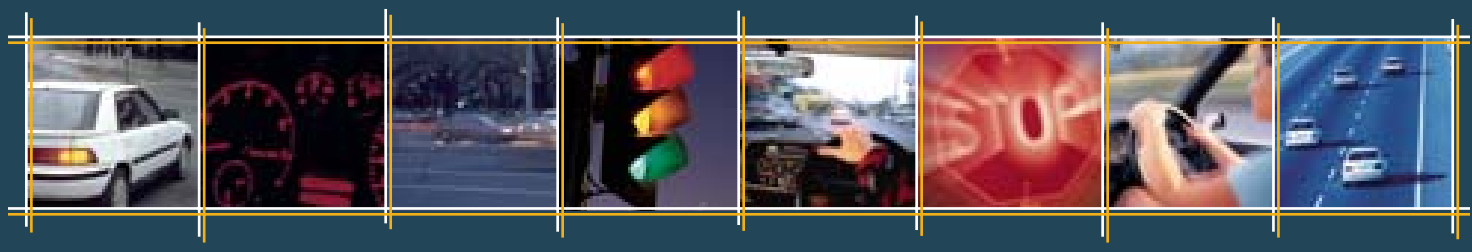
Australian Government

Australian Transport Safety Bureau

Development of a Novice Driver Education Curriculum for the ATSB



Protecting lives on our roads

Australian Government

Australian Transport Safety Bureau

DEVELOPMENT OF NOVICE DRIVER EDUCATION/DEVELOPMENT CURRICULUM

NOVICE DRIVER COACHING PROGRAM

Prepared for the ATSB

by

Dr Ron Christie

RCSC Services Pty Ltd

&

Warren Harrison

Eastern Professional Services Pty Ltd

&

Darryl Johnston

DCS Consultants Pty Ltd

AUSTRALIAN TRANSPORT SAFETY BUREAU
DOCUMENT RETRIEVAL INFORMATION

Report No.	Date	Pages	ISBN	ISSN
CR 222	December 2004	160	0 642 25527 X	1445-4467

Title
Development of a novice driver education curriculum for the ATSB

Authors
Dr Ron Christie, RCSC Services Pty Ltd
Warren Harrison, Eastern Professional Services Pty Ltd
Darryl Johnston, DCS Consultants Pty Ltd

Sponsor [available from]
Australian Transport Safety Bureau
PO Box 967, Civic Square, ACT, 2608, Australia.

Abstract
Novice drivers continue to have a higher level of crash involvement than more-experienced drivers, with the consequence that there is ongoing interest in the development and implementation of effective road safety measures for this group. To influence and direct evidence-based practice in this popular area, the Australian Transport Safety Bureau (ATSB) commissioned the development of a best-practice driver education/development program for Australian novice drivers with about 6 months of solo driving experience. The ATSB retained the authors to research and prepare a model novice driver curriculum program based on best road safety practice and contemporary psychological, educational theory. The authors were also required to develop specifications for a large-scale, crash-based trial of this program in a suitable Australian jurisdiction.

This report provides an outline of the *Novice Driver Coaching Program* curriculum*,* together with a rationale for the content, orientation and emphases of the program. Other program documentation is attached as Appendices:

- Novice Driver Coaching Program Guide – sets out how the Program is to be conducted by a Coach and the source document for the training of coaches (see Appendix A)
- Novice Driver Coaching Program: Coach Training Program – summarises the prerequisites for coach selection and outlines the training requirements/program for coaches (see Appendix B)
- Coaching Guide *(Coaching Novice Drivers*) – a handbook for coaches covering how to coach/mentor specially written for this program which is used in coach training and as a reference for coaches conducting the program with novice drivers (see Appendix C)
- Novice Driver Coaching Program: Auditing Procedure – guidelines for the auditing of the Program to ensure that it operates consistently and in accordance with the specified curriculum (see Appendix D)
- Evaluation Plan –specifications for the proposed crash-based trialling and evaluation of the Novice Driver Coaching Program (see Appendix E)

Keywords
Young, novice, training, education, coaching, mentoring, Insight, Finnish Stage 2.

Notes
(1) ATSB reports are disseminated in the interest of information exchange.
(2) The views expressed are those of the author(s) and do not necessarily represent those of the Australian Government.

CONTENTS

Page

List of Figures

List of Tables

Appendices

DEVELOPMENT OF NOVICE DRIVER EDUCATION/DEVELOPMENT CURRICULUM: NOVICE DRIVER COACHING PROGRAM

Background

Novice drivers continue to have a higher level of crash involvement than more-experienced drivers, with the consequence that there is ongoing interest in the development and implementation of effective road safety measures for this group. The Australian Transport Safety Bureau (ATSB) has expressed an interest in the development and trial of a driver education/development program for novice drivers that is similar to the program currently used with some success in Finland (ie Stage 2 program). As the first requirement is the development and evaluation of a sound driver education/development program, the ATSB retained Dr Ron Christie (RCSC Services Pty Ltd) and Warren Harrison (Eastern Professional Services Pty Ltd) to prepare a suitable program and the development of specifications for a large-scale trial of the program.

The outline of driver education/development program curriculum – named the *Novice Driver Coaching Program* - follows below, together with a rationale for the content, orientation and emphases of the program. This program outline/rationale is supported by other program documentation – these are attached as Appendices:

- Novice Driver Coaching Program Guide – sets out how the Program is to be conducted by a Coach and the source document for the training of coaches (see Appendix A)
- Novice Driver Coaching Program: Coach Training Program – summarises the prerequisites for coach selection and outlines the training requirements/program for coaches (see Appendix B)
- Coaching Guide *(Coaching Novice Drivers*) – a handbook for coaches covering how to coach/mentor specially written for this program which is used in coach training and as a reference for coaches conducting the program with novice drivers (see Appendix C)
- Novice Driver Coaching Program: Auditing Procedure – guidelines for the auditing of the Program to ensure that it operates consistently and in accordance with the specified curriculum (see Appendix D)
- Evaluation Plan –specifications for the proposed crash-based trialling and evaluation of the Novice Driver Coaching Program (see Appendix E)

Adoption of the title “coaching program” was deliberate and intended to indicate that the intent of the program is not one of traditional driving instruction but rather cooperative learning/development. The aim of the program is to assist novice drivers to develop as safe and responsible drivers by identifying areas for improvement in their driving behaviour on real roads and in real traffic. This differentiates this program from most others that have attempted to influence the development and behaviour of novice drivers.

An analogy from the sporting world would be the relationship between a tennis coach and a player who wished to improve their game. The tennis player can already play the game and knows the rules, but needs assistance to develop into a more skillful and competent player. The tennis coach does not attempt to retrain the player, but rather works with them to identify areas where they can improve and how this could be accomplished. Most of the player’s improvement comes about via practice in the areas identified by the coach between face-to-face coaching sessions.

The Novice Driver Coaching Program therefore seeks to influence the development and behaviour of novice drivers through guidance interspaced with self-directed practice rather

than the application of training input per se. This is consistent with the published literature that shows that training per se is unlikely to substitute for experience and practice in the development of almost any set of complex skills or behaviour.

Development Novice Driver Coaching Program: Process and Sources of Information and Influence

Table 1: EU Project Gadget Matrix (Driver Behaviour model) (After Hatakka et al, 2002)

Hierarchical levels of behaviour & referring structure of driver training content			
Essential Contents			
	Knowledge & Skills	Risk-Increasing Factors	Self-Evaluation
Goals for life & skills for living (general)	*Knowledge about/control over how life goals & personal tendencies affect driving behaviour* *eg Motives*	*Risky tendencies eg* *Acceptance of risk* *Self-enhancement through driving* *Use of alcohol & drugs*	*Self-evaluation eg* *Personal skills for impulse control* *Risky tendencies*
Driving goals & context (journey related)	*Knowledge & skills concerning eg* *Effects of journey goals on driving* *Effects of social pressure inside the car*	*Risks connected with eg* *Driver's condition (mood, BAC etc)* *Driving environment (eg urban/rural)*	*Self-evaluation eg* *Personal planning skills* *Typical driving goals*
Mastery of Traffic Situations	*Knowledge & skills concerning eg* *Traffic regulations* *Speed adjustment communication*	*Risks caused by eg* *wrong expectations* *risk increasing driving style* *vulnerable road users*	*Self-evaluation eg* *Strong & weak points of basic traffic skills* *Personal driving style*
Vehicle Manoeuvring	*Knowledge & skills concerning eg* *Control of direction & position* *Tyre grip & friction*	*Risks connected with eg* *Insufficient automatism or skills* *Unsuitable speed adjustment*	*Awareness of eg* *Strong & weak points of basic manoeuvring skills* *Realistic self-evaluation*

This Novice Driver Coaching Program was developed by drawing together empirical and theoretical evidence from the road safety, education, and training literature, and by using the Finnish Stage-2 novice driver education program as a starting point. It also incorporates best practice in terms of adult learning and the shaping of behaviour and targets the intermediate levels of the EU Project Gadget driver behaviour model, ie *Mastery of Traffic Situations and Driving goals & context (journey related)* and (see Table1). EU project GADGET was funded by the European Commission in the late 1990's to assess and document changes in driver behaviour resulting from the introduction of in-vehicle safety devices, visual modifications to the road environment, education/training, legal measures and safety campaigns (see Siegrist, 1999 for further information). It also provided recommendations as to how education and training for novice drivers should be conceptualised and structured. The matrix shown in Table 1 was developed as part of Project Gadget as a means of summarising the development of driver behaviour.

Beyond screening for the presence of basic skills as a pre-requisite for participation in the Novice Driver Coaching Program, basic vehicle control (see *Vehicle Manoeuvring* in Table 1) is not addressed. It is assumed and expected that novices participating in the program will be competent in respect of these low level skills. However, consistent with *Mastery of Traffic Situations* level of the EU Project Gadget Matrix, the program does expect novice drivers to apply the following four elements of safe driving:

- Keeping a safe distance from other vehicles.

- Controlling/managing the speed of their vehicle.
- Selecting safe gaps when turning, crossing traffic or changing lanes.
- Scanning for hazards (ahead, behind and to the side) and responding to these appropriately.

Coaches working within the Novice Driver Coaching Program will be trained to assist novice drivers in maintaining and improving these skills on road and in-traffic. To this end, Part 2 of the Roads & Traffic Authority (RTA, NSW) publication *Hazard Perception Handbook* (see RTA, 2001) will be used as a text for coaches during their training and as a resource when coaches interact with novices within the program. The *Hazard Perception Handbook* was written by Dr Christie for RTA as part of the NSW Graduated Licensing Scheme (GLS) and supports the development of the middle to higher order skills associated with safe, solo driving behaviour. It targets novice drivers in their first year of solo driving who are preparing to graduate from the first to the second stage of provisional licensing in NSW by successfully passing a hazard perception test. While specifically written for the NSW context, Part 2 of the Handbook is applicable to all novice drivers with up to about 12 months solo driving experience. Use of the *Hazard Perception Handbook* in the Novice Driver Coaching Program takes advantage of an existing resource custom-written for the age/experience target group of the program and obviates the need to develop new materials. The *Hazard Perception Handbook* would be purchased and distributed as a resource for coaches with care being taken to preserve the copyright and/or intellectual property of RTA.

In developing the model, the consultants relied heavily on recent reviews of the efficacy, content and orientation of novice driver training, education and development programs and initiatives (Christie, 2001: Christie & Harrison, 2003). This was supplemented by information gained by Dr Christie's visit to Finland in August 2003 to observe Stage 2 novice driver training and to meet with the program developers, administrators and trainers.

Consultation and Expert Advice

Comment and advice was also received from a panel of Australian novice driver experts who met with the consultants in Melbourne on 27 April 2004 (ie Prof Tom Triggs, Dr Wendy Macdonald and Dr Barry Watson) to discuss the content, emphases and orientation of the model curriculum outline. This expert panel also provided further comment on the fully developed program submitted to ATSB.

Input from the expert panel was further supplemented by comments and feedback from road safety and driver licensing representatives of the roads and traffic authorities of each Australian jurisdiction (with the exception of RTA NSW which declined to become involved). This input/comment was gained from a series of consultation briefings conducted by the program developers with the road/traffic authorities in each state/territory capital during May and June 2004.

The combined comments and suggestions of the expert panel and jurisdictional representatives have been incorporated into the Novice Driver Coaching Program.

Assumptions Inherent in the Development of Novice Driver Coaching Program

In developing the Novice Driver Coaching Program, the consultants operated under the following assumptions/conditions about the curriculum/program, in that it should:

- target novice-driver behaviours or characteristics that are known to be related to crash involvement. Targeting other behaviours or characteristics might influence behavioural outcomes or attitudes, but is less likely to have an effect on crash involvement.

- target behaviours and characteristics that are able to be manipulated using an intervention based on sound education and training methods. Some characteristics that to appear to be related to crash involvement – such as the personality of drivers – are not able to be changed using educational methods and would therefore make poor targets for the program.
- target these behaviours or characteristics in a way that does not have negative consequences for safety. The cognitive and behavioural skills that assist in safe driving develop naturally for drivers, with the consequence that the likelihood of crash involvement is remarkably low for experienced drivers. This natural development of safe skills could conceivably be hindered by a driver training program.
- use educational or training methods that are known to have an effect on the target behaviours and characteristics, and be limited to methods of this type.
- adopt an adult-learning approach to the development of novice driver participants – including the incorporation of coaching/mentoring.
- target novice drivers with at least six months solo driving experience (to approximate the age/experience target of the Finnish Stage 2 program).
- not include any off-road components as these would be expensive to provide and would be at odds with road safety/ driver licensing authority policy in most Australian jurisdictions and much of the published literature.
- target higher order driving behaviour and not vehicle control per se
- not exceed a total of about 8 hours in duration, though this could comprise a number of composite modules/sessions
- be capable of both behavioural and crash-based evaluation
- if shown to be effective in reducing crashes/crash risk among Australian novice drivers, be deliverable within Australian driver licensing jurisdictions with the assistance of expert organizations such as TAFE
- not infringe the copyright and/or intellectual property of individuals or organisations.

The first three assumptions are based on a theoretical discussion of novice driver education and training presented by Harrison (1999). These assumptions necessitated giving consideration to factors that are associated with crashes amongst novice drivers, and the way in which safer driving behaviours and characteristics develop in the context of normal driving experience.

Outline of Novice Driver Coaching Program

An outline of the Novice Driver Coaching Program may be found at Figure 1 (on Page 11). The Figure 1 flow chart shows how the novice moves through the program from initial contact to final follow-up, post-program. A major feature of the model is modularization to allow for reflection, consolidation of learning and self (re-)calibration of one's driving behaviour between contact sessions with one's mentor/coach and/or with a group of peers.
Contact, learning, reflection and follow-up are spread over a period of several months. This is considered to represent sound educational and developmental thinking and to enhance the likelihood of behavioural change on the part of novice drivers exposed to the program.

The reader will also note that the collection of behavioural and related data is built-in to the Program. This should facilitate the evaluation of the program in behavioural terms and help lay the foundation for subsequent crash-based evaluation.

Rationale for the Approach Adopted

The rationale for the approach taken, including content, emphasis and orientation, is set out below. The content of this section should be read in conjunction with Figure 1 as it refers directly to characteristics of the program.

ISSUE OR PROGRAM CHARACTERISTIC	RATIONALE
Requirement for at least six-months of experience prior to undertaking program	• The Finnish stage 2 program requires a minimum of six months driving experience (with a minimum licensing age of 18 years). This program is more-commonly taken by young drivers with one year of driving experience. • The developers of the Finnish stage 2 program consider that novices with less than six months solo driving experience would not be ready for this type of program and would not profit from it (personal communication, Prof Esko Keskinen and Dr Mika Hatakka, University of Turku, Finland, August 2003) • The choice of a minimum experience requirement reflects competing needs to introduce the program as soon as possible to influence novices in the period of highest risk (see Mayhew et al., 2003) and to allow participants sufficient time to accrue solo driving experience that can be used as the basis for learning and discussion in the program. • McKnight and McKnight (2003) report that experience has a broad effect across driving, and that the high crash rate during early solo driving relates to factors that depend on experience – attempting to reduce the impact of these factors with an educational program is unlikely to be successful. • The strongest decline in crash rates occurs up to six-months experience, after which the decline becomes shallower (Mayhew et al., 2003), suggesting that experience-related factors have their strongest effect in the first six months.
Reliance on an adult-learning and coaching approach	• The program has the dual aims of behaviour change and an increase in self-awareness and safety-related motivation. Both rely on the participant's motivation to benefit from the program. This is especially critical given the non-traditional nature of the program and the possibility that some participants will be disappointed to learn that the program does not include vehicle-control training. • The educational experience of young people is in the context of participatory methods, especially in the senior years of schooling. Reverting to a traditional didactic approach or a teacher-student relationship is unlikely to encourage helpful motivation amongst participants – this approach has been unsuccessful with novice solo drivers in the UK Pass Plus program (Christie & Harrison, 2003) • Using the driving experiences of participants as the basis for learning and discussion ensures that the program is relevant.

ISSUE OR PROGRAM CHARACTERISTIC	RATIONALE
Exclusion of any off-road or driving range components	• Driving ranges can be used to teach vehicle handling skills (such as those that could be used during emergency situations where hazard detection skills have failed) or to encourage better self-awareness or insight into the uncertainties in the driving task and the limitations of the participant's skill. • Programs to teach vehicle handling skill are unlikely to be successful as skills to be evoked in emergency situations would need to be practiced enough to become automatic. There is unlikely to be sufficient opportunity to practice skills in the context of emergencies to ensure that these skills are elicited when needed (Christie, 2001) • Insight-based programs relying on driving-range and related activities have been consistently unsuccessful when assessed in relevant behavioural terms (eg. Nolen et al, 2002; Senserrick & Swinburne, 2001). Insight-based programs that teach limitations are likely to result in learning that mistakes when driving have only minor consequences (such as skidding without any further consequence). • Off-road activities are unlikely to access the internal mental model of the driving environment that directs behavioural decisions when driving (see Harrison, 1999).
Reliance on higher-order focus and exclusion of any vehicle-control component	• Programs based on vehicle control skills are unlikely to have a positive effect on the safety of novice drivers (Harrison, 1999) • There is no empirical support for programs based on teaching vehicle control skills (Christie, 2001) • There is some evidence that programs with a focus on hazard perception (ie higher order skills) or self-awareness may have positive effects (Christie and Harrison, 2003)
Use of eight-hour duration	• The Finnish stage 2 program is of similar length • There needs to be some consideration given to the cost of the program for participants and funders. A longer course may provide additional benefits, but the cost and (and attractiveness) of a longer course weighs against it. • There is no evidence available on this issue.
Distribution of components over a period of time	• It is generally accepted that allowing some time between learning or training experiences increases the retention of learnt material (Adams, 1987). • Allowing time between components will allow participants time to practice specific activities set as "homework during the program.
Combination of on-road and discussion activity	• This mimics the most-accepted components of the Finnish program (Christie and Harrison, 2003). • On road components allow in-situ learning to occur and for the instructor and participant to deal with real-world issues that arise as a result of the participant's own driving. • There is some evidence that discussion-group approaches have an effect on safety outcomes (Gregersen et al., 1996). • A discussion-group approach matches the general educational experience of young adults, and is consistent with an adult-education approach.
Use of participant's own vehicle	• The participant is familiar with their own vehicle, ensuring that the driving observed in the in-car activities is not influenced by the familiarisation process likely to occur in a new vehicle. • This ensures that the interaction between "instructor" and participant relates to the participant's driving rather than their ability to cope with a new vehicle.
Initial contact by post	• The administration of the program is a significant expense. Postal contact to confirm program times and to provide information about the program is more efficient. • This could be supplemented by telephone/email contact where/when possible

ISSUE OR PROGRAM CHARACTERISTIC	RATIONALE
Inclusion of initial questionnaire	• This mimics the Finnish program, where questionnaires are sometimes used to provide additional discussion material • A questionnaire based on the Manchester Driver Behaviour Questionnaire and similar content will provide discussion material during the group discussion and will also flag issues for discussion on a one-to-one basis – this tool has been used in other driving related research • A questionnaire can be used as part of the follow-up process during the trial/evaluation to assess changes in intermediate measures such as attitudes and knowledge. While these are not central to the success of the program, measuring changes over time will provide additional information about its effects.
Assessment of vehicle roadworthiness before each session	• Good OH&S practice requires that the workplace be safe – as instructors (coaches) will be working in the participant's car it is necessary to ensure a basic level of safety • The roadworthiness assessment provides an opportunity for rapport building and an introduction to the adult-education approach of the program during which the participant will check the car under general guidance. • The process of assessing the roadworthiness of the car teaches the participant about some basic vehicle safety issues.
Preliminary assessment of driving using NZ LTSA FLT part 1	• Part 1 of the New Zealand LTSA Full Licence Test (FLT) assesses basic vehicle handling skills in light traffic. • Using this approach provides some additional opportunities for rapport building in the context of a task that most young drivers will find easy and familiar (given their recent exposure to a driving test). • The test was developed as an assessment tool for drivers with on-road, solo experience and is therefore more appropriate for this program than other driving assessment tools.
Exclusion of participants who fail the NZ LTSA FLT part 1	• Participants who fail the initial assessment may be a safety risk to themselves and the instructor as they are unable to demonstrate simple driving skills in light traffic. • Participation in the program assumes that participants have accrued some driving experience and that they have sufficient vehicle control and traffic-related skills to benefit from a program that focuses on more-complex situations. Participants who fail at this initial level may not be ready for the program.
Use of 1:1 feedback sessions	• One-to-one sessions based around the safety-related elements of the participant's driving ensure that the focus of the program is on the particular needs of participants. • The one-to-one process allows coaching/mentoring methods to be used to increase the motivation of participants to gain something from the program.
Use of "drive to a destination" activities in feedback sessions	• The on-road components of the program will start in the participant's neighborhood. Using a "drive to a destination" activity ensures that the driving feedback is provided in relation to the type of purposeful driving experience that the participant might normally encounter. • This type of activity minimises participants' need to deal with novel traffic situations. • Asking participants to drive to a particular destination also allows in-car discussion about the strategic decisions involved in route planning.

ISSUE OR PROGRAM CHARACTERISTIC	RATIONALE
Restriction of most driving in feedback sessions to 50-80 km/h speed zones	• Access to higher speed zones is limited, and for most young drivers, most of the time, day-to-day driving occurs in urban or built-up areas – this is also where/when most collisions occur. • Driving feedback sessions conducted as part of programs offered in rural areas may need to include driving in faster speed zones to reflect common driving experiences in these areas.
Focus on samples of behaviour for recording and feedback	• It is necessary – both for the evaluation and more generally for the reliability of the feedback – to have the instructor record the safety-related driving behaviours of the participant using a standard recording instrument. • Sampling safety-related behaviours at regular time intervals during the drive will provide a consistent approach to providing feedback to participants.
Break between two drive components in feedback sessions	• A short break between the drive to the destination and the drive back provides an opportunity for some feedback and for the participant to then modify one or two aspects of their driving for the return trip. • This also avoids fatigue or overloading the novice – Finnish program sessions are about 30 minutes in length
Focus of evaluation on second half of feedback sessions	• Participants are likely to commence the feedback session with a tendency to self-censor their driving behaviour to maximize the positive feedback they receive. • Limiting the evaluation assessment to the second half of each feedback session reduces the likelihood that the assessment will reflect self-censored driving behaviour, and increases the likelihood that the assessed behaviour will be more-typical of the driver's usual behaviour.
Provision of feedback at end of feedback sessions	• Immediate feedback ensures that the instructor can draw on specific examples of behaviours during the drive and that the participant is able to relate the feedback to recent experience. • Provision of immediate/timely feedback is consistent with good educational and behaviour modification practice • The feedback at the end of the session also provides an opportunity for the instructor and participant to discuss "homework" exercises or things that could be trialed or practiced before the next session.
Inclusion of separate night-time feedback session	• Novice drivers appear to have a higher risk of crash involvement at night compared to other drivers (McKnight & Peck, 2002). • Including a feedback session for night-time driving ensures that safety-related issues for night-time driving are discussed as part of the one-to-one part of the program, and enables them to be discussed (with reference to the experiences of participants) as part of the discussion group.
Use of discussion groups and structure of groups to include males and females	• This mimics the Finnish program and is consistent with Gregersen et al.'s (1996) positive findings in relation to discussion-group approaches. • Discussion groups provide an opportunity for learning through the shared experiences of others and identification with them. • The Finns believe that mixed groups help keep the program focused on safety-related issues, and that this increases the benefits of the program for young males.

ISSUE OR PROGRAM CHARACTERISTIC	RATIONALE
Group selection of problems for group session	• The motivation of participants to benefit from the program is likely to depend (in part) on the perceived relevance of the program to them. Allowing the discussion group to select a number of issues from a larger pool of safety-related issues will help to ensure that the program is perceived to be relevant. • The experiences of each group, and the particular safety-related issues that are relevant to them, are likely to differ. Having groups help select issues for discussion will help ensure that the focus of each group is relevant to the safety-related experiences of members. • An adult learning approach emphasises the collaboration between instructor and participants and between participants themselves.
Conducting group sessions on-site	• On-site discussions provide an opportunity to draw on observations of the behaviour of other drivers, and to draw on group observations about critical issues at the site. • The links between the day-to-day driving experiences of drivers and the issues discussed in the group are likely to be more realistic. • The use of on-site discussions reduces the potential negative response of participants to a classroom-based program.
Use of a people-mover	• The use of on-site discussion sessions requires an efficient method of transport – using a people mover allows the whole group to travel together and will allow some discussion to occur while traveling. • The vehicle will provide a location for discussions if weather conditions are bad. • In line with good OH&S practice, only vehicles with a good crash rating and safety features would be used
Use of drive-through approach to demonstrate issues	• Where issues relate to driver behaviours that can be demonstrated – such as gap selection or speed – the people mover can be used as a demonstration tool to model appropriate, safe driving behaviours with the program participants observing in the vehicle. • Participants could be encouraged to discuss the instructor's driving – to provide feedback within the context of group discussion that relates to safety issues and their own experiences while driving and during the earlier feedback sessions
Final group discussion	• A final discussion session will give an opportunity for participants to draw their solo driving experience, their experience during the feedback sessions, and their experiences in the on-site group discussions together. • The final discussion will also allow participants to discuss how their experiences in the program could be used to improve the safety of their driving
Follow-up feedback sessions	• Follow-up feedback sessions are essential for the evaluation as they will provide an opportunity to assess the nature of any program-related changes in driving behaviour. • It would also be worthwhile including follow-up feedback sessions in the program as they provide an additional opportunity for interaction between instructor and participant that focuses on safe driving behaviours. • The knowledge that there is an additional feedback session in the program may encourage participants to continue to practice some of the safe driving behaviours discussed in the program, so increasing the likelihood that they will become part of the participants' behavioural repertoire.
Follow-up telephone calls	• Follow up telephone contact emphasizes the longer-term interest of the program in participants, and may encourage participants to consider safety-related issues covered in the program over a longer time period than would be the case without the contact. • This may help extend the influence of the program and is consistent with approaches used in public health and behaviour change programs

Conclusion

The program developers consider that the Novice Driver Coaching Program outlined above represents a best-practice approach to the intent and content of a development program for novice drivers with at least six months solo driving experience. It is also considered that the program delivery envisaged is sound from both an educational and behaviour modification perspective. The design also allows for the ready collection of evaluation/assessment information.

References

Adams, J.A. (1987) Historical review and appraisal of research on the learning, retention, and transfer of human motor skills. Psychological Bulletin, 101, 41-74.

Christie, R & Harrison, W. (2003). *Driver Training and Education Programs of the Future*. Melbourne: RACV Ltd.

Christie, R. (2001). *The Effectiveness of Driver Training as a Road Safety Measure: A review of the Literature*. Melbourne: RACV.

Gregersen, N.P., Brehmer, B., & Morrn, B. (1996) Road safety improvement in large companies. an experimental comparison of different measures. Accident Analysis and Prevention, 28, 297-306

Harrison, W.A. (1999) *The Role of Experience in Learning to Drive: A Theoretical Discussion and an Investigation of the Experiences of Learner Drivers Over a Two-Year Period. Report 156.* Monash University Accident Research Centre.

Hattaka, M., Keskinen, E., Gregersen, N.P., Glad, A. & Hernetkoski, K. (2002) From control of the vehicle to personal self-control; broadening the perspectives to driver education. *Transportation Research Part F*.

Mayhew, D.R., Simpson, H.M., & Pak, A. (2003) Changes in collision rates among novice drivers during the first months of driving. Accident Analysis and Prevention, 35, 683–691

McKnight, A.J., & McKnight A.S. (2003) Young novice drivers: Careless or clueless. Accident Analysis and Prevention, 35, 921-925.

McKnight, A.J., & Peck, R.C. (2002). Graduated driver licensing: What works? Injury Prevention, 8, 32-38.

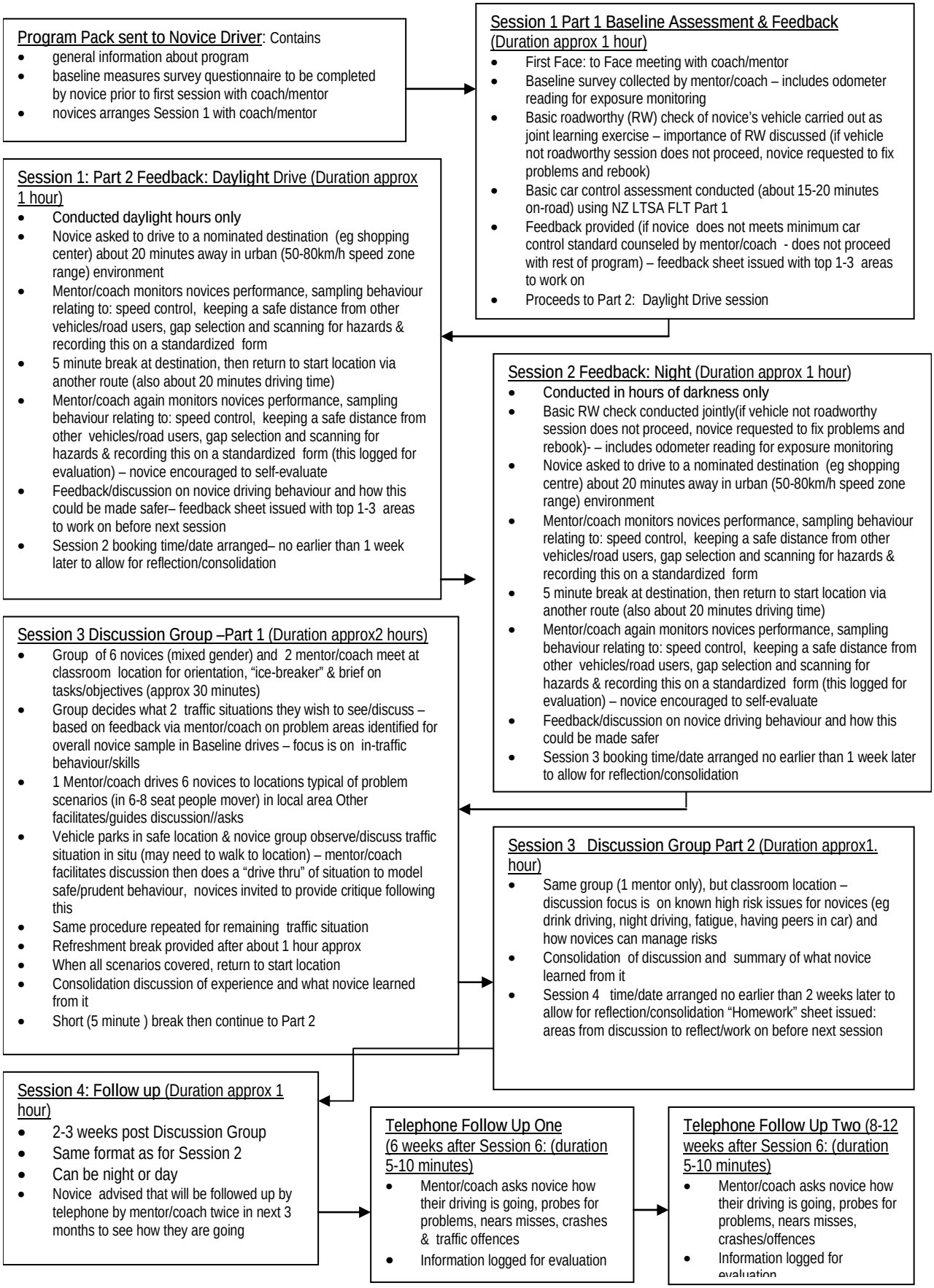
Nolen, S., Engström, I., Folkesson, K., Jonsson, A., Meyer, B., & Nygard, B. (2002). PILOT – Vidareutbildning av unga bilförare. Slutrapport. Rapport 457. Linköping: VTI

Roads & Traffic Authority (RTA). (2001). *Hazard Perception Handbook.* Sydney: Author (see also PDF version on RTA website: www.rta.nsw.gov.au)

Senserrick, T.M., & Swinburne, G.C. (2001) Evaluation of an insight driver-training program for young drivers Report 186. Clayton, Vic.: Monash University.

Siegrist, S (Ed) (1999). *Driver Training, Testing & Licensing – towards theory-based management of young drivers' injury risk in road traffic.* Results of EU Project GADGET, Work Package 3. Berne: Schweizererische Beratungsstelle fur Unfaliverhutung (BFU).

FIGURE 1: OUTLINE OF NOVICE DRIVER COACHING PROGRAM



APPENDIX A: Novice Driver Coaching Program Guide

Novice Driver

Coaching Program

Program Guide

DCS Consultants Pty Ltd
For
RCSC Services
2004

Contents

Introduction

The Novice Driver Coaching Program has been developed with the objective of influencing behavioural change among novice drivers and to increase their self-awareness and safety-related motivation. It targets novice drivers with about 6-12 months of solo driving experience.

It achieves this by the application of:

- Coaching/mentoring of participants of in-traffic skills activities such as gap selection, speed control, scanning and hazard perception
- Peer discussion groups where the group determines the subject matter to be discussed based on the driving tasks that concern them the most.

Only trained/skilled personnel who have been trained in the operation of the program and how to conduct its components facilitate Coaching and discussion groups.

The term coach is used deliberately to indicate that the role is not one of traditional driving instruction and that cooperative learning/development is the aim.

The program is voluntary and is conducted over a timeframe of 8 – 12 weeks, taking approximately 7 hours of face to face contact with a coach/mentor and 10 – 20 minutes of follow-up telephone contact.

The Program

The Novice Driver Coaching Program applies principles developed from the review of international best practice driver training programs. The program is modelled on the Finnish Stage-2 novice driver education program but also incorporates best practice in terms of adult learning and the shaping of behaviour.

It targets the intermediate levels of the EU Project Gadget driver behaviour model, matrix (i.e. *Mastery of Traffic Situations and Driving goals & context (journey related) – See Attachment A.* It does not deal with basic vehicle control, the lowest level in the EU Project Gadget matrix.

The specific program components are as follows:

- Information Pack provided to the participant
- Session 1 Part 1- Basic Skills- Introduction & Baseline Assessment
- Session 2 Part 2 - In-traffic Skills assessment and feedback (Daylight hours) (One to One coaching)
- Session 2 - In-traffic Skills assessment and feedback (Night-time hours) (One to One coaching)
- Session 3 - Discussion Group - combined into two parts of same session
    - Part 1 Classroom discussion and In-vehicle skills modelling
    - Part 2 Classroom discussion on known risk issues
- Session 4 - Follow-up assessment & feedback: night or day (One to One)
- Session 5 - Telephone follow-up (probing for feedback on the participants progress)
- Session 6 - As in session 6, but up to 6 weeks later.

The sequencing of these components is shown I Figure 1 below.

It is important to note that all diagnostic assessments, discussions and issues will be recorded for evaluation and feedback purposes. The performance of the Coaches in terms of consistency and accuracy will also be audited and monitored during the operation of the program. This is essential to maintain the reliability and consistency of program delivery over time, coaches and locations.

Further information regarding the development and research base of the program can be found in the Curriculum Outline (see Attachment B).

Basic Curriculum

The curriculum model underlying this program requires the Coach to:

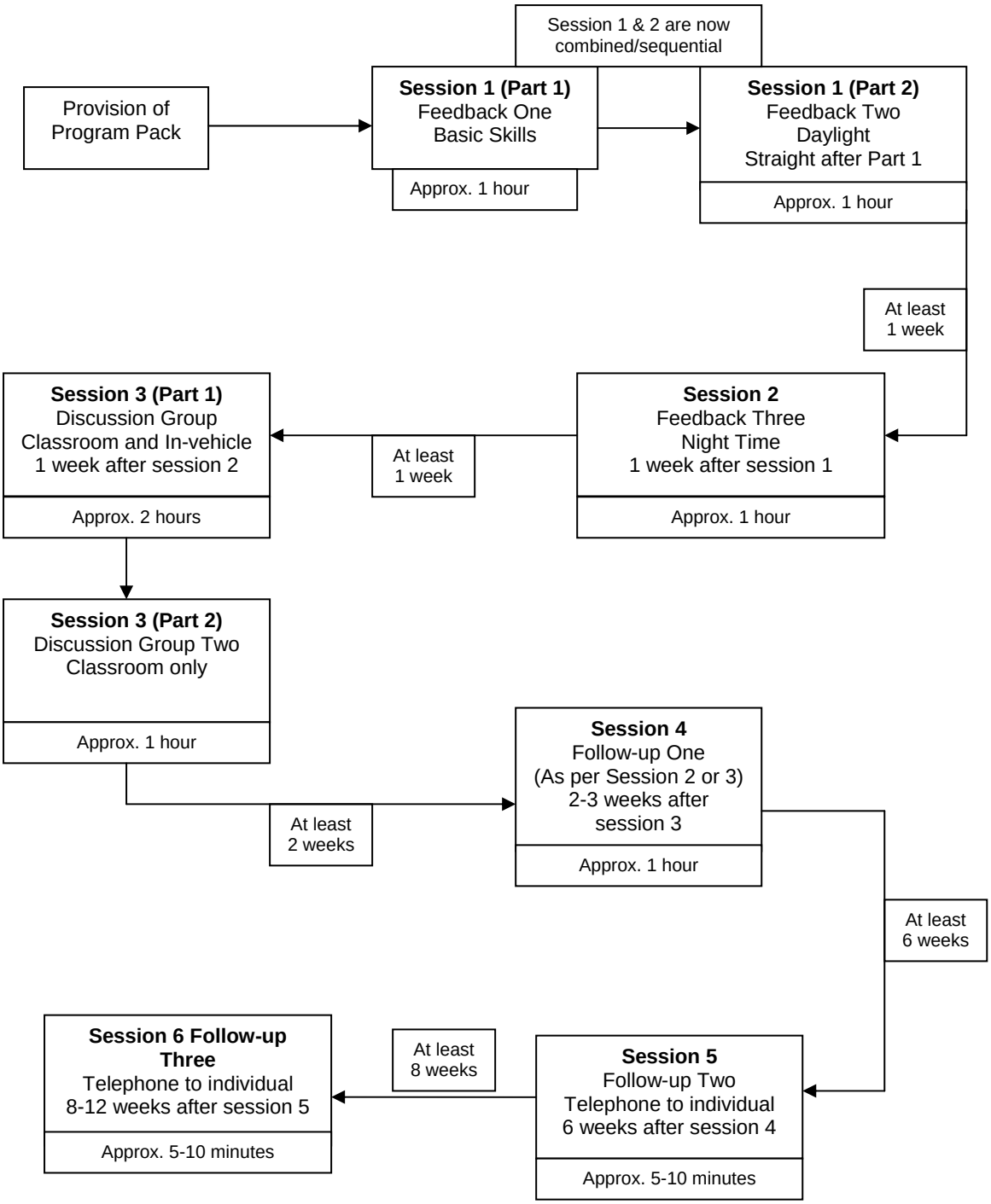
- Develop rapport with individual novice drivers and groups that participate in the program using “adult learning principles “
- To utilise and build upon the experiences encountered by the participants in their individual driving and in relation to interaction with coaches and novice driver peers during discussion and in-traffic modelling.

This relationship is different to that between a driving instructor and a learner driver as the discussion groups and the in-vehicle assessment and feedback sessions attempt to target:

- Behaviours and characteristics known to be related to crash involvement for novice drivers.
- Traffic/driving situations that present safety challenges to novice drivers.

The following flow chart summarises a novice driver’s progression through the program:

> Figure 1: Flow Chart of Program components



Time between contact sessions allows for novice drivers to reflect on their own experience, learning and interactions and to re-calibrate their thinking about safe driving behaviour at a personal level. It also provides the opportunity for novice drivers to work on areas for development identified in coaching feedback sessions.

Introduction to Program Components

This next section takes each program component in turn and provides:

- a brief rationale for the inclusion of this component,
- the learning aim of the component; and
- an outline of how to conduct the component, including the use of diagnostic assessment tools and the provision of feedback to the novice driver(s)

This should be read in conjunction with the Resource Material produced for coaches conducting the program, which may be found at Attachment C.

It is important that novices understand why particular activities/components are undertaken and that discussion of this takes place with novice drivers, individually and in-group settings. This is a key component of the adult learning approach.

Session 1 Part 1- Feedback 1 and Basic Skills Assessment

This session allows the coach to check the basic driving skills of the novice driver to ensure that they have sufficient competence and experience to take part in the program. This is essential as it acts to protect the coach and novice driver from potential crash risk as only competent novices who have mastery of basic car control and the application of road law are safe to take part in the program. In short, participating novices should have mastered the skills at the first level (Vehicle Manoeuvring) shown in the EU project Gadget matrix (see Attachment A).

For safety reasons, a brief roadworthy check of the novice driver's vehicle is also undertaken to emphasise the importance of vehicle safety issues and to ensure that the vehicle is safe for use in the coaching and feedback components of the program.

Diagnostic measures incorporated into this initial session also establish a baseline of driving behaviour against which the novice driver's progress can be assessed by the coach during the program and at its conclusion.

The Components of Session 1 are as follows:

- Baseline survey collected by coach – includes odometer reading for exposure monitoring
- Basic roadworthy (RW) check of novice's vehicle carried out as joint learning exercise – importance of RW discussed (if vehicle not roadworthy session does not proceed, novice requested to fix problems and rebook)
- Basic car control assessment conducted (about 15-20 minutes on-road) using NZ LTSA FLT Part 1 (Refer to Attachment L for an overview)
- Feedback provided– a feedback sheet issued with top 1-3 areas of driving behaviour to work on before next session (where a novice does not meets minimum car control standard he/she is counselled by mentor/coach and does not proceed with rest of program)
- Collection of Baseline Survey
- Progress to Session 1 Part 2 if basic car control successfully completed

The baseline survey that was mailed to all novice drivers participating in the program should be collected by the coach and checked for any omissions/errors. The baseline survey should be forwarded to the Program Administrator.

Road Worthy Check (RW)

The checklist at Attachment D shows what aspects of the novice driver's vehicle should be checked cooperatively by the novice and the coach. It is important that un-roadworthy vehicles are not used in the program. For occupational health and safety reasons any deficiencies must be rectified before a particular novice driver's vehicle is used.

As part of this check (which is conducted before each in-vehicle, on-road component/session) the coach should note the odometer reading and ask the novice what proportion of the kilometres travelled since the last reading were driven by the novice. This information is useful for coaching purposes as it gives an indication of how much on-road experience is being accumulated. It is also a useful piece of information for program evaluation purposes.

Basic Skills Assessment

The Basic Skills Assessment consists of a series of normal, everyday suburban/urban driving situations that would normally be encountered by drivers. To accurately assess the skills/competence of the novice driver, the following criteria have been developed for use by the Coach during the assessment.

Assessment Criteria	Components
Speed Control (SP)	• Maintains a speed within 5 kmh of the posted speed limit but does **not** exceed it. (Exceeding the speed limit would be an issue for feedback and discussion) • May need to reconsider how we deal with speed as we don't want to eliminate too many at trial – Could we eliminate only the worst or habitual • Maintains a safe speed relative to the traffic and weather conditions. • Adjusts speed by use of accelerator and brake smoothly • Approaches and completes turns under control
Position (PO)	• Positions the vehicle wholly within the marked lane • Positions the vehicle as near as practicable to the left kerb • Positions the vehicle with a safe clearance from parked vehicle or roadside activity • Positions the vehicle with a 2 second following distance • Maintains a minimum of 1 m to a maximum of 2 m of the kerb on the approach, apex and exit of a turn • Stops within 1 metre of a stop line at a Stop Sign • Stops no closer than 2 m of a stopped vehicle at a Stop Sign

Gap Selection (GS)	• Selects an appropriate gap to change lanes, enter or exit traffic flows • Rejects inappropriate gaps to change lanes, enter or exit traffic flows
Scanning (SC)	• Uses internal/external mirrors at least once every 10 seconds • Scans the field of vision to 360° • Scans the immediate, middle and distant environment forward of the vehicle • Scans intersections on the approach • Scans intersections throughout turns

Hazard Detection and Response is introduced as part of Session 2 onwards.

Hazard Detection & Response (HDR)	• Identifies potential hazards such as vehicles, pedestrians, intersections • Takes appropriate action in response to hazards using vehicle position, speed control • Is able to verbalise hazard detection and response whilst correctly performing the appropriate driving actions

Provision of Feedback to Novice Driver

It is essential that the coach provide constructive feedback to the novice driver on his/her driving behaviour. This should include areas of sound and unsound performance from a safety perspective, concentrating on the areas assessed. Feedback in Session 1 should concentrate on basic driving skills and how these could be improved. The novice is given areas to work on before the next contact session – feedback sheet on top 3 areas to work on issued (pro-forma feedback sheet at Attachment F. It should be noted that Session 1 Part 1 is the only session that covers basic driving skills in detail. Subsequent sessions will concentrate on higher order skills such as speed control, safe distances from other vehicles, gap selection, and scanning for hazards.

Should a novice driver not be assessed as competent in basic driving skills, they should be counselled that they cannot proceed as they lack the basic skills necessary to profit from the program.

Suggested Statement for Unsuccessful Novice

You have unfortunately not been able to demonstrate that you possess the necessary level of basic driving skill to continue in the program at this time. (Highlight a few areas of concern and point to relevant areas in score sheet if necessary.) Should you wish to continue with the program at a later date, you need to practise the driving skills identified and perhaps get some assistance from an experienced driver that you trust. When you feel that you have resolved these issues you can re apply to participate in the program. Even if you do not return to the program, it is important that you improve in respect of the areas identified as this will help you become a more competent driver.

Assessment Situations

Situations	Conditions	Assessment Criteria
Driving Straight	• Minimum of 400m in length with crossroads or “T” intersections interfacing • Shopping precincts • 60 - 80 kmh zone	• SP • PO • SC
Turning Left (Burdened)	• Stop Sign facing the participant • Cross Road • Single lane intersecting carriageway - • Dual lane intersecting carriageway • 60 - 80 kmh zone	• SP • PO • SC • GS
Turning Right (Across traffic)	• 90° intersection to the right of direction of travel - crossroad preferred but not essential • Straight section of carriageway - minimum of 100m clear view forward of the intersection • Single lane carriageway x 1 (Approach) • Dual lane carriageway x 1 (Approach) • 60 - 80 kmh zone	• SP • PO • SC • GS
Turning Right (Burdened)	• Stop Sign facing the participant • Cross Road • Single lane intersecting carriageway x 1 • Dual lane intersecting carriageway x 1 • 60 - 80 kmh zone	• SP • PO • SC • GS
Turning Right (Burdened)	• Traffic lights or Give way Sign • Single lane intersecting carriageway x 1 • Dual lane intersecting carriageway x 1 • 60 - 80 kmh zone	• SP • PO • SC • GS

Session 1 Part 2 - In-traffic Skills monitoring and feedback - Daylight only

Session 1 Part 2 allows the Coach to monitor the novice's performance and behaviour in tasks relating to speed control, following distance and clearance, gap selection and scanning techniques. Taken together, competency in these skills indicates the novice's level of development in regard to higher order driving skills (see Glossary for additional information). This should be a preliminary drive in the novice's local area, which will identify behaviours in which the novice is competent, and areas that require improvement.

This session will identify gaps in the higher-level skills of interaction with other road users, roadside activity and the identification of hazards and the novice's reaction to the hazards. The session is conducted under daylight conditions. A later session (Session 2) deals with night driving.

To achieve this outcome it is essential for the Coach to be able to identify/model the appropriate behaviour in order to provide a goal for the novice and foster their understanding of the concepts and their practical application.

The components of Session 1 Part 2 are as follows:

- Basic roadworthy (RW) check of novice's vehicle carried out as joint learning exercise – importance of RW discussed (if vehicle not roadworthy session does not proceed, novice requested to fix problems and rebook)
- Odometer reading collection, including the proportion (%) kilometres travelled by the novice where the vehicle is shared with others– develop a standard recording form and place it in a Resources Pack for Coaches
- Nominated destination drive assessment conducted (about 15-20 minutes on-road) – the novice is asked to drive to a given destination (eg shopping centre, station or other known feature. This should take the novice along a variety of arterial and local roads in 50km/h to 80km/h speed zones.
- Feedback provided - Feedback provided on top 1-3 areas for improvement - (during a 5 minute break)
- Return to start via an alternative route (about 15-20 minutes on-road)
- Feedback provided– feedback sheet issued with top 1-3 areas identified to work on before next session
- Session 2 booking time/date arranged – no earlier than1 week later to allow for reflection/consolidation.

Road Worthy Check

The checklist at Attachment D shows what aspects of the novice driver's vehicle the novice and the coach should check cooperatively. It is important that un-roadworthy vehicles are not used in the program. For occupational health and safety reasons any deficiencies must be rectified before a particular novice driver's vehicle is used.

As part of this brief check (which is conducted before each in-vehicle, on-road component/session) the coach should note the odometer reading and ask the novice what proportion of the kilometres travelled since the last reading were driven by the novice. This information is useful for coaching purposes as it gives an indication of how much on-road experience is being accumulated.

It is also a useful piece of information for program evaluation purposes. This should also be recorded on the standard form provided in the resources pack.

Destination Drive and Feedback monitoring

As the destination and feedback drive is conducted in the novice's local area, the novice would generally not require directional instruction, and this allows the coach to concentrate on the novice's behaviour and allows the novice to be more relaxed due to the familiar surroundings. The session involves purposeful driving to a nominated destination, with the novice selecting his or her own route. This will also provide conditions for the novice to demonstrate their behaviour in a normal manner without outside influences, encouraging a more accurate assessment. While the key purpose is to monitor higher level behaviours compared to the Basic Skills Assessment, those basic skills are still of interest in the destination drive, though not monitored as intensely.

What is a hazard?

To be able to identify a hazard you must know what a hazard is. In simple terms, a hazard is any possible danger that may lead to an accident. A more detailed definition of a hazard is: *a danger of any kind, moving or stationary, that could lead to a crash... Hazards include pedestrians, other motor vehicles, other road users such as cyclists and intersections, bends and traffic controls.*

Hazard Detection and Response requires the Coach to identify changing road or traffic situations that create hazards and to extract from the novice what they are seeing and what they are doing to manage the hazard effects. This is achieved by the Coach asking the novice (eg on the approach to a small shopping precinct); "

What hazard(s) do you see and what are you doing about it?"

For example, the novice driver response could be; "*There are shops ahead so I need to increase my scanning, prepare to slow down and maintain a safe position all around the vehicle*."

This, depending on the actual situation, may be an adequate response provided that this is actually carried out in practice. However the novice may have had to brake abruptly, which may indicate that the novice is underestimating the hazards at this situation, not scanning far enough ahead and/or to the left or right.

The following criteria have been developed to assist the Coach in monitoring behaviour in road/traffic situations known to be related to novice driver crash involvement.

Provision Of Feedback To Novice Driver

It is essential that the coach provide constructive feedback to the novice driver on his/her driving behaviour. This should be delivered in a helpful and supportive manner with the aim of development rather than assessment/criticism. Feedback should include areas of both sound and unsound performance from a safety perspective. Feedback in Session 1 Part 2 should concentrate on the higher-level skills such as identifying hazards and risk reduction techniques. (See Attachment F: Monitoring and Feedback Record).

The novice is given areas to work on before the next contact session – feedback sheet on the top 3 areas identified to work on issued (see Attachment F).

It should be noted that Session 1 Part 2 concentrates on higher order skills such as speed control, safe distances from other vehicles, gap selection, and scanning for hazards.

Possible Situations

An example of feedback and homework could be derived from the following sample situation. The novice positions their vehicle too close when following behind other vehicles in traffic. It is essential for the Coach to question the novice to determine if they are aware of their behaviour and its ramifications. For example, the coach might ask:

Do you think you are too close to the vehicle in front?
or
How could you work out if you are travelling too close to the vehicle in front?

This would stimulate a discussion of the consequences of travelling too close to the vehicle in front (eg risk of rear end collision, more limited view of road ahead and hazards from left/right) and how their driving behaviour should change to make things safer for them and other road users. (eg slowing down and maintaining a safer distance from the vehicles in front (at least 2 seconds) and increase scanning activities. (See Attachment C)

This is designed to draw the novice into thinking about scanning far enough ahead so that any unusual situation does not catch them off-guard because they could not identify the hazard or situation threatening in time to respond safely.

Another example could be; the novice appearing to see traffic to the right when crossing or turning at an intersection facing a Stop or Give Way sign, but failing to react to traffic coming from the left, and requiring rapid acceleration to clear the intersection. This could be the result of limited perceptual/ cognitive ability, divided attention, risk taking or a poor understanding of the road rules. To stimulate discussion, the answer the Coach could ask; *"What hazards did you see at that last intersection?"* The novice may respond by indicating that they identified all the hazards, indicating to the Coach that they are taking risks or do not fully understand the road rules.

To further the enquiry the Coach could ask; *"Can you tell me who gives way at that intersection?"* If the novice responds that they have to give way to all vehicles, then a conclusion could be that they were taking risks and not identifying safe gaps. It may not be completely conclusive but it will help narrow the areas for discussion and practice by the novice before the next session.

Addressing this scenario could include: revisiting safe gap selection by discussing the time taken by vehicles coming from the left and right at intersections to reach the intersection from various reference points, such as a power pole 4 seconds away from the intersection and another reference point 6 seconds away in a 60 km/h zone.

Simply standing at an intersection and talking through what other drivers are doing that is safe/unsafe, and/or talking the novice through a practical demonstration and/or

modelling the behaviour could achieve this. Commentary driving techniques can be used to good effect here – see Resource Material, Attachment C.

Booking For Next Session

The last activity in Session 1 Part 2 is to make a booking for Session 2. This should be scheduled at a mutually suitable date/time at least one week following Session 1 Part 2. This provides time for consolidation, reflection and calibration on the part of the novice driver. The novice should be given an appointment card with contact details for their coach for cancellations/numbers (telephone, email and/or SMS) – Note- coach could also ask for mobile number for novice to send a SMS reminder.

Session 2 - In-traffic Skills monitoring and feedback - Night Time

Session 2 increases the demands on the novice by introducing adverse conditions to the driving task, in this case night driving. This allows the Coach to monitor the novice's behaviour and spare cognitive ability during one of the most difficult driving conditions - darkness. The inherent dangers of night-time driving such as glare from headlights and limited visibility present problems, while the need to manage speed, increase scanning routines, following distance and clearance is important for safety.

As in Session 1 (Part 2) the monitoring drive is conducted in the novice's local area to avoid the Coach having to provide directional instructions and to allow the novice to make their own route selection decisions. The specific criteria are the same as in Session 1 (Part 2) although the context (i.e. night time) is different.

The components of Session 2 are as follows:

- Basic roadworthy (RW) check of novice's vehicle carried out as joint learning exercise – importance of RW discussed (if vehicle not roadworthy session does not proceed, novice requested to fix problems and rebook)
- Odometer reading collection
- Nominated destination drive assessment conducted (about 15-20 minutes on-road)
- Feedback provided - Feedback provided on top 1-3 areas for improvement - (during a 5 minute break)
- Return to start via an alternative route (about 15-20 minutes on-road)
- Feedback provided– feedback sheet issued with top 1-3 areas identified to work on before next session
- Session 3 booking time/date arranged – no earlier than1 week later to allow for reflection/consolidation.

Road Worthy Check

The checklist at Attachment D shows what aspects of the novice driver's vehicle the novice and the coach should check cooperatively. It is important that un-roadworthy vehicles are not used in the program. For occupational health and safety reasons, any deficiencies must be rectified before a novice driver's vehicle is used.

As part of this brief check (which is conducted before each in-vehicle, on-road component/session), the coach should note the odometer reading and ask the novice what proportion of the kilometres travelled since the last reading were driven by the novice. This information is useful for coaching purposes as it gives an indication of how much on-road experience is being accumulated. It is also a useful piece of information for program evaluation purposes.

Monitoring Situations

These are the same as Session 1 (Part 2); however, the focus on Hazard Detection and Response should be increased to include the adverse conditions associated with driving at night, such as glare from headlights and low visibility. (See Attachment F: Monitoring and Feedback Record)

Provision Of Feedback To Novice Driver

It is essential that the coach provide constructive feedback to the novice driver on his/her driving behaviour. This should include areas of sound and unsound performance from a safety perspective, concentrating on the areas assessed. Feedback in Session 2 should concentrate on the higher-level skills such as identifying hazards and hazard management/reduction techniques. The novice is given areas to work on before the next contact session – feedback sheet on top 3 areas to work on issued – using standard form. It should be noted that Session 2 concentrates on higher order skills such as speed control, safe distances from other vehicles, gap selection, and scanning for hazards during the adverse conditions of driving at night.

Possible Situations

An example of feedback and homework could be derived from the following situation.

An aggressive driver is tailgating the novice and the headlights of the following vehicle are dazzling the novice. To combat this, the novice increases their speed but this does little to alleviate the problem. The Coach could ask the novice; *"Is the vehicle behind bothering you?"* The response should be *"Yes".* The Coach should then ask; *"What are you doing about it?"* The novice should admit that they have increased their speed but it didn't help. The Coach should then ask; *"What other things could you do?"* The response could be; *"If it is safe to do so move over and let them pass or slow down to encourage the other driver to overtake."*

Of course the situation may not at that point permit these actions immediately but it should be attempted as soon as safely possible. It is also important to emphasise that the management actions should be gradual actions and never unpredictable as this could make the situation worse and/or risk a collision. It should also be discussed that aggressive drivers may also offer advice and aggressive gestures, which must be ignored.

Another situation could be; the novice appears to misjudge the speed of vehicles approaching at intersections to the right or left by refusing safe gaps. The headlights of the other vehicles may affect them especially if the novice has managed these situations well during daylight driving. Revisiting safe gap selection techniques may resolve the issue however the Coach should ensure that the novice is aware that increasing the time from 4 seconds to 5 or 6 seconds is a better technique at night and that they should not be discouraged or forced to take risks in these situations.

Booking For Next Session

The last activity in Session 2 is to make a booking for Session 3 - Discussion Group. This should be scheduled at a mutually suitable date/time at least one week following Session 2. This provides time for consolidation, reflection and calibration on the part of the novice driver. The novice should be given an appointment card with contact details for their coach for cancellations/numbers (telephone, email and/or SMS) – Note- coach could also ask for mobile number for novice to send a SMS reminder.

Session 3 - Discussion Group - Part 1

The discussion components of the program (Discussion Groups 1 and 2) provide for novices to address safe driving issues and risk management/reduction within a group of peers. This is accomplished under the guidance of a coach, who facilitates discussion and encourages novices to draw on their own driving experience and the feedback provided in one-to-one feedback sessions. The discussion groups allow for exploration of safety issues of concern to novices, and aim to encourage the adoption of risk reducing driving behaviours.

The first discussion session allows the participants, in groups of six peers with a common coach, to nominate and work through road and traffic situations that cause them difficulties and/or present risks when driving. These situations are pooled from experiences from earlier sessions and their general driving experience.

The session progresses across three phases:

1. Discussion Group (20-30 minutes),
2. On-road observation, modelling and discussion of selected behaviours, which are experienced in-traffic with the novices and coaches - conducted in a suitable people mover vehicle at selected locations (about 90minutes);
3. Summary/conclusion back in the classroom environment (15 –20 minutes)

The total time allocated for Discussion Group - Part 1 is two hours. This time must be managed well to maximise involvement and learning. The aim of the session is, through discussion, to guide novice drivers to an understanding that the application of key higher order driving/risk management skills will help reduce risk to themselves and others. These are as follows:

- Keeping a safe distance from other vehicles
    - Speed control
- Selecting safe gaps when making turns, crossing traffic or changing lanes
- Scanning for hazards – ahead, behind and to the side.

To achieve this, the coach needs to monitor the group and use questions and resource material to shape the discussion and its outcomes. A checklist should be developed to ensure that the four key driving/risk management skills noted above are covered during the discussion. If participants do not raise them, the Coach must introduce them to the discussion.

In facilitating discussion, coaches may need to encourage the novices to talk, draw individuals into the discussion and guide/shape the process towards worthwhile outcomes. The group, with the assistance of the coach, selects no more than two situations to work on in the on-road environment as a group (eg making turns at Stop signs in busy locations). About 20-30 minutes should be allowed for this general discussion and the selection of topics.

Coaches should confirm with the group what will be done and what is expected of group members prior to moving out to the people mover and moving into the in the in-traffic phase. It is essential that the situations selected focus on in-traffic skills/behaviour and the management of hazards/risks. The two coaches involved in

the in-vehicle phase (one as driver and the other as facilitator) confer on what sites/situations will be used.

The in-vehicle, on-road discussion group phase requires two coaches. One Coach drives and models the targeted behaviours whilst the other facilitates the discussion within the vehicle. On first arrival at a target site, the vehicle is parked safely within sight of the situation and the novice drivers observe and discuss the situation.

Alternatively it may be appropriate to park the vehicle and walk to the location/situation to observe and discuss the situation. Care should be taken not to become a traffic hazard or distraction to other road users and to protect the group from harm.

Once the initial *in situ* discussion is finalised, one coach drives through the target scenario to model the appropriate behaviour/skills while the other Coach invites the novices to critique the drive- through. This is discussed following completion of the activity with the coach helping the group to identify the key behaviours via guided discussion.

It is important to arrange a 5 - 10 minute break enroute about mid-way through the overall session to ensure concentration levels are maintained. This process is repeated for the remaining situation(s) and on completion the group returns to the classroom to discuss and consolidate learning.

Target Situations

To provide structure and consistency across the program, Coaches will need to identify and document a geographical area that provides situations typical of problem scenarios to achieve the optimum value for appropriate hazard management modelling. The four key hazard perception and risk management skills that must be catered for in the training area are:

- Speed management
- Safe gap selection
- Scanning techniques
- Keeping a safe distance from other road users.

The criteria, conditions and suggested situations that provide for these key skills are detailed in Attachment I: Key Skills Criteria

Discussion Group - Part 1 - Check Sheet

Objectives	• To determine the group consensus of behaviour/skills to be demonstrated by the Coach based on feedback from Baseline drives. • To accurately explain, demonstrate (model) and discuss measures to improve participant behaviour/skills in nominated activities.
Conditions	• Suitable classroom • 6 - 2 participant/coach ratio in classroom & in-vehicle • Program vehicle – people mover with at least a 4 star NCAP rating and seating for 6 novices and 2 coaches. • Pre-selected training area - suburban conditions • Up to 80 kmh speed zones • Single and dual carriageways • Light to medium traffic flow • Clean, Roadworthy vehicle • Rotate novices through seating positions to vary view/perspective
Duration	• 2 Hours
Activities	• Discussion and selection of problem behaviour/skills (30 minutes) • Roadworthy check - conducted by the participants using provided checklist supervised by the Coach (Condensed version) (3 minutes) • 1 hour 25 minute modelling drive with discussion and feedback
Components	**Criteria**
Discussion	• Coach(s) draw discussion from participants by reflection on individual behaviours/skills based on feedback from Sessions 1 (Part 2) & 2 • A list is developed of behaviours/skills that the group nominate as concerns/issues • The list is prioritised by democratic voting • Situations are determined that will generate the need for behaviours/skills to be tested - Coach only activity, though novices may suggest suitable locations in the area
Roadworthy Check	Checklist is completed accurately and completely
In-vehicle/on site (Basic situations are detailed in Attachment C)	• First situation on the list is visited • The situation is observed by the group whilst vehicle is stationary - the group may need to walk to the site • Coaches facilitate the discussion, being mindful of the group's needs and safety, and the distraction they may present to other road users • 1 Coach drives through site modelling appropriate behaviour/skill whilst the other facilitates discussion • This is repeated until all nominated situations have been addressed

Discussion at conclusion of in-vehicle session	• Coach(s) draw consolidation discussion from the group about what individuals learned from the experience • Homework sheet issued - would be based on discussion issues • Return to classroom location
Homework	Homework sheet prepared for participant

Sample Discussion Activities

It is crucial that the participants are provided with feasible situations to observe, and that they have the opportunity to engage in constructive discussion about managing risk when driving. The Coach must also use situations that can be modelled to reflect appropriate hazard perception/management. Given the wide variety of situations that participants may identify, the Coach should encourage the participants to offer a known situation if indeed the Coach is not familiar with an appropriate location.

However the Coach should attempt to provide locations that fit the known high-risk situations for novice drivers, and to lead the discussion so that a generic situation is used to cover as many relevant issues as possible.

As one Coach leads the discussion the other should be in the background encouraging the group by prompting. The lead Coach should set the scene by identifying the proposed activity such as; "We are approaching this crossroad and we want to turn right. What are the hazards that you see?" The participants should identify the road situation i.e. Crossroad, facing a Stop Sign, vehicles approaching the intersection, roadside activity, pedestrians, parked vehicles and if a driver is present etc.

It is also important that the novices identify reference points for making safe gap selections and proposed actions on the approach and completion of the turn, such as where to stop and where to position throughout the turn. Once this has been established and agreed to, the group should return to the vehicle and the Coach should model the correct actions.

Questions like; "*What would you do if a pedestrian starts to cross the intersection once you commence the turn*?" will stimulate discussion and assist identification of potential strategies.

Some sample situations and mitigation suggestions are detailed in Attachment C, however they are samples only and do not cover all possible situations.

Refreshment Break

At this point in the session is essential to take a 10 minute refreshment break before commencing Session 5: Discussion Group - Part 2, to allow concentration levels to be optimum for the remaining 1 hour of this session.

Session 3 - Discussion Group - Part 2

Part 2 of Session 3 is a group discussion that addresses the known high-risk issues for novice drivers such as drink driving, fatigue and managing risks. It allows the novices to be guided through a series of group discussions regarding situations that they have encountered, or are likely to during their initial novice years of driving. While it takes place in a classroom setting, it draws upon the individual experience of novices and situations encountered earlier in the program.

The purpose is to highlight the high-risk issues and work through strategies that enable the novice to manage these situations known to present higher risk to novice drivers and to reduce individual risk. As with Discussion Group 1, the second discussion session is undertaken in a group of six peers with a common coach. However, this session only requires one Coach, as it is a classroom-only activity

The components of this session are as follows:

- Discussion facilitated by the Coach
- Consolidation of discussion points and risk reducing strategies
- Homework issued – using standard forms
- Session 4 booking time/date arranged – no earlier than 2 weeks post Discussion Group 2, to allow for reflection/consolidation.

Discussion Check Sheet

Objectives	• To generate discussion on known high risk issues for novices, and to work through appropriate strategies to reduce risk.
Conditions	• Suitable classroom • 6 - 1 participant/coach ratio in classroom - same group as Session 4
Duration	• 1 Hour
Activities	• Discussion
Components	**Criteria**
Discussion	Refer to Resource Materials at Attachment C
Drink Driving	• Major contributor to road crashes • .00 BAC for Probationary Drivers (State Requirements) • Staying below the limit • Differences between men and women • The effects of alcohol • High alcohol times • Penalties • The safest BAC is zero when driving
Night Driving	• Human error and environmental factors • Common night time risks • Speed and space • How to reduce risks
Fatigue	• What is fatigue? • Fatigue and your judgement • Fatal crashes attributed to fatigue • Fatigue is like alcohol • High risk times for fatigue -related crashes • How to manage fatigue
Driving with peers and other distractions	• Distractions divert attention to the driving task • Crashes that are attributed to distractions - inside and outside of the vehicle • How to reduce the distractions
Managing Risks	• Adverse conditions • Controlling speed and space
Crash Patterns	• Experience factors in crashes • Travelling too close to others • Speed
Homework	Homework sheet prepared for participant

Sample Discussion Activities – Part 2

This discussion group focuses on those areas known to be high-risk for novice drivers, and requires the Coach to facilitate the discussion by utilising the Coaches Guide, Resource Material and relating the situations to real life experiences or known local situations. Using local situations to discuss will encourage more participation from the novice drivers as they may have experienced a similar situation themselves.

Although the prescribed issues should be discussed, it is more important to satisfy issues raised by the group, because they probably have experienced themselves or know someone who has. The Coach should raise the prescribed situations by asking questions eg *"Who has had an issue with someone you know drink driving?"*

If no one volunteers, the Coach should then relate a story that they have heard or experienced. This can be drawn from personal experience or the Resource Materials. The discussion must not become a lecture. Participants should be encouraged to talk freely and to consider/challenge ideas presented by the coach and/or other group members.

Once a "drink driving" experience has been related to the group the Coach should ask; "What would you do in that situation?" It is important that everyone who wants to provide input is permitted to do so and that none of the participants are ridiculed or told that they are wrong except where the proposed actions would be dangerous. The most appropriate way of handling an incorrect or inappropriate response is to suggest; "That's one way you could do it but are there other ways?" This should ultimately result in the most appropriate responses being agreed.

The Coach must ensure that all group members participate by encouraging input by questioning individuals; eg "John, do you have any thoughts on this? or "I think I would do this……What do you think Susan?" However it is important that the individuals are not embarrassed or isolated, so gentle insistence is the best approach. Do not persist with an individual if the response is not forthcoming. The use of other techniques such as; "John, what do you think" or " Does anyone else want to add to that?" may well encourage the discussion and bring all participants into the discussion.

Booking For Next Session

The last activity in Session 3 is to make a booking for Session 4 - In-traffic Skills Assessment - Day or Night. This should be scheduled at a mutually suitable date/time at least 2 weeks following Session 3. This provides time for consolidation, reflection and calibration on the part of the novice driver. The novice should be given an appointment card with contact details for their coach for cancellations/numbers (telephone, email and/or SMS).

Session 4- In-traffic Skills assessment and feedback - Day or night time

Session 4 is designed to follow up individual program participants to measure skills/behaviour modifications made by the novice. It is also the final opportunity in the program for the coach to provide one-to-one feedback in-car, on-road. The session is conducted in the same manner as Session 1 (Part 2) or 2 in the novice's local area and may occur in daylight or darkness. The Coach provides feedback to the novice based on improvements noted from the previous drive assessments, and details areas that may still require further practice.

The components of this session are as follows:

- Basic roadworthy (RW) check of novice's vehicle carried out as joint learning exercise – importance of RW discussed (if vehicle not roadworthy session does not proceed, novice requested to fix problems and rebook)
- Odometer reading collection and recording
- Nominated destination drive assessment conducted (about 15-20 minutes on-road)
- Feedback provided - Feedback provided on top 1-3 areas for improvement - (during a 5 minute break)
- Return to start via an alternative route (about 15-20 minutes on-road)
- Feedback provided– feedback sheet issued with top 1-3 areas identified to work on before next session.
- Telephone follow up date and time arranged – no earlier than 6 weeks later to allow for reflection/consolidation.

(See Attachment F for the Monitoring and Feedback Record Sheet)

Provision of Feedback To Novice Driver

It is essential that the coach provide constructive feedback to the novice driver on his/her driving behaviour. This should include areas of sound and unsound performance from a safety perspective, concentrating on the areas assessed.

Feedback in Session 4 should concentrate on the higher-level skills such as identifying hazards and the risk management/reduction techniques. This session is also to identify improvements (or otherwise) in the novice's performance compared with Session 1 Part 2 & Session 2.

Other discussion during the feedback could be to reflect on the discussion sessions to identify whether the novice had any concerns or had experienced any additional issues. Even if there is not time for in-depth discussion, the Coach may provide risk management suggestions. Session 4 represents the final face-to-face component of the program. The opportunity should be taken to provide an overview of the novice driver's progress (or otherwise).

Booking For Next Session

The last activity in Session 4 is to make a booking for Session 5 - Telephone Follow-up 1. This should be scheduled at a mutually suitable date/time at least 6 weeks following Session 4. This provides time for consolidation, reflection and calibration on the part of the novice driver. The novice should be given an appointment card with contact details for their coach for cancellations/numbers (telephone, email and/or SMS). A mini-diary is also issued for the novice to record things that happen or changes they notice in their driving (both positive and negative) that could be discussed on follow-up contact – see Attachment M.

Session 5 - Telephone follow-up: One

The telephone follow up provides an opportunity for the Coach to ask the novice how their driving is going, to probe for successes, problems, near misses, crashes and traffic offences. It also services to extend the reach of the program beyond the final face-to-face session.

Probing should be used but without being challenging. The aim is to encourage the novice to openly provide detail without embarrassment. It may be helpful to use the records of earlier sessions and the issues raised during the discussion groups to direct the questioning. This may assist in focussing the novice on the high-risk issues pertinent to novices in general, and to individual driving situations.

The components of this session are as follows:

- Obtain & record Kilometres travelled and the type/conditions of driving by novice since the last session – kilometres travelled by the novice if the vehicle has more than one driver
- Questioning and recording of comments/information
- Final telephone follow up date and time arranged – no earlier than 8 weeks later to allow for reflection/consolidation.

(See Attachment G for Follow up Record Sheet)

Provision of Feedback To Novice Driver

This session is to establish how the novice's driving performance is progressing and if any issues such as successes in handling situations, near misses, crashes or traffic offences have occurred.

Questions that may assist could be:

- How do you think your driving is going?
- Tell me about a situation you think you handled really well?
- Tell me about a situation you think could have resulted in a crash, but didn't?
- "Where have you been driving recently?"
- "About how many kilometres have you driven since our last session?"
- "What sort of driving problems/issues have you had to deal with?"
- "Have you discussed the program with your friends?" - If yes
    - "What do they think about it?"
    - "How often have you driven them around?"

Booking For Next Session

The last activity in Session 5 is to make a booking for Session 6 - Telephone Follow-up 2. This should be scheduled at a mutually suitable date/time at least 8 weeks following Session 5. This provides time for consolidation, reflection and calibration on the part of the novice driver. The novice should be given an appointment card with contact details for their coach for cancellations/numbers (telephone, email and/or SMS) and reminded to use their mini-diaries to record events.

Session 6 - Telephone follow-up: Two

The final session is a final telephone follow up arranged about 8 weeks following the previous telephone follow up.

This session is conducted in the same manner as the previous session and provides final consolidation of the areas that have been identified by the novice as issues.

The components of this session are as follows:

- Obtain & record kilometres travelled and the type/conditions of driving by novice since the last session – kilometres travelled by the novice if the vehicle has more than one driver
- Questioning and recording of comments/information
- Final telephone follow up date and time arranged – no earlier than 8 weeks later to allow for reflection/consolidation.

As this is the final session in the program, it is important that the novice is thanked for their participation and congratulated on their hard work and improvement. An offer to maintain some contact if the novice has any issues they want to discuss and even an invitation to voluntarily come along to a discussion group in the future as a guest may add to the consolidation process.

The final statement should be that the Novice will receive a Money Order for participating in the program – check that current mailing address is still current.

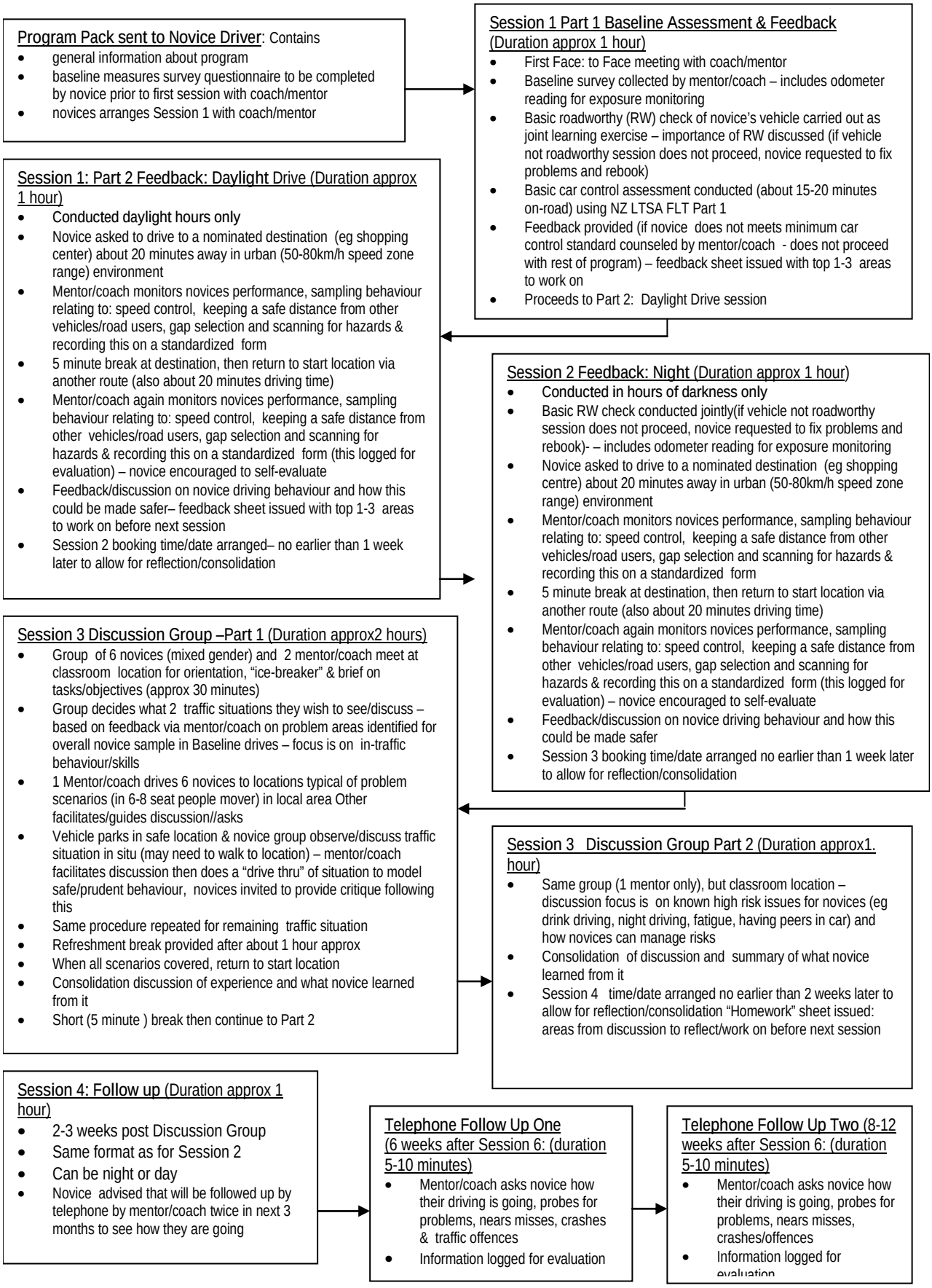
(See Attachment G for Follow up Record Sheet)

Attachment 1: EU Project Gadget Matrix

EU Project Gadget Matrix (Driver Behaviour model) (After Hatakka et al, 2002)

Hierarchical levels of behaviour & referring structure of driver training content			
Essential Contents			
	Knowledge & Skills	**Risk-Increasing Factors**	**Self-Evaluation**
Goals for life & skills for living (general)	**Knowledge about/control over how life goals & personal tendencies affect driving behaviour** eg Motives	**Risky tendencies eg** Acceptance of risk Self-enhancement through driving Use of alcohol & drugs	**Self-evaluation** eg Personal skills for impulse control Risky tendencies
Driving goals & context (journey related)	**Knowledge & skills concerning** eg Effects of journey goals on driving Effects of social pressure inside the car	**Risks connected with** eg Driver's condition (mood, BAC etc) Driving environment (eg urban/rural)	**Self-evaluation** eg Personal planning skills Typical driving goals
Mastery of Traffic Situations	**Knowledge & skills concerning** eg Traffic regulations Speed adjustment communication	**Risks caused by** eg wrong expectations risk increasing driving style vulnerable road users	**Self-evaluation** eg Strong & weak points of basic traffic skills Personal driving style
Vehicle Manoeuvring	**Knowledge & skills concerning** eg • Control of direction & position • Tyre grip & friction	**Risks connected with** eg • Insufficient automatism or skills • Unsuitable speed adjustment	**Awareness of** eg • Strong & weak points of basic manoeuvring skills • Realistic self-evaluation

Attachment 2: Outline of Novice Driver Curriculum



Attachment 3: Hazard Perception Handbook (RTA NSW)

Coaches working within the Novice Driver Coaching Program will need to assist novice drivers in maintaining and improving these skills on road and in-traffic. To this end, Part 2 of the Roads & Traffic Authority (RTA, NSW) publication *Hazard Perception Handbook* (see RTA, 2001) is used as a text for coaches during their training and as a resource when coaches interact with novices within the program.

The *Hazard Perception Handbook* was written by Dr Christie for RTA as part of the NSW Graduated Licensing Scheme (GLS) and supports the development of the middle to higher order skills associated with safe, solo driving behaviour. It targets novice drivers in their first year of solo driving who are preparing to graduate from the first to the second stage of provisional licensing in NSW by successfully passing a hazard perception test. While specifically written for the NSW context, Part 2 of the Handbook is applicable to all novice drivers with up to about 12 months solo driving experience.

Use of the *Hazard Perception Handbook* in the Novice Driver Coaching Program takes advantage of an existing resource custom-written for the age/experience target group of the program and avoids the need to develop new materials. While materials and information from the *Hazard Perception Handbook* may be used to assist in coaching/training, coaches must take care to preserve the copyright and intellectual property of RTA.

Attachment 4: Roadworthy Checklist

This checklist is a guide and only indicates that the vehicle is roadworthy for use during the program. It does not serve as a permit for any other purpose. It is to be used by the novice driver in conjunction with the Coach.

Item	Details	Condition	
		RW	URW
Registration	Registration label is displayed and current - (Checked on initial presentation, and provided the expiry date is beyond the date of session 6, it does not require further checking)		
Vehicle posture	Vehicle is sitting square on the road (Checked each time the vehicle is used)		
Leaks	No visible fluid leaks from engine compartment (Checked each time the vehicle is used)		
Damage	No loose external parts or sharp edges (Checked each time the vehicle is used)		
Tyres	Wear lines visible, even wear, pressure (Checked each time the vehicle is used except detailed pressure checks)		
Wheels	No rim damage, wheel nuts secure (Checked each time the vehicle is used)		
Windscreen	Clean with no cracks or severe pitting (Checked each time the vehicle is used)		
Wipers/ washers	Washers/wipers work (Checked each time the vehicle is used)		
Spare Tyre	Available, suitable and with pressure (Checked completely first time and only a check for availability thereafter)		
Jack and tools	Available and in working condition (Checked completely first time and only a check for availability thereafter)		
Lights	Park, Low and High beam work and are clear (Checked each time the vehicle is used)		
Indicators	All work within the 60 - 120 flashes per minute (Checked each time the vehicle is used)		
Brake Lights	All brake lights work (Checked each time the vehicle is used)		
Cleanliness	Vehicle is clean inside and out (Checked each time the vehicle is used)		
Loose items	No loose items in the vehicle cabin (Checked each time the vehicle is used)		
Fuel	Ample fuel for the session (Checked each time the vehicle is used)		

Notes:

Novice Name:		Signature	
Coach Name:		Signature	
Date:		Reg. No.	

Attachment 5: Basic Skills Assessment Sheet

Objectives	• To assess the participant's basic driving skills in order to determine whether the participant can enter the program.
Conditions	• One on One - Participant's own vehicle • Assessment area - suburban conditions - Daylight hours • Up to 80 kmh speed zones • Single and dual carriageways • Light to medium traffic flow • Clean, Roadworthy vehicle
Duration	• 1 Hour
Assessment	• Roadworthy check - conducted by the participant using provided checklist supervised by the Coach • 15 - 20 minute assessment drive

Tasks	**Criteria**	**Competent**	
Roadworthy Check	(Checklist to be provided in the Participant package) - (Odometer reading recorded)	**C**	**NYC**
	Checklist is completed accurately and completely (If vehicle is not roadworthy session does not proceed. Issues to be fixed and the session re-booked)		
Assessment Drive	Directions provided as required by Coach (Each task is assessed twice during the drive)		
Driving Straight	• Speed Control • Position • Scanning		
Turning Left (Burdened)	• Speed Control • Position • Scanning • Gap Selection		
Turning Right (Across traffic)	• Speed Control • Position • Scanning • Gap Selection		
Turning Right (Burdened) (Stop Sign)	• Speed Control • Position • Scanning • Gap Selection		
Turning Right (Burdened) (Traffic lights or Give way Sign)	• Speed Control • Position • Scanning • Gap Selection		
Homework	• Homework sheet prepared for participant		

Attachment 6: Monitoring and Feedback Record

Objectives	• To assess the participant's competence in speed control, interaction with other road users, gap selection, scanning and hazard detection and response.		
Conditions	• One on One - Participant's own vehicle • Assessment area - suburban conditions - Daylight hours • Up to 80 kmh speed zones • Single and dual carriageways • Light to medium traffic flow • Clean, Roadworthy vehicle		
Duration	• 1 Hour		
Assessment	• Brief Roadworthy check conducted by the participant using provided checklist supervised by the Coach - condensed version. • 15 - 20 minute assessment drive x 2		
Tasks	**Criteria**	**Competent**	
Roadworthy Check	(Checklist to be provided in the Participant package) - (Odometer reading recorded)	**C**	**NYC**
Checklist is completed accurately and completely (If vehicle is not roadworthy session does not proceed. Issues to be fixed and the session re-booked)			
Monitoring Drive	Directions provided as required by Coach for the participant to drive to a known destination i.e. shopping centre or park For example: *Please take me to Dandenong Station using the route that you usually take*		
Driving Straight	• Speed Control • Position • Scanning • Hazard Detection and Response		
Turning Left (Burdened)	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Turning Right (Across traffic)	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Turning Right (Burdened) (Stop Sign)	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Turning Right (Burdened) (Traffic lights or Give way Sign)	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Round-a-bout	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Lane Change	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Homework	• Homework sheet prepared for participant • Using standard form from resources pack		

Monitoring and Feedback Record

Objectives	• To assess the participant's competence in speed control, interaction with other road users, gap selection, scanning and hazard detection and response.		
Conditions	• One on One - Participant's own vehicle • Assessment area - suburban conditions - Night time hours • Up to 80 kmh speed zones • Single and dual carriageways • Light to medium traffic flow • Clean, Roadworthy vehicle		
Duration	• 1 Hour		
Assessment	• Roadworthy check - conducted by the participant using provided checklist supervised by the Coach • 15 - 20 minute assessment drive x 2		
Tasks	**Criteria**	**Competent**	
Roadworthy Check	(Checklist to be provided in the Participant package) - (Odometer reading recorded)	**C**	**NYC**
Checklist is completed accurately and completely (If vehicle is not roadworthy session does not proceed. Issues to be fixed and the session re-booked)			
Monitoring Drive	Directions provided as required by Coach for the participant to drive to a known destination i.e. shopping centre or park		
Driving Straight	• Speed Control • Position • Scanning • Hazard Detection and Response		
Turning Left (Burdened)	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Turning Right (Across traffic)	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Turning Right (Burdened) (Stop Sign)	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Turning Right (Burdened) (Traffic lights or Give way Sign)	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Round-a-bout	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Lane Change	• Speed Control • Position • Scanning • Gap Selection • Hazard Detection and Response		
Homework	• Homework sheet prepared for participant		

Attachment 7: Follow up Record Sheet

Objectives	• To establish how the participants driving is going and to identify if any problems, near misses, crashes or traffic offences have been incurred.
Conditions	• One on One • Novice records and program notes • Telephone • Date to be recorded
Duration	• 5 - 10 minutes

Notes from follow-up	
Successes	
Problems/Issues	
Near misses	
Crashes	
Traffic Offences	
Other Comments/Notes	

Attachment 8: Feed back Sheet

Novice Name:		Signature	
Coach Name:		Signature	
Date:		Session No.	

Areas to work on

Situation	Issue	Management
Example Driving along straight dual lane roads	Following too close	Use the time lapsed method of maintaining a minimum of 3 seconds behind other vehicles Handout # issued

Comments:

Attachment 9: Key Skills Criteria

Skill	Situation	Conditions	Criteria
Speed Management	Driving straight in a built up area	▪ 50 - 80 km/h zone in a built up area ▪ Single and dual lane carriageways ▪ Medium traffic flow ▪ Shopping precincts ▪ Long uninterrupted sections of roadway (at least two blocks in length)	▪ Maintains a safe speed for the conditions ▪ Does not exceed the speed limit ▪ Maintains Headway ▪ Maintains a safe following distance ▪ Maintains a space cushion around the vehicle ▪ Scans to 360° ▪ Scans to the immediate, intermediate and distant areas in front of the vehicle
Gap Selection	Lane changing, merging/diverging	▪ 50 - 80 km/h zone in a built up area ▪ Dual lane carriageways ▪ Medium traffic flow ▪ Shopping precincts ▪ Long uninterrupted sections of roadway (at least two blocks in length)	▪ Maintains a safe speed for the conditions ▪ Does not exceed the speed limit ▪ Maintains Headway ▪ Maintains a safe following distance ▪ Maintains a space cushion around the vehicle ▪ Scans to 360° & scans to the immediate, intermediate and distant areas in front of the vehicle ▪ Selects a safe gap before moving ▪ Indicates in the correct direction ▪ Completes a head check prior to moving laterally ▪ Moves quickly into the new position

Skill	Situation	Conditions	Criteria
	Crossing or turning at intersections	▪ 50 - 80 km/h zone in a built up area ▪ Single and dual lane carriageways ▪ Cross roads, T intersections ▪ Stop and/or Give Way signs facing ▪ Turning right across traffic ▪ Medium traffic flow	▪ Maintains a safe speed for the conditions ▪ Does not exceed the speed limit ▪ Maintains Headway ▪ Maintains a safe following distance ▪ Maintains a space cushion around the vehicle ▪ Scans to 360° & scans to the immediate, intermediate and distant areas in front of the vehicle ▪ Selects a safe gap before moving ▪ Indicates in the correct direction ▪ Completes a head check prior to moving laterally ▪ Positions correctly at the intersection ▪ Moves quickly into the new position
Scanning Techniques	Driving through shopping precincts	▪ 50 - 80 km/h zone in a built up area ▪ Single lane carriageways ▪ Medium to High road side activity	▪ Maintains a safe speed for the conditions ▪ Does not exceed the speed limit ▪ Maintains a safe following distance ▪ Maintains a space cushion around the vehicle ▪ Scans to 360° & scans to the immediate, intermediate and distant areas in front of the vehicle ▪ Identifies and reacts appropriately to hazards

Skill	Situation	Conditions	Criteria
Keeping a safe Distance from other road users	Driving straight in a built up area	▪ 50 - 80 km/h zone in a built up area ▪ Single and dual lane carriageways ▪ Medium traffic flow ▪ Long uninterrupted sections of roadway (at least 300 m in length)	▪ Maintains a safe speed for the conditions ▪ Does not exceed the speed limit ▪ Maintains Headway ▪ Maintains a safe following distance ▪ Maintains a space cushion around the vehicle ▪ Scans to 360° ▪ Scans to the immediate, intermediate and distant areas in front of the vehicle ▪ Identifies and reacts appropriately to hazards

Attachment 10: Slides

Attachment 11: Glossary of Terms

Blind Spot -The area where your vision to the front or rear is blocked when driving, generally found on both sides of the vehicle where mirrors do not capture the full field of vision.

BAC - Blood Alcohol Concentration - The percentage of alcohol in the bloodstream (eg BAC limit in most States in Australia is 0.05 which means 0.05 % or .05 grams of alcohol per 100mls of blood i.e. 0.05g/100ml.

Built-up Area - A location where there is generally found activity, usually considered to be where streetlights are erected.

Burdened - When you are driving and facing a stop or give way sign at an intersection.

Carriageway - The area normally referred to as the road.

Fatigue - The experience of feeling sleepy, tired or exhausted. Fatigue affects both your body and your ability to drive safely.

Field of Vision (peripheral vision) - What a person can see without moving the eyes.

Following Distance (headway)- The distance between your vehicle and the vehicle travelling in the same direction ahead of you - often referred to "headway" and is generally measured in seconds from the rear of the vehicle in front.

Hazard – (simple definition) Any danger that might l result in an accident. (More complex definition) Any moving or potentially moving road user that poses a clear threat to you in carrying out a manoeuvre that requires a response or action. Hazards include pedestrians, other motor vehicles, other road users such as cyclists and intersections, bends and traffic controls.

Hazard Perception - The ability to identify and appropriately respond to a hazard.

Head Check - This is part of the 360° scanning technique the make sure that nothing is in your blind spot - it requires you to turn your head approximately to 45° to the left or right over your shoulder, however your shoulders should remain square to the front.

Higher Order Driving Skills - Cognitive and perceptual abilities required to cope with driving beyond simple vehicle control.

High Alcohol Hours - Time of the day/night and period of the week when alcohol related crashes mostly occur - generally Thursday through to early hours of Sunday.

Multi-Laned Road - A road with more than one lane in each direction - these roads often have a median strip dividing the traffic.

Position - (Road Position) - Where you place the vehicle on the road to create a space cushion and to prepare for turns at intersections and for bends/curves.

Reference Points - Permanent road-side structures such as light poles, buildings or signs that enable you to judge the time it takes for other vehicles to reach a predetermined point - used for gap selection and following distance.

Road Rage - A range of anti-social or aggressive behaviour by drivers often triggered by a belief that another driver has inconvenienced them or have created a situation that they feel was dangerous.

Safe Gap - A gap in traffic that allows you to turn, overtake, change lanes or cross an intersection without being involved in a collision or endangering other road users. This also means that no other road users should have to take evasive action to avoid your vehicle.

Scanning - The process of constantly moving your eyes (and head) when driving so that you can see hazards that may arise ahead, to the sides and behind your vehicle. Looking all around the vehicle to 360°.

Single Carriageway - A road where there is only one driving portion of road in opposite directions.

Sleep Debt - The difference between the hours of sleep a person needs and the actual hours of sleep they get - everyone has different needs. Sleep debt can build up gradually over successive days and can only be 'discharged' by catching up on the lost hours of sleep.

Space Cushion - A "buffer zone" that you create around your vehicle (to the front, sides and rear) between you and other road users that gives you time to see and respond to hazards.

Speeding - Excessive or inappropriate speed - not only exceeding the posted speed limit but also not adjusting your speed to suit the conditions.

Speed Control - The ability to manage your vehicle's speed by using accelerator and/or brakes.

Time Lapsed Method - A technique used to measure time/distance between vehicles e.g following distance - usually by counting 1-thousand-1, 1-thousand-2, 1-thousand-3 and so on.

Attachment 12: New Zealand Full Licence Test (FLT) Overview

The FLT was developed to sample competencies and skills necessary for safe and responsible vehicle operation at full licence level. It was originally developed in 1998 for the Land Transport Safety Authority (LTSA) in New Zealand. The FLT forms part of the NZ graduated licensing system whereby novice drivers must successfully complete the FLT to "graduate" to full licence level.

Summary of FLT features:

- Takes about **1-hour** to complete
- Is conducted in the applicants own vehicle (or one supplied by them)
- Is made up of **3** parts:
  - **Part 1** Basic Confirmation Drive Test (about 10 minutes duration)
  - **Part 2** Detecting and Responding to Driving Hazards in built-up areas (about 15 minutes duration)
  - **Part 3** Detecting and Responding to Driving Hazards in higher speed zones (about 20 minutes duration)
- Time is also allowed in the one-hour test period for administration tasks (about 10 minutes) and for the tester to provide feedback on applicant performance (about 5 minutes)
- Applicants must successfully complete Part 1 before progressing to Parts 2 and 3
- There are no fixed test routes –applicants must be capable of driving on all types of road and in all traffic situations.
- A simple ***yes*** *and* ***no*** approach to scoring is used – if the applicant performs a driving skill to the required standard a *"yes" is* recorded if they do not perform to the required standard a "*no*" is recorded.
- To obtain the overall test mark the *Yes* scores are divided by the total *Yes/No* responses then multiplied by 100 to give a percentage
- The current pass score for the full licence test is 80% (based on total score across all parts of the parts of the test)
- While the tester gives instructions for turning, stopping or other manoeuvres when needed, applicants are required to drive safely and legally throughout the test eg positioning the vehicle correctly, controlling vehicle speed and selecting safe gaps in traffic are decisions for the candidate to make at all times
- Applicants are required to drive to suit the conditions but where it is safe they are expected to travel within 5 km/h of but not exceeding the posted speed limit
- If an applicant's driving endangers anyone the test ends. If the applicant caused the danger, they do not pass the test.

Attachment 13: Mini diary

The Novice Driver is encouraged to record events during the program to provide accurate details to the Coach. Novices should jot down memory joggers for discussion including the activity, time of day, conditions and the situation *e.g going to school/work, 10:00 am, wet and overcast - a car was tailgating me so I slowed down progressively and then the other car went past me.*

Date: **Time of Day:** **Conditions:**

Successes	
Problems/Issues	
Near misses	
Crashes	
Traffic Offences	
Other Comments/Notes	

APPENDIX B: Novice Driver Coaching Program Guide:
Coach Training Program

Novice Driver Coaching Program

Coach Training Program

DCS Consultants Pty Ltd
For
RCSC Services
2004

Contents

Coach Selection

The Novice Driver Coaching Program requires personnel with the following attributes:

- An ability to communicate effectively, get along with and have an aptitude for working with younger people
- Be comfortable with the adult learning approach
- Good people skills such as sensitivity, good communication skills and an ability to build respect
- An easygoing nature
- Ability to model positive behaviour
- Good driving skills– be able to demonstrate this in practical assessment
- Sound driving experience (at least 7 years driving experience)
- Be aged over 25 years with a clean driving record with no traffic offences/demerit points in the last 5 years)
- Satisfy a police check similar to that required for teachers and health professionals.

Pre-requisites

The program requires a number of prerequisites to be complied with before a person is considered for the Coaching role. They are:

- A current full driver's licence
- Access to a vehicle (This is so the Coach can travel between locations - it will not be used during the program for Coaching)
- Access to a PC and the Internet
- Mobile phone.

Coach/Mentor Roles

The program requires two levels of Coaches, a small group selected to be area mentors and the main body of program Coaches. While the tasks are similar for both groups, the mentoring group play a very active role in auditing, monitoring and training other Coaches as well as participating in the program from time-to-time.

This is a competency-based training and assessment program, requiring candidates to pass through each part before progressing to the next. Ultimately the candidates will need to demonstrate competency in administering the whole program before being approved to conduct the program. If individual candidates do not achieve competency during the program they may be able to re-enrol at a later date for the sessions or parts thereof where they have yet to demonstrate competence or in respect of which they may be reassessed.

Initial interview & assessment

The selection process consists of a preliminary interview, a driving assessment, a driver licence and Police check. The interested person will be required to sign a form that authorises the Program Managers to gain information from relevant authorities/agencies.

Once selected, Trainee Coaches will be required to participate in and successfully complete a two-part training program, consisting of 2 days of coaching/mentoring training and 5 days of Program training. The schedule, which may be found later in this document, summarises the whole program.

Pre-Requisite Assessment Drive

The assessment drive is based on the New Zealand Full Licence Test (FLT) (modified to suit Australian conditions) and will only be conducted in specific areas, due to the requirements of the assessment. Only those who meet the minimum FLT standard (i.e. that of a competent full licence holder) will be accepted as trainee coaches and progress to the training program. The assessment will take approximately 1 hour and will be conducted in the candidate's own vehicle to ensure that they are familiar with the vehicle itself. To satisfy occupational health and safety requirements and duty of care responsibilities, it is essential that coaches who enter the program are competent drivers.

The assessment consists of:

- A Basic Skills drive of approximately 10 minutes, including a brief Road Worthy and registration check
- An advanced Hazard identification drive, where the candidate is asked to identify all the hazards they see, while driving through a number of typical driving situations and completing specified manoeuvres
- A higher-level Hazard identification and Response drive where the candidate is asked to identify hazards encountered and describe what they are doing about them.

Feedback regarding the assessment will be provided to the candidate at the conclusion of the initial interview. If the candidate satisfies the assessment they will be invited to join the Coach training program.

Auditing and Monitoring

This program demands consistent and accurate administration. To achieve this, all Coaches will be audited and monitored for performance throughout the program. The auditing and monitoring will be conducted on record keeping, databases and the conduct of the program sessions, to ensure that coaches are adhering to the program criteria. The audits will not be invasive, but will require the Coach to be open and honest. The Auditors will also act as mentors for the Coaches when individuals are experiencing difficulties in delivering the program.

Course Requirements

The course requires classroom facilities with AV equipment, whiteboard and pens, seating for 8 people and easy external access. To deliver the in-field training and practice, an 8-seater people mover (with a NCAP rating of 4 or 5) is also essential and is supplied by the program managers. The final assessments are best conducted with real novice drivers.

Coaching and Mentoring Training Program

Time	Day 1	Time	Day 2
0800	Introductions Outline of program, Aims, Objectives & Expectancies	0800	Revision of Day 1
0830	What is coaching/mentoring?	0830	Coaching Novice Drivers- Applying coaching skills to driving
0845		0845	
0915	Characteristics of a good coach	0915	Discussion and Practice
0930		0930	
1000	Morning Tea	1000	Morning Tea
1015	Coaching skills Part 1 Theory	1015	Discussion and Practice (cont'd)
1200	Lunch	1200	Lunch

1245	Coaching Skills Part 2 Practical Application	1245	Assessment of coaching skills
1500	Afternoon Tea	1500	Afternoon Tea
1515	Coaching Skills Part 2 Practical Application continued	1515	Assessment of coach skills (cont'd)
1645	Homework - Revise days training and Coaching Manual	1645	Summary/close

Novice Driver Coach Training Program

Time	Day 1	Day 2	Day 3	Day 4	Day 5
0800	(S1) ▪ Introductions ▪ Training program overview (S2) ▪ Overview of the Novice Driver Program ▪ Reason for the program	(S1) Revision	(S1) Revision	(S1) Revision	(S1) Revision
0845		(S2) Session 2 & 3 overview	(S2) Session 4 overview	(S2) Session 5 Overview	(S2) Review of program
0915	(S3) ▪ Introduction Hazard Perception Handbook (HPH) ▪ Project Gadget - Where the Novice Program fits (S4) ▪ The 4 Key Elements (Safe Gap selection, Scanning, Safe Distance, Speed)	(S3) Day Vs Night time driving	(S3) In classroom practise of Session 4 - Part One & Two - Training Aids	(S3) Session 6 & 7 Overview	(S3) Final assessments
0930		(S4) Hazard identification and management	(S4) In classroom practise - Session 4	(S4) Administration overview	(S3) Final assessments
1000	Morning Tea	Morning Tea	Morning Tea	Morning Tea	Morning Tea

1015	(S5) ▪ How to use HPH ▪ Consolidation and summarise ▪ Check Understanding ▪ Link to FLT experience	(S5) Commentary Driving Techniques	(S5) In classroom practise - Session 4	(S5) The importance of accurate record keeping	(S3) Final assessments
1045	(S6) Session 1 overview	(S6) In field drive and discussion		(S6) In field/classroom practise of all sessions	
1115	(S7) In field drive and discussion				
1200	Lunch	Lunch	Lunch	Lunch	Lunch
1245	(S8) Preparation of training area principles	(S7) In field drive practise of Session 2 & 3	(S6) In classroom practise of Session 4	(S6) In field/classroom practise of all sessions	(S3) Final assessments
1315	(S9) In field practise of Session 1		(S7) In classroom critique of Session 4		
1500	Afternoon Tea	Afternoon Tea	Afternoon Tea	Afternoon Tea	Afternoon Tea
1515	(S9) In field practise of Session 1	(S8) Assessments & progress reports	(S8) Assessments & progress reports	(S7) Assessments & progress reports	(S3) Final assessments
1645	(S10) Assessments & progress reports	(S9) Homework - Training areas	(S9) Homework - Individual based on assessments	(S8) Homework - Individual based on assessments	(S4) Close and Certificate presentation
1700	(S11) Homework - Observation techniques	(Reserved)	(Reserved)	(Reserved)	(Reserved)

Training Session Overview

Session	Subject	Components	Objectives
Day 1 - 1	Introductions	▪ Trainer introduction ▪ Coach introduction	▪ To “break the ice” ▪ To meet and greet ▪ Create a friendly and learning atmosphere
	Training program overview	▪ Contents of the program	▪ To provide an insight into the 5 day training program ▪ To answer questions from participants
	Overview of the Novice Driver Program	▪ Contents of the Novice Program ▪ Check Manuals	▪ To provide an understanding of the program ▪ To ensure all manuals are complete ▪ To provide an understanding of how to use the manual
	Reason for the program	▪ Objectives of the Novice Program	▪ To provide an understanding of why the Novice program has been developed ▪ To provide the desired outcome of the Novice program
Day 1 - 3	Introduction HPH Handbook	▪ Overview and insight into the RTA NSW Hazard Perception Handbook	▪ To provide an understanding and insight into the techniques of the HPH ▪ To discuss openly the techniques used ▪ To emphasise the program’s intent to screen out “Car Control” ▪ To discuss the OH&S and learning reasons
	Project Gadget	▪ Reference and discuss the hierarchy of the Project Gadget matrix	▪ To demonstrate the hierarchy as detailed in the Project Gadget Matrix ▪ To emphasise the need to eliminate car control skills teaching
Day 1 - 4	The 4 key elements	▪ Scanning, Safe Gap Selection, Safe Following distance & Speed	▪ To provide and understanding of the 4 basic key elements to Hazard Perception techniques

Day 1 - 5	How to use the HPT	▪ The HPH as a training aid	▪ To provide examples of how and when to use the HPH as a training aid ▪ To promote discussion on participants experiences and for each participant to provide how they would use the HPH for those experiences
Day 1 - 6	Session 1 overview	▪ Discussion on Session 1	▪ To provide an understanding of the session ▪ To provide a reason for the session ▪ To discuss and understand the method of the session
Day 1 - 7	In field drive and discussion	▪ Practical application and discussion in field of Session 1 ▪ Demonstration/modelling of how the session is conducted	▪ To provide a practical demonstration/modelling of the session ▪ To answer questions and discuss the methodology
Day 1 - 8	Preparation of training area principles	▪ Discussion & explanation of how to develop a training area	▪ To provide an understanding of how an effective training area is developed ▪ To provide guidelines for the development of an effective training area
Day 1 - 9	In field practise of Session 1	▪ Continuous practise in conducting Session 1 ▪ Participants rotate through all positions within the “people mover”	▪ To practise and understand Session 1 and how it is conducted ▪ To achieve a competent level of conducting Session 1
Day 1- 10	Assessments & progress reports	▪ Assessments of participants skills in conducting Session 1 ▪ Counsel each participant on their progress	▪ To ensure participant competency in the conduct of Session 1 ▪ To provide feedback to participants on their performance and competency to date ▪ To ensure participants are able to move to the next level
Day 1 -11	Homework - Observation techniques	▪ Issue of homework - Observation techniques	▪ To provide after hours study material to reinforce methods for the effective conduct of Session 1

Session	Subject	Components	Objectives
Day 2 - 1	Revision - repeated each day	▪ Discussion of previous days activities ▪ Feedback ▪ Issues	▪ To ensure all participants are able to move to the next level ▪ To clear up any issues that participants may have
Day 2 - 2	Session 2 & 3 overview	▪ Discussion on Sessions 2 & 3	▪ To provide an understanding of the session ▪ To provide a reason for the session ▪ To discuss and understand the method of the session
Day 2 - 3	Day Vs Night time driving	▪ Highlight differences between day and night driving	▪ To discuss and identify the differences between Session 2 & 3 ▪ To provide an understanding of differences and the management of night-time conditions
Day 2 - 4	Hazard identification and management	▪ Explain the definition of a hazard ▪ Promote discussion on the management of hazards	▪ To provide an understanding of what a hazard is ▪ To discuss and determine effective hazard management methods
Day 2 - 5	Commentary Driving Techniques	▪ Explain and demonstrate Commentary Driving techniques ▪ Full commentary ▪ Snap shot commentary ▪ Hazard identification ▪ Response to hazards	▪ To provide an understanding of commentary Driving ▪ To identify the differences between Full commentary and snap shot commentary driving ▪ To explain and demonstrate full commentary driving ▪ To explain and demonstrate snap shot commentary driving ▪ To explain and demonstrate how to respond to hazards identified
Day 2 - 6	In field drive and discussion	▪ In field demonstration and practise of snap shot commentary driving	▪ To establish participants understanding and competency in modelling snap shot commentary driving
Day 2 - 7	In field drive practise of Sessions 2 & 3. This session can be split so that an hours session is conducted at night	▪ In field practise of sessions 2 & 3 ▪ Participants rotate through all positions within the “people mover”	▪ To practise conduct of sessions 2 & 3 ▪ To ensure participants understand and can conduct both the modelling and assessment of sessions 2 & 3

Session	Subject	Components	Objectives
Day 2 - 8	Assessments & progress reports	▪ Assessments of participants skills in conducting Sessions 2 & 3 ▪ Counsel each participant on their progress	▪ To ensure participant competency in the conduct of Sessions 2 & 3 ▪ To provide feedback to participants on their performance and competency to date ▪ To ensure participants are able to move to the next level
Day 2 - 9	Homework - Training areas	▪ Homework issued for participants to commence development of sample training areas - preferably in their assigned area	▪ To provide after hours study material to reinforce methods for the effective development of a training area ▪ To ensure participants are competent in the effective development of a training area

Session	Subject	Components	Objectives
Day 3 - 1	Revision	▪ Discussion of previous days activities ▪ Feedback ▪ Issues	▪ To ensure all participants are able to move to the next level ▪ To clear up any issues that participants may have
Day 3 - 2	Session 4 overview	▪ Discussion on Session 4	▪ To provide an understanding of the sessions ▪ To provide a reason for the sessions ▪ To discuss and understand the method of the session
Day 3 - 3	In classroom practise of Session 4 - Part One & Two -Training Aids	▪ Modelling of components of Session 4 ▪ Participant practise of components of Session 4	▪ To practise conduct of Session 4 ▪ To ensure participants understand and can conduct both the modelling and conduct of the session
Day 3 - 4	In classroom practise of Session 4	▪ Issue of individual tasks ▪ Preparation of individual tasks	▪ To provide an opportunity for participants to practise the delivery and conduct of Session 4
Day 3 - 5	In classroom practise of Session 4	▪ Practise of Session 4	▪ To provide an opportunity for participants to practise the delivery and conduct of Session 4
Day 3 - 6	In classroom critique of Session 4	▪ Critique and feedback to participants	▪ To provide a critique and feedback to participants on their delivery of Session 4
Day 3 - 7	Assessments & progress reports	▪ Assessments of participants skills in conducting Session 4 ▪ Counsel each participant on their progress	▪ To ensure participant competency in the conduct of Session 4 ▪ To provide feedback to participants on their performance and competency to date ▪ To ensure participants are able to move to the next level
Day 3 - 8	Homework - Individual based on assessments	▪ Homework issued as a result of individual participant competency to date	▪ To provide after hours study material to reinforce methods for the effective conduct of Sessions covered to date ▪ To assist the participants to work on improving identified elements of the program requiring improvement or consolidation

Session	Subject	Components	Objectives
Day 4 - 1	Revision	▪ Discussion of previous days activities ▪ Feedback ▪ Issues	▪ To ensure all participants are able to move to the next level ▪ To clear up any issues that participants may have
Day 4 - 2	Session 5 Overview	▪ Discussion on Session 5	▪ To provide the participants with a consolidation of how to conduct Session 5
Day 4 - 3	Session 6 & 7 Overview	▪ Discussion and objectives of Sessions 6 & 7	▪ To demonstrate and discuss the methods and intent of Sessions 6 & 7 ▪ To ensure participants understand the importance of obtaining factual information from the Novice driver
Day 4 - 4	Administration overview	▪ Discussion and explanation of the Program's administration requirements	▪ To ensure that participants understand the administration requirements and they are able to perform those activities
Day 4 - 5	The importance of accurate record keeping	▪ Discussion on record keeping requirements	▪ To reinforce the need for accurate record keeping ▪ To ensure participants are able to perform those activities
Day 4 - 6	In field/classroom practise of all sessions	▪ Role play on all sessions ▪ Individual assignments issued	▪ To provide an opportunity for participants to practise delivery/conduct of all program sessions
Day 4 - 7	Assessments & progress reports	▪ Individual assignments assessed ▪ Critique of performance ▪ Progress reports provided	▪ To ensure participant competency in the conduct of all program Sessions ▪ To provide feedback to participants on their performance and competency to date ▪ To ensure participants are able to move to the next level
Day 4 - 8	Homework - Individual based on assessments	▪ Homework issued as a result of individual participant competency to date	▪ To provide after hours study material to reinforce methods for the effective conduct of Sessions covered to date ▪ To assist the participants to work on improving identified elements of the program requiring improvement or consolidation

Session	Subject	Components	Objectives
Day 5 - 1	Revision	▪ Discussion of previous days activities ▪ Feedback ▪ Issues	▪ To ensure all participants are able to move to the next level ▪ To clear up any issues that participants may have
Day 5 - 2	Review of program	▪ Discussion of the whole program and objectives	▪ To provide an opportunity to consolidate all aspects of the program ▪ To provide a forum for issue resolution
Day 5 - 3	Final assessments	▪ Final assessments of all components of the program ▪ This is conducted using participants as drivers and with the trainer as observer	▪ To ensure participant competency in the conduct of all program Sessions ▪ To provide feedback to participants on their performance and competency in delivery/conduct of the whole program
Day 5 - 4	Close and Certificate presentation	▪ Final overview ▪ Next steps ▪ Certificate presentation	▪ To congratulate participants ▪ To provide information for Coach's regarding the next steps, areas of operation and reporting roles ▪ To issue certificates/authorisation/ID cards

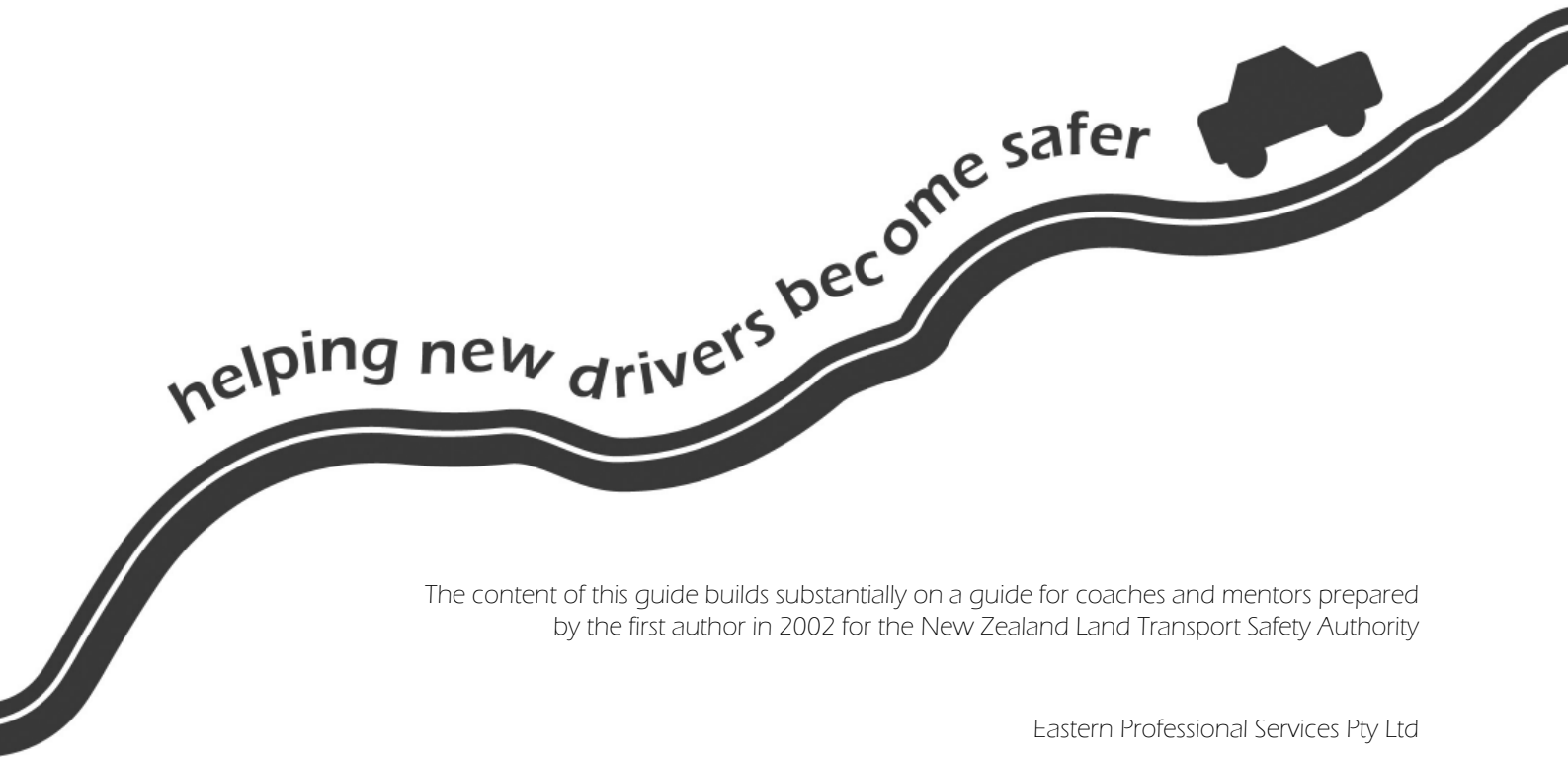
APPENDIX C: Novice Driver Coaching Program Guide:
Coaching Novice Drivers

a guide to

Coaching Novice Drivers

by

Warren Harrison & Sharon Harrison



The content of this guide builds substantially on a guide for coaches and mentors prepared by the first author in 2002 for the New Zealand Land Transport Safety Authority

Eastern Professional Services Pty Ltd

Table of Contents

Introduction

You are probably reading this because you are taking on a new role – helping new drivers to become safer. Many parents already take on this role with a learner driver, and with the development of new approaches to helping newly-licensed drivers there will be many people taking on this role professionally.

This is an important role and one that will have a strong, ongoing positive effect on individual new drivers and on the broader community.

Starting with the serious message – helping new drivers to become safer is a dangerous and risky activity. Not for you... for them.

There are many opportunities for you to have the opposite effect to the one you might expect, and the driver training and education world is littered with examples of programs that almost certainly increase the crash risk of young drivers. You probably don't want to get involved in something that will cause young people to crash more often.

If you are going to have a positive effect on the safety of new drivers there are some things that you absolutely should not do, and some things that you should do. This booklet has been prepared to guide you away from the negative things and towards the positive.

Some of the things you shouldn't do may seem to be things that you might want to do. Some of them are the things that conventional driver trainers have been doing for years and you will be tempted to include them if you get a chance. If you really want to help novice drivers become safer, following the ideas in this booklet gives you the best chance of success.

That's the serious message.

It's also important to realise that helping novice drivers is not meant to be difficult. You'll have to keep your mind on the task, but taking on this role will be very rewarding. You will be contributing to road safety in a practical, personal way, and you will develop a good working relationship with young people that may extend beyond your role in driving.

Helping a young driver become safer should be enjoyable – for both of you. If it's feeling like hard work, or if you're finding that you are not developing a close working relationship... perhaps it's time to hand the task over to someone else. Not everyone is suited to this role.

Hopefully after you have read through this booklet you will use it as an ongoing reference. It includes sections about the approach recommended for helping new drivers, and practical tips you can use.

Good luck!

Here's the Basic Idea

It's a bit of a shock to some people, but new drivers do not need instruction, training, or education to help them become safer. They need guided experience and a mentor or coach who can provide some general pointers and feedback, and who can help them work out what sort of experience they should be getting.

The scientific literature on driver training and education can be summarised very simply – there is no scientifically-sound evidence that driver training and education have a positive effect on the safety of new drivers. This is surprising to most people, but you cannot avoid this simple fact. Adding to the surprise – there is even some evidence that some forms of instruction or training can **increase** the crash risk of new drivers.

The simple scientific position – that education and training don't appear to work – is based on evaluations of training programs, a general understanding of how skills are acquired, and research in areas like cognitive psychology. The results are consistent, and many of the people who still argue in favour of driver training and education for new drivers have commercial reasons for doing so.

So... if the facts are the facts and driver training and education are probably not useful for new drivers... the next question is how can we help new drivers to become safer.

note taking space

The answer has to do with experience. In any area of skill acquisition the best way to encourage the skill to develop is to practise it over and over, spread over a reasonable amount of time, in the environment where the skill will be needed later on.

The best way for you to help a new driver, then, is to find ways to encourage and assist the new driver to gain a broad range of driving experience in real driving situations, while also providing some guidance and assistance to help them get practice at identifying potential hazards and risky situations.

This focus on experience, practice, and guidance or feedback sounds a lot like coaching in sports. This is why you should see yourself as a coach for new drivers, and this is why this approach is called coaching.

A successful sports coach ignores things that aren't central to success in the sport. A golf coach will not worry too much about the design of your golf clubs or the brand of ball you use, and a tennis coach will not worry too much about how many times you bounce the ball before you serve. These things are trivial. Sports coaches focus on a small number of issues that are central to your success at that sport. They then use guided practice and feedback as their main tools.

Like sports coaching, when you coach a driver your goals are to provide an opportunity for practice and some guidance on issues that are central to the driver's safety. As your coaching skills improve you will focus more and more on a small number of issues that are related to safety, and you will learn to ignore many issues that aren't as important.

Successful driving coaches, for example, will focus on issues like speed control and speed choices, how the new driver makes sure there is enough space between their car and other vehicles, choosing gaps when making turns or entering traffic, and how the new driver looks for and detects potential problems or hazards. These four issues are central to safety. Drivers do improve in each of these with experience – the coach's role is to help these skills develop a bit quicker through guided practice and feedback.

note taking space

Successful coaches are less interested in things like seating position, hand position on the steering wheel, smooth gear changing, and taking a "racing" line through a curve. These things are less important for safety and don't need to be addressed.

You will know you are doing a good job as a coach when you can build a good relationship with program participants, when you can raise safety-related issues and give feedback in a way that encourages a positive response from participants, and when the participants themselves start to take an interest in the safety-related issues you focus on during the program.

What Sort of Person Can Be a Driving Coach?

Coaching is not difficult and you don't need to have teacher training or some sort of degree in psychology. You also don't need to be a driving instructor unless there are rules in your jurisdiction about who can help new drivers. Being a successful coach doesn't require any particular cultural background or religious beliefs, and you can be young or old, male or female. None of these things matter.

Some things do matter, however.

- **You will need to be someone who gets on with, respects, and even likes younger people.** If this isn't you, you absolutely should not go anywhere near coaching new drivers. This sounds negative, but it's important that the new driver sees you as a mentor... someone they respect and whose opinion is important. Young people don't automatically respect people because of their role or their age – you will need to earn their respect. The most important step in earning the respect of a young person will be the respect and positive attitude you show for them.

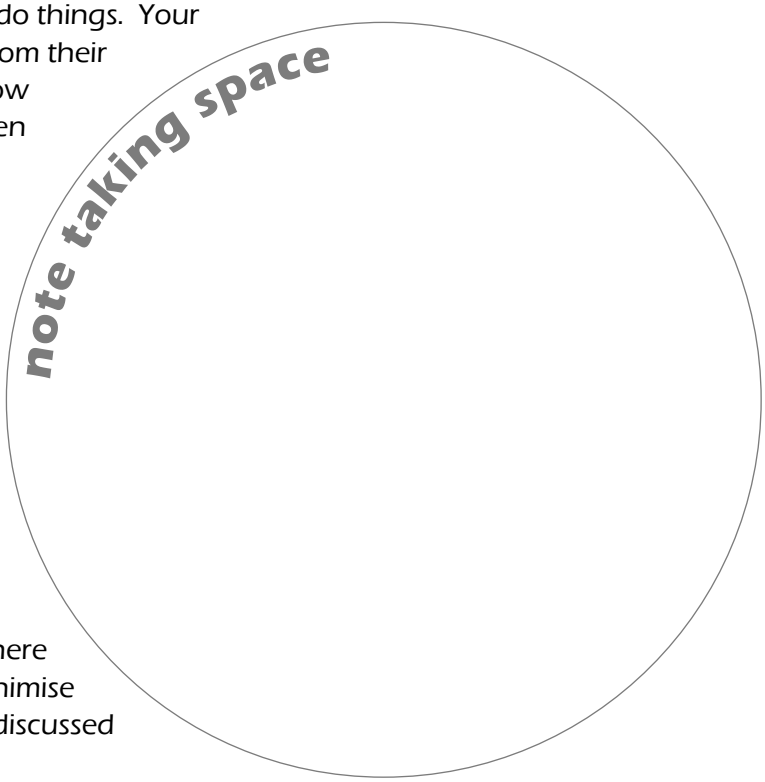
note taking space

- **You will need to be comfortable with an adult-learning approach.** This issue is discussed later in more detail. The important thing to realise here is that this coaching approach is based on the new driver learning through their own experience. You are not a teacher or instructor. Your role is to help them accrue experiences so they can learn. The feedback and guidance you provide is not instruction – it's to help them learn from their own experiences. If you see yourself as a teacher or instructor, you will not be a successful coach and may do more harm than good.

- **You will need to have some good "people" skills.** This doesn't mean you need to have skills as a counsellor or that you need to be the life of the party.

These things might help, but the important thing here is that you need to be sensitive to others and you will need to be able to work with another person in a way that promotes a positive relationship. The coaching role is a mentor role. Part of your task will be to provide support for the new driver and to be aware of their concerns.

- **You will need to be good at avoiding the temptation to play the "expert".** New drivers do not need (and will not benefit from) an expert driver telling them how to do things. Your role is to help them learn from their own experience, not to show off your own expertise. Even with the best intentions it will be difficult to avoid the temptation to be an expert. Every time you do this you weaken the potential positive effect you might have as a coach. Of course, you do have more experience than the new driver and you will need to use that experience to help them learn from their own experience and practice. There are ways to do this that minimise your "expertness" that are discussed later.



- **You will need to be patient and you will need to understand (and accept) mistakes as a source of learning.** New drivers make mistakes... often. These mistakes rarely lead to crashes, but they do occur and they are an important factor in developing safer driving skills and habits. If you have trouble accepting that people make mistakes, or if you are the sort of person who panics or gets angry when other people do something silly, you might not enjoy being a coach.

So, if you have these characteristics, you might be good coach material.

Coaching and the New Driver Program

You have taken up a coaching role as part of a specific program, you don't have to worry too much about how you are going to spend your time. The format and content of the program have been developed and your task is to work within these to help new drivers.

You will still have considerable flexibility, however, and many opportunities to get it wrong! You will need to focus on applying coaching skills or techniques within the program content to ensure that the new driver gets as much out your input as possible. These skills are discussed below.

The important thing to remember when you are working within the constraints of this new driver program is that the coaching and mentoring skills are tools to make the program itself work. This means that you will need to make sure that your involvement with the new driver follows the structure of the program, and that the program's structure takes precedence over your own ideas about what you should be doing.

A good program, of course, will have some flexibility that allows you and the new driver to make sure it is relevant to their needs. Using this flexibility is another coaching skill.

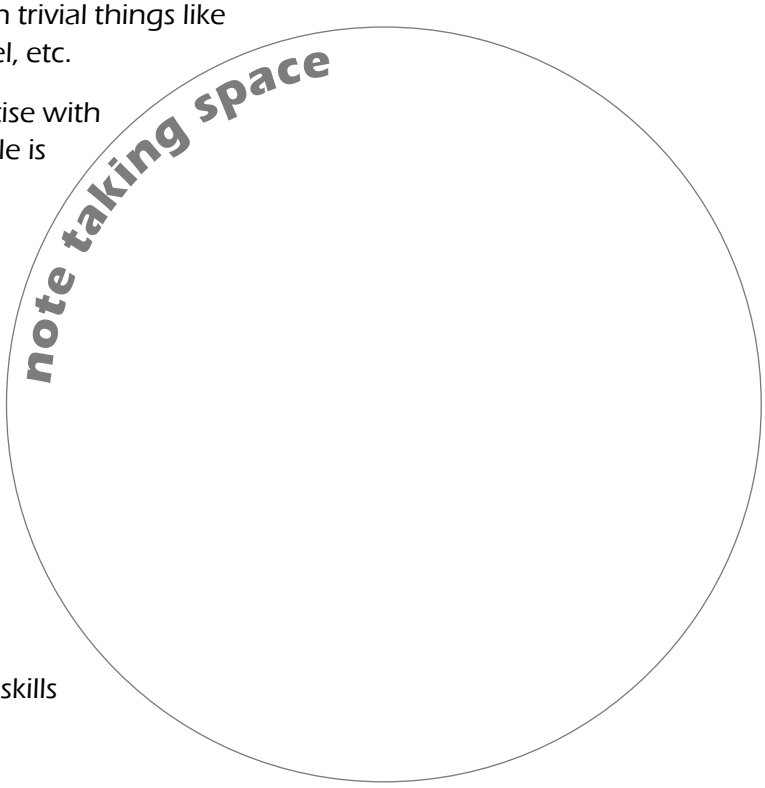
note taking space

What Are Some of the Differences Between Instructing and Coaching?

Some of the differences have been hinted at. Here are the important ones:

An instructor:

- Tries to teach the participant how to do things correctly.
- Instructs the participant in trivial things like how to sit, hold the wheel, etc.
- Tries to share their expertise with the new driver, whose role is to be a student.
- Often takes over the navigation task and tells the new driver where to go, when to turn etc.
- Sometimes restricts driving to a small number of routes and areas.
- Sees their role as a teacher.
- Believes that safe driving skills can be taught.



Coaches:

- Allow the learner to develop skills through their own practice and experience with guidance and feedback.
- Ignore the small things unless they are a clear safety risk.
- Avoid being an expert and focus on the shared learning environment.
- Allow the new driver to make navigation and route decisions.
- Encourage the new driver to decide where to drive based on their needs at that time.
- See their role as a mentor.
- Believe that safe driving skills develop through practice and experience.

While instructors focus on how best to teach a skill, coaches focus on how best to encourage the new driver to learn through guided experience. The main difference is really one of an active role (the instructor) that aims to deliver something (knowledge or skill) to the new driver, compared to a more-passive role (the coach) who works with the new driver to help them develop knowledge and skill through their own effort.

This is where the adult-learning idea fits in. When educators talk about adult learning, they are talking about a situation where people are able to learn through their own actions rather than through the instruction of an expert. Guidance and feedback are still important, but the focus is on the learner's involvement rather than the instructor's expertise. New drivers are adults – often young adults but they are still adults. They have had years of experience in an education system that is increasingly focused on experience- and practice-based learning, and they learn best when they have an opportunity to be active participants rather than inactive students.

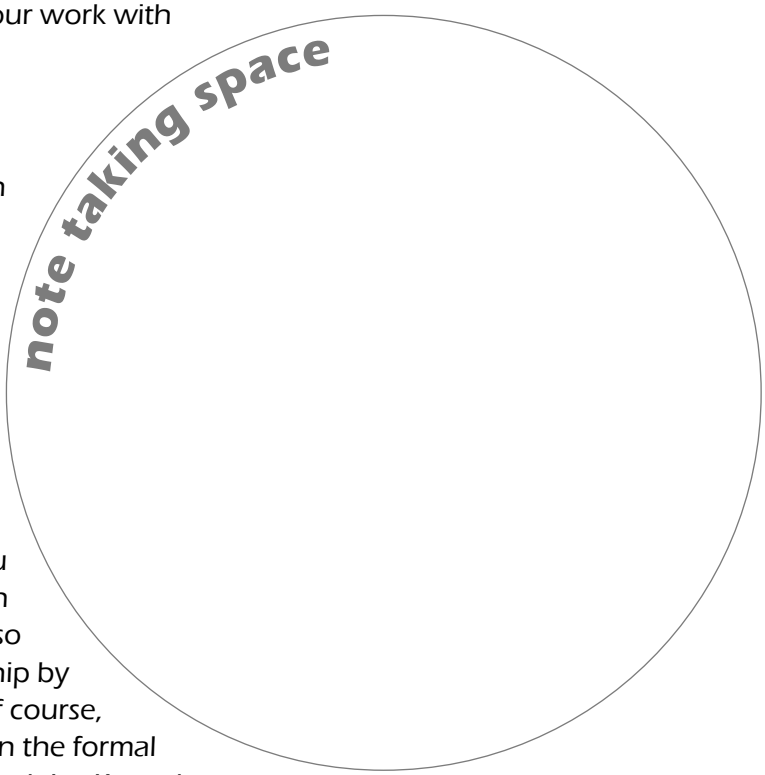
Taking an adult-learning approach to novice driver development is essential. The old idea of an expert passing on their wisdom to a young, naïve student doesn't work – partly because this approach never really did work for the sorts of skills associated with safe driving, and now because it doesn't match the learning experiences of young adults. Another reason for focusing on coaching rather than instruction or teaching is that most new drivers have a high level of confidence in their own ability as a driver – regardless of their actual ability. Taking on the role of an expert will cause a defensive reaction from some new drivers – limiting the effectiveness of the instructor. A successful new driver program must be based on the coaching ideas, techniques, and tips discussed here.

Relationship Building

Coaching relies on the quality of the relationship you develop with the new driver. The best relationship is one where the new driver values your opinion while still feeling that their own experiences and skills are taken seriously.

The new driver needs to see you as someone who is involved in their driving because you enjoy the role and because you want to help them. The new driver is unlikely to take your opinion seriously if you are dismissive of theirs.

There are some simple things you can do to help build a good coaching relationship that will then be a solid base for your work with the new driver:



- **You can build a relaxed relationship.** Make sure you introduce yourself with your first name and that you encourage the new driver to use this rather than some formal title. Most new drivers have been on first-name basis with older adults for quite some time, and an informal relationship will help communicate that you are not attempting to be an expert teacher. You can also build an informal relationship by dressing casually (neatly, of course, but casually) – don't take on the formal teacher role with a jacket and tie. Keep the sports-coach idea in mind. Your clothes need to emphasise a focus on comfort and work... and you need to be comfortable in the car and getting in and out of the car to discuss issues while watching traffic (discussed later).

- **Make the coaching relationship explicit.** Don't assume that the new driver understands that this is a coaching relationship. They will have memories of a driving instructor who saw themselves having a teaching role, of passing on their high level of expertise to the student. Tell the new driver that both of you bring driving experiences to the task and that the idea is to use those experiences, and some new experiences while driving together, to help the new driver learn about some safety-related issues. Make sure you take every

opportunity to remind the new driver that their experiences count, that practice is the key to new-driver success, and that your role is to help them, not to teach them.

- ***Don't tell the new driver that he or she has done the wrong thing.*** There are better ways to get a message across than direct criticism. The problem with direct criticism is that the new driver most likely already knows they have done something wrong (your white knuckles and sharp intake of breath probably gives this away) and they will only react defensively if you join with their own self-criticism. A better approach is to ask some questions. This puts the onus onto the new driver to try to understand (and communicate) what went wrong without you having to blame them directly, and it directs their thinking to their own experience rather than your experience of the event from an expert's point of view. So, when something happens that appears risky, start by asking something like "did you notice anything odd back there?", or "what do you think happened then?" Sometimes the new driver will not have the same perception of the event that you have – they may not think that something was unsafe or may not have noticed something that was important. In these situations, before you take on the "teacher" role, you can ask more-specific questions like "do you think that..." or "I got the impression that..... what do you think?"

- ***Make sure you notice the positives.*** It is easy to slip into the role of an assessor – always noticing the mistakes, errors, and unsafe things the new driver does. Relationship building requires that you notice the safe and positive things the new driver does, and that you comment on them. Keep an eye out for those times when the new driver slows down when approaching a potential hazard, when they clearly notice a situation developing that could become risky, or when they drive courteously. Make sure you comment on these. Successful coaches comment on, and actively encourage the behaviours

they want to see happen more often. Reinforcing behaviours like this almost guarantees that they will happen again, and that the new driver will see you as having a positive attitude towards them.

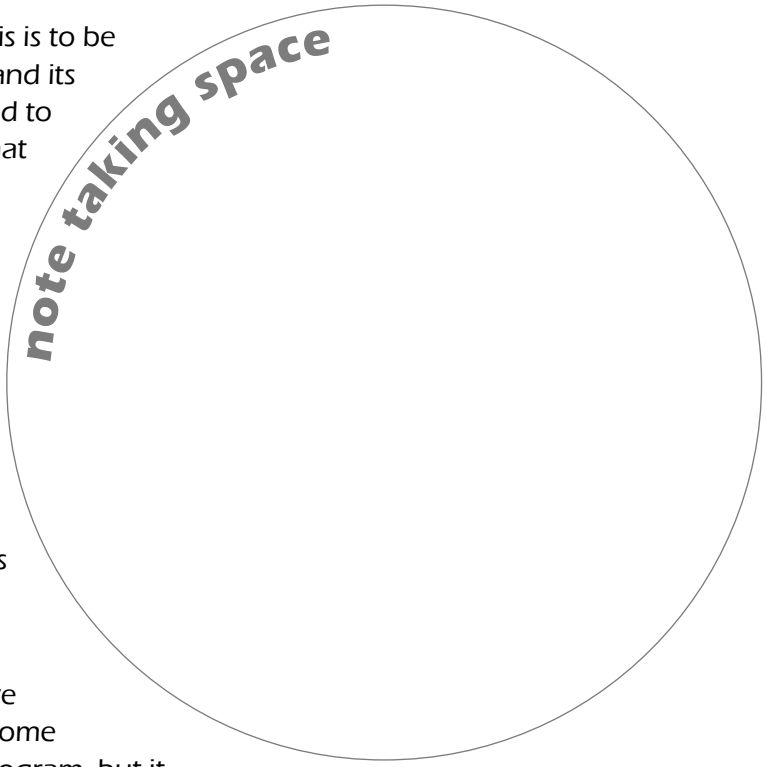
- ***Ask the new driver about their own experiences.*** As well as helping new drivers to relate their current and remembered experiences, this helps build a good working relationship by communicating your interest in the new driver and their own experiences as a driver. It ensures that the focus of your work with the new driver is on their experience and not yours. This point needs to be emphasised – while it is useful to draw on your own experiences when working with a new driver, your involvement should not be an opportunity for you to reminisce about how things were for you. The focus should always be brought back to the new driver.

- ***Make sure the new driver understands that they are improving and that this will continue for some time.*** You will need to remind the new driver that they are a lot better than they were when they first started – that they are safer, they are better at detecting and avoiding hazards, and that they can handle traffic better than earlier in their driving career. This is important to help build confidence, but it needs to be placed in the context of a bigger message that they are still improving. You can emphasise this by drawing on your own experience and on the experience of any other people you have coached. You can also draw on the experience of high-level sports people – almost all of whom continue to have a coach to help them improve regardless of their skill level in the sport. Improvement in driving safety will continue long after the new driver's contact with you has stopped, and they need to be aware of this to prevent some of the over-confidence problems.

note taking space

There is one extra thing to keep in mind – building a relationship includes doing something to help the new driver stay motivated about their work with you and the program. Most new drivers will come along hoping for a program that focuses on

exciting activities like learning how to manage a skid, emergency braking, and so on. Realising that a coaching program will involve relatively boring things like driving in normal traffic and a discussion group will not do a lot to encourage high levels of motivation for some participants.



The best way to deal with this is to be upfront about the program and its focus. The message you need to get across from the start is that the participant will become safer on their own as they become more experienced, but that there are some things that are not so obvious and that will make a difference. Coaching deals with these not-so-obvious issues. Some of these things may even get worse with experience, so it's important to deal with them now rather than later.

This may not completely solve the motivation problem for some participants in a coaching program, but it does put the issue upfront and will give you a chance to discuss the importance of day-to-day driving and avoiding problems rather than learning how to deal with problems once they occur. It will also give you a chance to point out the importance of practice in developing any skill and how a one-day program that focuses on something like skid training or emergency braking could never give them enough practice to develop the skill properly anyway.

Coaching Through Your Own Behaviour

The new driver learns from their own experiences, and some of those experiences are their perceptions of your behaviour and who you are. Everyone models their behaviour on the behaviours they see about them – especially the behaviours of people in important roles who they respect. Sometimes the effect is direct – the young person picks up behaviours they see – and sometimes it is more subtle – your behaviour becomes part of the young driver's broader perception of what is normal or acceptable behaviour. Either way, you need to recognise the power of your behaviour to help – and hinder – the new driver's development of safe driving skills.

There are some simple things you can do as a coach to give a safety message through your own driving and behaviour:

- **If you drive in the presence of the new driver – do it right.** You will completely ruin any chance of having a positive influence on the new driver's safety if you drive badly in their presence. So, if you do drive and there is any chance that they will see you, do all the safety-related things you expect them to do, drive at the best speed for the situation and courteously, obey the rules, and avoid distractions. This applies whether they are sitting next to you or watching you leave after a session.

- **Don't share stories of crashes and traffic offences.** If the new driver asks about these things, be honest (of course), but avoid details and certainly avoid telling the story as if everything worked out alright in the end and it was not such a big deal. You should also avoid telling stories about close calls that came to nothing in the end, and stories about avoiding detection or penalties for offences like speeding and drink driving. The potential risk of detection and crash involvement is an important deterrent. Although drivers with experience know that the risk of crashing or of detection for an offence is really very low, we don't need to tell novice drivers about this. It is better that we encourage the deterrent effect for as long as possible – until they become safer

through experience. So, your role modelling here needs to be about careful, legal driving and concerns about crash involvement and detection by the Police.

- **Be safe, not skilled.** A key message for new drivers is that safety is not about driving technique, vehicle handling, etc. You need to be seen as an example of a safe driver and as someone who focuses on safety rather than handling the car skillfully. Avoiding being seen as a skill-oriented driver means that you should avoid talking about any interests you might have in motor sports, fast cars, etc. You also don't want to share stories about your own youthful driving misadventures as these will result in an increase in their confidence of a positive outcome regardless of their behaviour.

- **Be a model of someone who drives for specific purposes.** We know that new-driver crash rates are especially high when they are driving just for fun or for social reasons. When you talk about your own driving experiences, make sure they are experiences involving driving for work or for a similar purpose – not for fun.

note taking space

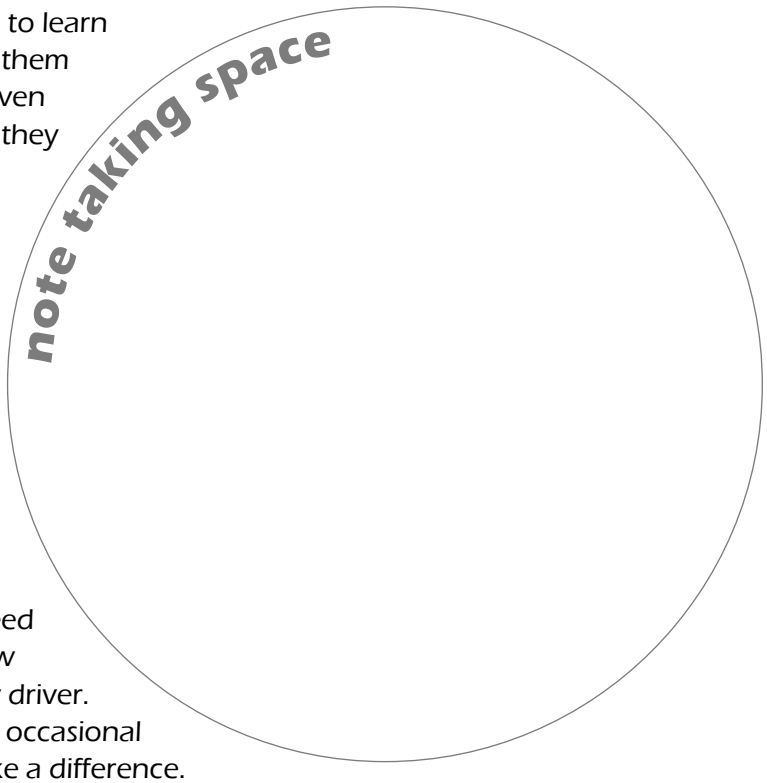
It's Mostly About the Conversation

Coaching has its effects mainly through the conversation between the coach and the new driver. Whether you are sitting in a car with one new driver, or working with a small group of new drivers in a program, your effectiveness depends on your ability to share your ideas in a way that encourages the new driver to take them up, and to help the new driver communicate and learn from their own experiences and the experiences of their peers. This means that coaching is about the conversation you have with the new driver.

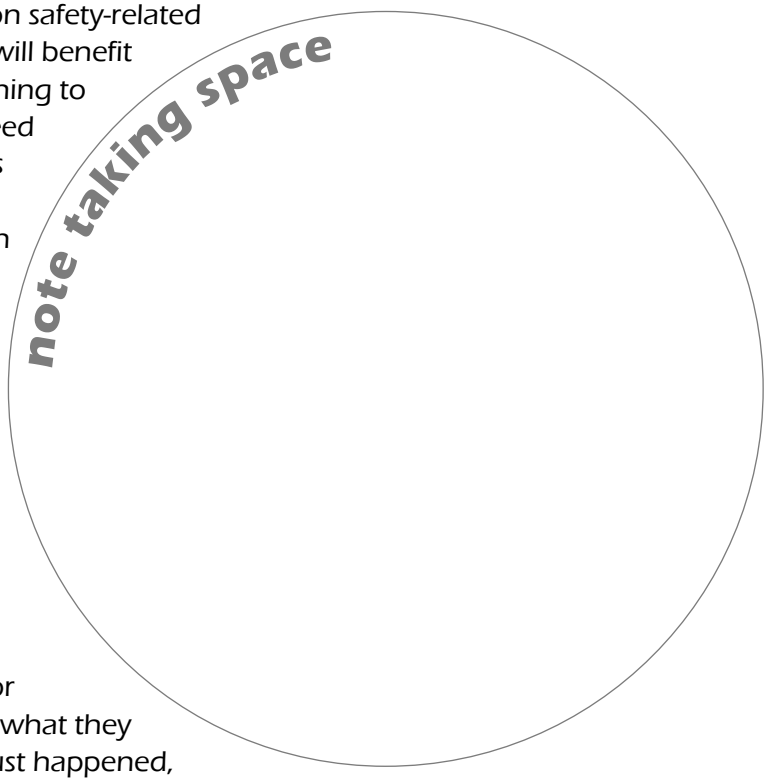
Making a conversation effective is a topic that has filled many counselling text books, but there is no need to be a trained counsellor to use some of the skills counsellors use to make their conversations with clients effective. Most of the new drivers you deal with won't need counselling anyway – but they do need for their driving coach to be effective at moulding a conversation to deliver a safe-driving message.

Some of the things you should be thinking about are:

- **How do you let the new driver know that you are listening to them?** Counsellors have all sorts of techniques for helping clients believe that they are being listened to. These include things like repeating sentences, rephrasing and repeating the main ideas, looking at the person, facing them (when you can) rather than standing beside them, and so on. These are simple skills to learn (well... you might think of them as social survival skills or even plain good manners) and they will encourage the new driver to take part in the conversation. Repeating and paraphrasing are important too because they provide an opportunity for the new driver to correct you if you have missed the point they are trying to make. These techniques shouldn't come across as artificial, though. They need to be a natural part of how you interact with the new driver. Even simple things like an occasional "yes" or "uh-huh" can make a difference.



- ***How do you communicate your ideas or opinions to the new driver?*** Regardless of the emphasis you place on the new driver learning from their own experiences, the coach's role is still an active one. You have a broad range of driving experiences that have helped you to become safer, and you will have some thoughts and ideas on safety-related issues that the new driver will benefit from hearing about. The thing to keep in mind is that you need to communicate your ideas in a way that ensures the message is heard and taken in. This means that you need to avoid creating a defensive reaction, and you need to try to get the new driver thinking about the suggestion. You can avoid defensive reactions by making sure your comments are not perceived to be critical. Rather than accusing the new driver of bad driving or decision making, ask them what they thought about whatever just happened, or what they think another driver might have thought about it. Rather than a broad comment on the new driver's skill or performance, focus on specific instances of behaviours or specific events.



- ***The best way to get a new driver to think about some point you want to make is to get them to think of it themselves.*** The process of getting to a conclusion about a safety-related issue in their driving can teach a new driver more than simply telling them the conclusion up front, and is part of the discovery or insight that is the key to effective adult education. Your conversation about an issue can lead the new driver to see events, hazards, and their own behaviour in new ways. So rather than simply saying something like "You didn't notice that bike rider early enough" you can lead the new driver to the same conclusion by asking a series of questions. In this example you could ask about when the driver noticed the bicycle, how far away they were, was it hard to see it, what made it hard to see it, how could they make sure they see bike riders like that one earlier, what would have happened if they had seen them even later... and so on. It takes time, but it builds a positive working relationship, and explores issues around a safety problem in a way that leads the new driver to take on some of the thinking themselves.

You might think that the focus on communicating and conversations is all a bit much – that it shouldn't need so much effort on your part to help the new driver. The problem for you and the new driver is that you will have very different perceptions of driving. You are coming from a few years of driving experience where you've probably accumulated a lot of hours in many driving situations – some of which the new driver will never have experienced. You will have built up a mental model of the driving environment that is flexible and that allows you to detect and react automatically to many potential hazards that the new driver will not even notice. The new driver has a mental model of the driving environment that has a lot of rule-based expectations – they will not notice many potential hazards because they expect other people to act according to the rules.

When you try to communicate something that comes from your flexible mental model based on many hours of driving experience, the new driver may not understand it. Because driving decisions are based on our own collection of experiences, it will sometimes seem that you are talking about an alien driving world that doesn't match their own experience. This makes the communication issue an important one for a driving coach. You will have to find ways to draw on the limited experience of the new driver to find examples of situations and events that can be used to support the messages you need to get across. So listening to them, communicating in a positive manner, and getting the new driver to think through issues based on their own experiences and reasoning are vitally important.

note taking space

When Disagreements Occur

The coaching relationship is not always a smooth one. Your role is to work with the new driver as they accrue new experiences and some new knowledge and skill, and sometimes this can produce some stress. You might be concerned about something the new driver did and find that they don't see it your way, or perhaps the new driver consistently reacts defensively to your suggestions and comments or is the sort of person who refuses to take personal responsibility – someone who makes a mistake and then blames it on the other driver or the wet road and so on.

The first thing you need to do is make sure that you don't convince yourself that it's awful that things aren't going smoothly. The coaching task is stressful, and the new driver will feel like they are on show or being assessed even if they are not. Things will go wrong, you will disagree about some things, and there will be times with some new drivers where you don't feel that much progress is being made. These things should be expected, so don't tell yourself that things should be different or better somehow. Instead, use your discomfort with the situation as a motivator to improve things.

You will need to manage disagreements so they don't limit your effectiveness as a coach. Although problems of this type involve both you and the new driver, you are the older adult and will need to take the lead in making the relationship work. There are a few things you can do in a conflict situation to help reduce the pain.

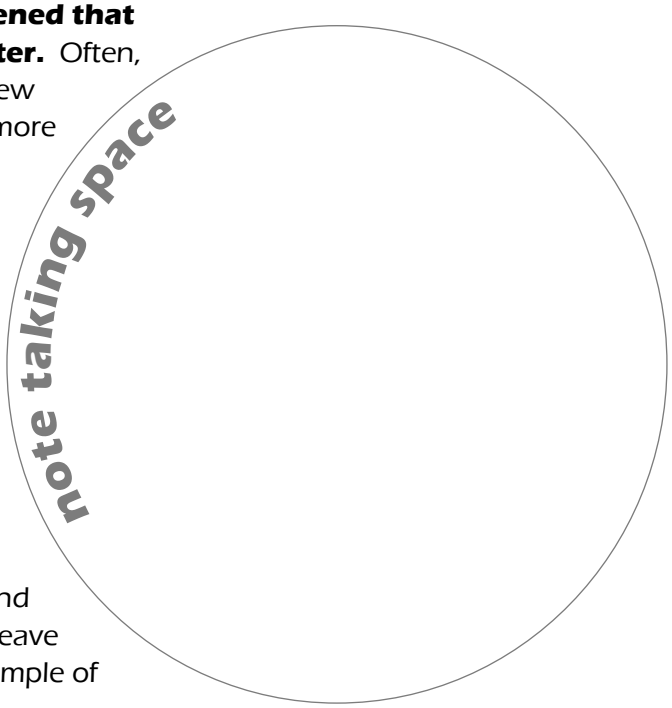
note taking space

- **Get the new driver to talk about their friends' or relatives' experiences.** If the new driver is defensive or hasn't experienced some of the things that have taught experienced drivers to be more wary as drivers, perhaps they have heard things from their friends that you can use. You could ask "have any of your friends ever had a near miss with a pedestrian like that?"

- **If you find that the new driver is a bit defensive about possible criticism, make sure you make comments by asking questions.** You can ask "what if" questions when you are talking about things that might have

become hazards, for example. These might be questions like "what if that little boy had run out onto the road before his father got to the intersection?", or "what if that car had stopped suddenly?"

- ***Ask the new driver to think over a risky situation and suggest some things that could have happened that would have resulted in disaster.*** Often, when asked to be imaginative, new drivers can come up with many more potential problems than even they expect. Inventing potential problems in a situation in this way will help the learner link it with potential negative consequences.



- ***You can also use your own experiences and this can work well when you ask "what if" questions.*** If you have an instance in your mind of a time when something similar and unexpected happened to you, weave it into the conversation as an example of how unpredictable things are.

- ***If you are finding that disagreement is a common part of your interaction with a new driver, it may be useful to discuss this with them.*** You can shift the conversation to the process or relationship by saying something like "I'm feeling that we aren't getting on as smoothly as I'd hoped", or "have you noticed that we seem to disagree about some safety-related things" and then use this as a way to talk about what could be done to make things go a bit more smoothly. It doesn't always work – especially with less-mature young men – but it is worth a try.

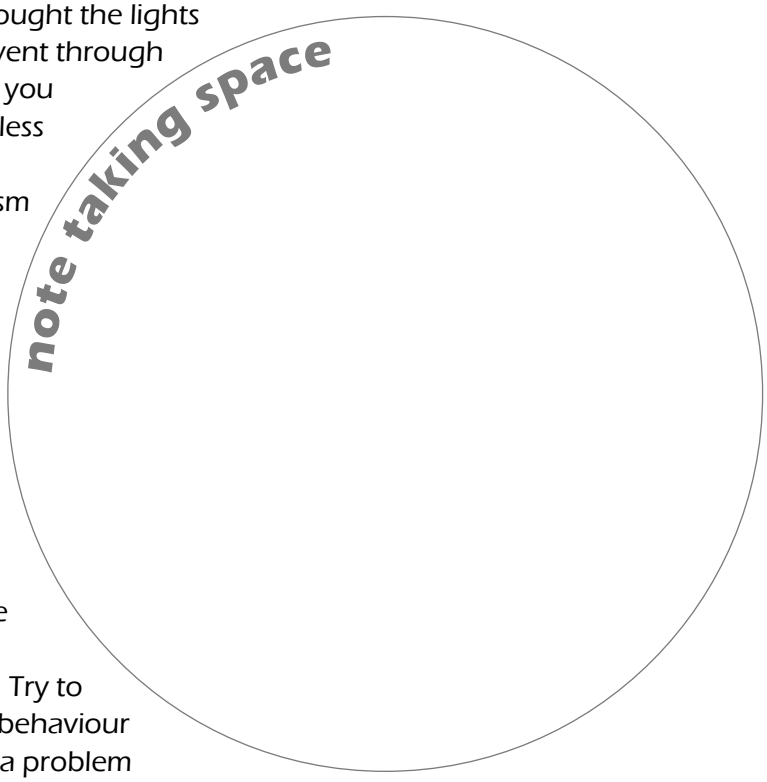
- ***Finally, it is possible that disagreements and stress between a coach and a new driver reflect something other than the coaching relationship.*** There may be a personality conflict that gets in the way of a successful relationship, or it is possible that the new driver has something in their own background that makes them more difficult to work with than most. If you really don't feel that you are progressing, or that the new driver isn't benefiting, you can discuss finding a new coach and help them to make some new arrangements. This is a difficult thing to do, and you will feel like a bit of a failure even though you aren't, but the best thing is always to do what needs to be done to help the new driver become safer.

Getting Blunt

New drivers do make mistakes and some of them can have serious consequences, or at least can have the potential to have serious consequences. Sometimes you will need to intervene or say something strong, despite all the best intentions about keeping up the mentor or coach role and letting them learn from experience. In situations like this, keep the following things in mind:

- ***Do not apologise for saying something bluntly or directly.*** You don't have to be sorry for being definite about something that's important. The key to getting the message across is not to be apologetic, it's in how you present the message. You might also remind yourself that if the coaching relationship has been developing positively, you will have earned some respect and can eat into this a little if you have to make a strong point every now and then. Once you've started building a relationship you can rely on it being a little resilient if it needs to be.

- ***Focus on the situation and not the driver's behaviour.*** Rather than "you should have stopped back there at the lights", a less confronting comment might start with "I thought the lights were red when we went through the intersection... did you notice them?" This is less confronting because although it is a criticism of the new driver's behaviour, it focuses on the behaviour in a specific context. This suggestion extends to any potentially-negative comment – the idea is to state the problem directly, but without criticising the new driver's general level of competence. Try to focus on the specific behaviour or situation that was a problem rather than directing a criticism at the driver's ability to drive. Something like "when you didn't notice the pedestrian back there, it created a dangerous situation" is better than "you have no idea about detecting hazards".



- ***Direct comments after a dangerous situation are best if they lead to shared problem solving and further practice.*** Once you have directed the new driver's attention to the problem, ask them what went wrong, and how they will avoid the problem next time. Again, the idea here is to increase the driver's self awareness and problem solving rather than teaching specific driving skills. You could then try to arrange for further driving practice in the type of situation that led to the problem.

- ***Limit the possibility for defensive reactions.*** You can help reduce the strength of any defensive reaction by putting your concerns in the form of a statement about how you felt in the situation rather than how bad the new driver's driving behaviour was. You could say things like "I noticed that you had to brake heavily...", or "When we went around that corner I felt uncomfortable because... ". This type of statement indicates there is a problem but does so in a way that can avoid a strong defensive reaction.

note taking space

Using Questions Creatively

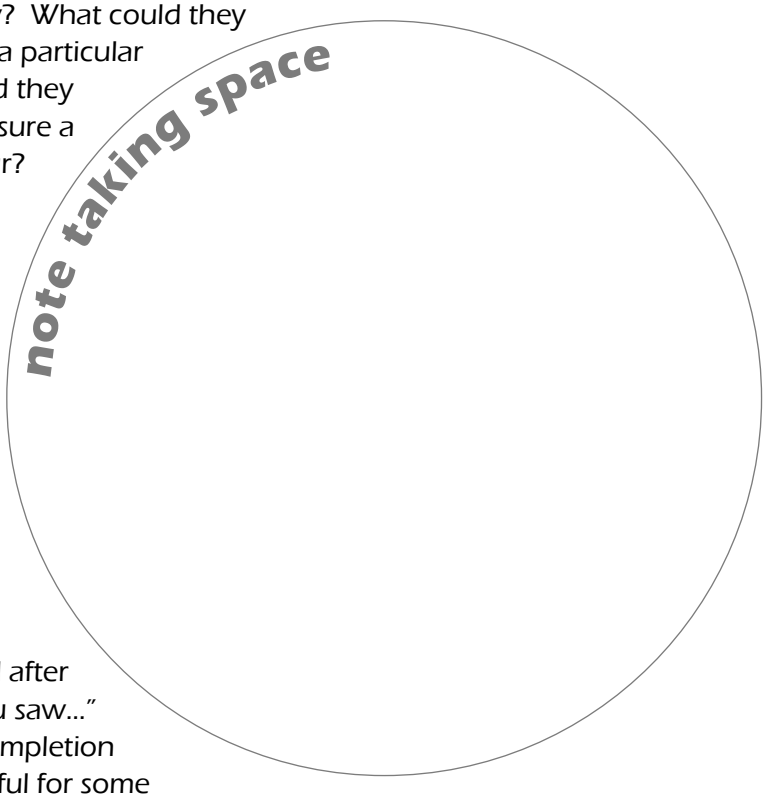
The use of questions to raise issues and encourage the new driver to explore them has been raised a few times. Questions are an important tool for the coach, and can be used as an alternative to direct comments about the new driver's driving and situations that arise during practise sessions. Questions put the onus onto the new driver to think about their driving, rather than letting them rely on you to tell them what went wrong and how to fix it.

You might want to think about the following:

- **What did the driver see or hear?** What was happening? What were the obvious things they could see? Where were they looking? Did other drivers/people see the same thing happening? Were there things that happened that they missed entirely or just caught? Where else could they have been looking?
- **What could have happened?** Could something else have happened? What would have happened if...? How would things have turned out if something else had happened? Did they get anxious about anything?... what was it?
- **How did the driver feel in the situation?** How good or bad did they feel? Can they put a label on the feeling? What did they think the coach was feeling? What do they feel now that they think about some of the things that might have gone wrong? Do they find themselves feeling this way at other times? What might the feelings be telling them?
- **Has this ever happened before?** Does this match any other experiences the new driver has had? Have they ever heard a relative or friend say something about this type of situation? What have they done (correctly or incorrectly) in the past in similar situations?
- **What did the new driver actually do in the situation?** How did they behave or react to the things they noticed? If they were in the situation again could they try something else? How might things have turned out differently

if they had behaved differently? What were the good or bad consequences of their behaviour? What about the potential consequences?

- ***Did the driver have a sense of what they were doing or what they were thinking at the time?*** What does the new driver think about how things happened and how they turned out? Is there something they could have done differently? What could they do in future to avoid a particular situation? What could they do in future to make sure a problem doesn't recur?



- ***Questions don't always need a question mark***. Try using a sentence-completion approach to encourage the driver to answer a question without actually asking a question... "go on...", "you noticed....", "and after that...", "and then you saw..." etc. This sentence-completion approach can be useful for some young people – especially those who are good with conversations. It might put off some people – such as some younger males – but there's only one way to find out...

- ***The worst thing you can ask most people about their behaviour is "why?"*** People simply don't know how to answer this question most of the time. A better approach is to use the conversation skills discussed earlier whenever anything goes wrong, and use some of the question ideas mentioned above. "Why" questions are a problem because most driving behaviours are largely automatic, or at least based on high-speed decision making processes that are largely automatic. When you ask "why" in this situation, you are likely to end up with an explanation for the behaviour that is invented with hindsight... it is not really possible to know why a behaviour occurred once it has occurred.

New Drivers Can Get Far Too Confident

Most people are pretty confident in their ability to drive a car safely and to handle traffic competently. This is so for new drivers, and for the most part the confidence of new drivers is justified. Their crash rates, although high relative to those of more experienced drivers, are quite low in absolute terms. That is, most new drivers have very few crashes and are able to drive safely most of the time.

One of the problems is that this reasonable confidence goes hand-in-hand with a broader confidence in their ability to handle unexpected events or difficult/uncommon driving conditions, or even a confidence that other drivers won't behave unexpectedly.

The dilemma for the coach is that some of the confidence of new drivers is reasonable and is most likely resilient to interference, but some of the new driver's confidence is a problem because it may put them in a potentially-dangerous situation without the skills to notice it developing and avoid it.

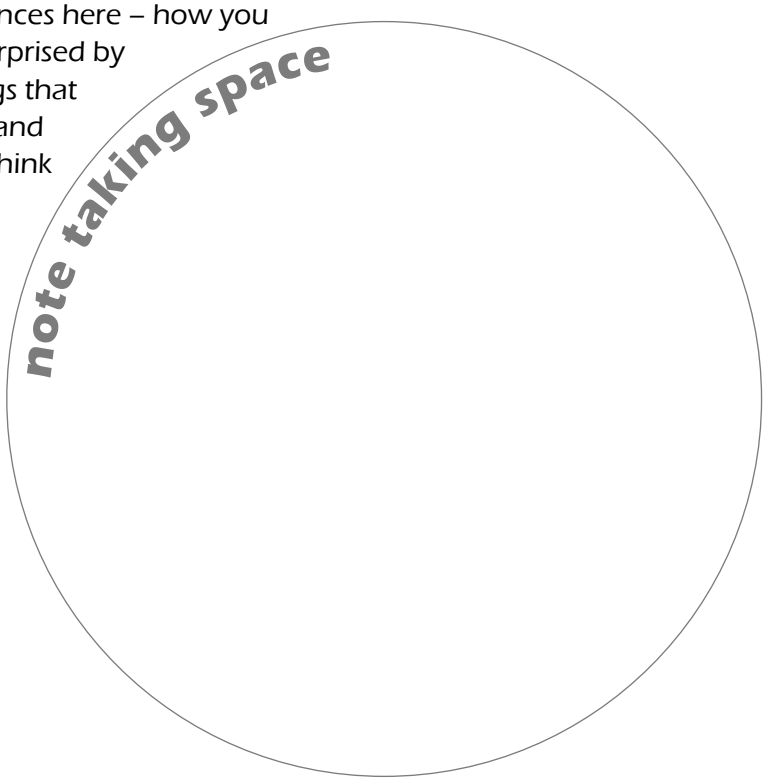
There are three things you can do as a coach to help keep confidence realistic:

- Emphasise the need for experiences, in safe conditions, of different types of driving. New drivers, even when licensed, continue to develop safety-related driving skills for many years, and the best way to assist this is to continue to gain experience as a driver, but safely.

- Hopefully you will find plenty of opportunities to give positive comments to the new driver – and you should do this, of course. The trick is to make sure that you link the comments to how the new driver behaved rather than making general comments about their driving skill. This is a bit like dealing with children – you don't call children "good" or "bad"... you tell them that their behaviour in a particular situation is "good" or "bad". New drivers love to hear that they are great drivers, but overly broad positive comments will add to their general level of over-confidence rather than their confidence in their own ability to handle specific

situations. So rather than telling them what a great driver they are, tell them that they did something well or that they acted much more safely in a particular situation.

- You really need to try to convince the new driver that they still have a lot of learning to do. The more a driver believes that they are still improving, the less likely they are to be overly confident that they are a great driver already. Draw on your own experiences here – how you are still sometimes surprised by the unexpected things that happen around you and that you sometimes think you still have a lot to learn. You'll find that most new drivers will resist this message – deep down they will still think they are pretty good – but if they hear the message often enough from you it might have an effect.



A Little Bit of "Teaching" May Still Be Needed

The best driving coach will still have to explain things from time to time, and will still have to suggest activities or practise opportunities during driving sessions. A good driving coach will embed these small instances of "teaching" into the larger learn-through-experience approach that will produce the best outcomes.

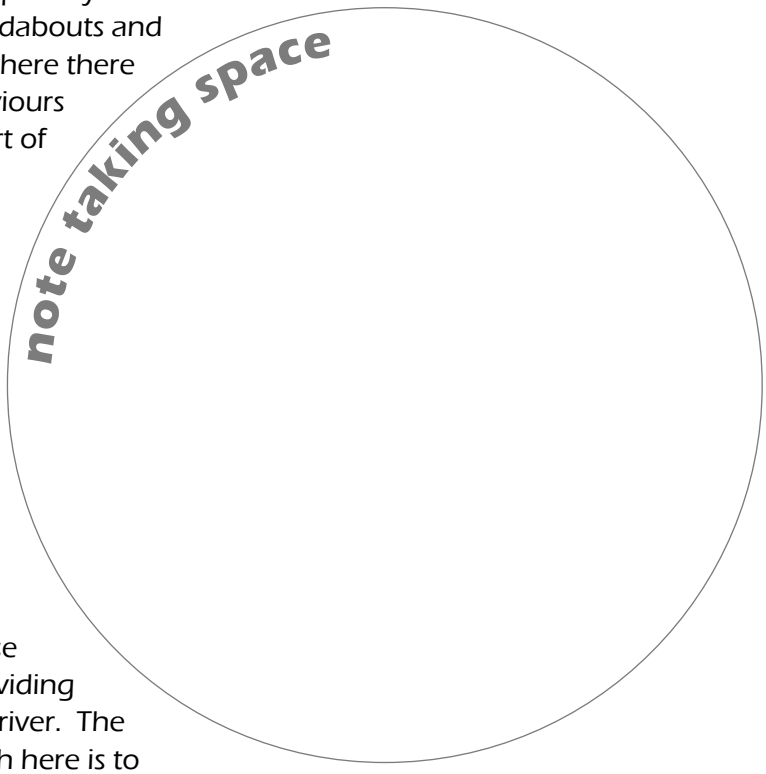
When you do need to shift into teaching mode for a short period every so often, some techniques and issues to think about are:

- **Use a question and answer approach.** Try to avoid playing teacher or instructor by asking questions (as suggested above) to encourage the new driver to teach themselves under your guidance.
- **Use some teaching material as coaching material.** A few items might be useful if you suddenly have to explain something or use some props as part of the experience-based coaching you are trying to achieve. A small whiteboard or a blank writing pad is good for diagrams of intersections or traffic situations and may be easier than creating a real-world situation that could be risky. Some small "Matchbox" cars can useful as an alternative to using diagrams and are much more enjoyable to use – although some might frown at playing with cars on the footpath when you could be driving. A stopwatch may be useful when discussing safe gaps.

note taking space

- **Over-learning and revision help learning to last longer.** Learning occurs best when the material and experiences are repeated. Doing something or experiencing something once or twice is rarely sufficient, and you should consider over-practising or over-experiencing things. If there is some traffic situation that needs additional attention, experience it a few times rather than just once or twice.
- **It is OK to stand and watch traffic.** Successful coaching relies on bringing together different types of experience to aid learning, and a change in scenery can be a good thing. Don't be reluctant to

get out of the car and stand (safely) beside the road to discuss a situation or the behaviour of other drivers. Standing, watching, and discussing can be powerful learning techniques, especially with situations such as roundabouts and difficult intersections where there are often unsafe behaviours that can be used as part of the discussion.



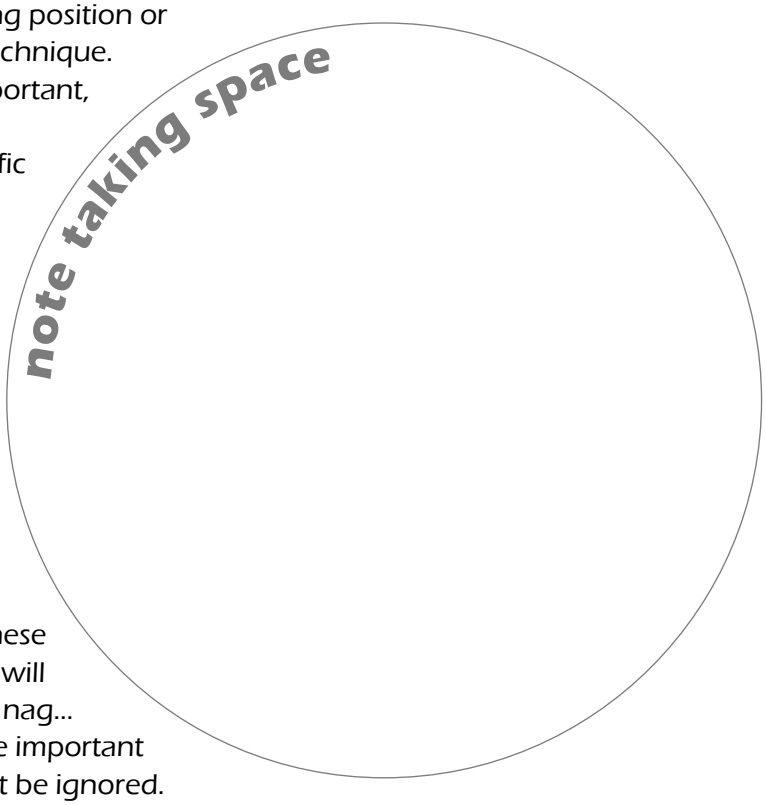
- **Practice, Practice, and some more Practice.** If it is possible to design an activity that reflects a particular problem for a driver – perhaps right turns at intersections, for example – you might simply provide many opportunities to practise the situation while providing guidance to the new driver. The most effective approach here is to try to give less and less guidance as the new driver shows signs of becoming safer and safer.

If you do need to shift into teaching every now and then, you need to be absolutely clear about the limits you must not exceed. **You should focus only on the key safety issues that have been identified as the central focus of the program.** These are:

- **Speed control** – the new driver should stay within the speed limit and should adjust their speed to suit the driving situation.
- **Staying away from other cars** – the new driver should keep a safe distance from other cars by leaving a safe distance between themselves and the vehicle in front, and by managing their position in the lane or roadway.
- **Selecting safe gaps** – the new driver should make decisions about turning, entering traffic, and overtaking that always allow for a clear safety margin with other traffic.
- **Scanning for potential hazards** – the new driver should be entirely focused on the driving task and should actively look for and respond to potential problems and hazards while driving.

There is information about these safety issues in the curriculum documents used during your training sessions, and you can also refer to the Roads and Traffic Authority Hazard Perception Handbook. It contains a lot of useful information that you can use when you have to move into a bit of teaching. As well as information on hazard perception, there is also information on speed control, selecting safe gaps, and safe distances. You might even find it useful to have a copy with you in the car, and you can suggest that the new driver downloads a copy from the RTA web site if you think they would find it helpful.

When you do take on a teaching role, it shouldn't be for trivial issues like hand position on the steering wheel, seating position or posture, or gear changing technique. These issues are not that important, even if you think otherwise. There is still no sound scientific evidence that things like this matter from a safety point of view, and the purpose of coaching in this program is safety.



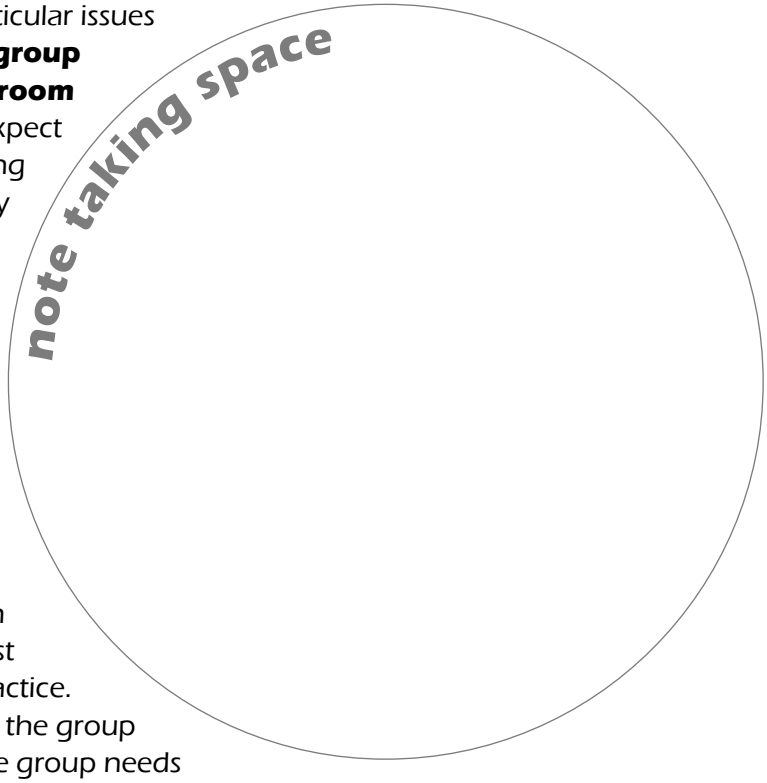
There is another good reason for not taking on a teaching role about unimportant things – if you do head down this path you can expect the new driver to react negatively. They see these things as trivial too, and you will end up being perceived as a nag... with the result being that the important things you want to say might be ignored.

Coaching in a Group

This program includes group discussions and activities. These are only worthwhile if they draw on the experiences of the group members. The moment a group discussion session becomes a classroom or lecture theatre, the opportunities for effective adult-learning will evaporate.

Leading a group discussion is a skill that coaches may need to develop. Most of the skills and characteristics discussed earlier are relevant to leading a group, and there are just a few more to consider:

- The program will have particular issues that you need to cover. **A group discussion is not a classroom situation** and you can't expect new drivers to gain anything from a session that is strictly timed or regimented. The best discussion group flows like a conversation, with some gentle guidance and direction setting by the leader. Making this happen is the leader's responsibility. Making it happen in a way that covers the issues that need to be conducted is an important skill that will most likely only develop with practice. The program should guide the group rather than force it, and the group needs to be brought back on track when it's clear that the program content is being ignored.

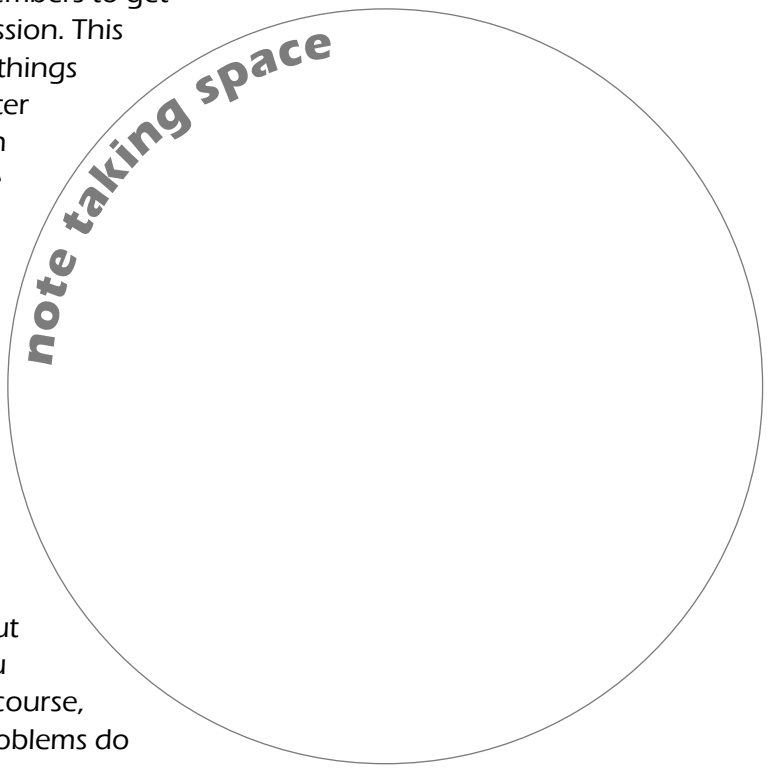


- **You should set some ground rules for the group at the start of the session and make sure everyone understands them and agrees to them.** For the most part the rules should be similar to the usual rules of etiquette and appropriate social behaviour, with the addition of some rules about contributing (everyone has a right to contribute and a responsibility to do so), and confidentiality (things said in the group should stay in the group). The last one sounds a little like something out of a group therapy session, but it is important here too. An effective group discussion about driving and safety may ask some new drivers to admit to problems or to talk about their fears and concerns. These issues should not become weapons outside the group, and the

comments people make inside the group shouldn't be shared with others. You will need to model appropriate behaviours here... for example it wouldn't be appropriate to say in one group that "John in this morning's group admitted to drink-driving last week."

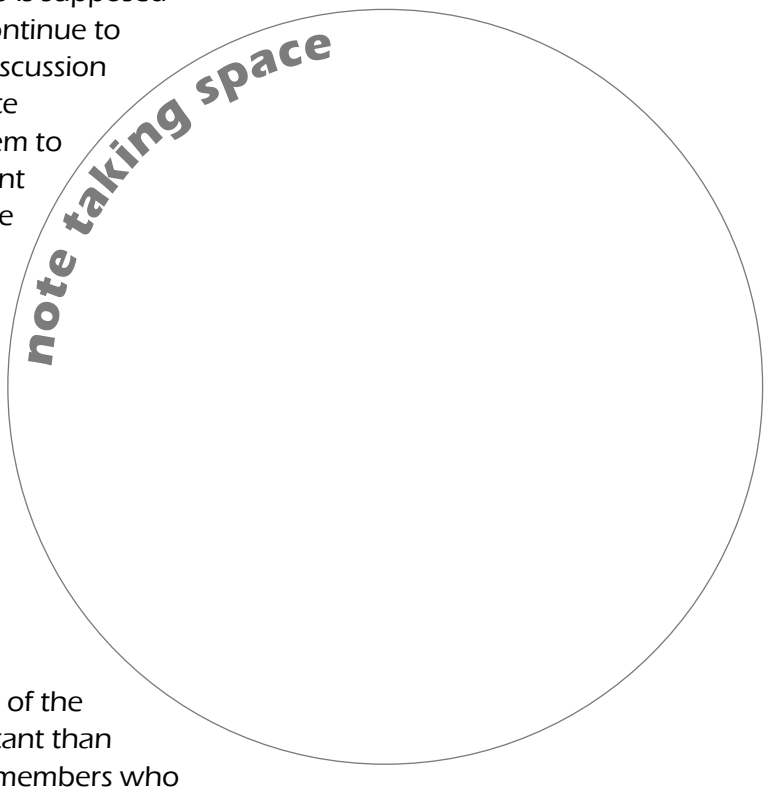
- **The group discussion approach to coaching for safety will rely on sharing experiences amongst group members as a learning aid for everyone.** This means that every issue in your program or on your checklist is best discussed amongst participants by drawing on their experiences and, to a much lesser extent, your own. By constantly coming back to their experiences, the discussion will help to link the safety issues that are central to the group with the particular experiences of group members.

- **One of the difficult tasks when leading a group is making sure that everyone is encouraged to participate in the discussion.** People have different levels of verbal skill and self-confidence in a group setting, and (unfortunately) some new drivers will come along and not really want to participate in any active sense. This will be especially so for some new drivers who would prefer to be involved in a driver training program that involves skid control and other activities that make them less safe. You need to encourage the quieter group members to get involved in the discussion. This might involve subtle things like looking at a quieter group member when asking a "has anyone experienced..." question, or less-subtle approaches such as asking "what do you make of this, Jenny?" You could even approach people during refreshment breaks to make sure they are alright and getting something out of the discussion. You should be aware, of course, that social anxiety problems do exist. If members of your group are shy or anxious in social situations, that should be respected. Socially-anxious people will still get something worthwhile out of listening to a group discussion, and might be encouraged to take part a little



if you set the scene well at the start of the group. You probably don't want a group full of shy people, though.

- Some new drivers may enroll in the program, turn up, and then make life difficult for you and others. Young people with various psychological disturbances or social and conduct problems can make the group experience uncomfortable for all. This is a situation where having some rules can be helpful. If you find you have a difficult customer, you can quietly remind them about how the group is supposed to operate. If they continue to hinder the group's discussion and progress, it's quite reasonable to ask them to leave. You might want to ask them if they are interested in making another time, but also to point out that the group discussion is an important part of helping new drivers become safer and that their behaviour in the group wasn't helping achieve that goal. Ultimately the progress and success of the group is more important than holding onto group members who don't want to benefit from the program.



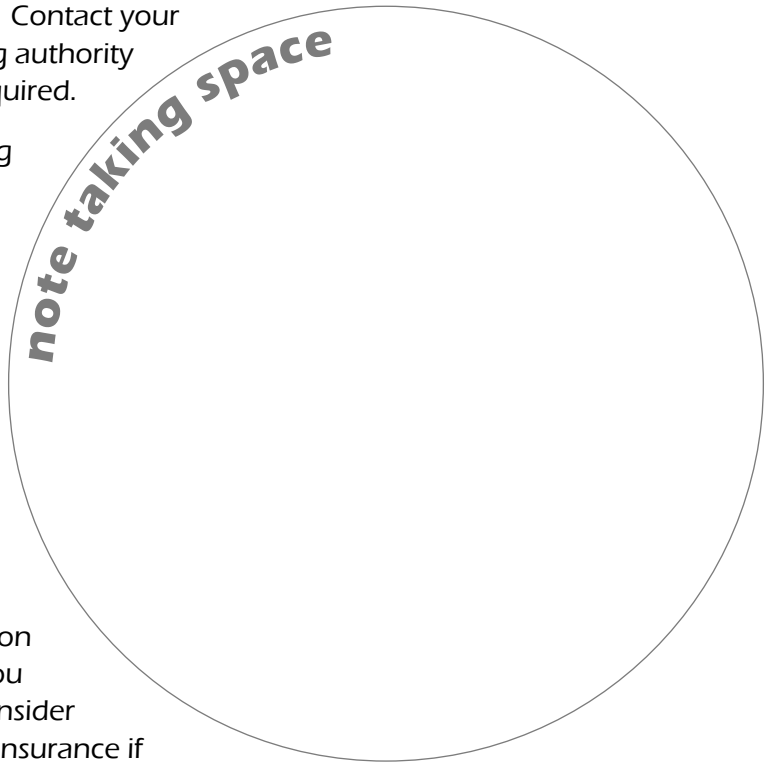
- This has been mentioned before – ***your role in a group setting is to lead, encourage, and guide the discussion between the new drivers***... not to teach them or to present yourself as a driving expert. The focus of your efforts should be the group process and interaction between group members, followed by meeting the specific discussion aims of the program. It will be difficult not to slip into "expert" mode, but doing so will make you less effective as a group coach.

Bad Behaviours – Legal and Ethical Considerations

This section is mostly common sense, but needs to be included. Your role as a coach working with new drivers – most of whom are relatively young – places you in a situation where you will need to ensure that your behaviour is appropriate. Beyond this, and partly for your own protection, you will need to make sure that your behaviour is even better than appropriate.

Some things to consider here include:

- You need to make sure you meet any local requirements for supervising drivers or (if you are being paid) driving instructors working with your particular type of new driver. If you are coaching learner drivers, for instance, all States have specific requirements. If you are being paid to coach newly licensed drivers, some States have requirements that you will need to know about. Contact your local road or licensing authority to find out what's required.

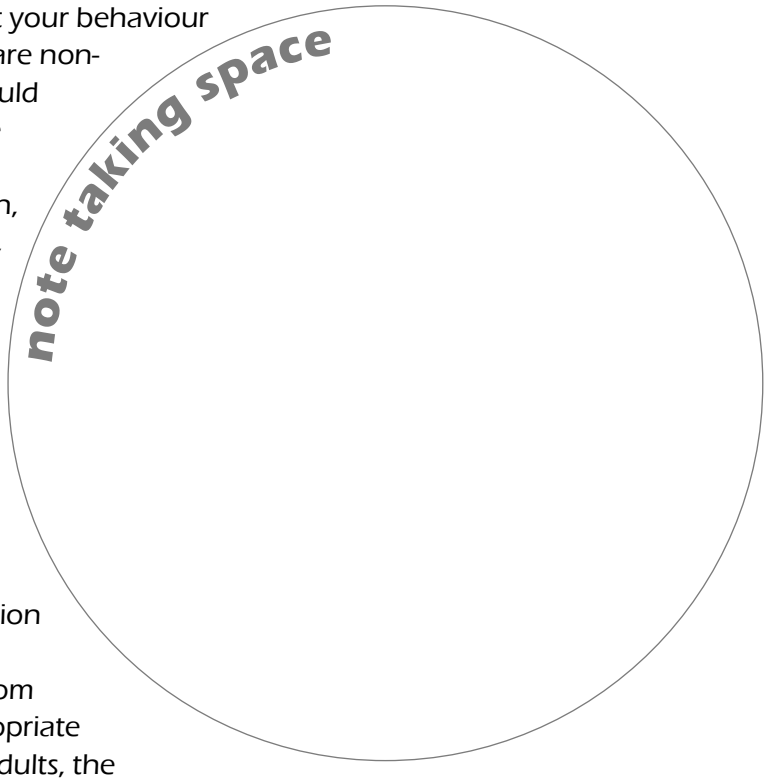


- It is worth considering insurance issues. If you are using your car for any aspect of the program, you will need to check with your insurer about how this type of activity affects your policy. If you are using the new driver's car, they need to have appropriate registration and insurance and you still might want to consider obtaining public-risk insurance if you are coaching professionally. If you are part of a larger program, the program should look after this, but it is worth checking.

- If there are any reasons why you shouldn't be coaching a new driver – such as medical or psychological conditions that might increase the risk to the new driver – don't take up coaching... at least not until you have the all-clear from an appropriate health practitioner.

- There is no need for physical contact between you and the new driver. There is really no situation where it would be necessary to touch the new driver while involved in coaching, so don't. This may seem overly cautious, but the risk of physical contact being misinterpreted – either by the new driver or by others – is very real.

- You need to ensure that your behaviour and the things you say are non-discriminatory. You should treat any new driver the same as anyone else regardless of their health, gender, religious beliefs, racial or cultural background, language skills, impairments, or sexual preferences. You should not make any comments about other people or situations that could be construed as having overtones of discrimination based on any of these characteristics. Apart from needing to model appropriate behaviour to younger adults, the likelihood of offending someone by engaging in this type of behaviour is very high, and your role is to coach a new driver as effectively as possible – offending them won't help.



- You need to ensure that you don't make comments about the new driver's physical characteristics or clothing. While comments of this type may be common amongst friends, the relationship between you and the new driver is not a friendship of equals. The coaching relationship is based on greater equality than an expert-student relationship, but it is not a friendship. Inappropriate comments of this type are not acceptable and may be taken to mean something that was not intended.

- Don't allow yourself to be out of some level of public gaze when working with a new driver. You would not, for example, have a one-to-one discussion with a new driver in a room with a closed door. There is no need for this in a coaching relationship, and the potential risk to you and the new driver is substantial. If there is a need for some form of counseling intervention, you should refer the new driver to an appropriate professional.

- Your focus – both overt and subtle – should be on the new driver's driving. Discussion should relate mostly to this – although it will obviously include some discussion of general background and day-to-day issues as part of the normal building of rapport between coach and driver. Discussion of personal issues (such as relationships with family, boyfriend/girlfriend issues and so on) does not belong in this type of relationship, and – falling into a sexist attitude here, but probably justifiably – male coaches working with female new drivers need to keep the inappropriate glances under control. Having the new driver see you as a sleazy older man doesn't do a lot for your effectiveness as a driving coach.

Conclusions

You are involved in a task that should help save lives and reduce some of the awful suffering associated with crash involvement. The task can be rewarding and a lot of fun, and the opportunity to make a real difference to new drivers and the broader community is attractive.

The important thing is to make sure you do it right – that you do the work of a coach and that you do it well... and that you avoid taking on the less-effective role of an instructor. Hopefully the contents of this booklet will be useful to you as you do your bit for road safety.

Good luck.

APPENDIX D: Novice Driver Coaching Program: Audit Procedure

Novice Driver

Coaching Program

Auditing Procedure

DCS Consultants Pty Ltd
for
RCSC Services
2004

Contents

1. Purpose and Scope

1.2. The purpose of this document is to detail the auditing procedure required to ensure that the Novice Driver Coaching Program is being administered accurately and consistently.
1.3. This procedure covers all activities and administration associated with delivery of the program.

2. Definitions

2.1. Program Managers - Organisation managing the trial program on behalf of the ATSB
2.2. ATSB - Australian Transport Safety Bureau
2.3. Coach - Person authorised to conduct the program
2.4. Novice - Person participating in the program as part of the trial treatment group
2.5. Training aids - material or equipment approved to be used in the program
2.6. Regular Audits - audits that are notified and prearranged
2.7. Irregular Audits - audits that are unannounced and not pre-arranged (the result of identified trends of concern or complaints)
2.8. Activity Listings - Coach schedule for the program activities

3. References

3.1. Novice Driver Training Program
3.2. Coaches Resource Package
3.3. Novice Driver Coaching and Training Program

4. Responsibilities

4.1. The Program Managers are responsible for arranging audits.
4.2. Auditors will be selected by the Program Managers and trained to conduct audits. Auditors will be selected from the initial Coaching group.
4.3. Auditors are responsible for conducting audits under the direction of the Program Managers and adhering to the criteria of the program and this procedure.
4.4. Coaches are responsible for cooperating with the auditors and Program Managers.
4.5. Program participants are responsible for permitting program auditors to accompanying Coaches in the participant's vehicles for audit purposes.

5. Method

5.1. General
5.1.1. This audit procedure is designed to monitor Coach performance in delivering the Novice Driver Training Program to ensure consistent and accurate delivery of the program.
5.1.2. All aspects of the program and the Coach's performance will be monitored throughout the trial, and records will be maintained of all audit observations.
5.1.3. Coaches will be counselled as a result of audit findings and appropriate feedback provided.
5.1.4. Audits will be conducted at regular and irregular intervals in order to establish areas that require immediate action to ensure the program and the Coaches are delivering the desired outcomes.

5.1.5. Coach's activity listings will be established to ensure audits can be achieved.

5.2. Audit Items

5.2.1. The following list of audit items apply to this procedure:

- Administration Records
- Conduct of classroom activities
- Conduct of in-vehicle activities
- Conduct of Feedback activities

5.3. Administration Records

5.3.1. All Coach and participant records, diaries, assessments and feed back sheets in paper-based and electronic format will be audited to ensure accuracy, content, legibility and completeness.

5.4. Classroom Activities

5.4.1. Coaches will be audited on the conduct of the discussion session by ensuring that they adhere to the program guidelines and promote participation by the Novices. Coaches are **not** to lecture.

5.4.2. Use of training aids will be assessed to ensure that they are used appropriately and in the context of the discussion. Only the program approved training aids are to be used.

5.4.3. Timings will also be audited to ensure that the Coach adheres to the program timings and allows ample time for discussion.

5.4.4. Coaches should encourage the participants to relate their experiences and not relate their own except to encourage the participation of the Novices.

5.4.5. Use of whiteboards should be legible and pertinent to the discussion and not overused.

5.4.6. Listening and answering techniques will also be audited.

5.5. In-vehicle Activities

5.5.1. The process of Roadworthy check and recording of odometer readings will be audited. Feedback to the Novice will be noted to ensure accuracy, and that it only relates to the checklist.

5.5.2. Coaches will be audited on their modelling techniques, for adherence to the program guidelines and safe driving practices.

5.5.3. The Coach's ability to direct the Novice and offer advice and appropriate feedback will be noted.

5.5.4. Calmness and adult learning techniques will be noted to ensure the Coach does not develop an inappropriate instructor/student relationship. The importance of developing and maintaining a coach/mentoring relationship with the Novice is paramount to the success of the program.

5.5.5. The Coach must apply the appropriate coaching methods to highlight risk management techniques, such as using suitable questioning techniques rather than instructing.

5.6. Feedback Activities

5.6.1. At predetermined times, Coaches will be audited on their feedback techniques in all sessions of the program to ensure that they are supplying and obtaining the optimum information.

6. Documentation

6.1. Audit Checklist

Audit Checklist

Item No.	Description	Competent Y/N	Observations	Recommendations
1	Administration ▪ Records ▪ Diaries ▪ Assessment sheets ▪ Feedback Sheets			
2	Classroom activities ▪ Technique for promoting discussion ▪ Training Aids ▪ Timing ▪ Non-overuse of self experiences ▪ Use of Whiteboard ▪ Listening/Answering technique			

3	In-vehicle activities ▪ Roadworthy check ▪ Modelling technique ▪ Directional and feedback technique ▪ Calmness and adult learning techniques ▪ Training technique ▪ Questioning technique			
4	Feedback activities ▪ Questioning technique ▪ Recording			

Coach Name **Type of Audit** **Standard/Specific**
(Cross out one that does not apply)

Auditor Name **Signature**

Date

APPENDIX E: Development of Novice Driver Education/Development Curriculum: Recommended Evaluation Plan

DEVELOPMENT OF NOVICE DRIVER EDUCATION/DEVELOPMENT CURRICULUM

RECOMMENDED EVALUATION PLAN

Prepared for ATSB

by

Warren Harrison
Eastern Professional Services Pty Ltd

&

Dr Ron Christie
RCSC Services Pty Ltd

2004

EXECUTIVE SUMMARY

This document was prepared to make recommendations for a potential evaluation of the novice driver coaching program developed for the Australian Transport Safety Bureau. It discusses the characteristics of a scientifically sound evaluation and their implications for the proposed evaluation. It then proposes an evaluation plan that could be used as the basis for developing a detailed evaluation method.

The main recommendations were:

- The use of an experimental research design to compare a group of novice drivers involved in the program with a control group of novice drivers not involved in the program.
- Random allocation of group membership from a single sample of volunteers for the program.
- A minimum sample size of 5,500 novice drivers in each of the two groups to ensure sufficient statistical power, and preferably more in each group if possible.
- The use of self-reported crash involvement as the main outcome measure, and the use of questionnaire data and official crash and offence data as additional measures.
- Data analysis to be based around multivariate survival-analysis methods to make use of time-to-collision information collected from participants.
- Minimising the potential for researcher bias or other influences by separating data collection and implementation of the program as far as possible, and by making data available to researchers to conduct independent analyses of program effects.

It is also recommended that a statistician be invited to provide an independent estimate of the minimum sample size, and that development of a detailed evaluation method be undertaken with advice from a broad range of young-driver and evaluation experts.

BACKGROUND

The Australian Transport Safety Bureau (ATSB) commissioned RCSC Services Pty Ltd (and through it, Eastern Professional Services Pty Ltd and DCS Consultants Pty Ltd) to develop the structure and content for an education program for novice drivers with at least six months of driving experience. In addition to this, the consultants were asked to present an evaluation plan should it be possible for ATSB to commission a trial of the program in one or more States.

The recommended evaluation plan is not a detailed description of an evaluation method, as the final form of the evaluation will depend on its location, implementation method, and the number of participants. It is recommended that the final evaluation plan should be developed with input from a number of people with evaluation and novice-driver expertise to ensure that the method is scientifically sound and has broad acceptance.

THE PROGRAM

The program structure includes the following:

- An initial in-car assessment of basic driving and traffic skills based on the Land Transport Safety Authority (LTSA) New Zealand, Full Licence Test (FLT).
- The possibility of having participants complete questionnaire measures prior to the program.
- One-to-one feedback sessions with a coach in daytime and night-time driving conditions, each of one-hour's duration and each requiring that the participant drive to a given destination and then return to the starting point.
- Small-group discussion conducted in situ (eg in a vehicle in the vicinity of a traffic situation/location under discussion by the group) incorporating observation of potential problem situations and observation/discussion of drive-throughs by the coach.
- Small-group discussion conducted in a classroom situation,
- Follow-up one-to-one feedback sessions on-road/in-vehicle with a coach in daytime and night-time driving conditions, each of one-hour and each requiring that the participant drive to a destination and then return to the starting point.
- Follow-up telephone contact with participants.

ISSUES

If the program developed for ATSB is to be evaluated in a large-scale, crash-based study, is it important that the evaluation be conducted using scientifically sound methods. Such a study will provide new evidence concerning driver education and training that will have significant implications for licensing and road safety policy both here and overseas. For this reason, it is strongly recommended that any trial or initial implementation of the program be conducted so that it is possible to draw unambiguous conclusions about the effects of the program on crash involvement.

Nathan and Gorman (1998) proposed a system of classification for evaluations of behaviour-change and treatment programs based on the strength of evidence that can be derived from different research methods. Their system divides evaluations into six categories. The weakest evidence is derived from studies that describe a program and present an opinion as to its effectiveness. Literature reviews without secondary analysis of data fall into the second lowest category as they are subject to the theoretical viewpoint of the authors.

The highest category in Nathan and Gorman's scheme is the so-called randomised controlled trial, a prospective research method that involves:

> "… comparison groups with random assignment, blinded assessments, clear presentation of exclusion and inclusion criteria, state-of-the-art diagnostic methods, adequate sample size to offer statistical power, and clearly described statistical methods." (p. x)

The relevance of each of these requirements is as follows:

- **Comparison groups with random assignment:** The randomised controlled trial is based on the experimental method. Use of this method makes it possible to draw strong conclusions about the effect of an intervention on behaviour because it involves comparison of the effects of the intervention with any changes that occur in the absence of the intervention, and because it attempts to control for many non-intervention effects by averaging them across comparison groups (Bell & Staines, 1979).

  Bell and Staines (1979) noted that the conclusions drawn about the effect of an intervention depend on the comparison group used. Where an experiment compares one group subjected to a treatment with a group subjected to nothing, the study provides information about the effect of exposure to the treatment relative to no treatment, and says nothing about the specific aspects of the treatment that may have contributed to any effect, including the potential placebo effects or demand characteristics that might cause a behavioural response to exposure to the program but that do not depend on that particular program. Controlling for this placebo effect requires that the control group be exposed to some intervention that is similar to the actual intervention or program in its demand characteristics or placebo effect, but that excludes the specific characteristics of the program that are believed to lead to the behaviour change.

  Ideally, an evaluation of a program or intervention would use multiple control groups to assess the effect of the program against different conditions. It might use a no-treatment control to assess behavioural changes relative to the current situation, and might include one or more placebo controls that allow an assessment of critical features of the program. In the proposed evaluation of the proposed ATSB program, the likely cost of multiple control groups would be very high and it might be difficult to find sufficient participants to populate more than one control group (see sample size estimates later). If it is only possible to use a single control group, it is recommended that a no-treatment group be used for the following reasons:

  - The program needs to be assessed against the current situation, where no evidence-based program of any type is available for novice drivers.
  - The program needs to be assessed in a way that will allow an increase in crash risk to be detected, compared to the current situation where there are no programs.
  - It would be difficult to implement a single placebo control group when there is still some uncertainty about the critical features of the proposed program.
  - A placebo control group may need to include some on-road components, raising an ethical concern in that the on-road components would need to be conducted without providing feedback to control group members. If their behaviour is risky during these on-road components, it may be ethically wrong to restrict feedback.

  Random assignment of participants to groups is a key feature of the experimental method and of randomised controlled trials because it makes it unlikely that there will be any systematic differences between the program group and the control group. If there are systematic

differences (e.g. if the program group are volunteers and the control group is selected from a licensing database and tracked without having to volunteer), any differences between outcomes could be the result of the differences between groups at the start of the evaluation (Aronson, Wilson, & Brewer, 1998; Bell and Staines, 1979).

For the proposed evaluation of the ATSB program, this means that all participants should be volunteers or selected using a single recruitment method, and then once they have agreed to take part in a study they should then be randomly assigned to the two groups. This does not completely equate the groups because it is possible that exposure to the program will cause more or less members of the program group to drop out of the study, but the random-allocation approach is the best way to ensure that systematic biases are minimised.

- **Blinded Assessments:** Any evaluation that relies on outcome measures collected through an assessment activity or mechanism involving the research team is best conducted by someone who is blind to the group membership of participants (Aronson, Wilson, & Brewer, 1998). This is to ensure that the assessment outcomes are not influenced by expectations or more-subtle factors that could bias the outcome measures. This should not be a significant problem if the proposed ATSB evaluation is limited to crash-based measures. If police-reported data are used, there is little opportunity for experimenter biases to influence data collection. If self-reported data are used and collected using a survey methodology, it would be important to collect these data independently – perhaps by outsourcing the task to another research organisation without providing information about the program or involvement of participants.

  The need for a blind assessment process would be more important if behavioural measures were used for the evaluation. In this case it would be advisable to use a separate team of behavioural assessors to collect measures of driving behaviour – but even this may not prevent the assessors becoming aware of group membership for each participant as a result of general conversation while undertaking the assessment. The difficulties of ensuring a blind assessment argues against attempting to incorporate a behavioural assessment in the proposed research project as any differences between the two groups could not easily be ascribed to the effect of the program.

- **Clear presentation of inclusion and exclusion criteria:** This issue relates most strongly to clinical trials of treatments where it is important to draw specific conclusions about treatment effects in relation to a particular population (Nathan and Gorman, 1998) but has some importance here. The results of an experimental evaluation of the ATSB program can only be generalised to the population of novice drivers that meet the inclusion criteria for the study. It would be necessary to take this into account when assessing the potential value of the program. If, for example, inclusion in the study was limited to 18-19 year old drivers in the Sydney metropolitan area, the results could not be generalised easily to older (or younger) drivers, drivers in rural areas, or drivers in other jurisdictions. Indeed, with inclusion criteria of this type it would be difficult to justify implementing a program in rural areas. This will be a problem for the ATSB evaluation if it is conducted in one State only, especially if the licensing context in that State differs markedly from other States. It might not be as easy, for example, to generalise from a study that includes only Victorian novice drivers to other States because of the higher licensing age in Victoria.

  The implication of this for the ATSB evaluation is that the inclusion criteria would need to be as broad as possible, and would need to be well-understood when interpreting the policy-implications of the results.

- **State-of-the-art diagnostic methods:** This issue is also related to clinical trials, and specifically concerns inclusion criteria for evaluations of treatments. In that context, it is important to ensure that people included in an evaluation meet the inclusion criteria, which often relate to specific diagnostic categories.

  In the proposed ATSB evaluation, it needs to be noted that the program includes an initial assessment of basic driving skill based on the Land Transport Safety Authority (LTSA) New Zealand, Full Licence Test (FLT) – see Christie et al (1998) and LTSA website for details – www.ltsa.govt.nz. The purpose of this is to meet an exclusion criterion for the program (rather than the evaluation) that requires that participants have a basic level of on-road, car-control skill. The assessment acts as a diagnostic tool, and its use to meet the exclusion criterion assumes that it is a reliable and valid tool for assessing this aspect of driving skill. This issue is less important for the evaluation than for the program itself, but the absence of information about the reliability and validity of the assessment tool means that there will be some uncertainty about this exclusion criterion when considering the effectiveness of the program. Rather than concluding that the program has a particular effect (or no effect) on drivers with basic car-control skills, it will be necessary to conclude that it has its effect on drivers who have passed the initial assessment phase.

- **Adequate sample size:** This is an issue of critical importance in the proposed ATSB evaluation, as the outcome being measured in the two groups (crash involvement) is a relatively rare event. An inadequate sample size will mean that statistical analysis of the outcome data may not detect a small program effect. The appendix to this document presents the results of a series of analyses that attempted to determine an appropriate minimum sample size, using two distinct methods and, within one of them, different statistical techniques.

  The outcomes of this were reasonably consistent – leading to a recommendation that the proposed evaluation use self-reported crashes as an outcome measure and a sample size of at least 5,500 in each of the two groups.

  It needs to be stressed that a sample size that is smaller than this will be inadequate to detect small (say, 10%) program effects. If the new program were to increase crash risk by this amount, for example, an evaluation with an inadequate sample size would have to conclude that the program did not have an effect on crash involvement. In the current environment where there is still a strong push for driver training programs, the policy implications of an inadequate study would be substantial.

  It is recommended, however, that ATSB seek independent advice and that this advice be given "blind" to the advice provided here.

- **Clearly described statistical methods:** This is important for assessing the results of an evaluation after the event (Nathan and Gorman, 1998). In the present context it might be more reasonable to require the selection of an appropriate statistical method beforehand as well as a clear description after the event. As noted in the appendix, there are a few statistical techniques that could be applied in an experimental design that uses a measure of crash involvement as an outcome. While there are most likely arguments in favour of each, it is recommended here that a survival-analysis method be used as the primary analysis technique. The Proportional Hazard or Cox regression technique is similar to a multivariate regression technique, but uses the time to first collision as an outcome measure while taking into account the censoring of data for those drivers who have not had a collision in the evaluation period (see Fox, 2002, for detailed treatment of this technique in terms of one statistical package). It is recommended that this technique be used as it makes use of the time to collision as well as the existence of a collision, and it allows the inclusion of potential predictors to assess interactions between program involvement and other factors.

Regardless of the statistical method used, it is strongly recommended that the method be selected during the planning of the evaluation and not once the data have been collected. There are numerous examples of evaluation studies where statistical decisions have been made after the planned analysis method failed to produce the expected or desired response. This post hoc selection of a statistical method that generates results that are closer to those expected by the research team should not be permitted.

OUTLINE OF METHOD

Given the issues discussed above, it is recommended that the evaluation focus on the crash-effects of the program as the primary outcome measure, in the context of an experimental research design.

Design

The fundamental requirement is that the evaluation be conducted using a sound scientific method that enables a clear conclusion to be drawn about the causal relationship between participation in the program and crash involvement. This means that the evaluation must use an experimental method comparing a control group with a treatment or experimental group, and as noted above that assignment of participants to the two groups should be random, constrained only by the requirement that groups have about equal numbers.

The simplest evaluation design that meets these requirements is one in which one group of participants undertakes the novice driver program and the other group does nothing in relation to the program. The potential value of this no-treatment control group compared to a placebo control group was discussed earlier, and for the reasons outlined here it is recommended that a no-treatment control group be used here. This simple design would provide an assessment of the effect of participation in the program on the outcome measures compared to the current situation for novice drivers where there is no program of this type. It therefore provides an estimate of the effect of introducing the program that could be generalised across novice drivers assuming an effective sampling method is used and that the sample is representative of the broader population.

Crash Evaluation

The program should be evaluated in terms of changes in crash involvement. The program has been developed as a potential road safety measure, and any resource expenditure on this program will most likely reduce the resources available for other road safety programs. It is essential, therefore, that the program be assessed in terms of changes in actual safety rather than changes in some alternative, surrogate measure such as knowledge, attitudes, or behaviour. Some of these may be useful as additional measures, but they should not be used as the basis for drawing conclusions about the value of the program.

Crash data should come from two sources:

- Police-reported crash data obtained for participants (control and experimental group members) for at least a one-year period following participation in the program. A longer follow-up period could be considered.

- Follow-up data-collection interviews conducted (by telephone) with treatment and control participants at four-month intervals to collect self-reported crash and other data. A minimum of twelve months should be used, with a longer period adding to the statistical power of the evaluation. As an alternative, a single telephone interview could be used after twelve months, but recall of offence, crash, and near-miss data might be poor.

The focus of the evaluation should be the self-reported crash data to maximise the statistical power of the analysis (see later section), with the police-reported crash data can be used to assess the reliability of participants' recall. This will be especially important to ensure that the treatment and control group have similar levels of accuracy in relation to recall of the occurrence and timing of any crashes.

As recommended, the self-reported crash data should be analysed using the proportional hazards (or Cox) regression technique It would also be useful to undertake additional analyses to assess any changes in crash severity resulting from involvement in the program and, if the data allow, to undertake specific analyses of changes in subtypes of crashes that might be related to specific behaviours – such as excessive speed or following too closely. In both cases, however, undertaking additional analyses will depend on the quality and quantity of data.

Questionnaire Data

It is recommended that initial and follow-up questionnaires be completed by members of the two groups. Control group members could be informed that they are part of an attitude-survey project or something similar. The questionnaires should include a version of the Driver Behaviour Questionnaire developed by Reason (Reason et al., 1990) and since adapted for a number of studies locally and overseas (e.g. Mesken et al., 2002). This questionnaire includes scales that have been validated against measures of crash involvement. The questionnaires should also include items relating to driving behaviours and consequences, such as crash involvement and detection for traffic offences. It is also recommended that exposure data be collected to include in the analyses as covariates. These data should be collected as self-report estimates.

Comparison of the two groups (before and after) will provide an indication of any program effects on questionnaire measures. Statistical techniques should be selected to match the characteristics of the data.

In addition to their use as potential predictors in the regression analysis, the exposure data should be used to assess any changes in the amount or type of driving resulting from participation in the program. If the program results in an increase in driving activity, this could have negative consequences for safety.

The data will also provide an opportunity to assess the possibility that some groups of drivers benefit more than others from the program – but it should be noted that these analyses will be less statistically powerful than the overall analysis of the effect of the program.

Questionnaire data should include self-reported offence-related information. This could also be compared with official records as an additional reliability and recall check, and would provide an additional behavioural measure for comparison between the two groups. Offence data cannot be used as an unambiguous measure of program effects as the number of offences detected for a driver can relate to many factors including Police enforcement policies and practices, but the ability to further validate self-report measures will give a stronger sense of the reliability of self-report as it relates to recollections of negative events such as crash involvement.

Observational Data

The proposed use of a design that includes a no-treatment control group means that it will not be possible to collect observational data from control group members. This means that it will not be possible to compare any changes in driving behaviour observed amongst program participants during the feedback drives to similarly-observed changes in members of the control group. Although this limits the value of observational data, the collection of these data is part of the program itself so it is recommended that they be used in the evaluation.

Observational data collected from the program participants could be used as a general measure of behavioural changes over the course of the program, but the lack of a comparison group means that it would not be possible to draw any strong conclusions about the causal effect of the program. The observational data would be useful, however, should the evaluation results be unclear. If, for example, the results suggest that the program has no effect on crash outcomes, it would be useful to assess the observational data to determine if there were any observable changes in driver behaviour amongst participants.

The observational data might also be useful to investigate any differential program effects. If the crash data suggest that the program is effective for one group of novice drivers but not others, it might be possible to investigate any differences in changes in observed driving behaviour between these groups.

Collection of observational data could make use of the monitoring and feedback forms in the Program Guide – the data collected as part of the coaching process should be sufficient to assess any overall changes in performance. Observational data should be treated as an additional source of information only, as it is not possible to analyse these under the experimental evaluation design discussed earlier.

Sample Size and Characteristics (Inclusion and Exclusion Criteria)

The sample should be composed of young, novice drivers with at least 6 months experience as a solo driver, and who are under the age of 21 years at the time of joining the program. Participants should be paid for their involvement in the program (with an amount sufficiently motivating to ensure a high level of enrolment in the program[1]), and will be divided randomly into the two, equal-sized groups.

Power calculations were conducted using three different methods as outlined in the Appendix to this document. The calculations assume a treatment group and a single control group with about-equal numbers and two-tailed testing. It is recommended that a sample size of at least 6,000 participants in each of the two groups be included in the study, with a preference for a sample size of 7,000 in each.

As noted earlier, it is recommended that the Australian Transport Safety Bureau (ATSB) engage a suitably qualified and experienced statistician to provide a second-opinion in respect of sample size and power issues as a preliminary to any evaluation study. This would be prudent given the considerable amounts of time, money and resources that would need to be allocated to the proposed crash-based evaluation.

EVALUATION TRANSPARENCY

A key issue that needs to be addressed in the proposed evaluation is the potential for the evaluation outcomes to be influenced by the expectations of the evaluation team. It is recommended that the following issues be considered:

[1] It is also proposed that prizes be awarded regularly to program participants as an added bonus. The large sample size required for the evaluation necessitates the use of creative methods to recruit participants and to keep them in the study.

- The team responsible for developing the program is likely to be more successful at implementing it during an evaluation than a group that is less certain about the original intentions of the developers. This argues for an ongoing involvement in the evaluation for the development team, but with a stronger focus on implementation than evaluation.

- There is a risk, however, that the involvement of the developers could be seen as prejudicial to a reliable outcome for the evaluation, or that the perception of bias could lessen the impact of the results when they become available. For this reason, it is important to make use of some strategies to increase the involvement of others in the evaluation.

- The planning of the evaluation method should take into account advice from independent researchers and people with a policy interest in the program to ensure that it is scientifically sound and that it meets the policy needs of relevant jurisdictions. It is recommended that the evaluation method be fully planned in cooperation with representatives of Australian government organisations with carriage of road safety in each jurisdiction, and in cooperation with selected international experts in the novice driver, driver education, and driver behaviour areas. Planning could commence with a workshop, followed by development of a detailed evaluation method and feedback from workshop participants. The focus of this group should be on sound evaluation methods, not the further development of the program.

- The collection of data should be automated as far as possible, should be audited throughout the evaluation, and should be decentralised. If individual coaches are responsible for entering data concerning observations and questionnaire responses into a database, for example, this provides some separation between the implementation/evaluation team and the data entry process. Automated data entry systems could be developed relatively easily for this process. Some data collection – for example the collection of official crash and offence data and the collection of follow-up survey data – could be outsourced to people or organisations with expertise in these areas.

- The analysis of the data should be undertaken by a number of independent evaluation experts in addition to the implementation/evaluation team. The full dataset could be provided to some international evaluation experts with encouragement to analyse it using appropriate methods to assess the effect of the program, with the results of these independent analyses being included in a published final report.

- If concerns about the independence of the evaluation team and the developers are still present despite these measures, it may be necessary to separate the two roles. If this is considered, it would be beneficial to maximise the cooperation between the development/implementation team throughout the evaluation to ensure that the evaluation takes into account development and implementation issues, and that the implementation is undertaken with the needs of the evaluation in mind.

APPENDIX: SAMPLE SIZE CALCULATIONS

Method 1: Sample size based on a formula for statistical power

The first calculations were undertaken as follows, based on Catellier (2003):

- Assume analysis with the log-rank test to compare the proportions of participants with crash involvement in the two groups after one year of post-program driving. This might be more conservative than the likely analysis using the Cox regression technique, but making this assumption ensures that it will be possible to use this (simpler, non-parametric) technique should the need arise.

- Assume a type I error rate of .05, and assume two-tailed testing to ensure any increases in crash risk can be detected.

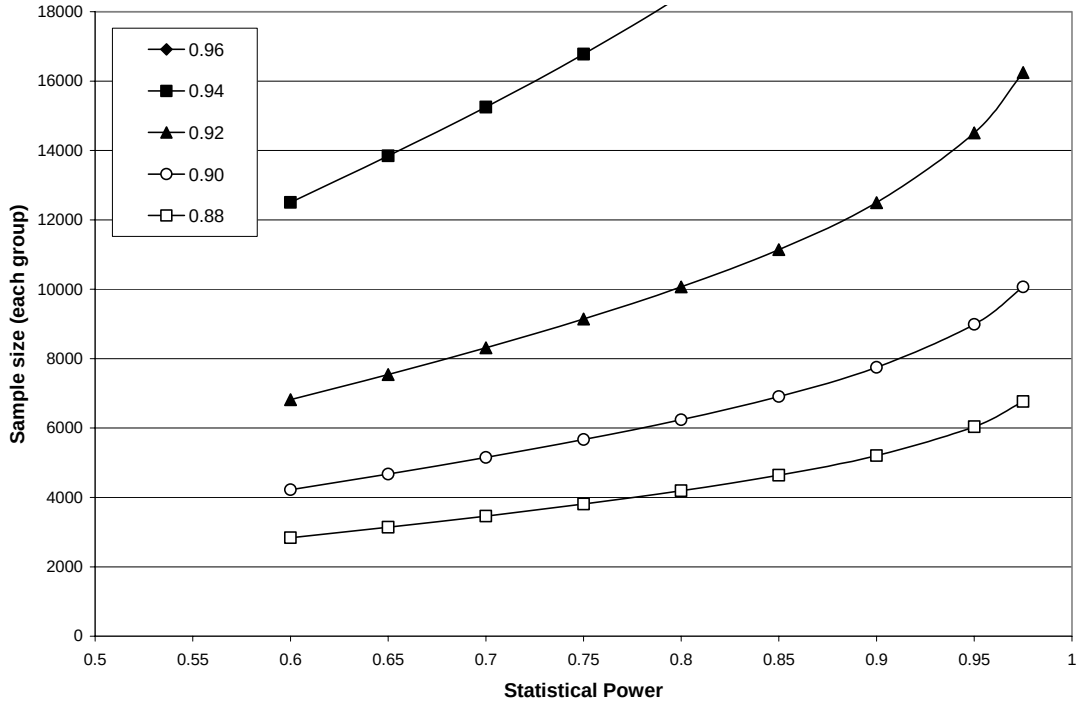
- Assume that after one year of follow-up, 95% of the sample are still crash free (based on NSW estimates in this case. Victorian estimates were used for subsequent calculations).

- The sample size for each group is:

$$n = \frac{\left(z_{\alpha/2} + z_{\beta}\right)^2 (h+1)^2}{(2 - p_1 - p_2)(h-1)^2}$$

where h is the hazard ratio
p1 and p2 are the proportions of participants crash free after 1 year

- This equation was applied to different hazard ratios to estimate the required sample size to detect changes in crash involvement. The results are shown in the following graph for hazard ratios of 0.88 to 0.94. These correspond to reductions in crash involvement in the treatment group of 12% to 6%.



A sample size of 6,000 in each group gives 77% certainty of detecting a 10% reduction (or increase) in crash involvement with a type I error rate of .05. A sample of 8,000 in each group gives 91% certainty of detecting the same reduction or increase.

The additional calculations confirm the earlier estimate of about 7,000 participants in each group. It would therefore be recommended that a sample size of 8,000 in each group be set as a target to allow for drop-outs over the course of the study.

Method 2: Monte Carlo studies with different statistical methods

As an alternative to the method used above, a series of so-called Monte-Carlo studies were undertaken to assess the statistical power of different sample sizes, using different statistical methods, under a set of assumptions about the data that would result from the study. The technique was similar to that used by Goldman et al. (1999) and Muthen & Muthen (2002). In both cases, minimum sample sizes were estimated based on repeated simulated statistical tests conducted on large numbers of samples drawn from simulated population data with known characteristics.

The basic approach in these studies was to construct a simulated population dataset based on assumptions about the population to be used in the actual study and treatment effects, and then to draw many random samples for statistical analysis at each of a range of sample sizes to be considered for the study. The statistical power of a test in the context of the proposed evaluation is the probability of detecting a significant program effect in a sample of novice drivers when one is actually present in the population of novice drivers. With a known effect size in the population, the statistical power at that effect size for each sample size is the proportion of statistical tests that achieve statistical significance. The Monte Carlo approach used in Goldman et al. and Muthen and Muthen was applied here to estimate the statistical power for three analysis methods and sample sizes from 2,000 (1,000 in each group) to 16,000 (8,000 in each).

It is proposed to use an experimental method to evaluate the ATSB program, randomly assigning participants to one of two groups – a control group and a program group. It is proposed to use self-reported crashes as an outcome measure, collected one year after program completion. A number of statistical techniques could therefore be used to analyse the resulting data:

- A simple contingency-table analysis could be used to assess the independence of the crash measure (crashed or did not) and involvement in the program (treatment group or control group). This 2 x 2 contingency table would use the chi-squared test statistic, and as participants are randomly assigned to the two groups any dependence between factors will reflect the effect of the program on crash involvement.

- A survival-analysis technique could be used to compare the time until first crash involvement (measured in months after completion of the program) for participants in the two groups, taking into account that a measure of time-to-crash would be "censored" for those participants who do not have a crash in the one-year follow-up period.

- A survival-analysis technique could be used to assess the relationship between a number of predictors (including program involvement as a dichotomous variable) and the time to first crash involvement as a criterion measure, again taking into account censoring of the data series. A method known as Proportional Hazard (or Cox) Regression is available to analyse data in this way.

The population data set

Similar to the approach in Muthen & Muthen (2002), a data set representing the characteristics of novice drivers was created (using Microsoft Excel and then the Statistica data analysis software) to have the following characteristics:

- A population size of 45,500 novice drivers (this limit was defined by limitations in Excel, and is close to the 53,000 18-19 year old first year drivers in Victoria).

- An equal number of males and females assigned alternately through the file.

- An equal number of program participants and non-participants to provide samples of treatment group members and samples of control group members. Group membership was assigned randomly.

- A variable representing learner driver experience with means of 85 hours for males and 75 hours for females, and a standard deviation of 30 hours in each case. These estimates were thought to be consistent with the situation in Victoria and may not apply to other jurisdictions, although the use of this variable here was as a potential additional predictor in some analyses, so the effect of different estimates would not be substantial.

- A variable representing current driving exposure with means of 8.5 hours and 11.5 hours per week for females and males respectively, and a standard deviation of 5 hours in each case. These estimates were based on Victorian survey data collected in the late 1990's.

- The minimum levels of learner experience and current exposure were defined as 0 hours in each case.

- Monthly crash risk over a 12-month period commencing from the sixth month of solo driving (set as the minimum for program involvement) based on the following considerations:

    - An initial (during the first month of solo driving) risk of crash involvement of 0.04. This was based on a first-year risk of crash involvement for self-reported crashes of 0.3 – a conservative estimate reflecting VicRoads data, limited to crashes on road – and a declining risk curve based on VicRoads data for casualty crash involvement amongst novice drivers (see below)(information provided by VicRoads).

- A base risk curve defined initially as a power function (to reflect the involvement of learning processes for new drivers) based on VicRoads data such that the risk of crashing in any month is:

$$Risk = 0.04 \times month^{-0.3057}$$

- The risk curve was then modified to include an effect of experience as a learner (higher levels of learner experience associated with a lower starting risk in the first month of solo driving) and an effect of current exposure (higher levels of exposure associated with a slower decline in risk over time to reflect greater exposure to opportunities to crash). Each effect was applied with a small amount of normally distributed "error" variance:

$$Risk = \frac{0.04}{LearnerExp \times N_{(1,0.0025)}} \times month^{-0.3057 \times Exposure \times N_{(1,0.0025)}}$$

  where LearnerExp and Exposure reflected the Learner Experience and Current Exposure variables described earlier recalculated to have means of 1 and standard deviations of 0.08 and 0.1 respectively, with the exposure variable inverted such that high levels of exposure resulted in an increase in crash risk when included in the power function (see below); and where $N_{(x,y)}$ refers to a normally distributed variable with mean x and variance y.

- The curve was then modified by adding a program effect. Consistent with Finnish findings, but wanting to restrict any program effect to a 10% reduction in crash risk over the twelve-month follow-up period, cases defined as members of the treatment group had their crash risk advanced along the risk curve by four months:

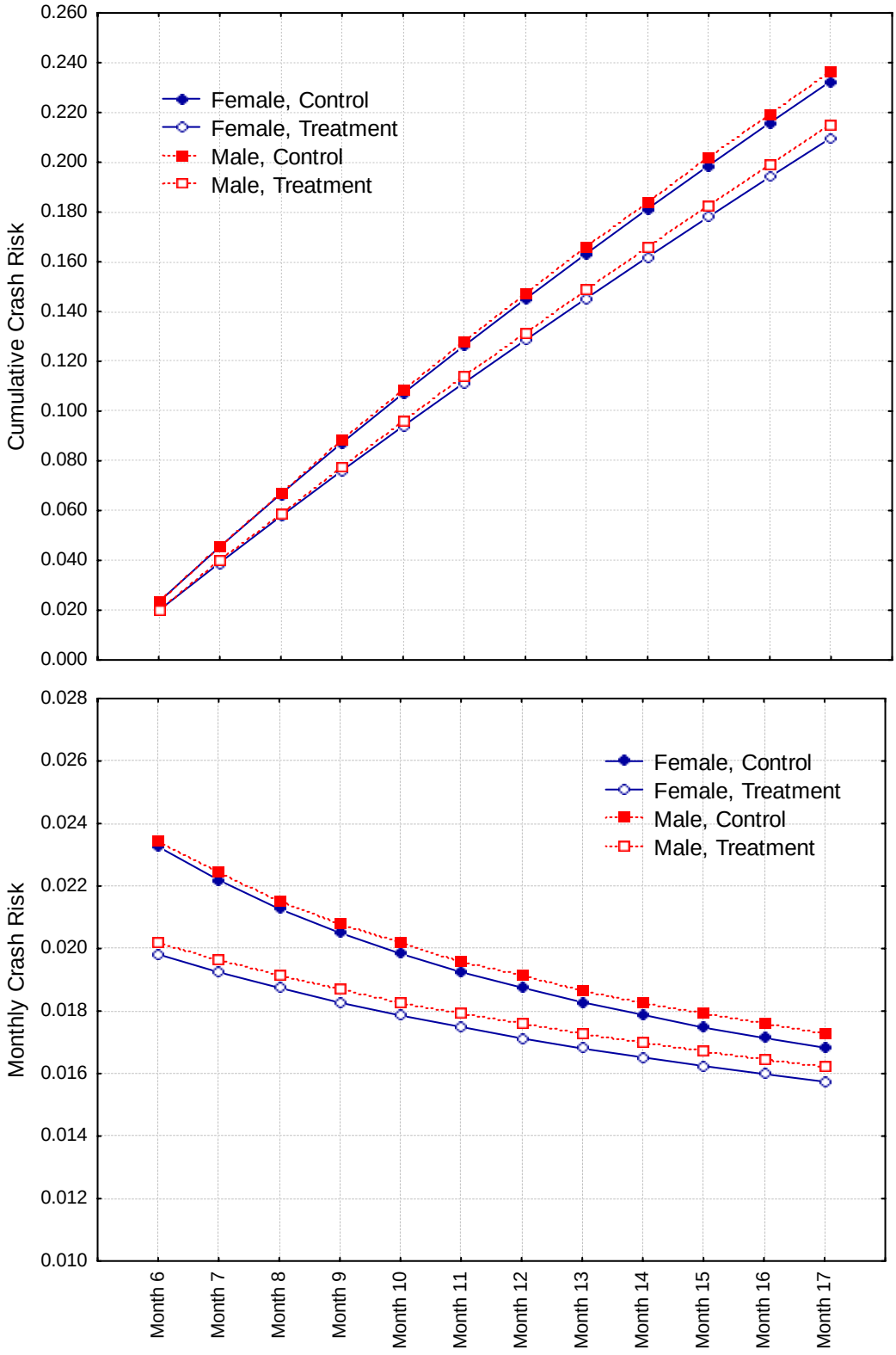
$$Risk\ (treatment) = \frac{0.04}{LearnerExp \times N_{(1,0.0025)}} \times (month+4)^{-0.3057 \times Exposure \times N_{(1,0.0025)}}$$

- The risk of crashing in each month was then used to assign a crash month (or censored data value) for each case by creating a random variable with a flat distribution and comparing this to the cumulative monthly crash risk. The results of this are shown below.

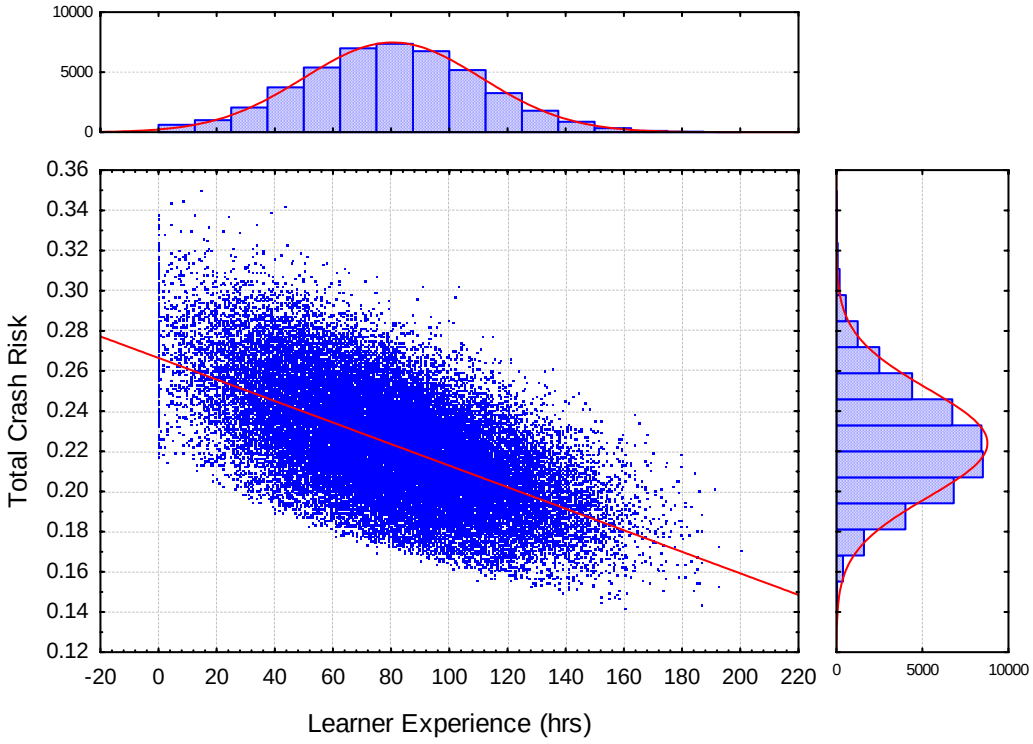
Description of population

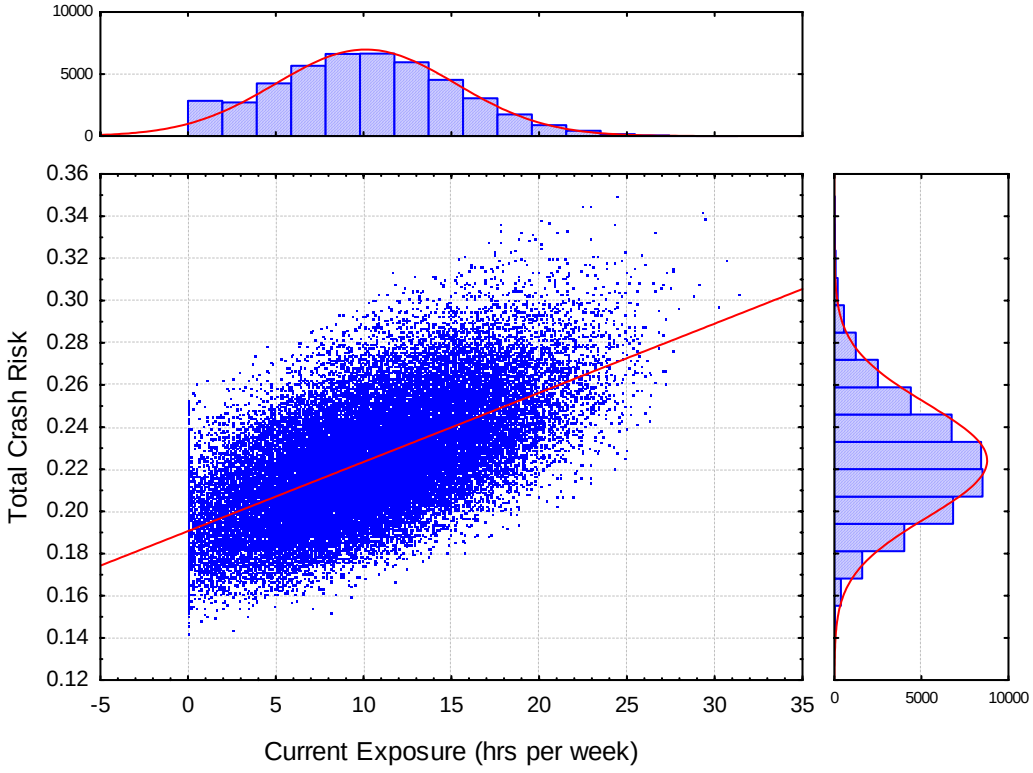
The population file defined as above was analysed to ensure that the simulated population data had the intended characteristics.

The monthly crash risk and cumulative crash risk is shown below disaggregated by program involvement and sex. The treatment group had a mean crash risk equal to the control group's crash risk four months later, as intended. The cumulative crash risk over the 12 month "follow-up" period was 0.235 for control group members, and 0.212 for treatment group members – a difference of 9.8%. The difference was the same for male and female population members – this reflects a simplification of the likely outcomes in a real trial, where males and females may differ in their response to the program.


Cumulative Crash Risk
0.260
0.240
0.220
0.200
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
Female, Control
Female, Treatment
Male, Control
Male, Treatment
Monthly Crash Risk
0.028
0.026
0.024
0.022
0.020
0.018
0.016
0.014
0.012
0.010
Female, Control
Female, Treatment
Male, Control
Male, Treatment
Month 6
Month 7
Month 8
Month 9
Month 10
Month 11
Month 12
Month 13
Month 14
Month 15
Month 16
Month 17

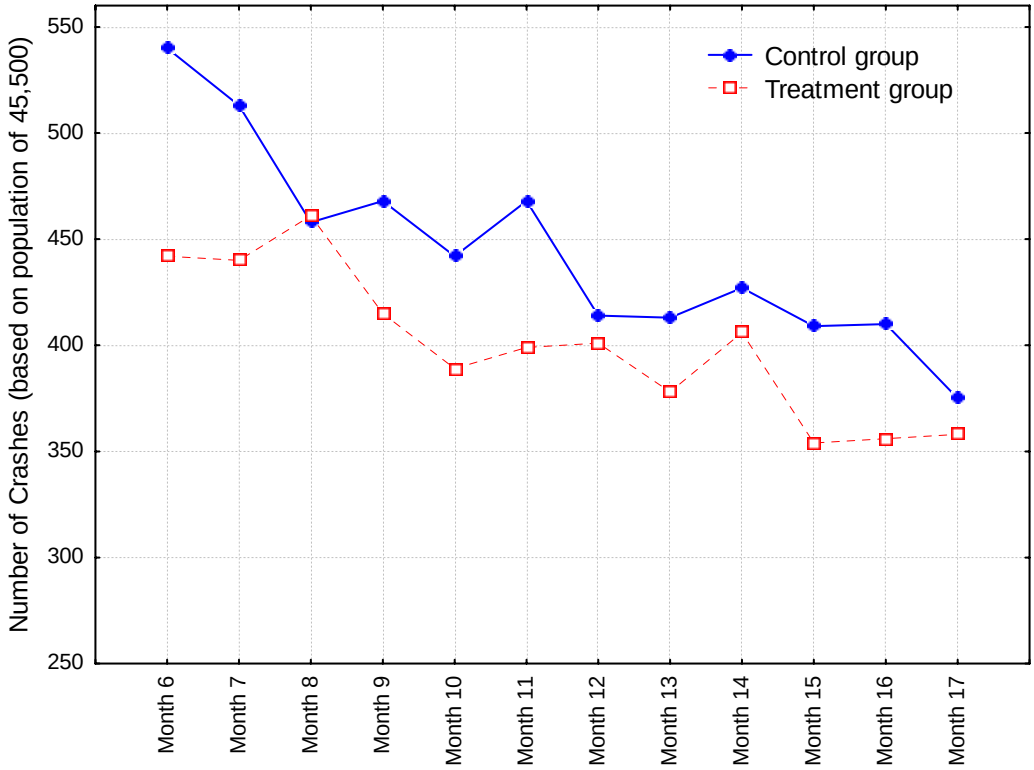
The relationship between learner experience and current exposure and total crash risk over the 12-month follow-up period is shown below.





As intended, learner experience is inversely related to crash risk, and current exposure is positively related to crash risk in the population file.

When the cumulative crash risk was used to simulate crash involvement in the 12-month follow-up period, 23.4% of the control group and 21.2% of the treatment group were recorded as having a crash. The monthly distribution of crashes for the two groups is shown below:



The pattern of crashes over time shows the effects of adding random (error) variation into the creation of "crash" data for the population.

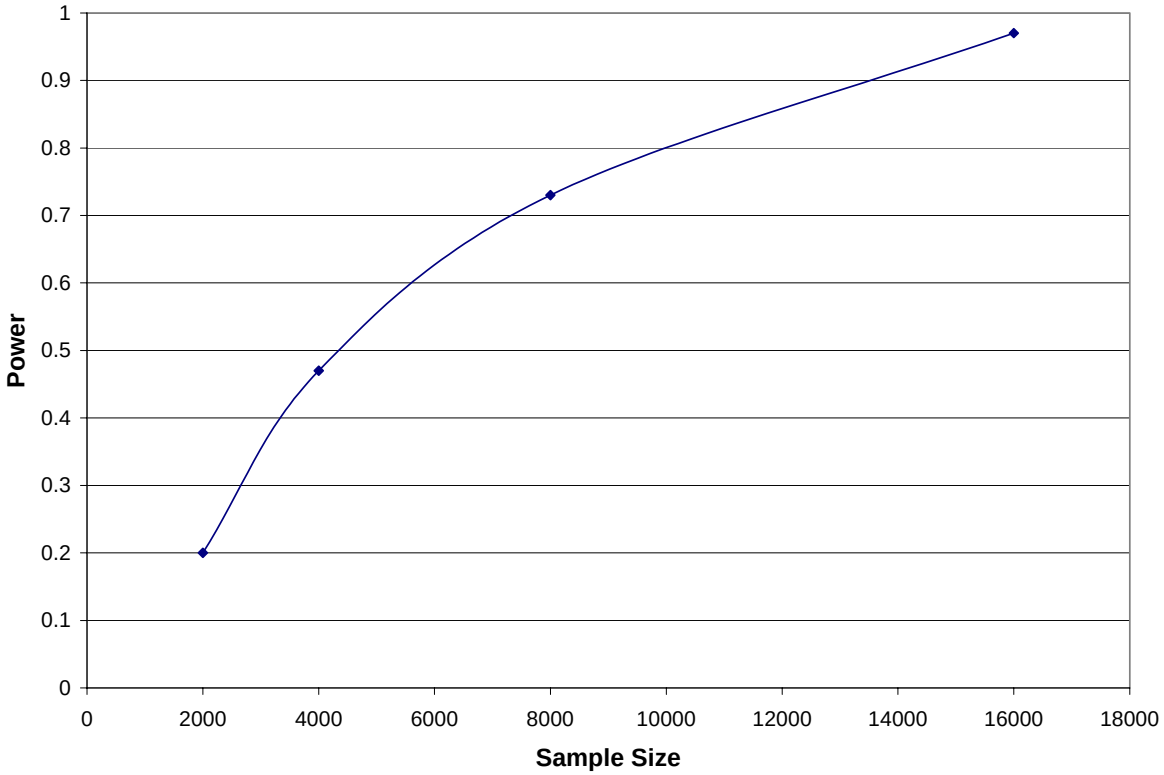
Monte Carlo studies

Contingency-Table Analyses

Thirty simulated experiments were conducted with each of total (treatment plus control) sample sizes of 2000, 4000, 8000, and 16000 drawn at random from the population data file. The data in each experiment were subjected to a two-by-two contingency table analysis under a null hypothesis that crash involvement during the follow-up period (yes or no) was independent of group membership (treatment or control). The number of analyses that would have rejected this null hypothesis and the consequent estimate of statistical power at each sample size is shown below:

N	**Number of times H_0 rejected when false in the population file**	**Estimate of Statistical Power**
2000	6	0.20
4000	14	0.47
8000	22	0.73
16000	29	0.97

These power estimates are graphed below:



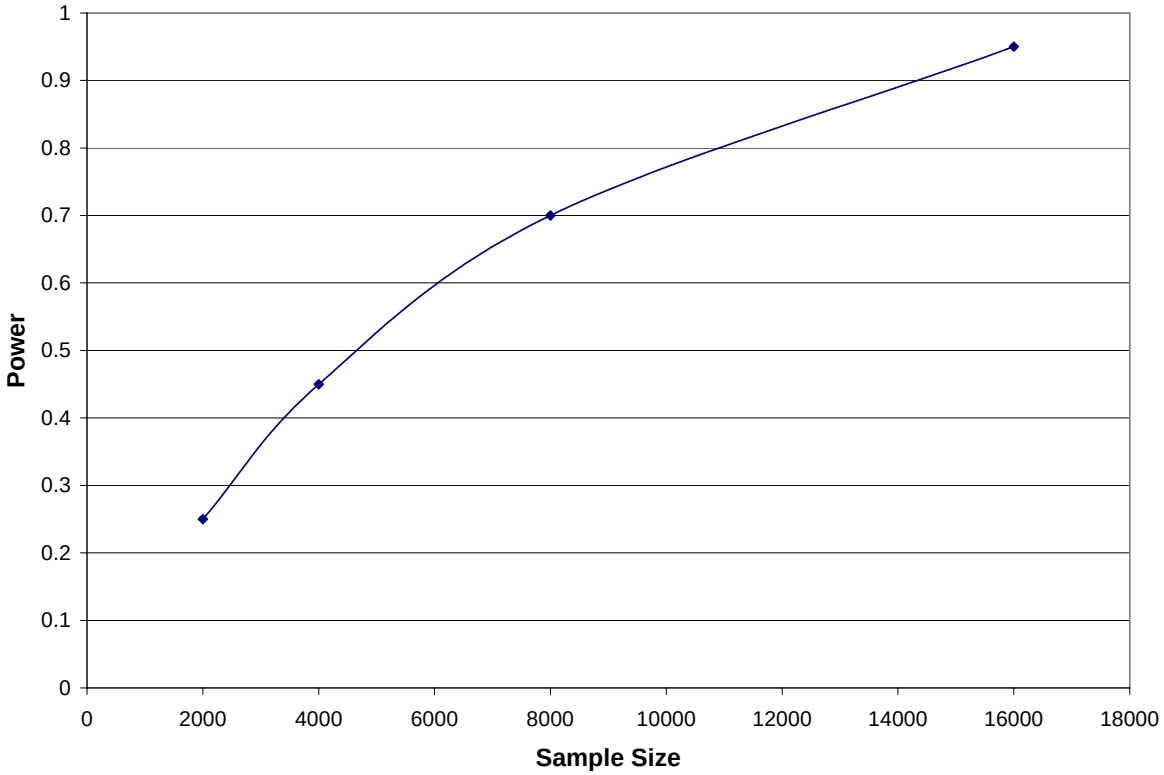
To achieve a statistical power of 0.8 using a 2x2 contingency-table analysis, with a type I error rate of 0.05 and a program effect of about 10%, a total sample size of about 10,000 (or 5,000 per group) would be required. The current estimate of a sample of 14,000 would give statistical power of about 0.9.

Between-Groups Survival Analyses

Twenty simulated experiments were conducted with each of total (treatment plus control) sample sizes of 2000, 4000, 8000, and 16000 drawn at random from the population data file. The data in each experiment were subjected to an analysis of the time-censored month-of-first-crash variable using a survival analysis method under a null hypothesis that survival was independent of group membership (treatment or control). The number of analyses that would have rejected this null hypothesis and the consequent estimate of statistical power at each sample size is shown below:

N	**Number of times H_0 rejected when false in the population file**	**Estimate of Statistical Power**
2000	5	0.25
4000	9	0.45
8000	14	0.70
16000	19	0.95

These power estimates are graphed below:



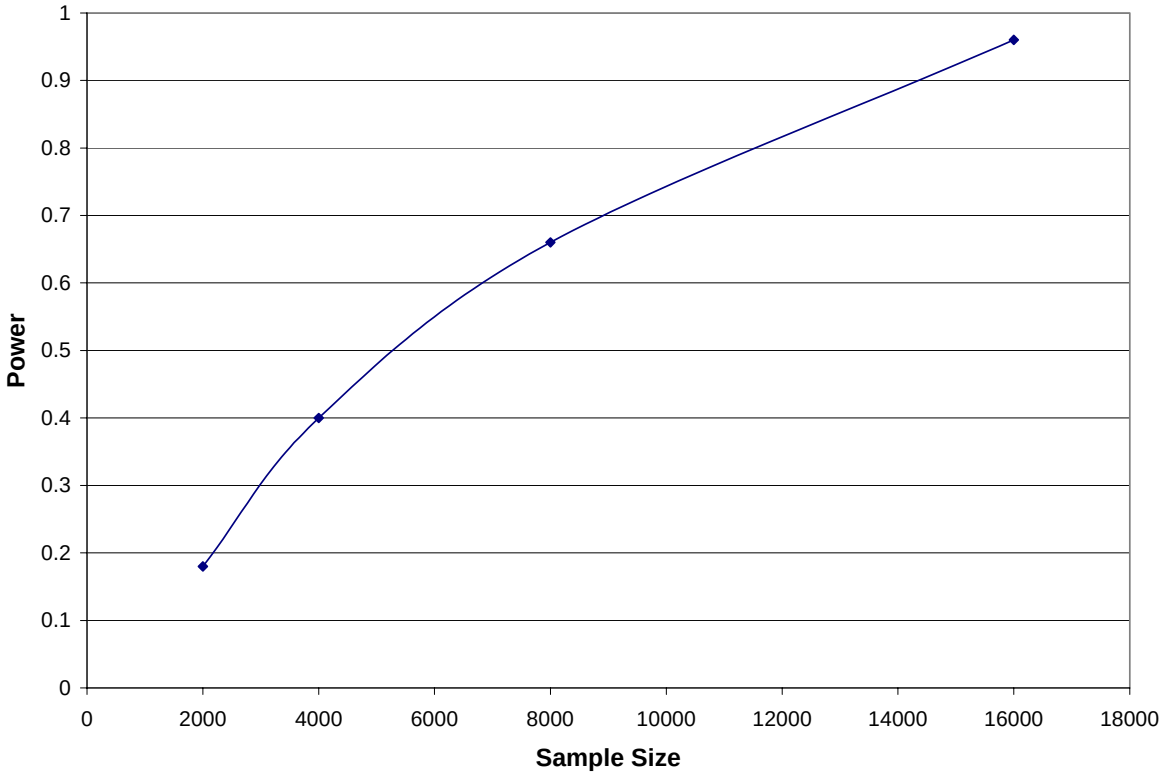
To achieve a statistical power of 0.8 using this method, with a type I error rate of 0.05 and a program effect of about 10%, a total sample size of about 11,000 (or 5,500 per group) would be required. The current estimate of a sample of 14,000 would give statistical power of just under 0.9.

Proportional Hazard Regression

Fifty simulated experiments were conducted with each of total (treatment plus control) sample sizes of 2000, 4000, 8000, and 16000 drawn at random from the population data file. The data in each experiment were subjected to an analysis with the time-censored month-of-first-crash variable (as the criterion) using the Cox Regression technique with sex, learner experience, current exposure, and group membership as predictors. All predictors were entered into the regression model simultaneously, and the null hypothesis was that group membership was not a predictor of time to first crash. The number of analyses that would have rejected this null hypothesis and the consequent estimate of statistical power at that sample size is shown below:

N	**Number of times H_0 rejected when false in the population file**	**Estimate of Statistical Power**
2000	9	0.18
4000	20	0.40
8000	33	0.66
16000	48	0.96

These power estimates are graphed below:



To achieve a statistical power of 0.8 using this method, with a type I error rate of 0.05 and a program effect of about 10%, a total sample size of almost 12,000 (or 6,000 per group) would be required. The current estimate of a sample of 14,000 would give statistical power of just over 0.85.

Although the statistical power appears slightly lower than is the case for other methods, this method also provides information about the relationship between other variables and the criterion (and could incorporate additional variables relating to potential predictors such as education level and socio-economic status), and allows separate modeling (and comparison of models) for subgroups of the population. It is also possible to sacrifice some statistical power to incorporate interaction terms into the analysis.

Discussion

The Monte Carlo studies reported here were conducted to provide statistical power estimates for the proposed evaluation of a novice driver education program. The population data file was created to mimic some key relationships between predictors and crash risk, and to incorporate a 10% program effect. Detection of a 10% program effect, regardless of analysis method used and based on the assumptions made in preparing the population file, will require a sample size of between 10,000 and 12,000 (5,000-6,000 per group) if a statistical power of 0.8 or greater is required.

The population file was created with a reasonably conservative estimate of self-reported crashes (30% of drivers in their first year), meaning that the power estimates should also be slightly conservative. This is preferred, particularly given the likely interest in assessing the effect of the program on sub-groups of drivers.

It is recommended that treatment and control groups of at least 6,000 participants be considered for the trial.

Addendum

Some concerns were raised that the above Monte Carlo studies were based on data from a single simulated population. They therefore reflect what might happen if the same experimental evaluation were to be carried out over and over again on a single population of novice drivers. This may have the following consequences:

- The effect of random variation in crash outcomes across the studies was constant, making it impossible to generalise to populations that differ from the simulated population in the effect of random factors.

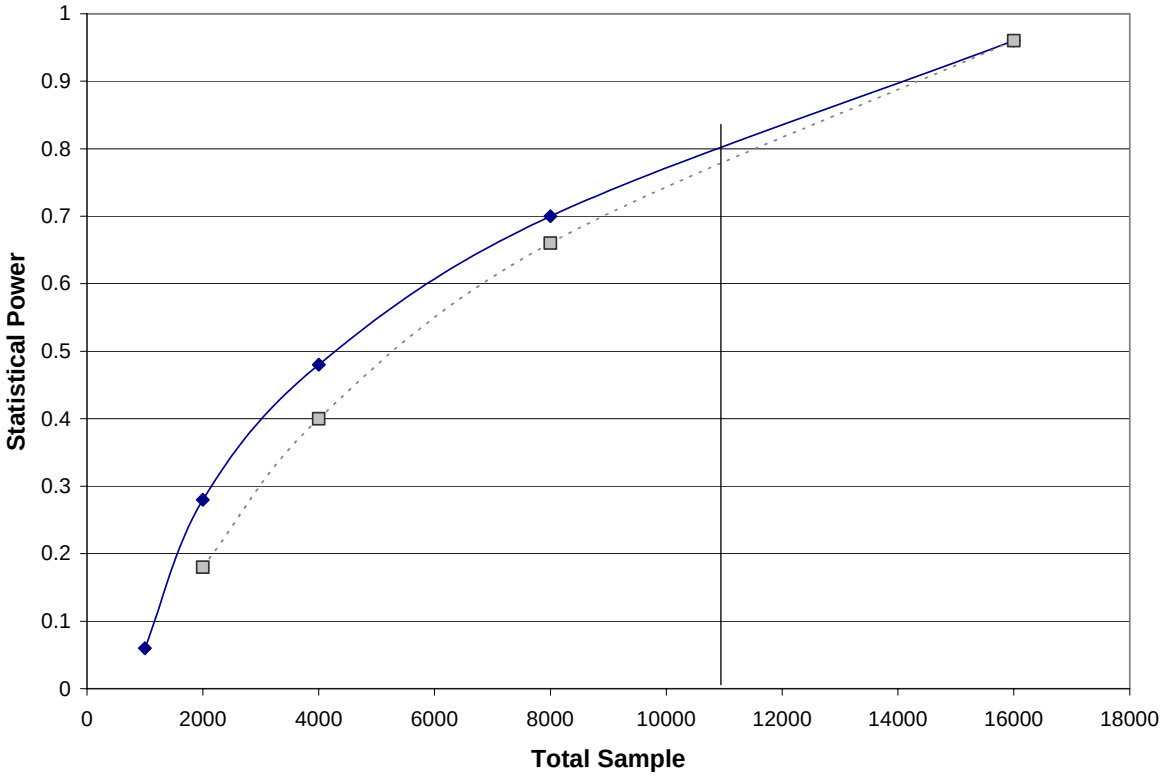
- The samples in each analysis were drawn with replacement – meaning that there was the possibility of an individual case contributing to multiple analyses, especially with analyses with large sample sizes, perhaps constraining the variability that might normally be encountered.

To ensure that the estimates of statistical power were not biased, an additional Monte Carlo study was undertaken using the Proportional Hazards regression technique, and total sample sizes of 1,000, 2,000, 4,000, 8,000, and 16,000 with 50 samples drawn and analysed for each. The criterion and predictor variables were as used in the earlier study. In this case, however, the monthly crash risk and therefore time to first crash were recalculated using the same formulae/method before each of the 250 samples were drawn. This is the same as conducting 250 experimental evaluations with different populations that share the same underlying relationships between variables but that have crash outcomes that are influenced by random processes (such as error). The power estimates in this case could be more-easily generalised to future studies.

The results of the additional study are shown below:

N	**Number of times H_0 rejected when false in the population file**	**Estimate of Statistical Power**
1000	3	0.06
2000	14	0.28
4000	24	0.48
8000	35	0.70
16000	49	0.98

These power estimates are graphed below, with the earlier estimates using a single population shown in grey:



The revised method yields slightly higher estimates of statistical power, especially for smaller sample sizes. The effect on estimates of the required sample size for an evaluation is not substantial. It might be reasonable now to argue for a sample size of 5,500 in each of the two groups to achieve statistical power of 0.8 under the assumptions made earlier and to detect a program effect of about 10%, whereas a sample size of 6,000 per group was more reasonable under the single-population study.

REFERENCES

Aronson, E., Wilson, T.D., & Brewer, M.B. (1998) Experimentation in Social Psychology in D.T.Gilbert, S.T.Fiske, & G Lindzay (Eds.) *The Handbook of Social Psychology (4th Edn)*. Boston: McGraw Hill.

Bell, P.B., & Staines, P.J. (1979) *Reasoning and Argument in Psychology*. Sydney: UNSW Press.

Catellier, D. (2003) Sample size and statistical power. http://obssr.od.nih.gov/Conf_Wkshp/RCT03/Lectures/Catellier_Sample_Size.pdf

Christie, R., Fabre, J., Johnston, D., Newland, R., Harrison, W. Cummins, M., Hill, C. Robertson, W. (1998). Development of Full Licence Test for New Zealand. In *Proceedings of Road Safety Research, Policing & Education Conference*, Wellington, New Zealand, November, Vol. 2, 48-52.

Fox, J. (2002). *An R and S-PLUS Companion to Applied Regression*: Appendix - Cox Proportional-Hazards Regression for Survival Data. http://cran.r-project.org/doc/contrib/Fox-Companion/appendix.html

Goldman, C.A., Orvis, B.R., Mattock, M.G., Smith, D.A., Madison, R., McDonald, L.L. (1999) *Staffing Army ROTC at Colleges and Universities: Alternatives for Reducing the Use of Active-Duty Soldiers.* RAND

Mesken, J., Lajunen, T., & Summala, H. (2002) Interpersonal violations, speeding violations and their relation to accident involvement in Finland. *Ergonomics*, *45*, 469-483

Muthen, L.K., & Muthen, B. (2002) How To Use A Monte Carlo Study To Decide On Sample Size and Determine Power. *Structural Equation Modeling*, *4*, 599-620

Nathan, P.E., & Gorman, J.M. (1998) *A Guide to Treatments that Work*. New York: Oxford University Press.

Reason, J.T., Manstead, S.R., Stradling, S.G., Baxter, J.S. And Campbell, K. (1990) Errors and violations on the road: a real distinction? *Ergonomics*, *33***,** 1315-1332.

Australian Government

Australian Transport Safety Bureau

Australian Transport Safety Bureau
PO Box 967, Civic Square ACT 2608
1800 621 372
www.atsb.gov.au

The ATSB is an operationally independent bureau within the
Australian Government Department of Transport and Regional Services