) suggest that if a road safety education programme is compatible with the teachers' belief system, then the teachers will accept and promote the programme more readily. This confirms Martin's statement (1993) that programme implementation approaches that do not consider teachers' beliefs have a temporary life. Handal and Herrington (2003) elaborated on this point and stated that if the teachers do not see the value or the merits of a new programme, then they will become negative towards the implementation of the programme.

In the context of this study, the implementation of the road safety education programme will depend fundamentally on the individual teacher's perception of the road safety education programme and its value. A road safety programme cannot be implemented successfully if teachers are not positive towards the programme. The study therefore explores the perceptions of teachers regarding the

implementation of a road safety programme in primary schools in South Africa.

PURPOSE OF THE STUDY

The researchers' purpose for undertaking this research was to explore the perceptions of teachers regarding the implementation of the road safety education programme in five selected primary schools in the Pietermaritzburg Region, South Africa.

LITERATURE REVIEW

The implementation of a new programme such as the road safety education programme will be realised through the broad curriculum of a school system. This section provides a brief review of the literature on road safety programmes in selected countries.

There is a substantial body of literature which examines road safety education in schools. This literature indicates that there is a wide range of road safety education programmes which fall in the continuum of content focus on more general road safety issues to more in-depth knowledge of specific road safety issues. Across these differences, they tend to focus either on the transmission of information or on the development of more practical skills or a combination of both. There is also a number of education programmes that aim to develop positive attitudes of children with regard to road safety (Cooke & Sheeran, 2004).

Curriculum-based approaches of road safety education involve the inclusion of road safety specific subjects or the integration of road safety themes within existing subjects such as Mathematics, Science, and English. Incorporating road safety education in school subjects is known as the cross-curricular approach. Raftery and Wundersitz (2011) state that curriculum-based approaches enable the delivery of developmentally appropriate road safety education to students of all ages and usually involve multiple sessions delivered over the course of a term, semester or school year. However, they (2011) state that the main problem associated with the addition of road safety subjects to any school curriculum is that of space, because the school curriculum is already overloaded with core subjects (Govender, 2012).

Researchers worldwide are striving to find solutions for high fatality rates on roads (Christie, 2002, Cairney, 2003, Buckley, 2008). Many countries developed and implemented road safety programmes but for this article we selected the following countries; England, New Zealand, Norway, Scotland, Australia and Ghana to explore their road safety education programmes in more detail.

The revised curriculum in England addressed road safety education in primary and secondary schools. Road safety education is not necessarily about isolating children and young people from all potential hazards but is about equipping them to deal with situations safely (Department for Transport, 2004). Using the information and experience from the English programmes, Massey University in New Zealand was contracted to conduct research on the road safety education programmes in England. The research confirmed:

- A measurable and significant increase in both the amount and quality of road safety education is taking place in schools that were part of the programme.
- There is evidence that schools were beginning to incorporate road safety education into their curricula in underlying policies and programmes.
- Road safety was becoming institutionalised within the curriculum of each school and also

in the schools' administration (RoadSense, 2003). Pentecost and Murray (2003) agreed with this finding that being part of RoadSense increased the awareness of road safety with the children.

In Norway, two local councils carried out a project aimed at integrating road safety into the curriculum. This project was evaluated and the results show that the project has led to an increased understanding of road safety issues by the children involved with the programme (Elvik, 2000).

The Scottish Government and the Scottish Road Safety Campaign (SRSC) commissioned research to assess the current state of road safety education in Scottish schools, the key stakeholders' views on road safety education and the factors that affect its delivery (Graham, 2000). The results of the research assisted in the development of a strategy for the SRSC to provide a more equitable and consistent promotion and delivery of road safety education within Scottish schools (Dragutinovic & Twisk, 2006).

In one of the states of Australia, Victoria, an evaluation was done on the Safe Roads to School programme. The main focus of this evaluation was to determine the perceptions of the key stakeholders with regard to the implementation of the programme. Couch, McCutcheon and Cirocco (2001) found that most schools which implemented the programme reported that children show an improvement of road safety knowledge. In another state of Australia, New South Wales, an evaluation was done about their project, Road Zone. Road Zone was a more interactive road safety programme for children. Gray (2003) found that the interactive nature of the programme improved the majority of learners' understanding of road safety.

In contrast to developed countries, children in developing countries spend more of their time as pedestrians and are extremely vulnerable to be injured in road accidents on the roads. In Ghana, child casualties are mostly in the 6 to 10-year-old age group (Sayer, Palmer, Murray & Guy, 1997). Ghana's Ministry of Transport and Communications acknowledge this fact and indicated that it is also a concern for them as government. They are consequently using education as a means of addressing the problem (Accra Declaration Ministerial Round Table, 2007). For road safety education to be effective there needs to be a national commitment at all levels. Ghana is fortunate to have the benefit of a national road safety committee (National Road Safety Committee) as its official body. Yet the literature also revealed that road safety in Ghana is more on a conceptual level and less on the implementation of the programmes in schools (Joubert, Fraser & Sentsho, 2012).

Although countries around the world are implementing good road safety programmes, there are also critics of the road safety education programmes that are being implemented in schools. Dragutinovic and Twisk (2006) conducted a comprehensive evaluation study of road safety education programmes in several countries. Some of their important findings were that most road safety programmes focused on primary school children which were implemented in developed countries. They found that although many countries implement road safety programmes there is a lack of a systematic evaluation to determine the success of the programme. They established that effective programmes were these that focus more on the individual instead of the group. They also found that computer-supported practical training in a road safety programme was very successful. Christie (2002), however, stated that sometimes road safety education and training programmes may cause more harm than good depending on the content and the way it was delivered. This is important for this study because we want to find out if the road safety programme introduced in schools contributes to general road safety.

Schrieber and Vegega (2002) concurred with Christie when they said that no single road safety education

programme has demonstrated sufficient impact on the majority of students to merit endorsement and widespread dissemination and that road safety education programmes have modest and limited benefits. This is an important statement for this study because the data gathered for this study will help to support or dismiss this statement.

In a South African context, the abovementioned road safety education programme is a relatively new education programme which was only introduced to the schools after the new post-apartheid curriculum in 1994. This study could contribute to the debate and knowledge of road safety education programmes and their implementation in South Africa. Raftery and Wundersitz (2011) state that for road safety education to be effective it must be presented on a continued basis and across all learning areas in the curriculum. Evidence-based evaluations must be conducted to determine what works and what does not work. This could assist ineffective programmes to be discontinued and new effective programmes being developed to replace those (Raftery & Wundersitz, 2011).

There is general consensus in the literature and among practitioners that *ad hoc* activities such as visits from experts and road safety enthusiasts may have mass appeal but are relatively unsuccessful because road safety education should be planned continuously and progressively (Bailey, 1995; ITF, 2011). The Organisation of Economic and Cooperation Development (OECD) promotes and supports road safety education programmes worldwide that are integrated into several curriculum areas (ITF, 2011). They also recommend that road safety professionals must support teachers continuously in delivering a progressive programme of road safety education in schools rather than the occasional talks on road safety.

As stated earlier the researchers' purpose for undertaking this research is to explore the perceptions of teachers regarding the implementation of the road safety education programme in five selected primary schools in the Pietermaritzburg Region, South Africa. This purpose leads to the following research questions:

1. What are the teachers' perceptions with regard to the implementation of the road safety education programme in selected primary schools?
2. What are the teaching and learning constraints experienced by the teachers during the implementation of this programme?

RESEARCH DESIGN AND METHODOLOGY

As the central aim of this research is to explore the perceptions of teachers with regard to the implementation of a road safety programme, the researcher identified an interpretive paradigm as the most suitable for this study. Joubert, Hartell and Lombard (2015) prefer this paradigm because it gives the teacher the opportunity as participant to describe his/her interpretation of the implementation of the road safety programme. Joubert, Hartell and Lombard (2015) explain that the methodological paradigm can either be qualitative, quantitative or a combination of both called mixed mode. The researchers decided to use a qualitative approach because this paradigm focuses on the perceptions of people in their environment (Joubert, Hartell & Lombard, 2015). This fits neatly into this study which attempts to gather teachers' perceptions with regard to the implementation of a road safety programme. Qualitative research according to Cohen, Manion and Morrison (2011) provides an in-depth, intricate and detailed understanding of meanings, actions, observable as well as non-observable phenomena, attitudes, intentions and behaviours. It gives voice to participants, and probes issues that are beneath the surface.

Qualitative research often highlights the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Researchers working in a qualitative paradigm also emphasise the value-laden nature of inquiry. Qualitative research generally attempts to study human action from their own perspective.

All ethical issues with regard to the participation of the participants were followed as prescribed by the university's ethical policy (North-West University, 2014).

Sample and sampling procedures

For the purpose of this research, five teachers from the five different schools were selected for the interviews. This represented one teacher from each school. Two teachers from the Foundation Phase and three teachers from the Intermediate Phase were interviewed. The researchers selected these schools because they were easily accessible and the schools took part in other road safety programmes such as the regional scholar patrol programme. This is referred to as purposive sampling where the participants are intentionally selected. Purposive sampling is also referred to as judgement sampling (Gay, Mills & Airasian, 2009). Three schools from the rural areas and two schools from the urban areas were chosen.

Data collection

Cohen et al. (2011) refers to the interview as a distinctive research technique which may serve three purposes. It can be used as the principal means of gathering information because it relates directly to the research objectives. Secondly, it may be used to test hypotheses and thirdly, it may be used in conjunction with other methods.

The researchers use the interview as the principal means of gathering data from the teachers who implemented the road safety programmes in their classrooms. Punch (2009) describes an interview as a data gathering technique of people's perceptions and their understanding of reality. A topic guide is used to steer the discussion and ensure that the important concepts as identified in the literature are covered in each interview. However, it will not be so restrictive that it will discourage the interviewee from raising issues that may not have occurred to the researcher.

Data analysis

The analysis of the data is important to give answers to the research question (Joubert, Hartell & Lombard, 2015). The data analysis is a critical process where the researcher interprets the data to get insight into the phenomenon, in this case how teachers perceive the implementation of the road safety programme. Data analysis can consist of various cycles of analysing and coding. The process of analysing and coding can lead to the identifying of themes. Mouton (1996) explains data analysis as the process when the researcher is breaking up the data into smaller units and then see if themes can be identified.

PRESENTATION OF RESULTS

The following interpretive themes were extrapolated from the data:

- Teachers are positive towards the implementation of the road safety education programme
- The significance of the road safety education programme
- A lack of feedback sessions for teachers

- Availability of resources when implementing the road safety programme
- Support from the Principal when implementing the road safety programme
- Support from colleagues when implementing the road safety programme.

Teachers are positive towards the implementation of the road safety education programme

All participants agreed that the implementation of a road safety education programme is a positive step in view of the extremely high fatality rate in South Africa, and that is important that learners are taught about road safety from the foundation phase upwards. Hopefully, this will ensure that the future generation of road users, are responsible road users. It is also extremely important that the learners develop the right attitude to road safety.

Teacher A said:

> It is easy and user friendly. It is important for learners to learn about road safety, because it impacts on their everyday lives.

Innovations are often implemented in classrooms if teachers realise the importance of the innovation. Smith and Lovat (2003) support this notion when they state that a teacher will implement an innovation if they perceive it as positive.

The significance of the road safety education programme

All five teachers interviewed agreed that this was a valuable programme.

Teacher A confirmed this notion when she said:

> It is good for the children to learn about road safety in a formal school environment, because some children do not learn anything at home, because of their home circumstances. The children from this area are extremely poor; their parents are uneducated and are unable to assist with any school work. These children will become safer road users for now and also as adults.

Teacher C agreed:

> It is extremely important that children learn about road safety as early as possible. I have noticed a change in behaviour when I am at duty at the gate, after doing the lesson on road safety.

Teacher E supports the above view:

> Road safety education is important for all road users, these children will also be responsible road users as adults.

If people have a deep understanding of the value and purpose of an innovation, then implementation becomes easy. This research indicated that teachers will embrace a new programme if they perceive the value of such an innovation. Fullan (2003) states that the value of an innovation in the school curriculum, such as a road safety programme in this case, will be realised if teachers anticipate that the programme will make a tangible difference in the lives of the learners.

This research indicated that readiness for the implementation of road safety education programme occurs when teachers perceive the inherent value of this programme. Teachers are more likely to engage with the change if they realise that by doing so, they will be responding to the changing social context of their work and especially to the needs of the learner. Change will more likely occur if the teachers acknowledge that the road safety education programme has the potential to develop a generation of road users that will help to reduce road fatalities.

A lack of feedback sessions for teachers

Reflection and feedback are mechanisms for identifying problems encountered during the implementation of new programmes. Govender (2012) mentions that the absence of feedback during an implementation of a new programme is problematic. It is also important that such feedback sessions occur between peers and between staff and management. All participants indicated that there was a lack of reflection and feedback during the implementation of the road safety programme between peers and between staff and management.

Teacher A said:

> When I returned to school, I discussed this with the Principal. The Principal requested me to distribute the packs to other staff members. We did not have any discussions and feedback sessions regarding the implementation of the programme.

Feedback mechanisms are a means for identifying problems encountered during implementation and providing support to address implementation problems. According to Fullan and Pomfret (1977), the absence of feedback mechanisms during implementation of a programme is a major problem. They further state that feedback among peers, teachers and principals, are essential for encountering and finding solutions to problems encountered during implementation (Fullan & Pomfret 1977). Teachers iterated that there was no such platform at their schools during the implementation of the road safety education programme. They did not discuss the implementation of the programme nor discuss any problems that they were experiencing. Regular staff meetings were held, but the implementation of the road safety education programme was mentioned in a cursory way. Communication is essential in implementing new programmes. It is important for teachers to share ideas and to discuss the strengths and weaknesses of any new programme.

Availability of resources when implementing the road safety education programme

The provision and availability of resources for the implementation of the road safety education programme was an issue of concern for all five teachers that were interviewed. Teachers expressed the view that not enough resources, such as learning material, space, equipment and human capital were available to support the implementation. They had, for example, to resort to making copies of learning material themselves because there were not enough learning materials for each learner.

Teacher B said the following:

> If we run short of paper for photocopying, I usually do the exercises on chart paper and paste them up on the board. It would be easier to implement the lessons if every teacher and learner

was issued with their own course packs. This will save time and effort.

This process of copying also depended on the vagaries of the photocopying machine as well as the availability of paper for copying. This impacted on costs which were not funded.

Physical structures and resources play an important role in the implementation of new programmes. Although the lack of resources is symptomatic of socio-economic circumstances, it leads to serious conditions that may impact negatively on the effective implementation of new programmes. This view confirms that of Mahomed (2004) that primary school teachers are especially dissatisfied with the physical environment of the schools. All five participants agreed that the road safety course packs were excellent packs but to implement excellent materials one needs to have adequate resources. Bennie and Newstead (1999) support this view when they said that even if teachers are highly motivated, a constant lack of resources will impede implementation. Another factor that can hinder implementation is overcrowded classrooms. This phenomenon is evident in many South African rural schools.

Support from the Principal when implementing the road safety education programme

All the participants agree that support from the Principal is vital for the successful implementation of a new programme in a school and they all agree that their principals were very positive towards the new road safety programme.

Teacher B said:

> The Principal supports all the Department of Education road safety initiatives. She has acknowledged that the road safety education programme is a good programme and that it is important for all children to learn about road safety.

Teacher C confirmed this notion when she said:

> All correspondence concerning the workshops is addressed to the school principal. He informs us about the workshops and allows us to attend the workshops. He also makes time available for cascading information when we return to school. He is aware of the road safety education programme, he has also read through the course packs. He has indicated that it is extremely important that all children learn about road safety.

According to Tanner and Tanner (2007), it is the Principal's job to lead. In order to meet the school's leadership needs, the Principal has to know the curriculum and any new innovations and programmes for implementation. From the above interviews it is clear that principals have an important role to play in implementing any innovation. All the participants felt that the Principals did try to implement the road safety programmes successfully.

Principals that become actively involved in the implementation of new programmes have a strong influence on how well the change progresses or the innovation is implemented. Implementing a new programme such as the road safety programme will require the support of the Principal who sets the pace, assumes directions and encourages his subordinate staff to keep forging ahead despite obstacles and resistance to change (Tanner & Tanner, 2007).

Smith and Lovat (2003) also agree by stating that the most important factor in successful programme implementation is the explicit commitment of the leadership of the school. Teachers in this study viewed the support from the Principal as a positive contribution to the implementation of the road safety programme.

Support from colleagues when implementing the road safety education programme

This theme is closely related to the previous theme about support but in this case the research identified a lack of support from colleagues during the implementation of the road safety programme. All five teachers interviewed stated that they work on their own when they implement the road safety education programme and did not get support from their colleagues.

Teacher A put it as follows:

> We do not have time to engage in discussions or to share ideas with our colleagues about the implementation of new programmes. Each teacher basically does his or her own thing in their classrooms. I have shared the course packs with the other teachers, but we did not subsequently have any discussions about how or when we were going to implement the new programme.

Teacher E elaborated further on this point:

> We sometimes mention the new programme casually during breaks in the staff room. We do not discuss how we can help each other with the implementation of new programmes because we do not have time to do so.

From the data analysis it is evident that teachers did not make time to reflect together or support each other on the implementation of the road safety programme. Research has revealed that school cultures are traditionally individualistic in which teachers keep to themselves rather than work together (Fullan, 2001). Teachers also do not willingly allow other teachers in their classroom. In South Africa as a result of the intervention by the trade union movement, SADTU, teachers were not allowed to be critiqued in their classrooms by anyone for evaluation purposes (Govender, 2012). From the data analysis it is also evident that teachers do not generally support other teachers. This is due to the culture of the school, the demands of the classroom, and the usual way in which change is introduced does not facilitate teacher involvement in exploring or developing more significant changes in classroom practice.

DISCUSSION AND RECOMMENDATIONS

The implementation of a road safety education programme is worthwhile but the implementation of the road safety education in South African schools highlighted some limitations. The study was a qualitative study and therefore it is not possible to generalise these findings to the rest of the schools which implemented this road safety education programme but the data from this study are important enough that schools can take cognisance of the findings and which are, in many cases, transferable to other schools. Transferability in qualitative studies is according to Lichtman (2010) the possibility to transfer findings from a small scale qualitative studies to a larger population.

The success of the implementation of the road safety programme depends on teachers' positive attitudes

towards the programme. The literature (Smith & Lovat, 2003) clearly states that teachers will be positive to implement new programmes if they see the benefit of such a programme. Schools and Road Safety organisations must make sure that teachers understand the importance of such programmes so that they are positive to implement such programmes in their classrooms.

Teachers also need to understand the importance and value of road safety programmes and therefore schools and road safety organisations must inform Departments of Education, schools and teachers on how such programmes enhance road safety. The participants of this study were quite positive about such programmes but it is important that all teachers be motivated over a period of time to understand the importance of such programmes.

The participants felt that there was not enough reflection and feedback regarding the implementation of the programme. As the literature (Tanner & Tanner, 2007) suggests it is important that principals and schools establish these communication routes and reflection sessions so that teachers can learn from each other.

The participants generally agreed that they need more resources to implement such new programmes. It is important that the Department of Educations, Schools and Road Safety organisations ensure that all the resources are available when the programmes are implemented. It is also important that schools know what is expected from them and what they must have available when such programmes are implemented. It is especially difficult for schools in rural areas and in low socio-economic areas to provide extra resources for the implementation of the road safety programmes.

The data indicated that principals were quite positive towards the implementation of the road safety programmes but the teachers felt that their peers were not so supporting. It is therefore necessary that principals and schools encourage teachers to support each other when new programmes, such as the road safety education programme, are implemented. It is well-known that people learn and have more success if they support each other and assist if they realise people experience some difficulty with the implementation of the programme.

CONCLUSION

Road safety education programmes are playing an important part to prepare young people to be more aware of road safety. The development of this road safety programme which was implemented in South African schools was a good initiative and has the potential to contribute to road safety. The problem, ..

however, is that a good programme does not automatically mean successful implementation. Successful programme implementation requires highly qualified experts to lead the implementation process, skilled competent people to motivate teachers, schools to strive for educational excellence and committed teachers with good support and adequate resources. The data indicated that generally the teachers and principals are positive regarding the road safety programme. It is important that the implementation of any new programmes need substantial support and resources. These were identified in this study as important components for the successful implementation of the road safety programme.

REFERENCES

AA. (2014) https://www.aa.co.za/about/press-room/press.../be-safe-on-the-roads-thiseaster.html
(Accessed 15 April 2014).

Accra Declaration Ministerial Round Table. (2007) 'African safety promotion' *A Journal of Injury and Violence Prevention* 5(1) pp.117-119.

Bailey, T. (1995) 'The Effectiveness of occasional or short – term school road safety education programs'
Road Transport Research 4(33) pp.71-75.

Bennie, K. & Newstead, K. (1999) 'Obstacles to implementing a new curriculum' In M.J. Smith & A.S. Jordaan (Eds.) *Proceedings of the National Subject Didactics* pp.150-157. Stellenbosch: Stellenbosch University, South Africa.

Buckley, L. (2008) *The design and preliminary evaluation of an intervention to reduce risk-taking behaviour among adolescents: The potential for protective behaviour toward friends*. Brisbane: Queensland University of Technology, Australia.

Cairney, P. (2003) 'The impact of the safe routes to schools program on road safety knowledge and behaviour in Victorian primary schools' Paper presented at the 2003 Road Safety Research, Policing and Education Conference, 24-26 September, Sydney, Australia.

Christie, R. (2002) 'Road safety education & training from a public health perspective' Paper presented at the Road Safety Research, Policing, and Education Conference, 3-5 November, Adelaide, Australia.

Cohen, L., Manion, L. & Morrison, K. (2011) *Research methods in….education* (7th ed.). London: Routledge.

Cooke, R. & Sheeran, P. (2004) 'Moderation of cognition-intention and cognition - Behaviour relations: A meta-analysis of properties of variables from the theory of planned behaviour' *British Journal of Social Psychology* 43 pp.159-186.

Couch, M., McCutcheon, A. & Cirocco, B. (2001) 'An evaluation of safe routes to school in South Australia' Paper presented at the Road Safety Research, Policing and Educational

C onference, 19-20 November, Melbourne, Victoria, Australia.

Dragutinovic, N. & Twisk, D. (2006) *The effectiveness of road safety education*. Leidschendam, NI: SWOV Institute for Road Safety Research.

Elvik, R. (2000) 'Evaluating the effectiveness of Norway's "Speak Out!" road safety campaign' *Transportation Research Record* 17(17) pp.66-75.

Fokides, E. & Tsolakidis, C. (2012) *Virtual reality in education: A theoretical approach for road safety training to students*. Rhodes: Aegean University.

Fullan, M. (2001) *The new meaning of educational change*. New York: Teachers College Press.

Fullan, M. (2003) *Change forces with vengeance*. London: Routledge Falmer.

Fullan, M. & Pomfret, A. (1977) Research of curriculum and instruction implementation. *Review of Educational Research* 47(2) pp.335-397.

Gay, L.R., Mills, G.E. & Airasian, P. (2009) *Educational research. Competencies for analysis and applications* (9th ed.). New Jersey: Pearson.

Govender, J. (2012). *A road safety education programme: a journey into the school curriculum*. A thesis submitted in fulfilment of the requirements of the degree of Doctor of Philosophy, University of KwaZulu Natal, South Africa.

Graham, T. (2000) *Road Safety Education in the Scottish Curriculum*. Aberdeen: Scottish Executive. Gray, S. (2003) 'It's fun but do they learn anything? Student learning at an interactive road safety exhibition' Paper Presented at the 2003 Road Safety Research, Policing and Education Conference, 24-26 September, Sydney, Australia.

Guldbrandsson, K. & Bremberg, S. (2004) 'A study of safety-promoting activities for children and adolescents in 25 Swedish municipalities' *Health Promotion International* 19(2) pp.215-225.

Handal, B. & Herrington, A. (2003) 'Mathematics' teachers' beliefs and curriculum reform' *Mathematics Education Research Journal* 15(1) pp.59-69.ITF. (2011) *Road Safety Annual Report 2010*. Paris: OECD Publishing.

Jacobs, G. & Aeron-Thomas, A. (2000) *Estimating global road fatalities. Transport Research Laboratory Report 445 Africa Road Safety Review Final Report; PR/INT/659/2000*. TRL Limited, Washington, DC: US Department of Transportation/Federal Highway Transportation.

Joubert, I.C., Fraser, W.J. & Sentsho, M. (2012) 'Road Safety Education: A paradoxical state for children in a rural primary school in South Africa' *Journal of Asian and African Studies* 48(2) 209-228.

Joubert, I., Hartell, C. & Lombard, K. (2015) *Navorsing: 'n gids vir die beginnernavorser* (*Education: A guide for a novice researcher*). Van Schaik: Pretoria.

Lichtman, M. (2010) *Qualitative Research in Education*. London: Sage.

Mahomed, H. (2004) 'Challenges in curriculum transformation in South Africa' Fifth Annual Educationally Speaking Conference, May, Boksburg, Gauteng, South Africa.

Martin, P. (1993) 'An evaluation of the Victorian Certificate of Education on mathematic teachers' Paper Presented at the 16th Annual Conference of the Mathematics Education Research Group of Australasia (MERGA), 9-13 July, Brisbane, Australia.

Mouton, J. (1996) *Understanding Social Research*. Cape Town: Van Schaik Publishers.

North-West University. (2014) *Rules of the Research Ethics Regulatory Committee (RERC) and the Research Ethics Committees (RECs)*. North-West University, South Africa.

Odero, W. (2004) 'Africa's Epidemic of Road Traffic Injuries: Trends, Risk Factors and Strategies for Improvement' A paper presented at the Harvard Center for Population and Development Studies on the Occasion of the World Health Day, 9 April, Harvard, Massachusetts, US.

Pentecost, J. & Murray, D. (2003) 'RoadSense: Building a strong road safety culture in NZ primary schools' *Highway Capacity Manual* 2 pp.492-494.

Punch, K.F. (2009) *Introduction to research methods in education*. London: Sage.

Queensland Department of Transport. (2008) *Queensland road safety action plan 2008-2009*. Safe4life. Brisbane: Queensland Government.

Raftery, S.J. & Wundersitz, L.N. (2011) *Road safety education: Directions for the Future*. Adelaide: Centre for Automotive Safety Research, The University of Adelaide, Australia.

RoadSense. (2003) *Road Safety Initiative*. www.road-sense.org/documents/springer09sw_v6.pdf (Accessed 9 July 2008).

Sayer, I.A., Palmer, C. J., Murray, G. & Guy, J. (1997) 'Improving road safety education in developing countries; Ghana' *TRL Report 265*. Crowthorne: Transport Research Laboratory.

Schrieber, R. & Vegega, M. (2002) 'Education versus environmental countermeasures. Is it really an either or proposition?' *Injury Prevention* 8 pp.10-11.

Smith, D. & Lovat, T.J. (2003) *Curriculum: Action on reflection*. Australia: Cengage Learning.

Tanner, D. & Tanner, L. (2007) *Curriculum development. Theory into 199 practice* (4th ed.). New Jersey: Pearson.