

events. In particular this work has demonstrated that several factors need to be accounted for when using these devices, such as the accuracy of calibration, the signal noise, and the validity of the events being recorded. Future studies using in-vehicle monitoring devices should ensure that these factors have been tested prior to use for accurate and valid results. With all these factors considered, in-vehicle monitoring using this system should prove to be a useful tool for measuring driver safety and exposure.

## Acknowledgements

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# Contributed articles

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## Towards survival on the road: a whole-of-life road safety program of learning for all road users

*By Graeme S. Horsnell, member of ACRS*

Learning how to improve one's chances of surviving each road trip is no easy task. It cannot be achieved in a short space of time, nor is the retention of knowledge and skills a simple matter. This program of learning aims to present road safety education as a step-by-step process that takes a lifetime. It is intended that it fit both the left and right-hand drive environments, making it accessible across the globe.

### About the author:

After graduating with a BA and DipEd from Sydney University, Graeme Horsnell taught in NSW Government Schools from 1971 to 1992 and then in the Independent School System of NSW until 2006. In those years Graeme was responsible for the implementation of Road Safety and

Driver Education Programs. He wrote a Senior High School Road Safety Syllabus and assisted in the framing of the Safety Strand of the Health Education Syllabus. He has also written programs for specific purposes in the field of road safety education.

In 1988, Graeme received a special award from the Royal Australasian College of Surgeons for his work in road safety. He has constantly aimed to add to his education and experience having gained his Graduate Certificate in Road Safety at the UNE and has travelled widely.

### Introduction

This program lends itself to publication in hard copy format or would be equally accessible electronically, and in that

format it would be a virtually no-cost item. The program is designed to be used as a diagnostic tool for individuals and private or government systems alike; identifying what is currently being done to improve road safety and what needs to be undertaken. The program is built on the scaffolding concept in educational terms.

## Road users' needs change with time

The purpose of this program of learning is to understand how road safety needs change through childhood into adulthood and later life. One step prepares for another. One major presumption is that there is a transfer of road safety skills from being a passenger, to being a pedestrian, cyclist and driver.

## Towards making your own decisions

At each stage of learning it is assumed that the learner will progress from total dependence on mentors through to the possibility of total independence. The progression along this continuum is for the mentors to assess, remembering that each person's needs are different.

It is not presumed that all learners will progress from being a passenger, to being a pedestrian, then cyclist and then driver – it depends on the individual's own personal circumstances.

## The whole-of-life program

Personal research on road safety education shows that there are many programs in a large number of jurisdictions, but little evidence to show how those programs link up to form a continuum for the first 1000 weeks of life and beyond. The Department for Transport in the UK does go down this path and it is useful to follow this link: [dft.gov.uk](http://dft.gov.uk), specifically "Good Practice Guidelines for RSE in Schools", but the vital preschool years are not part of this, nor are the road users' adult years.

As a result, what is lacking is the holistic approach covering the first 19 years of life and beyond. Schools cannot make presumptions about what road safety education experiences a child has had in the preschool years nor can they predict one's road safety education needs in adult life.

This holistic learning program sets out education targets for each road user group. The result is a learning program which shows the building blocks of understanding how to get the best chance of survival on the road. The ascending order of complexity of tasks would be:

1. Passenger safety
2. Pedestrian safety
3. Cycling safety
4. Driver safety
5. Road safety for adults

## Enforcement and other strategies

Enforcement of regulations by the relevant authorities along with public information campaigns are seen in the context of this program as supports for the education of all road users.

Road safety research, past experience and the development of new technologies do, however, point towards certain strategies for improving road safety, for example:

- The provision of internet access to current road safety related information;
- Advertising via available media; and
- Engineering treatments, measures or solutions accompanied by relevant public information.

Adult road users are the primary source in the development of appropriate sets of knowledge, attitudes and skills in children. As a basic premise at all stages of road use, we need to promote the message that the learning process should aim to satisfy the needs of people and that the learning experience never finishes. Also, as we age we need to make certain allowances and take compensatory measures. It might be added here that it is during the "adult" stage that most people will be passing on the benefit of their experience to the next generation either by example and/or by direct teaching.

## The approach taken by the "whole-of-life" program

The approach taken in this program outline does not suggest any particular method, but rather content, ie what needs to be learnt within the broad context of developing on-road behaviour patterns that satisfy simultaneously both the legal requirements and personal responsibility for the safety of all road users. This principle applies to the "adult" stage as well. The skill of predicting the actions/lack of action and mistakes is a vital skill and is one that requires time to develop. Also embedded in the aims of this program are considerations for the environment and animal welfare.

## The Program

### 1. Greater passenger safety

#### Covered in this section:

- Seat belts
- Which seat to sit in
- Boarding safely
- Alighting safely
- Sufficient ventilation
- The driver needs to concentrate
- Road reading

- Map reading
- The driver becomes ill/incapacitated
- Choosing your driver
- Handling emergencies
- First aid
- Ambulance, fire, police
- Progress chart

**NB: Charts such as Table 1 and Table 2 below are available for each section of the program, but have not been reproduced in full in this article. Copies of the full program can be obtained from the author.**

**Table 1: Passenger safety skill chart**

Concept	Item demonstrated/ shown how to do and has been practised  please tick	Can carry out this skill reliably  please tick
Getting in and out using the kerbside door wherever possible		
Appropriate child restraint properly installed and worn		
Seat belt correctly worn		
Getting enough fresh air		
Guarding against excessive heat and cold		
Helping the driver concentrate on driving		
Learning about traffic signs and signals		
Recognising road markings		
Reading a map		
Operate a satnav		
Stranger danger – not getting into a stranger’s vehicle		
Knowing how to call emergency services		

**Table 2: Advanced passenger safety skills**

Concept	Item demonstrated/ shown how to do and has been practised  please tick	Can carry out this skill reliably  please tick
What you can do if your driver suddenly becomes ill while driving		
Choosing when not to get into a vehicle eg. if the driver has been drinking, is suffering fatigue or is unlicensed		
Knowing how to apply First Aid		
How to manage a crash scene		

## 2. Pedestrian safety

Key concepts are:

- Holding an adult's hand
- Walking on a footpath
- Surfaces we walk on – when they are slippery and when they are not
- Watching out for vehicles crossing the footpath
- Where to walk when there is no footpath
- Walking in parking areas
- Kerbside drill when not near an intersection – stop, look, listen, think
- Kerbside drill when at different types of intersections – stop, look in all directions that traffic comes from, listen, think
- Knowing what speeds to expect on any given stretch of road
- Fast speeds and slow speeds
- Deciding what is near and what is far away
- Left and right
- Obeying traffic patrol and police officers
- Knowing the meaning and use of traffic signals for pedestrians
- Making sure you can see any approaching traffic and that the drivers can see you
- Wearing clothes that help you to be seen
- Finding appropriate places to cross roads
- Identifying vehicle sizes and their ability to stop
- Being a pedestrian at night
- Roads where pedestrians are not allowed to go eg. freeways
- Identifying mistakes commonly made by drivers
- How to call emergency services
- Giving first aid

The safety factors you understand as a pedestrian and skills you use when you are on foot help prepare you for understanding cycling.

## 3. Cycling safety

Key ideas needed for pedestrian safety also relate closely to cycling safely

- the dangers presented by driveways
- the use of emergency services
- knowing first aid
- footpaths
- left and right
- the dangers presented by kerbs and drains
- pedestrian crossings
- the need to recognise slippery surfaces
- judging speed

### Covered in this section

- Self-preservation
- Buying appropriate equipment
- Caring for equipment
- Understanding what the lawmakers aim to do
- What to wear
- Using your senses wisely
- Being aware of your environment
- Communicating with other road users
- Caring for yourself and other people
- Choosing and wearing a helmet
- Having the right bicycle
- Owner maintenance
- Maintenance/repairs best done by a mechanic
- Road rules
- Left, right, in front, behind
- Surfaces we cycle on
- Judging speed
- Judging distance
- Daytime/night time
- The weather
- Cushion of safety
- Seeing
- Being seen
- Footpaths
- Classes of roads and cycleways
- Driveways and parking areas
- Signalling your intentions
- Intersection types
- Turning left
- Turning right if there is no other traffic
- Turning right if there is other traffic
- Two way to two way street
- Turning right - one way to two way street
- Turning at busy roundabouts
- Road signs, signals and markings
- Giving signals
- Safer places to ride
- Unsafe places to ride
- Vehicle shapes and sizes
- Common errors made by other road users
- Patterns in traffic movement
- First aid

## 4. Driving safety

Driving according to the prevailing conditions with maximum safety margins is the aim. It is often called “defensive driving” which aims to allow the driver to be fully aware of how to avoid making driving errors and as much as possible not become a victim of the mistakes that other road users make.

### Covered in this section

- Getting comfortable behind the wheel
- Caring for yourself and other people
- Buying and caring for appropriate equipment
- Understanding what the lawmakers aim to do
- Using your senses wisely
- Being aware of your environment
- Communicating with other road users
- Your personal limits
- Night driving
- Fitness to drive
- City v country driving
- Road rules
- Road signs, signals and markings
- Visual check before every drive
- Windows to be clear
- Hearing
- Secure your passengers
- Secure your load
- Deposition behind the steering wheel
- Adjust mirrors
- Controls
- Signalling your intentions
- Fuel usage
- Start – manual gears
- Start – automatic gears
- Stop - manual gears
- Stop – automatic gears
- Emergency stopping
- Skids caused by braking
- Skids caused by engine power
- Steer
- Road positioning
- Gears
- Following distances
- Reverse
- Left turn
- Right turn
- U turn
- Three point turn
- Roundabouts
- Park
- Change lanes
- Cornering
- Driving downhill
- Being overtaken
- Overtake
- Towing a trailer
- Emergencies – other road users
- Emergencies – your vehicle
- Vehicle shapes and sizes
- Common errors made by other road users
- Owner maintenance
- Maintenance/repairs best done by a mechanic
- Annual fixed costs
- Protecting your investment

## 5. Road safety for adults

### Background information for the adult stage

- We can learn much from the mistakes of others.
- The development of new technology brings the need for understanding and adaptation.
- Inappropriate road-related habits need to be identified and rectified.
- We encounter emergency situations - some are common, some not.
- Pre-thinking how to handle common emergencies can be advantageous – a child in a locked vehicle, disobedience of traffic control signals, being tailgated, skids, impending hit from the rear and so on are simple examples.
- We age and this has consequences for road safety.
- Our needs and circumstances change necessitating acquisition of new knowledge and skills.
- Complacency is natural for humans and it needs to be well-appreciated and acted against.
- Laws change and we have the responsibility to keep up with the changes, obey and understand them and their aims.

### Concepts:

- Monitoring one's health
- Promoting self improvement
- Having access to good information
- Identifying sources of information
- Being a good example
- Learning from experience and this never finishes.
- Appreciating the skills of how to impart knowledge
- "Accidents" don't "just happen" – we need to understand how factors involved in crashes interact.
- Being receptive to learning new skills and adapting to new circumstances
- Adapting to the new technology available to passengers, pedestrians, cyclists, and driver/riders

### Covered in the adult stage:

- Attaining personal comfort
- Caring for yourself and other people
- Buying and caring for appropriate equipment
- Understanding what the lawmakers aim to do
- Use your senses wisely
- Being aware of your environment
- Communicating with other road users
- Self assess physical capability
- General health check up done professionally to assess physical fitness – an aid to early diagnosis and treatment
- Professional check on vision
- Self assess one's senses
- Learn from experience and the experience of others how to avoid crashes and injury

- Keep up-to-date with road rules
- Understand new technologies
- Update first aid competency
- Assess/use appropriate transport alternatives
- Report road-related problems
- Suggest road improvements
- Set a good example to other road users
- Impart knowledge/share experience
- Adapt to the use of new equipment
- Adapt to left/right hand drive
- Deal with hot, cold or wet weather
- Tow a large vehicle – trailer/caravan
- Acquire other classes of driving licences as necessary

## Conclusion

Learning is a lifelong pursuit driven by our ever-changing needs and circumstances. Knowing how to best prepare ourselves for road use is a never-ending challenge. Review of the currently available educational theory and the application of it to road safety education revealed the need to develop a whole-of-life approach that could be put into practice by parents, caregivers and educationalists.

There have been centuries of educational research on how to structure a learning program and all current programming seeks to provide a scaffold on which to build a suitable scope for each element and an appropriate sequence for those elements. When the tables were constructed, the

author referred to education theory as a separate concept and then education theory as applied to Road Safety Education. It is widely accepted in the field of child development that the teaching and learning process needs to be well-structured and with clear aims at all times so that the desired outcomes can be achieved. The learner is the central figure and the appropriate balance needs to be struck between theory and practice. Such education theorists as the oft-quoted Piaget who expounded his theory based on stages, Vygotsky with his social and interactive scaffolding and the multiple intelligences of Gardner, lead one to the conclusion that any road safety education program needs to satisfy the following criteria

- be soundly based educationally
- have the best quality design
- be sequentially structured
- be learner centred
- be targeted at the learner's current and future needs
- be competently delivered
- involve on-going evaluation by the mentors
- be evaluated for its relevance

All of these elements need to combine in order to maximize the positive powers of motivation on the part of the mentor and the learner.

*For details of relevant online resources, further reading and educational theory, please contact the author for a list of references and links to pertinent websites.*

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# Asperger's Syndrome: the implications for driver training methods and road safety

*by S Tyler, Highlands Drive Safe, member of ADTA and ACRS*

## Abstract:

Road safety issues often focus on behaviour and attitudes to driving in key age groups. However, underlying conditions such as Asperger Syndrome (AS) are not given enough consideration in the training and testing phase to ensure these road users are sufficiently equipped with the necessary skills to ensure the safety of themselves and other road users.

The prevalence of autism spectrum disorders is approximately 62: 10000 at present. This is steadily rising as diagnostic methods are refined and awareness of the condition increases. This issue must be addressed urgently and infrastructure put into place to ensure this group of potential road users are taught and tested in the most effective way to address any road safety concerns.

This report looks at the educational issues faced by this special needs group and the potential problems at the testing phase when attempting the provisional drivers test. Four case studies have been reviewed to see the real problems faced by supervisors and instructors during training and the strategies that can be implemented to decrease the risks associated for this road user group.

## Keywords:

Asperger syndrome, autism, driving, education, testing procedures.

## Introduction:

Asperger's (AS) is a condition diagnosed within the autism spectrum criteria and is prevalent in approximately 62 per 10,000 [McDermott et al, 2006] people in the population,