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**The Feasibility of a Flexibly Delivered Professional Development Program
for Teachers in Road Safety Education**

by

Vanessa Hille

This thesis is submitted in partial fulfilment
of the requirements for the Award of

Bachelor of Health Science (Health Promotion) Honours

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USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

ABSTRACT

School-based prevention education programs can contribute to a reduction in childhood road trauma by increasing students' knowledge, attitudes and skills. Professional development (PD) for teachers is needed to ensure effective implementation of health curricula. Access to conventional workshop PD is restricted by obstacles such as time, cost and lack of resources. A flexibly delivered PD program would allow teachers to study when, where and how they prefer. The purpose of this study was to examine the feasibility of a flexibly delivered PD program for teachers in road safety education. The target population was teachers from Western Australian primary schools.

A self-completed questionnaire was administered by mail. The instrument addressed factors such as perceived importance of road safety, education needs of students, previous participation in PD and use of road safety education resources. The time, location and what method of delivery preferred by teachers for a flexible learning PD program were also identified. The resources and information that teachers wanted included in a flexibly delivered PD program on road safety education were also determined. Knowledge of how to access an Internet site, location of access to the Internet and the likelihood of teachers in government and non-government schools participating in a flexibly delivered PD program on road safety education were also established.

Teachers perceived road safety to be an important health topic and the need for the road safety education of students was identified by teachers. Road safety resources

were used to supplement or in place of the Health Education K-10 Syllabus. Videos, discussion posters and storybooks were considered important resources to be included in a road safety education program. Information concerning essential facts about road safety, involving parents and the community, a road safety policy for schools, resources, an action plan and teaching strategies were also perceived as important components to be incorporated in a road safety PD program.

Teachers preferred to participate in PD at school during school hours. Greater interest was shown by teachers in a flexible learning package of hard-copy materials rather than a flexible learning package available on the Internet. The majority of teachers knew how to access an Internet site and had access to the Internet either at home, school or both. The findings of this research suggest that a flexibly delivered PD program in road safety education is feasible. The proposed flexible learning PD program may utilise both methods of delivery to allow for those who do not have access to the Internet or do not possess Internet skills.

DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

- (i) incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education;
- (ii) contain any material previously published or written by another person except where due reference is made in the text; or
- (iii) contain any defamatory material.

Signature



Date

21/3/01

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CHAPTER 1

General Overview

1.1 Introduction

Morbidity and mortality associated with road trauma is a significant child health problem. Schools are appropriate environments to reach children, and school-based prevention education programs can improve students' road safety knowledge, attitudes and behaviour (School Health Coalition, 1996; Towner, 1995; Gingiss, 1992; Cameron, 1991). Professional development (PD) for teachers is needed to facilitate the implementation of health curricula (Cameron, 1991; Butler, 1992). PD programs that include workshops as a main strategy often hinder teachers' access as they fail to address time and cost barriers, particularly for teachers in rural and remote areas. PD using flexible learning, the focus of this study, may address these problems as this method of training provides participants with the opportunity to study at their own pace, at a convenient time and location (Porter, 1997; Johnston, 1993).

1.2 Background

Epidemiological data indicate the significance of road trauma in childhood. During 1998, road trauma patients accounted for (8%) of the 10,300 injured children aged 0-16 years who presented to the Princess Margaret Hospital (PMH) Emergency Department (PMH Emergency Department, 1998). They included 531 pedal cyclists (64%), 172 motor vehicle occupants (21%), 91 pedestrians (11%) and 32 motorcyclists (4%). Prevention strategies are necessary to reduce injuries associated with road trauma among children.

Schools provide access to children and can play a significant role in fostering healthy behaviours and preventing childhood injury. Effective school-based programs can influence the knowledge, attitudes and behaviour of students (Gingiss, 1992; School Health Coalition, 1996). PD is required to ensure efficient implementation of health interventions by teachers (Nutbeam, Wise, Bauman, Harris, & Leeder, 1993; Connors, 1991). Obstacles such as time and cost often restrict teachers' access to conventional workshop PD.

An example of comprehensive road safety curricula is the 'Kids and Roads' program developed by the WA School Road Safety Project (WASRSP). The program is a cross-curricula package with materials for years one to seven (Centre for Health Promotion Research, 1999). The WASRSP provide a half-day in-service training workshop for teachers. Results of the 1998 process evaluation revealed the need for strategies to increase the implementation of training sessions. The present study derived from the recommendation to use distance education via the Internet to improve the effectiveness of implementation of the 'Kids and Roads' program.

1.3 Significance

There is little evidence in the literature of alternative models for delivery of PD. There is a need to establish a cost-effective model for PD delivery of road safety education which is accessible to all teachers in Western Australia. This project will make a significant contribution to the research literature by testing the feasibility of a road safety PD program delivered by flexible learning.

Factors taken into consideration by teachers when choosing to participate in a road safety PD program include the preferred time, location and method of delivery. The identification of these factors can aid in the development of a PD program that caters for the needs of teachers. Examination of the resources and information teachers want included in a flexibly delivered PD program on road safety education will allow the content needs of teachers to be accommodated for in the program design.

1.4 Purpose

The purpose of this study was to investigate the feasibility of a road safety PD program for teachers using flexible delivery. The opinions of teachers from rural and metropolitan primary schools throughout Western Australia were examined. An accessible road safety PD program for teachers could contribute to an increased implementation of road safety education in schools, which should have the long-term effect of reduction in road trauma (involving children).

1.5 Research questions

The research question for this study:

- What is the feasibility of a flexibly delivered PD program in road safety education?

Sub-questions:

- What factors do teachers take into consideration when choosing to participate in PD programs?
- What do teachers want included in a flexibly delivered PD program on road safety education?

- Would teachers in government and non-government schools participate in a flexibly delivered PD program on road safety education?

1.6 Definition of terms

Child: for the purposes of this study a child will be defined as a student in year one to year seven.

Government school: one administered by the Department of Education in Western Australia (ABS, 1997, p.86).

Health education: the classroom learning experiences that enable students to develop health knowledge, attitudes and values, and skills to voluntarily make informed decisions about their health behaviour (Smith, Roberts, Nutbeam, & MacDonald, 1992, p.133).

Health education

K-10 syllabus: a health education syllabus disseminated to Western Australian schools.

In-service an activity that aims to improve the performance of teachers. In-service activities can focus on classroom and student learning, curriculum, administration and teacher's own personal development (Schools and Curriculum Policy Branch, 1991, p.14).

Flexible learning/delivery: education or training which provides participants with the opportunity to study at their own pace, at a convenient time and location (Porter, 1997, p.12).

Information technology, such as the Internet, allows

teachers to share resources and ideas quickly and easily over long distances and helps to reduce the isolation associated with teaching (Schrum, 1995, p.222).

Metropolitan: The Perth Statistical Division comprises the following local government areas: Armadale, Bassendean, Bayswater, Belmont, Cambridge, Canning, Claremont, Cockburn, Cottesloe, East Fremantle, Fremantle, Gosnells, Kalamunda, Kings Park, Kwinana, Melville, Mosman Park, Mundaring, Nedlands, Peppermint Grove, Perth, Rockingham, Rottnest Island, Serpentine-Jarrahdale, South Perth, Stirling, Subiaco Swan, Victoria Park, Vincent, and Wanneroo (Cercarelli, Kirov, Legge, & Rosman, 1998, p.x).

Non-government school: one administered by a religious, community or private organisation. Independent schools may have a specific religious affiliation (other than Catholic) or be inter-denominational, non-denominational, or have no religious affiliation (ABS, 1997, p.91).

Professional development: involves in-servicing where the teacher seeks to maintain and enhance teaching skills and knowledge and develop new ideas and approaches toward teaching and thereby maintain a high standard of professionalism (Schools and Curriculum Policy Branch, 1991, p.9).

Road crash: any apparently unpremeditated collision which resulted from the movement of at least one road vehicle on a

road open to and used by the public, and involving death or injury to any person (Cercarelli, Kirov, Legge, & Rosman, 1998, p.viii).

Rural:

The area of the state outside the Perth Statistical Division (see Metropolitan) (Cercarelli, Kirov, Legge, & Rosman, 1998, p.xi).

CHAPTER 2

Review of literature

Injuries associated with road trauma are one of the leading causes of mortality and morbidity in childhood. This chapter provides a review of the epidemiology of transport-related injury for children. In addition road trauma injuries for Aboriginal persons and rural residents are also explored in detail. A rationale for the school as an appropriate health promotion setting and an examination of the success or otherwise of health promotion interventions and road safety education programs is reviewed. The review of literature concludes with current research on PD for teachers to facilitate implementation of health curricula and the use of flexible learning as a delivery method in PD programs.

2.1 Road trauma

2.1.1 Road crash fatalities and injuries

Cercarelli, Kirov, Legge and Rosman (1999) reported that in Western Australia in 1998, there were 199 fatal road crashes in which 223 people were fatally injured. The estimated total costs in 1998 were \$775.4 million for metropolitan crashes and \$311.9 million for rural crashes. There were 6,578 potential years of life⁽¹⁾ lost as a result of road crash fatalities in Western Australia. In 1998, there were 12.2 fatalities per 100,000 population in Western Australia, the second highest road fatality rates per population in the Australian states.

¹ Potential years of life lost: The number of years of life lost as a result of premature death, defined as death before age 70 years.

This review concentrates on data collected by Princess Margaret Hospital for Children (PMH) including the cause and circumstances of injury recorded on all children presented to the Emergency Department for treatment. PMH provide a more comprehensive data set on childhood road trauma than other information sources such as the Road Safety Council, Main Roads Western Australia, Health Department of Western Australia and Australian Bureau of Statistics. During 1998, road trauma patients accounted for (8%) of the 10,300 injured children aged 0-16 years who presented to the PMH Emergency Department. They included 531 pedal cyclists (64%), 172 motor vehicle occupants (21%), 91 pedestrians (11%) and 32 motorcyclists (4%). Presentations were especially common among children aged 5-13 years. The PMH injury surveillance data gives an indication of injury patterns in Western Australian children, particularly children with more severe injuries from the Perth metropolitan region. Rural residents may be under-represented in the PMH statistics as they may not have been transferred to the hospital if injuries were able to be treated at the closest rural hospital.

2.1.2 Pedestrian fatalities and injuries

Pedestrians have the highest proportion of severe to critical injuries, which is evident in the mean length of hospital stay of 12 days, the highest of all road-user groups (Dolinis, O'Connor, Trenbath, 1995). A combination of factors act to increase the vulnerability of pedestrians, for instance, nearly all injuries result from a collision with a faster and heavier vehicle. The low physiological tolerance to impact in children contributes to their high pedestrian injury rates.

In 1998, there were two police-reported pedestrian fatalities aged 6-11 years in the metropolitan area and no reported fatalities in the rural area of Western Australia (Cercarelli, Kirov, Legge, & Rosman, 1999). Of the 91 injured pedestrians presenting to the PMH Emergency Department in 1998, 13% (12 cases) were nine year-old children (PMH Emergency Department, 1998). More than three-quarters of injured child pedestrians (69 cases) resided in the Perth metropolitan area, 15% (14 cases) were from rural Western Australia and the residence of the other eight pedestrian trauma patients were unknown.

2.1.3 Bicyclist fatalities and injuries

There were no police-reported bicyclist fatalities in the six to 11 age group in 1998 (Cercarelli, Kirov, Legge, & Rosman, 1999). Nearly two-thirds of road trauma patients presenting to the PMH Emergency Department in 1998 were pedal cyclists. The number of injured children cyclists increased steadily with age up to 13 years, then declined in older age groups. The helmet use status was specified in 474 (89%) of the pedal cyclist presentations (PMH Emergency Department, 1998). Of those, 308 (65%) were wearing a helmet at the time of injury. Child cyclists living in the Perth metropolitan area (67%) were more likely to have worn a helmet at the time of injury than their rural counterparts (41%).

2.1.4 Passenger fatalities and injuries

There were three passenger fatalities in the six to 11 age group in Western Australia in 1998 (Cercarelli, Kirov, & Legge, 1999). None of these were wearing a restraint at the time of crash. In 1998, one-fifth of the road trauma patients presenting to the PMH Emergency Department were motor vehicle occupants. The status of car

restraint use was specified in 123 (72%) of the motor vehicle occupant presentations. Among those specified, 60 out of 70 (86%) who were injured in the Perth metropolitan region were restrained, compared with 5 out of 12 (42%) who sustained motor vehicle injuries in rural Western Australia (PMH Emergency Department, 1998). Of particular significance is that only one-quarter of children injured in single vehicle crashes and roll-overs were restrained (PMH Emergency Department, 1998). The danger for children is further highlighted by the fact that 43% of unrestrained children needed urgent medical attention compared with 19% of restrained children (PMH Emergency Department, 1998). The high proportion of vehicle occupants injured in road crashes not wearing a restraint, particularly in rural areas, exemplifies the need for strategies to increase restraint use.

2.1.5 Geographical variation

The characteristics of crashes involving rural residents are different to those from the Perth metropolitan area. Roads in rural areas have higher speed limits and are often unsealed, therefore, increasing the risk of road injury (Cercarelli, 1994). For the period 1985-1994, the age-specific death rates for injuries due to land transport injuries in rural residents were higher than in metropolitan residents. The age-specific death rate for pedestrian injuries aged five to nine years was 3.1 among rural residents compared with 1.8 in metropolitan residents (Ashwell, Pinder, & Thomson, 1996). The age-specific death rate for bicyclist injuries among children aged five to nine years were 0.8 deaths for rural residents and 0.6 for metropolitan residents (Ashwell, Pinder, & Thomson, 1996).

Over the decade 1985-1994, hospitalisation rates for cyclist and pedestrian injuries increased significantly among rural residents whereas hospitalisation rates for metropolitan residents decreased. The age specific hospitalisation rate for pedestrian injuries aged five to nine years was 33 among rural residents and 42 for metropolitan residents (Ashwell, Pinder, & Thomson, 1996). The age-specific rate for hospitalisations due to bicyclist injuries was 96 for rural residents and 112 for metropolitan residents. The prevention of transport-related injuries among rural residents requires further investigation and development to reduce injury rates.

2.1.6 Aboriginality

While Aboriginal people made up only 2.9% of the total population of Western Australia in 1996 (ABS, 1996), they comprised nine percent of those admitted to hospital as a result of traffic crash during 1998 (Cercarelli, Kirov, Legge, & Rosman, 1999). Among those aged six to 11 years, there were 291 traffic crash hospital admissions among non-Aboriginal children and 63 for Aboriginal children in Western Australia (Cercarelli, Kirov, Legge, & Rosman, 1999). The over-representation of Aboriginal children in road crashes highlights the importance of determining ways to reduce the number of injuries and deaths related to road usage involving Aboriginal persons.

Ashwell, Pinder, and Thomson (1996) conducted a descriptive analysis of the epidemiology of injury in Western Australia for the decade, 1985-1994. The age-specific death rates for pedestrian aged five to nine years were 3.8 among Aboriginal children and 2.1 for non-Aboriginals. Among those aged five to nine years, the age-specific death rates for bicyclist injuries were 1.9 for Aboriginal children and 0.6 for

non-Aboriginal children during 1985-1994. The most marked difference between Aboriginal and non-Aboriginal children were the age-specific rates for injuries in pedestrians. The age-specific hospitalisation rates for injuries among pedestrians aged five to nine years was 111 among Aboriginal children and 36 for non-Aboriginal children. For cyclists aged five to nine years, the hospitalisation rate was 191 among Aboriginal children compared with 104 for non-Aboriginals.

In 1996, 66.1% of Aboriginal people lived in rural areas (ABS, 1996). The Kimberley statistical division recorded the highest proportion and the second highest number of people who reported being of Indigenous origin (34.7% and 11 469 respectively). The Perth statistical division reported the highest number of people of Indigenous origin (17 197), however, it contained a relatively low proportion (1.4%). The over-representation of injuries among Aboriginal children exemplifies the need for effective road safety education programs in rural and remote areas of the state where there are large Aboriginal communities.

2.2 Children as target group

The reasons for road trauma are complex and involve interactions between road users and their environment (Sabey, 1995). The cognitive abilities and developmental stage of children affects their ability to understand and master appropriate responses to the traffic environment (Stevenson, Jamrozik, & Burton, 1996; Cross & Pitkethly, 1991). The vulnerability of children aged five to nine years for injury can be explained by the fact that they have not yet developed the necessary perceptions and skills to avoid dangerous situations (Rivara, 1990; Malek, Guyer, & Lescohier, 1990). Trends in childhood injury change with stages of development. There are rapid rises in the

frequency of injury for specific causes, such as, becoming an independent cyclist (Moller, & Kreisfeld, 1997). As the child learns new skills associated with exposure to the hazard there is a plateau at a high level, followed by a decrease in frequency of injury as the task is mastered.

Road crossing in childhood is a complex task which involves the coordination of a child's physical, sensory and cognitive abilities (Roberts, & Norton, 1995) as well as support from environmental and legislative interventions (Sabey, 1995; Towner, 1995). Environmental and vehicle characteristics contributing to the severity of road trauma include the volume and speed of traffic, presence of visual obstacles, separation of vehicles and pedestrians, and traffic controls available, such as traffic guards, signs and lights (Stevenson, Jamrozik, & Burton, 1996; Gilliam & Stevenson, 1995; Sabey, 1995; Roberts, Ashton, Dunn, & Lee-Joe, 1994; Roberts, & Coggan, 1994). A child's developmental stage has the potential to contribute to their behaviour in road situations and modifications to the road environment reduce the likelihood of childhood injury.

2.3 Road injury prevention interventions

Interventions to reduce transport-related injury have focused on reducing road use, better roads and traffic management, safer vehicles, and well directed traffic laws. Personal behaviours such as speeding, drink driving, and failing to wear a bicycle helmets and seatbelts are also important determinants of transport-related injury which are potentially amenable to behaviour change. In recent years, several strategies have been successful in reducing road morbidity and mortality. These have included significant improvements in vehicle safety, the adoption of stronger

enforcement methods with regard to seat belts, drink-driving, and speeding, significant investment in roads infrastructure (including the treatment of accident blackspots) and public health education (Nutbeam, Wise, Bauman, Harris, & Leeder, 1993).

Environmental approaches aim to reduce the incidence and severity of road trauma by imposing barriers between motor vehicles and children, or by modifying the speed, flow or volume of traffic (Gilliam, & Stevenson, 1995). Aspects of traffic and road environment that contribute to the likelihood of childhood pedestrian injury were examined in a population-based case-control study conducted in Perth between 1991 and 1993 (Stevenson, 1997). The results indicated that the volume of traffic and presence of visual obstacles to which the child pedestrian was exposed influenced the risk of injury. Changes to the road environment, such as traffic-calming initiatives and removal of visual obstacles from the roadside, were recommended as strategies to prevent injury to children. Traffic-calming methods, such as speed humps and road narrowing, have been identified as effective in reducing the volume and speed of traffic (Roberts, Ashton, Dunn, & Lee-Joe, 1994; Stevenson, Jamrozik, Burton, 1996; Roberts, Norton, Dunn, Hassall, & Lee-Joe, 1994).

Legislation has an important role in the prevention of road trauma in childhood. In Australia, helmet use soared with the introduction of mandatory cycle helmet wearing legislation in 1990-1992 (Federal Office of Road Safety, 1998; Moller, & Kreisfeld, 1997). Bicycle helmets are highly effective in reducing the risk of bicycle-related head injuries (Thompson, Rivara, & Thompson, 1989). Children have lower helmet use rates and higher bicycle related injury rates compared with adults (Britt, Silver, &

Rivara, 1998). After peaking at 71% in 1993, the compliance rate for children declined whereas the adult compliance rate remained steady at over 80% since 1993 (Federal Office of Road Safety, 1997). Researchers report that legislation combined with education has a more positive effect than legislation alone (Dannenburg, Gielen, Beilenson, Wilson, & Joffe, 1993; Macknin, & Medendorp, 1994).

Health education is an important foundation for both environmental change and legislation. The integration of education, legislation and improvements to the road environment are essential to the success of road safety interventions (Sabey, 1995; Towner, 1995). School-based education, media campaigns and community education have been used in conjunction with environmental interventions and legislation (Stevenson, Iredell, Howat, Cross, & Hall, 1999; Gilliam, & Stevenson, 1995). This review will now focus on school health education and its importance in road injury prevention. School-based education programs can aid in the prevention of injury among children who are vulnerable to road trauma by increasing students' knowledge, attitudes and skills (School Health Coalition, 1996; Gingiss, 1992; Cameron, 1991, Towner, 1995).

2.4 The school as a health promotion setting

Interventions can be targeted more readily to children located in schools where they are a 'captive' audience. Schools can play an important role in providing children with the tools for successful adolescence and adulthood. Children's health and education are interrelated in that education can contribute substantially to improving health, and conversely, a child's health status can affect educational achievement. School health education is an effective means of helping children improve their health

knowledge and develop attitudes that facilitate healthier behaviours (Lavin, Shapiro, & Weill, 1992, Gingiss, 1992; Gold, et al., 1991; School Health Coalition, 1996).

Schools can play a significant role in fostering healthful behaviours and preventing childhood injury. Injury prevention efforts are cost-effective, whereas the social and economic costs of inaction produce serious repercussions for children, their families and society (Lavin, Shapiro, & Weill, 1992).

School-based health education programs are often restricted by problems with implementation and maintenance (Gingiss, 1992). Failure to implement health education programs effectively and maintain use over time can influence the potential of an intervention in changing student knowledge, attitudes and health behaviour (Gingiss, 1992). One of the best ways to serve children is to meet the growing information needs of their teachers (Neuman, 1997). A positive relationship exists between the level of implementation of programs and degree of in-service training for teachers (Cameron, 1991; Butler, 1992). PD programs for teachers are concerned with increasing the level of existing skills and developing new and more integrated skills (National Board of Employment, Education and Training, 1993). PD aims to enhance teachers' knowledge and competence in implementing the health curriculum, and consequently improve student learning (Connors, 1991).

A comprehensive school health promotion program involves the school curriculum, the school environment, the interface between school and community, and links with health and welfare services (Nutbeam, Wise, Bauman, Harris, & Leeder, 1993). The concept of a 'health promoting school' has been supported by other researchers (Colquhoun, Goltz, & Sheehan, 1997; Rivara, Booth, Bergman, Rogers, & Weiss,

1991; Weiler, 1993; Resnicow, Cherry, & Cross, 1993). The successful implementation of curriculum structures require adequate space in the total school curriculum, adequate training of teachers, and the production of relevant support materials (Nutbeam, Wise, Bauman, Harris, & Leeder, 1993). Parents can support health education through their active involvement in school programs and home activities (Nutbeam, 1992; Rivara, Booth, Bergman, Rogers, & Weiss, 1991). They are able to reinforce and extend educational messages, isolated school-based programs that do not provide for the inclusion of parents are likely to be ineffective (Rivara, Bergman, & Drake, 1989). Health services can allow for maximum use of expertise and resources, prevent confusion of health messages between school-based and population-based programs, and facilitate the development of jointly supported policies and guidelines (Nutbeam, Wise, Bauman, Harris, & Leeder, 1993). Relevant road safety organisations include Main Roads WA, Office of Road Safety, Health Department of WA and Police Service of WA.

2.5 Health Education Syllabus

Cross, Darby, Jones, Noble, and Baxendale (1995) conducted an extensive formative evaluation involving consultation with classroom teachers and a national and international educational materials and literature review. The findings showed videos, storybooks, discussion prints and cassette tapes were resources preferred by teachers. The evaluation also found that the Western Australian Health Education K-10 Syllabus (Education Department of WA, 1986) includes road safety education in most K-10 year groups, although the extent of the activity suggestions and support materials for teachers is limited. It was recommended by the evaluation that road safety education supplements were needed to support the syllabus.

2.6 School-based road safety programs

2.6.1 Comprehensive road safety curricula

The present study was developed in response to possible funding by Western Australian School Road Safety Project (WASRSP). The WASRSP (Centre for Health Promotion Research, 1999) produced curriculum materials for students in pre-primary to year ten. The program has three components: 'Kids and Traffic' (pre-primary); 'Kids and Roads' (primary); and 'Roadsmart' (lower secondary). The 'Kids and Roads' program is a comprehensive, cross-curricula package with materials for years one to seven. The year level packages are supported by a road sign kit and discussion posters. The key road safety issues of play, passenger, bicycle and pedestrian safety are addressed in the lessons. The program currently includes PD for teachers in the form of a half-day workshop delivered by a WASRSP officer, a district-based trainer or a school-based trainer.

In 1998 a process evaluation was conducted by Curtin University's Centre for Health Promotion Research under the direction of the WA School Road Safety Project Management committee (Centre for Health Promotion Research, 1999). The research objectives were to measure the extent of district based training on teacher implementation and school based training, and the implementation of 'Kids and Roads' materials. Only 13% of primary teachers indicated that they had received a district-based or school-based training session. The majority of teachers (94%) who received WA School Road Safety Project training implemented activities from the education materials. Of the teachers surveyed approximately half (52%) of primary school teachers had received the 'Kids and Roads' materials, 46% had read at least some of the materials and 38% had implemented at least one activity. The evaluation

report identified the need for strategies to increase implementation of training sessions. Distance education via the Internet was suggested in the report as a possible strategy to improve the effectiveness of implementation. An extensive literature search showed no evidence of road safety programs which offer PD for teachers via flexible learning, including the Internet. The feasibility of this mode of PD needs to be examined.

The Child Pedestrian Injury Prevention Project (CPIPP) used a multifaceted approach to increase pedestrian-related knowledge, attitudes and behaviour of students and their parents (Burns, Cross, Stevenson, & Kenaston, 1998). The program was only available to teachers in the Perth metropolitan area. The project consisted of three local government areas which were randomly assigned to one of three conditions: a school-based and community intervention; a school-based only intervention; and a comparison group which received a nutrition education intervention. Teachers involved in the school-based intervention received PD to enhance the implementation of pedestrian safety lessons. PD involved a half-day training session prior to the program and ongoing post-training support was provided.

In the first two years of CPIPP a significant difference in pedestrian knowledge was observed between the intervention and comparison groups, although by the final year there was no difference (Cross et al., 2000). Children in the high and moderate intervention groups were significantly more likely to cross the road with adult supervision and play away from the road than the comparison group. At the completion of the CPIPP intervention trial, the pedestrian safety educational materials were incorporated into the 'Kids and Roads' materials of the WASRSP.

The 'Out and About' road safety program developed by the Federal Office of Road Safety included knowledge-based classroom materials and take home information materials for parents. Teachers primarily used the program as they felt no alternative models were available (Cross, Darby, Jones, Noble, & Baxendale, 1995). The 'Out and About' package was withdrawn in 1995 producing the need for new road safety resources to be developed (Darby, 1996). The Western Australian School Road Safety Project commenced planning appropriate materials.

Another program available for use in WA schools is the Constable Care Child Safety Project (CCCSP). The CCCSP involves a puppet show tailored for pre-primary to year four students and focuses on the issues of stranger danger, bike safety, how to cross the road and what to do when finding a used needle or syringe (The Constable Care Child Safety Project, 2000). The shows take approximately 25 minutes with a short introduction by a police officer or Constable Care coordinator and then a question and answer period at the end. An evaluation report is given to the participating teacher to monitor the impact of the puppet show in terms of reinforcing the safety messages being taught. The evaluation measures the immediate reaction of teachers to the Constable Care show, in particular, their perception of whether they believe the program is worthwhile and of benefit to the students. The results of these evaluations are not available for public observation. The Constable Care Child Safety Project does not conduct formal evaluations due to lack of funding.

An additional bicycle safety program available in WA is the 'Bike Ed' program (Lindley, 1999). This intervention is a national initiative produced by the Federal

Office of Road Safety (FORS) and coordinated by the Police Bike-Ed Unit in Western Australia for students in years four to seven. The aims of the program are to increase knowledge and understanding of the road traffic environment and the law, develop physical and cognitive skills to manage such an environment safely as a cyclist, and develop responsible behaviours, attitudes and decision-making skills for the safe use of bicycles both on and off the road (FORS, 1996). The program provides a two-day in-service course for teachers. The 'Bike Ed' Kit comprises a teachers' manual which includes practical components with background information, a picture pack and an accompanying video. The program is skill rather than knowledge based and enables students to undertake hands-on practice. Vacation Bike Education is available during the holidays for children whose schools do not implement Bike-Ed. This holiday program is only accessible to metropolitan schools who must travel to the Bike Education Centre to participate in two half-day introductory lessons. No evaluation of this program is currently available.

Issues raised at the 1997 National Bike-Ed Workshop and from the 1998 policy review focused on improving access to in-service for teachers in rural areas (Lindley, 1999). Fully serviced safety centres such as the Armadale, Roleystone, Kelmscott Road Safety Centre (ARK) can provide quality Bike-Ed to students however, schools that are more than 30 minutes by bus from the centre are disadvantaged because the trip time and cost does not justify the limited instructional time. There is a need for Bike-Ed in country regional centres because there is high potential for cycling, a greater perception of personal security and safety, and an actual risk from the road traffic environment.

2.7 Professional development

Teacher PD is the “sum of all activities, both formal and informal, carried out by the individual or system to promote staff growth and renewal” (Hughes, 1991). PD opportunities in the form of single in-service sessions are insufficient to ensure effective implementation of health curricula by teachers (Gingiss, 1992; National Board of Education and Training, 1993). Cost is a major obstacle preventing schools from allowing teachers to access high quality PD opportunities (Review and Curriculum Directorate, 1991; Marx, 1998). Research has shown teachers prefer to attend PD in school time, however, the expense of teacher release time and travel restricts participation (Review and Curriculum Directorate, 1991; Schools and Curriculum Policy Branch, 1991).

PD can enhance the skills and knowledge of teachers and provide opportunities for new ideas and approaches toward teaching to be developed (Schools and Curriculum Policy Branch, 1991). A study by Shilton, McBride, Cameron, and Hall (1995) exploring teacher needs in PD found that 76% of primary school health education teachers preferred full-day or half-day formats for PD programs. Teachers were not asked about alternatives to workshops such as PD delivered by flexible learning. There was a strong indication that teachers were not prepared to attend residential seminars (during work days, weekends and a combination thereof), and after-school time slots. Only 7% of respondents indicated they would attend PD programs after hours. These data have significant implications for the provision of PD and provide some information on the needs of teachers in terms of format, timing and duration.

Location is a significant consideration when deciding upon PD courses. An important factor is the travelling time needed to attend PD opportunities. Teachers in larger schools commonly prefer to participate in PD located at their own school or a nearby school (Review and Evaluation Directorate, 1991). Teachers in geographically isolated schools usually prefer to undertake PD in school support centres or higher education institutions where they can interact and acquire knowledge not available in their local areas.

The implication for providers of PD courses at schools is organising travel to remote schools to ensure all teachers have access. The Centre for Remote Area Studies (Blue & Howe-Adams, 1993) developed a pilot model of education for rural and remote multidisciplinary health welfare workers. Face-to-face workshops and seminar activities were conducted over two days in a central location for course participants. One of the problems experienced with program delivery was difficulty in arranging for distant remote and rural participants to travel to workshops and return to the workplace within specified time.

2.8 Flexible learning

Flexible learning may be an appropriate method of delivery to overcome problems of accessibility to PD for teachers in rural and remote locations (Levin, & Thurston, 1996). Flexible learning provides participants with the opportunity to study at their own pace, at a convenient time and location (Porter, 1997; Johnston, 1993). Teachers have control over their learning environment and are not limited to scheduled lecture and tutorial hours (Lockyer, Patterson, & Harper, 1999; Johnston, 1993). Flexibly

delivered PD may overcome obstacles of time, cost and lack of resources which hinder teachers' access to conventional PD (Johnston, 1993).

Flexible learning may incorporate hard copy materials or information technology such as the Internet. The benefits of using information technologies are numerous as the Internet provides direct access to a variety of international resources on a broad range of topics (Lockyer, Patterson, & Harper, 1999; Schrum, 1995). Electronic learning networks are highly interactive (Levin & Thurston, 1996) and allow teachers to share ideas, beliefs and attitudes quickly and easily over long distances (Lockyer, Patterson, & Harper, 1999; Schrum, 1995). Further, information technologies help to reduce the isolation experienced by teachers in rural and remote locations as well as enhance the quality of the learning experience (Schrum, 1995).

Teachers may have access to information technology, however, lack of skills may stop them from taking advantage of the significant benefits they provide. Meredyth, Russell, Blackwood, Thomas, and Wise (1999) conducted a national sample study of the information technology skills of Australian school students and teachers.

Teachers' skill possession appeared to be strongly related to age, with younger teachers consistently tending to have more skills than older teachers. The study found 83% of those aged 20 to 30 knew how to use the World Wide Web (WWW) and steadily decreased to 64% of those aged over 50 years. Male teachers appeared to be more likely than female teachers to engage with a range of information technology. Females were significantly more likely not to use the WWW (32% compared with 21% of males). Teachers in independent schools were more likely to have more advanced skills than those in government schools possibly because independent

schools are equipped with more hardware and software for relatively advanced applications.

2.9 Conclusion

Road trauma is a significant child health problem as demonstrated by the related mortality and morbidity statistics. Previous interventions designed to reduce road trauma have included school-based education, media campaigns, community education, legislation and environmental changes. Effective school health education programs require comprehensive road safety curricula such as the 'Kids and Roads' program and PD for teachers to enable efficient implementation. Access to PD for teachers is restricted by issues of time and cost. Flexible learning may be an effective method of delivery to overcome these barriers, in particular for teachers in rural and remote areas. This study will make a significant contribution to the literature by examining the feasibility of developing and implementing a flexible learning road safety PD program for teachers.

CHAPTER 3

Theoretical Framework

The principles of Adult Learning Theory form effective guides for the development of PD programs for teachers (Connors, 1991; National Board of Employment, Education and Training, 1993). The principles of Adult Learning Theory (Merriam, & Caffarella, 1999; Davenport, 1993) were used to shape the questions presented in the survey instrument which tested the feasibility of a flexibly delivered PD program in road safety education.

3.1 Core principles of Adult Learning Theory

The core principles of Adult Learning Theory are the learners' need to know, self-directed learning, prior experiences of the learner, readiness to learn, orientation to learning, and motivation to learn (Knowles, Holton, & Swanson, 1998).

3.1.1 Need to know

The main principle of adult learning is that adults need to know why they need to learn something before they engage in learning (Knowles, Holton, & Swanson, 1998; Biggs, & Moore, 1993). The three dimensions to this premise are the 'need to know' how learning will be conducted; what learning will occur; and why learning is important. Knowles, Holton and Swanson (1998) emphasise the importance of involving adults in planning the learning process. Adults need information and involvement in the how, what and why of learning. Understanding learners' expectations and desires through needs assessment and involving adults in mutual planning enable effective programs to be developed. The method of delivery, time

and location preferred by teachers for a road safety PD program impacts the development of such a program.

3.1.2 Self-directed learning

Self-directed learning involves adults taking control of teaching themselves a particular subject (Knowles, Holton & Swanson, 1998). The two concepts of self-directed learning are self-teaching and personal autonomy. The example used by Knowles, Holton, & Swanson (1998) to illustrate self-teaching is a person who completes an independent study course. Personal autonomy involves taking control of learning and freely questioning what is learned. Adults facilitate their personal autonomy and self-direction when they are involved in the process of setting their own directions and means of learning and evaluation (Pratt, 1993). Flexible learning incorporates the concepts of self-directed learning.

3.1.3 Prior experience of the learner

Knowles, Holton & Swanson (1998) state experience can aid in learning new knowledge if the new information can be related to the existing beliefs. However, experience can become a barrier if new learning challenges existing knowledge. The role of the adult experience creates biases that can greatly impact new learning. The difficulty adult learners' face is to overcome the natural tendency to resist new learning that challenges existing beliefs and perspectives resulting from prior experience. Adults' experiences can both help and hinder the learning process and outcome. For example, successful road safety PD experiences will influence future participation.

3.1.4 Readiness to learn

Readiness to learn is closely associated to the need to know. Adults become ready to learn when their life situation generates a need to know. A high level of readiness to learn may exist for teachers who rate the education needs of their students as great or rate their own knowledge and skills as in need of improvement.

3.1.5 Orientation to learning

Adults generally prefer experiential learning and problem-solving approaches to learning. Current experience has an important role in shaping adults' orientation to learning. Information presented in a real-life context promotes optimum learning by adults (Knowles, Holton, and Swanson, 1998). Consequently, an experiential approach to learning is widely used when educating adults.

3.1.6 Motivation to learn

Finally, various factors may motivate adults to learn. Adults are generally more motivated toward learning that helps them to solve problems or results in internal rewards, such as satisfaction or self-esteem. Teachers may be motivated to learn by the outcome of participation in road safety PD which is the efficient implementation of curricula. The opportunity to participate in PD using flexible delivery instead of attending workshops may be another motivational reason.

CHAPTER 4

Methodology

4.1 Study design

Ethics approval to conduct the study was obtained from the Faculty of Communications, Health and Science Ethics Committee at Edith Cowan University. A quantitative, descriptive design was chosen for this study. The study used a self-administered questionnaire to obtain data. Factors such as the time required and likelihood to complete a flexible delivery PD program were identified. Additional questions explored perceived importance of road safety, education needs of students and Internet skills. Previous participation in PD, access to the Internet, and the teaching strategies and information needs of teachers to implement a road safety education program were also investigated.

4.2 Instrument

A self-administered questionnaire was developed to obtain information from teachers relating to the feasibility of developing a road safety PD program using flexible delivery. The principles of Adult Learning Theory were used to construct the questions employed in the instrument. The questionnaire was read by three experts for face and content validity. These readers had combined expertise in teacher PD flexible learning and questionnaire development. The feasibility of a flexibly delivered PD program in road safety education was tested.

4.2.1 Sample description

Demographic characteristics were examined to obtain a sample description and determine who would be most likely to participate in a flexibly delivered PD program

on road safety education. Questions 14-20 identified age gender, year group (s) currently taught, years teaching, type of school, location of school, and distance from Perth.

4.2.2 What factors do teachers take into consideration when choosing to participate in PD programs?

Questions seven to nine included what method of delivery, time, and location would be preferred for a flexible learning PD program in road safety education. These questions address need to know. The perceived importance of road safety as a health topic and education needs of students were addressed in questions one and two.

These factors are significant as the higher the rank of importance and the greater the need, the more likely teachers will participate in a PD program on road safety.

Previous participation in road safety PD and use of road safety resources were also examined in questions three to five. Prior experience of the learner was tested via these questions.

4.2.3 Resources and information teachers want included in a flexibly delivered PD program on road safety education

Question ten examined how important discussion posters, videos, story books and cassette tapes would be in a road safety education program for students. Question eleven investigated how important a number of information components would be in a road safety PD program for teachers. The components included a rationale for including road safety education in the school curriculum, essential facts about road safety, involving parents and the community, road safety policy for schools, relevant agencies, teaching Aboriginal students about road safety, resources, action plan, and

teaching strategies. Information about relevant agencies would involve WA School Road Safety Project, Main Roads WA, the Office of Road Safety and RoadWise. Identifying the resources and information teachers want included in a road safety PD program for teachers satisfies their need to know and informs the planning of such a program.

4.2.4 Likelihood of participation in a flexibly delivered PD program on road safety education

Question six addressed the likelihood of participation in a flexibly delivered PD program on road safety education. Readiness to learn was determined by this question.

4.3 Sample selection

A list of all government and non-government education institutions was obtained from the Education Department of WA. Centres and schools not appropriate to the study were removed from the sample. Those removed were early childhood centres; junior primary schools; community preschools; independent preschools; Aboriginal preschools; high schools; senior high schools; senior campuses; agricultural colleges; educational support centres; and full fee colleges. These schools were removed because they were not relevant to the focus of this study that concentrated on government and non-government primary schools.

The WA School Road Safety Project Process Evaluation, conducted by Curtin University's Centre for Health Promotion and Research, was administered at the same time as this study. Agreement between the Centre for Health Promotion Research and

Edith Cowan University to remove schools participating in the WA School Road Safety Project Process Evaluation was reached to avoid study contaminations.

Following the removal of these schools, the schools were distinguished government (n=413) and non-government (n=159). A proportionate number of government and non-government schools was determined. From this stratification, random sampling was conducted using the Statistical Package for Social Science (version 8.0) (SPSS). The total number of schools selected from the 572 eligible schools provided by the database was 150. The proportions of government and non-government schools are shown in table one.

Table 1: Proportionate stratified sample for government and non-government schools

Type of school	n	%	Sample
Government	413	72	108
Non-government	159	28	42
Total	572	100	150

The target group were teachers of years one, three, five and seven. This distribution of year levels was chosen to obtain a range of responses from primary school teachers. Each school was allocated a year level combination, either years one and seven or years three and five. The reason for the combination of year levels was to accommodate for schools with small populations. In smaller schools teachers of year one are likely to also teach year three but unlikely to also teach year seven.

Therefore, to maximise the chance of two teachers from each school completing the questionnaire, the groupings of years one and seven, and years three and five were decided. The combination of years three and five was appropriate for schools with

larger populations as they are more likely to have a different teacher for each year level. Therefore, based on this rationale for the selection and combination of year levels, the government and non-government schools were each divided in half based on the size of their student populations. The schools with the lower student populations were assigned years one and seven and the schools with higher student populations were allocated years three and five.

A letter, two questionnaires and two reply paid envelopes were sent to the principal of each school. The letter requested he/she ask one teacher of year one and one teacher of year seven or one teacher of year three and one teacher of year five depending on the size of the student population to complete the questionnaire. Teachers with the first letter of their surname closest to the end of the alphabet were nominated to complete the questionnaire. The completed questionnaires were returned via mail in reply paid envelopes.

4.4 Data analysis

Mean scores, frequencies and percentages were calculated for the quantitative data obtained from the questionnaires. Chi square analysis was used to examine the differences amongst discrete variables. SPSS for Windows version 8.0 was used to perform data analyses.

4.5 Limitations

In the context of the number of primary schools in Western Australia, the sample size may be a limitation. Considering the expected completion time of the study, a sample of 150 schools was realistic. A second limitation was the need to eliminate the

schools involved in the evaluation of the Western Australian School Road Safety Project to avoid teachers receiving two questionnaires on road safety.

The results of the study will not be generalisable to other parts of Australia. The findings are relevant to metropolitan and rural schools in WA. The different needs and circumstances of teachers in other states must be taken into account when testing the feasibility of a flexibly delivered PD program on road safety education.

There were several limitations in the questionnaire. As the questionnaire was directed to road safety education, it was already inherently biased and made the assumption that road safety was an important topic. Teachers were asked if they had received 'Kids and Roads' materials in question three. 'Kids and Roads' should have also been included as an option in question four where teachers were asked to identify which resources they have actually used. Bike Education program should have been included as an option in question five when teachers were asked if they had previously participated in PD for road safety.

One limitation in the sample selection is that teachers of years three and five were from big schools and teachers of years one and seven were from small schools. However, the year level combinations maximised the possibility of two teachers from all schools responding to the questionnaire. For the purposes of this study, the benefit of this combination of year levels outweighed the limitation.

CHAPTER 5

Results

Results presented below include an analysis of factors that teachers take into consideration when choosing to participate in PD programs (for example when, where and method of delivery). Resources and information teachers' wanted included in a flexibly delivered PD program on road safety education and the likelihood that teachers in government and non-government schools would participate in a flexibly delivered PD program on road safety are also presented below. The number of questionnaires returned was 125, resulting in a 40% response rate.

5.1 Sample description

5.1.1 Gender and age of respondents

The majority of respondents were female (80.8%) and approximately 60% were 41 years or older (Table 2 & 3).

Table 2: Gender of respondents

Gender	n	%
Male	24	19.2
Female	101	80.8
Total	125	100

Table 3: Age group of teachers

Age group	n	%
20-25	11	8.9
26-30	19	15.4
31-35	8	6.5
36-40	14	11.4
41-45	31	25.2
46-50	19	15.4
>51	21	17.1
Total	123	100

5.1.2 Number of years teaching and year group(s) currently taught by teachers

The average number of years respondents reported teaching was 15, however, the highest proportion (22%) of respondents had been teaching for five or fewer years (Table 4). Of the four year groups surveyed, Year three teachers represented the greater proportion of the sample (31.8%) (Table 5).

Table 4: Number of years teaching

Years	n	%
0-5	27	22.0
6-10	21	17.1
11-15	16	13.0
16-20	23	18.7
21-25	16	13.0
26-30	15	12.2
31-35	4	3.3
36-40	1	0.8
Total	123	100

Table 5: Year group (s) currently taught by teachers

Year group	n	%
Year one	38	25.7
Year three	47	31.8
Year five	37	25
Year seven	26	17.6
Total	148	100

5.1.3 Geographical location and type of school

Almost two thirds (62.8%) of teachers taught at schools located 100 kms or less from the Perth Central Business District (Table 6). Most of the respondents taught at government schools (72.8%) (Table 7).

Table 6: Number of kilometres from Perth CBD

Kilometres	n	%
0-15	34	28.1
16-30	29	24
31-100	13	10.7
101-500	29	24
501-1500	10	8.3
1501-2000	6	5
Total	121	100

Table 7: Type of school

Type of school	n	%
Government	91	72.8
Non-government	34	27.2
Total	125	100

5.1.4 Relationship between gender and school type

There were more female teachers in both government and non-government schools (Table 8).

Table 8: Gender and school type

Gender	School type			
	Government		Non-government	
	n	%	n	%
Male	15	16.5	9	26.5
Female	76	83.5	25	73.5
Total	91	100	34	100

5.2 Perceived importance of road safety and road safety education needs of students

When asked to identify the most important health topic for their students, 38.2% chose human relationships as the most important health topic, followed by nutrition (33.8%), and road safety (14%) as shown in Table 9. Only 5.6% of teachers indicated there was 'no need' or were 'unsure' of road safety education needs of their students (Table 10).

Table 9: Health topic identified as most important for students by their teacher

Health topic	n	%
Human relationships	60	38.2
Nutrition	53	33.8
Road safety	22	14.0
Physical activity	14	8.9
Environmental health	8	5.1
Total	157	100

Table 10: Road safety education needs of students as rated by their teachers

Rate of need	n	%
Great need	36	28.8
Slight need	82	65.6
No need	1	0.8
Unsure	6	4.8
Total	125	100

5.3 Previous use of road safety resources

Table 11 shows 39.8% of respondents used the Health Education K-10 syllabus to teach road safety, followed by Constable Care Road Safety Activity Sheets (20.7%) and the Bike Education Kit (17.7%).

Table 11: Resources used to teach road safety to students by teachers

Resources	n	%
Health Education K-10 syllabus	108	39.8
Constable Care Road Safety Activity Sheets	56	20.7
Bike Education kit	48	17.7
Out and About	27	10
Teacher made activities	7	2.6
Kids and Roads	6	2.2
Sci-Tech Road Safety Program	6	2.2
Road Smart	5	1.8
Other (including Roadwise, CPIPP, Kangaroo Creek)	8	2.9
Total	271	100

5.4 'Kids and Roads' materials received by schools

Approximately 45% of respondents were unsure about whether they had received the 'Kids and Roads' materials distributed by the Western Australian Road Safety Project

for primary school students appropriate to the student year level they teach, whilst 43.9% said they had received the materials (Table 12).

Table 12: ‘Kids and Roads’ materials received by the school appropriate to the student year level taught by the respondent

Materials received	n	%
Unsure	55	44.7
Yes	54	43.9
No	14	11.4
Total	123	100

5.5 Previous participation in road safety PD

Approximately 80% of teachers had not previously participated in any PD for road safety (Table 13). Of those who had participated in PD for road safety, 35% participated in Bike Education courses and 30% were involved in the Child Pedestrian Injury Prevention Project (CPIPP) as shown in Table 14.

Table 13: Previous participation in PD for road safety

Previous participation in PD	n	%
No	98	80.3
Yes	20	16.4
Can't remember	4	3.3
Total	122	100

Table 14: Previous participation in road safety PD programs

PD for road safety	n	%
Bike Education Course	7	35
CPIPP	6	30
'Kids and Roads' district-based teacher training	2	10
'Kids and Roads' school-based training	1	5
Other	4	20
Total	20	100

5.6 Role of teacher in 'Kids and Roads' program

Most teachers did not have a role in the 'Kids and Roads' program during 1999 (97.6%). Of those who did have a role, one was a school-based trainer and teacher, and two were teachers of the program (Table 15). Almost all respondents (98.4%) had not attended 'Kids and Roads' district-based teacher training, with the exception of one respondent who attended the 'Kids and Roads' district-based teacher training and another who was trained by a school-based trainer (Table 16).

Table 15: Role of teacher in the 'Kids and Roads' program

Role	n	%
No role	122	97.6
Teacher	2	1.6
School-based trainer & teacher	1	0.8
Total	125	100

Table 16: Attendance at 'Kids and Roads' district-based teacher training

Attendance	n	%
No	123	98.4
Yes	1	0.8
Trained by school-based trainer	1	0.8
Total	125	100

5.7 Resources identified as important in a road safety education program

The majority of teachers rated the availability of videos (95.2%) as important. Most teachers (81.6%) regarded discussion posters to be important. Approximately three-quarters of teachers considered storybooks an important resource. Cassette tapes were the least preferred resource selected (Table 17).

Table 17: Importance of resources in a road safety education program

Resources	Important		Neither		Unimportant		Unsure	
	n	%	n	%	n	%	n	%
Videos	119	95.2	5	4	0	0	1	0.8
Posters	102	81.6	20	16	1	0.8	2	1.6
Story books	94	75.2	23	18.4	4	3.2	4	3.2
Tape	48	38.4	48	38.4	19	15.2	10	8

5.8 Information identified as important in a road safety PD program

The majority of teachers rated essential facts about road safety (92%), teaching strategies (90%) and resources (92%) as important to be included in a road safety PD program. Most teachers (81%) regarded involving parents and the community as important. Approximately three-quarters of the teachers believed an action plan (75.2%) and a school road safety policy (73.6%) was important. Teaching Aboriginal students about road safety reported as important by 60% of respondents. A rationale for including road safety education in the school curriculum was indicated as important by 57% of respondents. Fewer than half of the respondents stated relevant agencies were important (Table 18).

Table 18: Importance of information aspects in a road safety PD program

Information	Important		Neither		Unimportant		Unsure	
	n	%	n	%	n	%	n	%
Resources	115	92	8	6.4	0	0	2	1.6
Essential facts	114	91.9	8	6.5	0	0	2	1.6
Strategies	112	89.6	11	8.8	1	0.8	1	0.8
Parents	99	80.5	18	14.6	2	1.6	4	3.3
Action plan	94	75.2	25	20	2	1.6	4	3.2
Policy	92	73.6	31	24.8	1	0.8	1	0.8
Aboriginal	72	59.5	34	28.1	7	5.8	8	6.6
Rationale	70	56.9	42	34.1	8	6.5	3	2.4
Agencies	59	47.6	50	40.3	4	3.2	11	8.9

5.9 Knowledge of how to access an Internet site

Most teachers knew how to access an Internet site on a computer (81.6%) (Table 19).

Table 19: Knowledge of how to access an Internet site

Response	n	%
Yes	102	81.6
No	23	18.4
Total	125	100

5.9.1 Relationship between age and knowledge of how to access an Internet site

A significant difference between respondents knowledge of how to access an Internet site according to their age was found, $\chi^2(1, N = 123) = 4.196, p < 0.05$. The younger age groups were more likely to know how to access the Internet as shown in Table 20.

Table 20: Relationship between age and knowledge of how to access an Internet site

	Age groups			
	20-40		> 41	
	n	%	n	%
Yes	47	90.4	54	76.1
No	5	9.6	17	23.9
Total	52	100	71	100

$$\chi^2 = 0.4.196$$

$$p = 0.041$$

5.9.2 Relationship between gender and knowledge of how to access an Internet site

Although there was no significant difference found in respondents knowledge of how to access an Internet site according to their gender, $\chi^2(1, N = 125) = 0.689, p > 0.05$, male teachers were more likely than female teachers to know how to access an Internet site on the computer (Table 21).

Table 21: Knowledge of how to access an Internet site and gender

Know how to access Web	Gender			
	Male		Female	
	n	%	n	%
Yes	21	87.5	81	80.2
No	3	12.5	20	19.8
	24	100	101	100

$$\chi^2 = 0.689$$

$$p = 0.407$$

5.9.3 Relationship between school type and knowledge of how to access an Internet site

There was no significant difference between respondents knowledge of how to access an Internet site according to their school type, $\chi^2(1, N=125) = 2.853, p > 0.05$. Non-government school teachers were more likely to know how to access the Internet (Table 22).

Table 22: Knowledge of how to access an Internet site and school type

Know how to access Web	School type			
	Government		Non-government	
	n	%	n	%
Yes	71	78	31	91.2
No	20	22	3	8.8
Total	91	100	34	100

$$\chi^2 = 2.853$$

$$p = 0.091$$

5.10 Location where the Internet is mostly accessed by teachers

Teachers reported that they usually accessed the Internet at school (56%) and 21.5% accessed the Internet both at home and school (Table 23). Only 8% of respondents indicated they did not have any access to Internet facilities.

Table 23: Location where the Internet is mostly accessed by teachers

Location	n	%
At school	68	56.2
Both home and school	26	21.5
At home	19	15.7
Do not have access	8	6.6
Total	121	100

5.10.1 Relationship between school type and location of access to the Internet

More than one-quarter of respondents in non-government schools had access to the Internet both at home and school (Table 24). Teachers who do not have access to the Internet are more likely to be from government schools.

Table 24: School type and location of access

Location of access	School type			
	Government		Non-government	
	n	%	n	%
Home	16	18.2	3	9.1
School	48	54.5	20	60.6
Both	17	19.3	9	27.3
No access	7	8	1	3
Total	88	100	33	100

5.11 Flexibly delivered PD program in road safety education

When asked if offered the opportunity to participate in a free PD program in road safety education, using flexible learning, interest was shown by approximately 70% of respondents (Table 25).

Table 25: Likelihood to participate in a flexibly delivered PD program on road safety

Participation	n	%
Definitely participate	38	30.6
Might participate	49	39.5
Definitely not participate	6	4.8
Require more information	31	25
Total	124	100

5.11.1 Relationship between age and opportunity to participate in PD program

A significant difference between respondents interest in participating in a flexibly delivered PD program according to their age was found, $\chi^2 (1, N=122) = 5.282, p < 0.05$. Older teachers were less interested in the flexibly delivered PD program than younger teachers (Table 26).

Table 26: PD program and age

Participation	Age groups			
	20-40		> 41	
	n	%	n	%
Definitely/might	42	80.8	43	61.4
Definitely not/more info	10	19.2	27	38.6
Total	52	100	70	100

$$\chi^2 = 5.282$$

$$p = 0.022$$

5.11.2 Relationship between gender and opportunity to participate in a PD program

There was no significant difference found in respondents interest in participating in a flexibly delivered PD program according to gender, $\chi^2 (1, N=124) = 0.333, p > 0.05$.

Three-quarters of male teachers and 69% of female teachers showed interest in participating in a flexibly delivered PD program (Table 27).

Table 27: PD program and gender

Participation	Gender			
	Male		Female	
	n	%	n	%
Definitely/might	18	75.0	69	69.0
Definitely not/more info	6	25.0	31	31.0
Total	24	100	100	100

$$\chi^2 = 0.333$$

$$p = 0.564$$

5.11.3 Relationship between type of school and opportunity to participate in a PD program

There was no significant difference between respondents interest in a flexibly delivered PD program according to the type of school in which the teacher taught, $\chi^2 (1, N=124) = 1.915, p > 0.05$. Two-thirds of government teachers and almost 80% of

non-government teachers were interested in a PD program on road safety education (Table 28).

Table 28: PD program and school type

Participation	School type			
	Government		Non-government	
	n	%	n	%
Definitely/might	60	66.7	27	79.4
Definitely not/more info	30	33.3	7	20.6
Total	90	100	34	100

$$\chi^2 = 1.915$$

$$p = 0.166$$

5.12 Preferred method of delivery for road safety PD program

A flexible learning package of hard-copy materials supported by a tutor was preferred by 73.4% of respondents and 26.6% preferred the flexible learning package available on the Internet supported by a tutor (Table 29).

Table 29: Method of delivery preferred by teachers

Method of delivery	n	%
Flexible learning package of hard-copy materials supported by a tutor	91	73.4
Flexible learning package available on the Internet supported by a tutor	33	26.6
Total	124	100

5.12.1 Relationship between type of school and method of delivery

A significant difference between preference for a flexible learning package available on the Internet according to type of school in which the teacher taught was found, χ^2 (1, $N = 124$) = 5.087, $p < 0.05$. Teachers in non-government schools were more likely to prefer the Internet (41.2%) as shown in Table 30.

Table 30: Method of delivery and type of school

Method of delivery	School type			
	Government		Non-government	
	n	%	n	%
Hard copy	71	78.9	20	58.8
Internet	19	21.1	14	41.2
Total	90	100	34	100

$$\chi^2 = 5.087$$

$$p = 0.024$$

5.12.2 Relationship between number of years teaching and method of delivery

Although, there was no significant difference found in a preferred method of delivery according to years teaching, $\chi^2 (2, N = 122) = 1.051, p > 0.05$, those with 0-10 years teaching experience were more likely to prefer a flexible learning package on the Internet (Table 31).

Table 31: Method of delivery and teaching experience

Method	Years teaching					
	0-10 yrs		11-20 yrs		>21 yrs	
	n	%	n	%	n	%
Hard copy	33	68.8	29	76.3	28	77.8
Internet	15	31.3	9	23.7	8	22.2
Total	48	100	38	100	36	100

$$\chi^2 = 1.051$$

$$p = 0.591$$

5.12.3 Relationship between gender and method of delivery

There was no significant difference between a preferred method of delivery and gender, $\chi^2 (1, N = 124) = 0.040, p > 0.05$. Approximately one-quarter of male and female teachers preferred the Internet (Table 32).

Table 32: Method of delivery and gender

Method	Gender			
	Male		Female	
	n	%	n	%
Hard copy	18	75	73	73
Internet	6	25	27	27
Total	24	100	100	100

$$\chi^2 = 0.040$$

$$p = 0.842$$

5.12.4 Relationship between age and method of delivery

There was no significant difference between a preferred method of delivery and age, $\chi^2 (1, N = 122) = 0.321, p > 0.05$. Older teachers were less interested in a flexible learning package available on the Internet than younger teachers (Table 33).

Table 33: Method of delivery and age

Method	Age groups			
	20-40		>41	
	n	%	n	%
Hard copy	37	71.2	53	75.7
Internet	15	28.8	17	24.3
Total	52	100	70	100

$$\chi^2 = 0.321$$

$$p = 0.571$$

5.12.5 Relationship between method of delivery and where Internet is mostly accessed

There was a significant difference between a preferred method of delivery and where the Internet is mostly accessed by teachers, $\chi^2 (2, N = 112) = 8.694, p < 0.05$. Of those who preferred hard copy materials, the highest proportion mostly accessed the Internet at school. Of those who preferred the Internet, an equal number of

respondents mostly accessed the Internet at school or both at school and home (Table 34).

Table 34: Method of delivery and where Internet is mostly accessed

Method	Location						Total	
	Home		School		Both			
	n	%	n	%	n	%	n	%
Hard copy	13	16.3	54	67.5	13	16.3	80	100
Internet	6	18.8	13	40.6	13	40.6	32	100

$$\chi^2 = 8.694$$

$$p = 0.013$$

5.13 Time and location of participation

Table 35 shows participation in a flexible learning PD program on road safety was preferred during school time (42%), followed by pupil-free days (36.2%). Table 36 indicates most teachers would prefer to participate in a flexible learning PD program on road safety in school time (70.5%).

Table 35: Time when teachers would prefer to participate in a flexible learning PD program on road safety

Time	n	%
In school time	87	42
Pupil-free days	75	36.2
Evenings	24	11.6
Other	13	6.3
Weekends	8	3.9
Total	207	100

Table 36: Place where teachers would prefer to participate in a flexible learning PD program on road safety

Location	n	%
At school	86	70.5
Both home and school	24	19.7
At home	6	4.9
Other	6	4.9
Total	122	100

CHAPTER 6

Discussion

The purpose of this study was to test the feasibility of and to determine what teachers want included in a flexibly delivered PD program in road safety education. A self-administered questionnaire was used to collect data from teachers in metropolitan and rural primary schools throughout Western Australia. Questions explored perceived importance of road safety; road safety education needs of students; previous participation in road safety PD; and use of road safety resources. Teachers were also asked about their Internet skills and access to the Internet, and when, where and what method of delivery they would prefer for a flexible learning PD program in road safety education. This discussion will explore the responses to these questions in relation to the relevant literature examined in Chapter 2.

6.1 Demographic data

The proportion of male and female teachers in the sample was similar to the gender distribution in government and non-government primary schools in Western Australia. In 1998, females represented 75.5% of teaching staff in primary schools in Western Australia (ABS, 1998). The majority of respondents in the sample were female (80.8%). In 1998, males represented 25.4% of teaching staff in government primary schools and 21.5% in non-government primary schools in Western Australia (ABS, 1998). In the sample, males accounted for 16.5% of teachers in government primary schools and 26.5% of teachers in non-government primary schools. Therefore, male teachers were slightly under-represented in government primary schools and slightly over-represented in non-government primary schools.

The number of government and non-government primary schools in the sample is representative of those in WA. Government primary schools represented 75.8% of primary schools in WA in 1998 (ABS, 1998). Approximately 73% of the respondents taught at government primary schools. Similarly, there were 24.2% non-government primary schools in 1998 (ABS, 1998) and 27.2% of non-government school respondents

In 1996, the median age of school teachers was 40 years (ABS, 1998). The finding that the highest proportion of respondents were aged between 41-45 years (25.2%) approximated the general teaching population. The average number of years the respondents reported teaching was 15. Year three was the group taught by the highest proportion of teachers (31.8%). Over one-quarter of teachers (28.1%) taught at schools located 0-15 kilometres from the Perth Central Business District.

6.2 Adult Learning Theory

The success of PD rests on the ability of course designers to reflect the educational needs of their target group in course content and methods of delivery. The questionnaire served to engaged teachers in the planning process for their learning by applying the principles of Adult Learning Theory (Knowles, Holton, & Swanson, 1998). Teachers identified the resources, course information and mode of delivery preferred for a flexibly delivered PD program on road safety education.

Adult Learning Theory principles were used to shape the questions presented in the survey instrument. The questionnaire was used to satisfy adults 'need to know' by investigating the method of delivery, time and location preferred by teachers for a

road safety PD program. The second principle of 'self-directed learning' was appropriate to a flexibly delivered program which enables teachers to take control of their learning. 'Prior experience of the learner' can both aid and hinder new learning. Previous use of educational resources and information components affects how teachers ranked their importance. 'Readiness to learn' occurs when a life situation generates a need to know. Teachers who rated the road safety education needs of their students as great may be ready to learn. Another principle which can guide the development of a PD program is 'orientation to learning'. The proposed program may incorporate an experiential approach to learning which is preferred by adults. Reasons for teachers 'motivation to learn' and participate in a flexibly delivered PD program may include the freedom to participate when and where they prefer, ensure effective implementation of road safety curricula or to gain satisfaction from engaging in self-directed learning.

6.3 Perceived importance of road safety and road safety education needs of students

Teachers perceived road safety education as less important than human relationships and nutrition, however more important than physical activity and environmental health. Teachers' perception of road safety as an important component of health education positively influences their likelihood of participating in a PD program on that topic. Only 5.6% of respondents indicated there was 'no need' or were unsure' of the road safety education needs of their students. The need for road safety education perceived by teachers also affects the likelihood of their participation favourably.

6.4 Previous use of road safety resources

The resource used mostly by respondents to teach road safety was the Health Education K-10 Syllabus (39.8%). An extensive formative evaluation conducted by Cross, Darby, Jones, Noble, and Baxendale (1995) found that the extent of the activity suggestions and support materials for teachers provided by Health Education K-10 Syllabus was limited. Approximately 60% of respondents have used other road safety resources instead of or to support the Syllabus. Other resources used to teach road safety to students included Constable Care Road Safety Activity Sheets (20.7%), the Bike Education Kit (17.7%) and 'Out and About' (10%). These resources are provided by programs which have several limitations as discussed in the literature review. For instance, providers of Constable Care Shows have the inconvenience of arranging travel to schools in rural and remote areas. A limitation of the 'Bike Ed' program is that teachers in rural areas have restricted access to the two-day inservicing provided. A flexible delivered PD program would overcome these problems by allowing teachers to study when, where and how they prefer.

6.5 Previous participation in road safety PD and use of 'Kids and Roads' resources

Approximately four fifths (80.3%) of respondents had not previously participated in any PD for road safety. As discussed in the review of literature there is a positive relationship between PD and the level of implementation of programs (Cameron, 1991; Butler, 1992). The finding that 80.3% of respondents had not participated in road safety PD is of concern considering teachers who have not participated in PD are less likely to implement curricula effectively. There is a need for an accessible quality PD program to enhance the implementation of road safety curricula.

Of those who had participated in road safety PD, the highest proportion of teachers had previously taken part in Bike Education courses (35%) followed by CPIPP (30%). The Bike Education program provides a two-day in-servicing course for teachers and CPIPP offers a half-day training session. Obstacles, such as the cost of teacher release time and travel, prohibit teachers from participating in the PD opportunities offered by these two courses (Review and Curriculum Directorate, 1991; Marx, 1998). Teachers prefer to participate in PD during school time, however their access is limited by cost (Schools and Curriculum Policy Branch, 1991). A PD program delivered via flexible learning is an alternative to conventional workshop PD which would allow teachers the freedom to study when and where they choose (Porter, 1997; Johnston, 1993).

'Kids and Roads' materials were received by 43.9% of respondents and 44.7% were unsure. The results of the WASRSP 1998 Process Evaluation (Centre for Health Promotion Research, 1999) stated approximately half (52%) of primary teacher respondents had received the 'Kids and Roads' materials. The results of the present study showed that 1.6% of respondents received district-based training or school-based training, whereas the WASRSP Evaluation reported 13% of respondents indicated that they had received a district-based or school-based training session. The Evaluation Report identified the need for strategies such as distance education via the Internet to increase the implementation of training sessions. This recommendation provided the impetus for the present study which tests the feasibility of such a strategy.

6.6 Importance of resources in a road safety education program

The 'Kids and Roads' curriculum materials are supported by resources such as discussion prints, videos, storybooks and cassette tapes (Centre for Health Promotion Research, 1999). Research has shown road safety education materials such as videos, storybooks, discussion prints and cassette tapes were regarded highly by teachers (Cross, Darby, Jones, Noble, and Baxendale, 1995; Darby, 1996). Videos (95.2%), discussion posters (81.6%) and storybooks (75.2%) were perceived as important by most respondents. Cassette tapes were regarded as important by only 38.4% respondents. Nutbeam, Wise, Bauman, Harris, and Leeder, (1993) advocate the successful implementation of curriculum requires the production of relevant support material. The availability of these resources should therefore enhance the execution of a road safety curricula.

6.7 Importance of various types of information in a road safety PD program

Successful health education programs often employ multi-component interventions that may include student, parent, teacher and community education and environmental interventions (Nutbeam, Wise, Bauman, Harris, & Leeder, 1993; Rescinow, Cherry, & Cross, 1993). The 'Kids and Roads' program incorporates a broad range of strategies including school-based education, media campaigns, community education and legislation. The essential components of comprehensive school health education were addressed in the questionnaire.

Teachers were also questioned how important they perceived a range of information components were in a road safety PD program. The majority of teachers believed resources (92%), essential facts about road safety (91.9%), and teaching strategies

(89.6%) were important. Community and parent involvement was rated as important by 80.5% of respondents. Parents are able to reinforce the educational messages of school-based road safety programs (Rivara, Booth, Bergman, Rogers, & Weiss, 1991). Approximately three-quarters of teachers regarded a road safety policy for schools (73.6%) and an action plan (75.2%) were important. Teaching Aboriginal students about road safety was considered important by 59.5% of respondents. This component is particularly valuable in rural areas where there is a high proportion of Aboriginal children who are over-represented in injuries associated with road trauma (Cercarelli, 1994). A rationale for including road safety education in the school curriculum was reported as important by 56.9% of respondents. Relevant agencies were considered important by 47.6% of teachers. The perception of how important the aforementioned information components are indicates what teachers want included in a comprehensive road safety education program.

6.8 Knowledge of how to access an Internet site

Teachers were asked if they knew how to access an Internet site to determine appropriate delivery methods for PD. Internet skills and access to the Internet are important factors if a flexible delivery mode is planned. Most teachers know how to access an Internet site on a computer (81.6%), however, only 6.6% did not have access to the Internet. This indicates that some teachers do have access but do not possess the skills to use the Internet. Strategies to develop and enhance the Internet skills of teachers would need to be considered when planning a flexibly delivered PD program using technology.

6.8.1 Relationships between demographic factors and knowledge of how to access an Internet site

There was a significant difference between respondents knowledge of how to access an Internet site according to age. Younger teachers in the sample were more likely to know how to use the Internet than older teachers (90.4% of 20 to 40 year olds compared to 76.1% of those over 41 years). Considering the highest proportion of respondents were aged between 41 and 45 years (25.2%), strategies to improve the Internet skills of older teachers in particular is required.

There was no significant difference between respondents knowledge of how to access an Internet site according to gender or school type. Though not statistically significant, male respondents were more likely to know how to use the Internet (87.5%) than females (80.2%). Considering the majority of teachers are female, strategies to improve the skills of female teachers may be warranted. Non-government primary school respondents (91.2%) were more likely to know how to access the Internet than government respondents (78%). This finding may be associated with independent schools being better equipped in terms of information technology (Meredyth, Russell, Blackwood, Thomas, & Wise, 1999). The planning of a road safety PD delivered via the Internet may need to involve improving the skills of teachers in government schools.

6.9 Location where Internet is most accessed

The location where respondents usually accessed the Internet was at school (56.2%) or both home and school (21.5%). Respondents who reported they mostly access the Internet at home may also have access to the Internet at school. Those who have

access at school have the opportunity to participate in a flexible learning PD program during school hours which was the preferred time to engage in PD (Review and Curriculum Directorate, 1991; Schools and Curriculum Policy Branch, 1991).

Enabling access for teachers who do not have the Internet is an obstacle which will have to be overcome when planning a flexible learning PD program delivered via the Internet. The alternative is to offer a flexible learning package of hard-copy materials to those who do not have access or prefer this method of delivery.

6.9.1 Relationship between school type and location of access to Internet

Only 3% of respondents in non-government schools and 8% of respondents in government schools had no access to the Internet. This may explain why a greater proportion of non-government schools preferred a flexible learning package available on the Internet (41.2%) than government schools (21.1%).

6.10 Response to the opportunity to participate in a road safety PD program

Teachers' readiness to learn was determined by whether they would participate in a flexibly delivered road safety PD program. When offered the opportunity to participate in a free PD program in road safety education, using flexible learning, interest was shown by approximately 70% of respondents (30.6% would definitely participate and 39.5% might participate). Only 4.8% said they definitely would not participate and the remaining 25% required more information to make their decision. The process of recruiting teachers to participate in the road safety PD program would involve the provision of information to those who required more information to make their decision.

6.10.1 Relationships between demographic factors and the opportunity to participate in a road safety PD program

A significant difference between respondents interest in participating in a flexibly delivered PD program according to age was found. Older teachers were less interested in the flexibly delivered PD program than younger teachers. Strategies to increase interest among older teachers would be required in the development of the proposed program.

Male (75%) and female (69%) respondents displayed similar levels of interest in response to participation in a free flexibly delivered PD program on road safety education. Interest was shown by two-thirds of government respondents (66.7%) and 79.4% of non-government respondents towards participating in a flexibly delivered road safety PD program. This finding suggests the proposed program is likely to be applicable to male and female teachers from non-government and government schools.

6.11 Preferred method of delivery for a flexibly delivered PD program on road safety education

A flexible learning package of hard-copy materials supported by a tutor was preferred by 73.4% of respondents and over a quarter (26.6%) of respondents preferred a flexible learning package available on the Internet supported by a tutor. Respondents who mostly access the Internet at school were more likely to prefer hard copy materials (67.5%) than the Internet (40.6%). Further investigation is required into the reasons respondents prefer hard-copy materials even when access to the Internet was available. Possible explanations may be lack of skills or confidence in using the

Internet, they have not identified the advantages of using the Internet as a method of delivery, or lack of time to access the Internet at a convenient site. Identifying the benefits of using information technology may influence teachers preferred method of delivery for a flexibly delivered PD program.

6.11.1 Relationship between demographic factors and method of delivery

Teachers in non-government schools were more likely to prefer a flexible learning package available on the Internet than those in government schools. This supports the finding of Meredyth, Russell, Blackwood, Thomas, and Wise (1999) that teachers in independent schools are more likely to have more advanced computer skills than those in government schools. Independent schools predominantly have more information technology resources, thereby providing teachers with the opportunity to enhance their skills. Non-government teachers were more likely to have access to the Internet both at home and school (27.3%) than government teachers (19.3%). This further supports the finding that non-government schools are better equipped.

There was no statistical significant difference between preferred method of delivery for a road safety PD program according to years teaching, gender or age. A similar number of male (25%) and female respondents (27%) preferred the Internet for a road safety PD program rather than hard copy materials. Considering male teachers are more likely to know how to use the Internet (Meredyth, Russell, Blackwood, Thomas, & Wise, 1999), a higher proportion of male than female teachers were expected to show interest. This finding suggests both sexes would be interested in the uptake of a PD program delivered via the Internet.

Teachers with 0-10 years experience (31.3%) preferred a flexible learning package available on the Internet more than those who have been teaching for 11-20 years (23.7%) and over 21 years (22.2%). This is consistent with the finding that younger teachers tend to have more information technology skills than older teachers (Meredyth, Russell, Blackwood, Thomas, Wise, 1999). Similarly, older teachers were less interested in a flexible learning package available on the Internet than younger teachers. Therefore a flexible learning package of hard copy materials would be an appropriate method of delivery for older teachers.

6.12 Time and location of participation preferred for a PD program

Teachers were asked when and where they would prefer to participate in a flexibly delivered road safety PD program. Consistent with findings of previous studies (Shilton, McBride, Cameron, & Hall, 1995) a high proportion of teachers would prefer to participate in PD programs during school time (42%). Similarly, most teachers would prefer to participate in a flexible learning PD program at school (70.5%). As discussed in the review of literature the implications for providers of conventional workshop PD is the organisation of travel to remote schools to ensure all teachers have access. A flexibly delivered PD program may overcome the problems of time and cost, and increase access to teachers who reside in rural areas. These results have significant implications for the provision of PD to schools in rural and remote locations. A flexibly delivered PD program may overcome problems of accessibility for teachers in rural areas.

CHAPTER 7

Conclusions and Recommendations

The purpose of this study was to test the feasibility of a flexibly delivered PD program in road safety education. The factors that teachers take into consideration when choosing to participate in PD programs included perceived importance of road safety, education needs of students, previous participation in PD and use of road safety education resources were addressed. The time, location and what method of delivery preferred by teachers for a flexible learning PD program were also identified. The Internet skills of teachers and location of access to the Internet were examined to enable possible explanations for preferred method of delivery. The resources and information that teachers want included in a flexibly delivered PD program on road safety education were determined. Finally, the likelihood of teachers in government and non-government schools participating in a flexibly delivered PD program on road safety education was established. The findings of this study may inform the development of a flexibly delivered PD program in road safety education.

7.1 Factors teachers take into consideration when choosing to participate in PD programs

Road safety was perceived as an important health topic and the need for the road safety education of students was identified. This finding positively influences the likelihood of participation in a road safety education program. Another significant factor was previous participation in PD and use of road safety resources. Most teachers used road safety resources to supplement or instead of the Health Education K-10 Syllabus. This indicates that the extent of activities and support materials provided by the Syllabus is limited. A flexibly delivered PD program would

overcome problems of travel and cost associated with other road safety PD available to WA schools.

The time and location of PD offered to teachers is another factor which influences teachers' decisions to participate in PD. Preference for PD at school during school time was displayed. The method of delivery preferred by teachers was a flexible learning package of hard-copy materials rather than a flexible learning package available on the Internet. The majority of teachers knew how to access an Internet site and had access to the Internet either at home, school or both. Therefore, a flexible learning package available via the Internet is feasible as most respondents had access and possess Internet skills. For those who do not have access and/or Internet skills, a flexible learning package of hard copy materials is a viable alternative.

7.2 Information and resources teachers want included in a road safety education program.

At least three quarters of teachers regarded videos, discussion posters and storybooks as important therefore they may be incorporated into the road safety PD program.

Cassette tapes were not considered as important. Information concerning essential facts about road safety, involving parents and the community, a road safety policy for schools, resources, an action plan, teaching strategies, a rationale for including road safety education in the school curriculum, teaching Aboriginal students, and relevant agencies were generally perceived as important by most respondents. These results suggest the appropriate components, content and strategies for a road safety education package.

7.3 Likelihood of teachers participating in a flexibly delivered PD program on road safety education

The findings of this research suggest that a flexibly delivered PD program in road safety education is feasible. Male and female respondents from non-government and government schools would be interested in participating in a flexibly delivered program on road safety education. Strategies targeting older teachers may increase participation among this group. The proposed flexible learning PD program may utilise both methods of delivery to allow for those who do not have access to the Internet or possess Internet skills or have the desire to complete an Internet based program.

7.4 Recommendations for future research

The first recommendation for future research would be to implement the proposed program based on the findings of this study. Following the implementation of the pilot program, the next step would be to conduct a process evaluation. The results of the process evaluation for the flexibly delivered PD program and the half-day inservice training workshop for teachers provided by WASRSP could be compared.

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The Principal
«School»
«Address»
«City» «State» «PostCode»

Dear Principal

We are conducting a survey to gather information about road safety education in Western Australian schools.

The self-administered questionnaire enclosed includes questions relating to perceived importance of road safety; previous participation in professional development; and the teaching strategies and information needs of teachers to implement a road safety program.

It would be appreciated if one teacher of Year «Year_A» and one teacher of Year «Year_B» in your school could complete the questionnaire. If there is more than one teacher of a year group, please select the teacher with the first letter of their surname closest to the beginning of the alphabet. The teacher is asked to identify their name and school on the front page of the questionnaire to ensure we have received their consent to be in the study. This front page will be separated from the answers and any identifying information will remain strictly confidential. A reply paid envelope is provided to return the completed questionnaire. The research has received ethical clearance from the Faculty of Communications, Health and Science at Edith Cowan University.

If you have any queries about the questionnaire, please contact Vanessa Hille on 9400 5451.

Yours sincerely

Vanessa Hille
Project Manager
School of Nursing and Public Health
Edith Cowan University

«School»
«Address»
«City» «State» «PostCode»

Dear Teacher

We are conducting a survey to gather information about road safety education in Western Australian schools.

The self-administered questionnaire enclosed includes questions relating to perceived importance of road safety; previous participation in professional development; and the teaching strategies and information needs of teachers to implement a road safety program.

You have been asked to identify your name and school on the front page of the questionnaire to ensure we have received your consent to be in the study. This front page will be separated from the answers and any identifying information will remain strictly confidential. A reply paid envelope is provided to return the completed questionnaire. The research has received ethical clearance from the Faculty of Communications, Health and Science at Edith Cowan University.

If you have any queries about the questionnaire, please contact Vanessa Hille on 9400 5451.

Yours sincerely

Vanessa Hille
Project Manager
School of Nursing and Public Health
Edith Cowan University



(Office Use Only)

ROAD SAFETY

Dear Teacher

We are conducting this survey to gather information about road safety education in Western Australian schools.

We have asked you to identify your name and school on the front page of the questionnaire. This is to ensure we have received your consent to be in the study. This front page will be separated from your answers. Any identifying information will remain strictly confidential.

The questionnaire will take about 10 minutes to complete. Each question has a number of alternatives. Please answer all questions to the best of your knowledge.

The questionnaire includes questions relating to perceived importance of road safety; previous participation in professional development; and the teaching strategies and information needs of teachers to implement a road safety education program.

After completing the questionnaire, please return it in the reply paid envelope provided.

If you have any queries about this questionnaire, please contact Vanessa Hille on 9400 5451.

Thankyou very much for your help.

Vanessa Hille
Project Manager
School of Nursing and Public Health
Edith Cowan University

TEACHER CONSENT

(Please print in upper case letters)

I have read the above information about this study and any questions I have asked have been answered to my satisfaction.

I _____ of _____
First Name Last Name School Name

will participate in this research study, realising that I may withdraw at any time without prejudice. I agree that research data gathered for the study may be published provided my name is not used.

Teacher Signature

Date

This questionnaire includes questions relating to FLEXIBLE LEARNING.

Flexible learning is: Education or training which provides you with the opportunity to study at your own pace, at a convenient time and location. Flexible learning packages can be delivered via the Internet or by hard copy materials.

1. Using a scale of one to five rank how important you feel the following health topics are for your students.

(Number 1 should represent the most important issue and number 5 the least important).

Nutrition.....	<input type="checkbox"/>
Road safety.....	<input type="checkbox"/>
Human relationships.....	<input type="checkbox"/>
Physical activity.....	<input type="checkbox"/>
Environmental health.....	<input type="checkbox"/>

(5-9)

2. How would you rate the road safety education needs of students at your school?

(Circle one number)

Great need.....	1
Slight need.....	2
No need.....	3
Unsure.....	4

(10)

3. Has your school received the “Kids and Roads” materials appropriate to the student year level you teach?

(Circle one number)

Yes.....	1
No.....	2
Unsure.....	3

(11)

4. Which of these resources have you used to teach road safety to your students?

(Circle as many numbers as appropriate)

- Out and About – Federal Office of Road Safety 1
 - Road Smart – WASRSP secondary materials 2
 - Health education K-10 syllabus 3
 - Bike Education Kit 4
 - Constable Care Road Safety Activity Sheets 5
 - Sci-Tech Road Safety Program 6
 - Other 7
- (Please specify) _____

(12-18)

5. Have you previously participated in any PD for road safety?

(You may circle more than one number)

- No 1
 - Can't remember 2
 - Yes, the Child Pedestrian Injury Prevention Project (CPIPP) 3
 - Yes, a "Kids and Roads" district-based teacher training 4
 - Yes, a "Kids and Roads" school-based training 5
 - Other 6
- (Please specify) _____

Go to question 6

Go to question 5a

(19-24)

5a. What was your role in the "Kids and Roads" program in your school during 1999?

(Circle one number)

- School-based trainer and teacher 1
- School-based trainer 2
- Teacher 3
- Unsure 4

(25)

5b. Have you attended a "Kids and Roads" district-based teacher training?

(Circle one number)

- Yes 1
- No, I was trained by our school-based trainer 2
- Unsure 3
- No 4

(26)

6. If you were offered the opportunity to participate in a FREE professional development (PD) program in road safety education, by flexible learning, which of the following would best represent your response?

(Circle one number)

- Definitely participate 1
- Might participate 2
- Definitely not participate 3
- Require more information to make a decision 4

(27)

7. If a flexible learning PD program in road safety education was offered, what method of delivery would you prefer for the program?

(Circle one number)

- Flexible learning package of hard copy materials supported by a tutor 1
- Flexible learning package available on the Internet supported by a tutor 2

(28)

8. When would you prefer to participate in a flexible learning PD program on road safety?

(You may circle more than one number)

- In school time..... 1
- Evenings 2
- Weekends..... 3
- Pupil free days..... 4
- Other..... 5
- (Please specify) _____

(29-33)

9. Where would you prefer to participate in a flexible learning road safety PD program?

(Circle one number)

- At home 1
- At school..... 2
- Both home and school 3
- Other..... 4
- (Please specify) _____

(34)

10. Circle the number that best represents how important you feel the following resources are in a road safety education program for your students?

(Circle one number for each statement)

	Important	Neither Important Nor Unimportant	Unimportant	Unsure
Discussion posters	1	2	3	4
Videos	1	2	3	4
Story books	1	2	3	4
Cassette tapes	1	2	3	4

(35)

(36)

(37)

(38)

11. Circle the number that best represents how important you feel the following information is in a road safety PD program for teachers.

(Circle one number for each statement)

	Important	Neither Important Nor Unimportant	Unimportant	Unsure	
Rationale for including road safety education in the school curriculum	1	2	3	4	(39)
Essential facts about road safety	1	2	3	4	(40)
Involving parents and the community	1	2	3	4	(41)
Road safety policy for schools	1	2	3	4	(42)
Relevant agencies	1	2	3	4	(43)
Teaching Aboriginal students about road safety	1	2	3	4	(44)
Resources	1	2	3	4	(45)
Action plan	1	2	3	4	(46)
Teaching strategies	1	2	3	4	(47)

12. Do you know how to access an Internet site on a computer?

(Circle one number)

Yes 1

No..... 2

(48)

13. Where do you mostly access the Internet?

(Circle one number)

At home 1

At school..... 2

Both home and school 3

I do not have access..... 4

(49)

14. What is your age?

(Circle one number)

- 20-25 1
- 26-30 2
- 31-35 3
- 36-40 4
- 41-45 5
- 46-50 6
- >51 7

(50)

15. What is your gender?

(Circle one number)

- Male 1
- Female 2

(51)

16. What year group(s) are you currently teaching?

(You may circle more than one number)

- K..... 1
- 1 2
- 2 3
- 3 4
- 4 5
- 5 6
- 6 7
- 7 8

(52-59)

17. For how many years (including 1999) have you been teaching?

(Write in the boxes provided)

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(60-61)

18. In which type of school are you teaching?

(Circle one number)

- Government 1
 - Independent..... 2
 - Catholic 3
 - Other..... 4
- (Please specify) _____

(62)

19. My school is in

(Please specify town, suburb or community)

(63)

20. My school is approximately

--	--	--	--

kms from the Perth CBD.

(Write in the boxes provided)

(64-67)

Thankyou for your participation.