

Introduction:

In this paper I will discuss what part Victorian Government policy plays in controlling the current effectiveness of driver training in Victoria, where a better option may be found than current practice.

Anticipated Government policy on driver education based on current trends and developments:

Government policy on road safety is framed around “Education”, “Engineering” and “Enforcement”. These are sometimes referred to as the three “E’s” of road safety. Government policy has favoured both engineering and enforcement in preference to education in its road safety policy for several decades. For example in the years 1969 and 1970 Victoria was the first State in the world to introduce two very successful programs: firstly, compulsory seat belt legislation and secondly, changing the method detecting alcohol impairment of vehicle drivers by measuring the alcohol in the blood-stream instead of measuring psychomotor coordination and cognitive function. Although both of these programs were initiated with public media awareness, they primarily represent changes in engineering and enforcement of the new road laws.

Governments have not supported driver training or re-training as a countermeasure to vehicle crashes. Perhaps the advice from a number of academics has been misunderstood by public servants and politicians. Generally, academics have criticised badly timed and badly designed training rather than driver training per se. An example is:

Christie (2003 p. v) argues that “research has also found that driver training or education may actually interfere with the experiential development of safe driving skills and competences unless it is timely, appropriate and geared to the needs of individual novice drivers. In fact some poorly designed novice driver licensing schemes (Ontario and Nova Scotia) have contributed to increased novice driver crash involvement...”.

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Perry (1977, p. 2) described two opposing ‘schools-of-thought’ about driver training in Australia. He coined the terms “Car-craft” and “Road-craft” to describe these opposing schools of thought. According to Perry, “car-craft” describes the idea of teaching extreme skills such as skid control and handbrake “U” turns, as means of escaping dangerous situations. The alternative “road-craft” model develops appropriate habits of thinking and behaviour which systemises conscious decision making into response protocols, which are applied to ordinary driving events until those protocols became sub-conscious.

Harrison (2001, 2002 cited in Christie 2003) states that:

Programs that focus on teaching advanced vehicle controls skills as a way to help novice driver extricate themselves from risky situations are unlikely to have positive road safety benefits because the successful application of a new skill relies on the repetitive practice of that skill for a long time period.

Clearly both Christie and Harrison discuss what Perry called “car-craft” style training. In fact there appears to be very little research into “road-craft” training in Australia, however there is some relevant information available from the United Kingdom.

There is a fable that describes how roast pig was invented in China. Following the tragedy of a village being destroyed by fire, a grandfather was combing through the hot embers for valuables when he accidentally plunged his hand into the body of the family’s pet pig, burning his hand. He quickly withdrew his hand and placing fingers in his mouth for relief; he discovered that the pig tasted delicious. And so from then on whenever the family wanted roast pig they burnt down a village. An important scientific principle is “association is not causation”. Just because some driver training doesn’t work, it doesn’t follow that no driver training will ever work. If an elite sports team loses a number of games they don’t stop training, they change their training strategy and train harder. Inappropriate training will produce poor results in any field of human endeavour. Failure of a training program implies that there is a need to investigate the training process itself; not a reason to discard the principle of training.

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Government policy is focused on engineering as a solution to road crashes:

Government policy has focused on better roadway systems and better vehicles running on them. As vehicle manufacturers have increased the number safety of features that aid driver control of vehicles in difficult conditions, two phenomena as unanticipated outcomes have occurred: firstly, a process of adaption by most drivers, and secondly, a “pushing outside the envelope” by a few. Considering first the driver adaption principle; when I was a teenager in the 1950’s, the ‘Bull-nosed Morris’ of the 1940’s was still a popular vehicle and I remember driving one and thinking how good it was to drive – then! Recently I met a man who had restored a 1943 ‘Bull-nosed Morris’ and he gave me a drive of it. He warned me about the brakes saying that I had to start braking much earlier than I was used to. Now I had two thoughts: firstly, I drove a ‘Bull-nosed Morris’ and I remember how good it was; secondly, I had spent over thirty-five years extolling the merits of early braking. Now I think you have already guessed what happened; as I approached my first corner, braking too late for the Morris I had to put up with “I told you so!” from my owner-passenger. Over the years as each improvement in braking systems had occurred, I had adapted, leaving my braking later and later without realizing the changes that were becoming habits. Adaptation is not an argument against improved engineering, but recognition of the fact that each improvement has a more profound effect on accident rates immediately after the introduction of the measure than is evident, as people become accustomed and adjust their habits to the new technology. It is the theory of diminishing returns applied to road safety. A definition of the law of diminishing return is: “A point beyond which the application of additional resources yields less than proportional increases in output”. Adaptation to better technology becomes a problem when one needs to drive a vehicle with the older technology.

The second phonemic outcome of improved vehicle technology is a response by some people known as “pushing outside the envelope” until the driver is again at the limit of control. I repeat that this argument isn’t against improving engineering, but it is recognition that some people’s response to improved technology is to push the use of that technology to a new extreme. If I had caused a crash by being too fast in the Morris I might have been travelling at 18 kilometers per hour instead of 15 kilometers per hour and any accident resulting would likely to be minor in

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nature. If a driver pushes a current model vehicle fitted with ‘Electronic-Stability-Control’ (ESC) beyond its ‘envelope’, the resulting crash is unlikely to be described as minor. Impact forces of an out of control vehicle increase by the square of the speed. The better the vehicle control technology, the greater the confidence of a driver to go beyond the limits of that technology. If it is true that some people will always “push-outside -the-envelope” and experiment close to disaster, then a vehicle with high technology becomes very dangerous in the hands of any person in a certain frame of mind.

The practical skill required to operate the vehicle is indeed becoming easier with transmissions that almost ‘think-for-themselves’, reversing cameras linked to rear sensors which guide the driver when the vehicle is reversing, cruise-controls which adopt a safe following distance from the vehicle ahead and many other safety features. An argument can be made that vehicles will become easier and easier to operate and correspondingly less skill will be required to master them. However, while it is agreed that the focus of driver training is likely to change, it is also likely to become more relevant to the quest of crash reduction. Up until current times, driver training has been one-to-one, one-hour lessons (or less than one-hour), and focused on the licence test administered by the Government Authority. This is referred to as learning to drive, and when the probationary licence is granted, the new driver says “I have learned to drive”. Yet it is this group of newly licensed drivers who are the most at-risk drivers on the road; multiplying their risk factor by some twenty-five times as they move from supervised driving to unsupervised driving (Alexander 2005 p. 2). Permission to drive by a Government Authority does not prove competence. If the present licensing system is not effective, training may indeed become more relevant in the future, not less relevant.

Is driver education limited by Government Authority testing procedures?

A licence test conducted by a Government Authority dictates the nature and extent of the training received by people preparing for the test.

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As stated by Alexander (2005 p. 7), “The nature of the Probationary test can often dictate the nature of the preparation that Learners undertake prior to the test”.

Similarly, according to Hirsch (1997 p. 4), “under the current system, the investment of time and money made by individuals preparing for the licence exam, and the standards of driver education, are determined largely by the standards of the licence exam. These standards are arguably low”.

It is reasonable to argue then that the licence test conducted by the Government Authority is a major causal factor of in vehicle crashes and prevents an improvement in most driver-training offered professionally. An assumption by Government is that one hundred and twenty hours of driving experience will prove competence; however this concept fails to recognise the important fact that one hundred and twenty hours of practice in bad habits ingrains bad habits, which in turn lead to crashes. It is acknowledged that experience is better than inexperience; however experience in good habits is best.

What I believe would be a better process leading to a better outcome:

Reason (2000) discusses two models of understanding human error which provides opposing strategies to counteract errors. He describes the traditional approach as the “people approach” which treats people like naughty children who must be controlled and punished for their errant ways whenever an error occurs. This model operates on the belief that “bad people do bad things”. It uses devices of fear with strategies such as poster campaigns, yet another procedure which must be signed off, discipline, litigation, retraining, naming, blaming and shaming, all of which are counterproductive.

Reason’s second model is called the “systems approach” which sees errors as consequence of system failure rather than the cause being in the perversity of human nature. The systems approach operates on the belief that the best operator can make the worst error. An example of this is the expert sky-diving instructor over Geelong who followed his pupils out of the plane and filmed their jump only to discover, to his horror, that he didn’t have his parachute on and he was filming his own death. The systems approach seeks to provide direct correcting feedback to the

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operator so that work is done differently by either changing behaviour or the process in which the behaviour occurs is appropriately and systematically adjusted, thus forming new habits. The system approach improves awareness and a persistent uncomfortable fear of mistakes by oneself or others. Note it is a fear of the rare but significant mistake that might happen to the novice or the expert.

I had a conversation with a bank manager who is responsible for the funding of Driver Training Academy’s (DTA) 5-day Learn-to-Drive program. He described to me his only car crash that he had at age eighteen and how it provided him with both the insight and motivation to change his driving belief and subsequent driving style. He described the feeling of dread and the horrible sound and painful compression of the crumpling car every time he drove towards an intersection. This feeling had stayed with him for over twenty years. This emotion that he described is exactly the “persistent uncomfortable fear” referred to by Reason (2000) and what needs to be reproduced in the hearts and minds of DTA’s five-day, learn-to-drive graduates, without the crash.

How may this be accomplished?

It is important to recognise that different stages of learning require different emphases to establish the most effective learning environment for learner drivers. Typically, the emphasis ought to be on knowledge during the “beginner” stage and move to economic mental processes (or driving protocols) during the “intermediate” stage. The focus of the development of driving protocols is importantly in the area of insight into observation skills, driver mood monitoring skills and recognition of changeable driving conditions.

Hirsch (1997 p. 3) discussed three phases of learning: “beginner” where early cognitive skills, psychomotor coordination and visual habits are formed and the “intermediate” or the associative phase where patterns of behaviour connect. This is the most important phase for developing long-term safe habits and beliefs about safety issues. Finally the “autonomous” phase, where

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habits are set and thinking is at an ‘economic’ subconscious level. Any attempt at changing these set habits creates stress because it requires the driver to drive consciously, which is uncomfortable for very long periods. So the ‘reforming’ driver reverts to the former habit, which subconsciously reinforces the idea that the old habit is the best after all.

Hirsch describes the development of positive habits that reduce the amount of conscious mental activity required to produce a safe response to a specific driving event.

“Once acquired, they (*safe driving protocols*) are habitual and do not necessarily require the “conscious” participation of the driver”. “Safety protocols, hypothetically, are the positive expressions of critical risk factors that, when neglected, contribute to collision involvement”. (p. 6). “Protocols are composed of individual rules or habits, so they are easily segmented and lend themselves to simple and relevant messages which emphasize proper planning and anticipation on the part of the driver”. (p. 7).

Christie and Harrison (2003, p. 7) describe the efficiency of thinking habits which produce driving behaviour.

“Safe driving performance in its complex, high-workload context requires psychological and cognitive mechanisms that can:

- Reduce the amount of information that must be processed to make a decision;
- Increase the possibility that behavioural decisions can occur with minimal attentional involvement; and
- Use experience as a basis for making decisions”.

Above I described DTA’s Five-Day Learn-to-Drive program which is designed to take new learners through the “beginner” phase into the early part of the “intermediate” phase. This is accomplished in a group which rotates learning roles of “Driver”, “Coach” and “Assessor” so that various aspects of cognitive, spatial, attitudinal and psychomotor skills are developed concurrently. The aim is to have safe driving protocols established prior to completing the program; that is entering the “intermediate” phase of learner development.

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It is significant to understand that knowledge is an important component within the “beginner” phase, but is a hindrance in the “intermediate” phase. According to Christie and Harrison (2003 p.12), adding further knowledge during the “intermediate” phase is likely to slow down the development of autonomous protocol responses.

Another key ingredient is that of motivation. Dealing with all the aspects of motivation is beyond the scope of this paper; however there is one issue which I believe is so important and so neglected that it cannot be missed here. It is the issue of an “intrinsic-reward” linking positive psychomotor skills with safe driving protocols. Christie and Harrison (2003 p. 14) discuss the importance of enhanced psychomotor skills; however they describe the negative side of intrinsic motivational reward. For example, “Sensation seeking and risk taking ... motivational factors” (p.13). What is possibly missing in their work is the importance of deliberately linking an intrinsic reward with positive driving actions. For example smooth vehicle operation resulting from enhanced psychomotor skills may be linked with positive scanning, detecting and decision making. In the “beginner” phase this process would include cognitive awareness, during the “intermediate” phase would be supported by repeated statement rather like mantras and finally in the “autonomous” phase would become subconscious behaviours linked to good feelings of smooth vehicle operation. Another example might be; when I feel very smooth braking, gear shifting or steering; I look at a solution and away from a problem. Success at establishing these links is best commenced in the “beginner” phase and supported throughout the “intermediate” phase while experience is gained until “autonomy” phase is reached.

The challenge is to assist private tutors (parents, guardians and other private helpers) to guide the learner driver through the “intermediate” phase of the process. As part of the five-day, learn-to-drive course we request that private tutors attend the final two-hours to observe practical driving. This is aimed at providing tutors with confidence in the learner and to canvass safe-driving-protocols, such as those described by Hirsch. The following are two lists are in the student’s work books:

Five Great Class-Driving Habits:

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1. Look at solutions and away from problems.
2. Take left foot support on the footrest whenever you brake or steer.
3. Use the brakes to slow, choose the best gear to go.
4. Keep good separation between vehicles.
5. Be able to stop in the distance you can see ahead.

Five Great Class-Driving Insights: (when repeating these insights as sayings the small print may be left out)

1. See the danger – do *something about it now – what’s hidden can kill.*
2. Early braking *usually means* early through.
3. Good habits make good reactions and easy decisions.
4. *Your job is to keep it safe; don’t win a point against another driver.*
5. Extreme speed makes up extremely little time.

Future possibilities might include simulation:

Above I mentioned the point made by Alexander (2005, p. 3) that as new drivers become unsupervised they multiply their risk factor by about twenty-five times, however they are not over represented in causing those additional crashes. It follows then that what new drivers don’t recognise is hidden risk in other people’s ordinary actions. The best use of simulators would be to provide practice at developing insight into hidden risk. There is a wide range of commercial simulators on the market from the simple attachment for a lap-top computer to the very expensive large machines.

Victorian Government Departments and the Monash University have studied a wide range of machines and agree that there is potential for hazard perception skills to be developed, but further research is required before any recommendations are made to Government about them. However there is one interesting point made by the Transport Accident Commission (TAC) that a simple interactive CD ROM is effective. The TAC sends out a CD ROM to any learner who applies on-line for one and monitors their results in an ongoing trial. We may look forward to the results of that trial when they are published.

Conclusion:

It is important to recognise that different phases of learning require a different focus in the learning environment. The “beginner” phase needs to concurrently develop knowledge, psychomotor skill and link the motivational effects of intrinsic rewards of smooth vehicle operation to safe driving protocols. Best practice protocol development is best established by small peer learning groups facilitated by an instructor expert in leading group dynamics and proven driving style.

The “intermediate” phase needs to monitor and refine the substantiation of safe driving protocols until they are performed subconsciously. Cooperation between the professional instructor and private tutors including the student’s family is the best environment in which to evolve this process. Programs such as Driver Training Academies “Hot-Seat” program are ideal to monitor the standards of the protocols being developed.

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