

Educating Young Drivers: A Method for Auditing School-based Resources

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Abstract

The Roads and Traffic Authority (RTA) currently implements a secondary school road safety education program in NSW called 'Young Driver' to address key issues relating to pre and novice driver crash and injury experience on the road. The RTA commissioned ARRB Transport Research to undertake an audit of the resources contained in this program, requesting that a model of *behaviour change* be considered as an appropriate framework for auditing these resources.

This study involved an examination of the nature of the young driver problem and the factors accounting for their over-representation in road crashes, coupled with a discussion of the linkages between road safety education, adolescent development and various learning styles. These factors were then linked to the concepts of the proposed model of *behaviour change*. Learning outcomes were developed for each concept, to assist in determining the appropriateness of introducing various road safety related issues to secondary school students, using a variety of techniques in the school setting, as they move from a being a pre-driver, to a learner and finally to a new, novice driver.

This process allowed the activities within each resource in the NSW 'Young Driver' program to be audited against the proposed learning outcomes, to determine which components of the *behaviour change model* were addressed by the current suite of resources, which were not addressed by the current program and which concepts may be better addressed outside the school setting. Recommendations regarding the development of, and the technological opportunities available for, future resources for the education of young drivers in the school environment were also drafted.

This current paper intends to illustrate the process developed for auditing the educational resources implemented in NSW high schools to promote safer road use by new, novice drivers, rather than detail the outcomes of the audit.

Introduction

The Roads and Traffic Authority (RTA) currently implements a secondary school road safety education program in NSW called 'young driver' to address key issues relating to pre and novice driver's crash and injury experience on the road. The RTA commissioned ARRB Transport Research to undertake an audit of the resources contained in this program, requesting that a model of *behaviour change* be considered as an appropriate framework for auditing these resources.

This audit was conducted in two stages. The current paper illustrates the process developed for auditing the educational resources implemented in NSW high schools to promote safer road use by new, novice drivers, rather than detail the outcomes of the audit.

Stage one of this audit was fundamentally concerned with examining the theoretical underpinnings of approaches to implementing road safety education for young drivers. It involved a summary of a complex *behaviour change* theory, an examination of the nature of the young driver problem and the factors accounting for their over-representation in road crashes, coupled with a discussion of the linkages between road safety education, adolescent development and various learning styles. The factors attributing to over-representation were then linked to the concepts and factors of the proposed *behaviour change model*. Learning outcomes were developed for each concept, to assist in determining the appropriateness of introducing various road safety related issues to secondary school students, using a variety of techniques in the school setting, as they move from a being a pre-driver, to a learner driver and finally to a new, solo driver.

Developing the Audit Process

Behaviour Change Model

The RTA requested that the *behaviour change model*, similar to that applied in the ACT Novice Driver Safety Program, be refined and its application to the education of young, pre-drivers be examined. Further to this, they requested that this model be considered as an appropriate framework for auditing these resources.

The *behaviour change model* proposed and adopted in the ACT Novice Driver Safety Program was based on eight key elements identified at the 1991 Theorist Workshop as responsible for generating and influencing behaviour (1). These eight elements were proposed to be responsible for most of the variance in any given behaviour, and therefore identified as potential determinants of behaviour and intervention points for behaviour change. Three factors were viewed as factors “necessary and sufficient” for generating behaviour (2). That is, for a given behaviour to occur, an individual must (a) have strong *intentions to perform* behaviour, (b) have the necessary *skills to do so* and (c) not be restricted by *environmental constraints*. The other five factors were viewed as factors that can actively influence the strength and direction of behavioural intention and included *anticipated outcomes*, *normative pressure*, *personal standards*, *emotional reaction* and *self-efficacy*. These dimensions generate a degree of influence on changes in behaviour.

The *ACT Novice Driver Safety Project* by ARRB Transport Research et al.(1) defined a conceptual model or framework of behaviour change that links these elements together. This model, referred to as the “*behaviour change model*”, is presented in Figure 1.

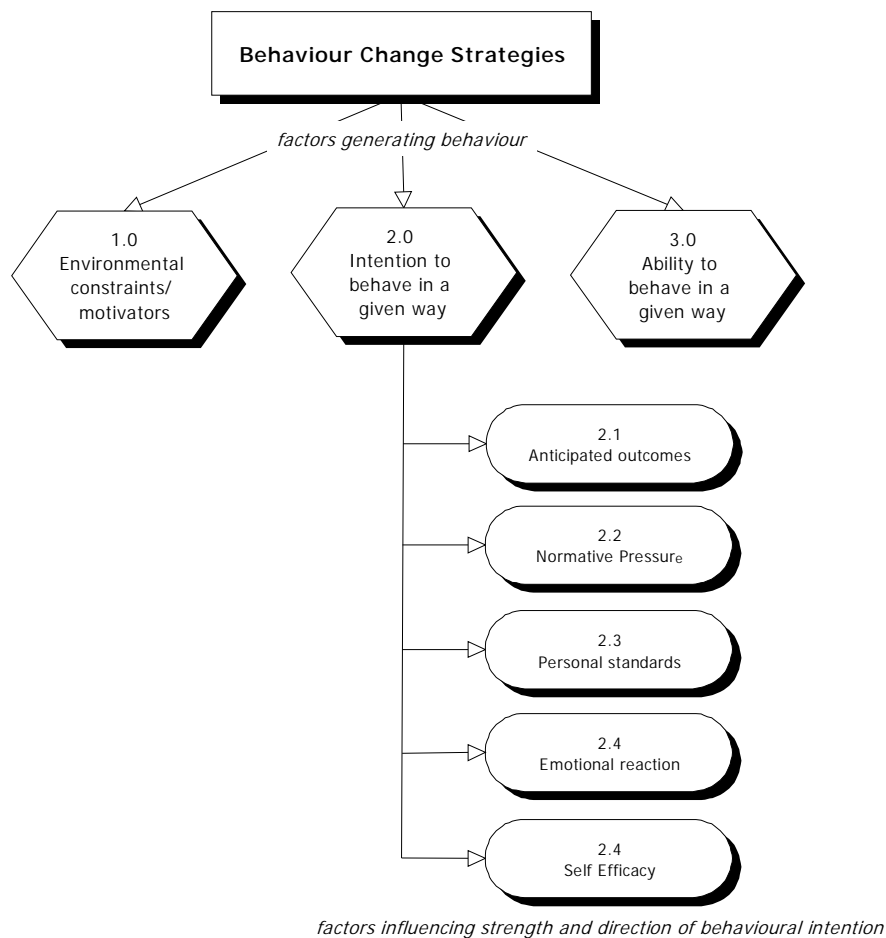


Figure 1: Behaviour Change Model

The *ACT Novice Driver Safety Project* also disaggregated each of the three factors responsible for generating behaviour into areas that determine the strength of influence of the factor and into inter-related concepts that comprise each area (1). These areas and concepts are briefly described in Table 1.

Table 1: Factors, Areas and Concepts of the Behaviour Change Model

Factor and Area	Concepts
Environmental Constraints	
Driving as a skilled performance	Pre-cursor to strategies for reducing self-efficacy Pre-cursor to need for increasing experience Learning and over-learning
Managing risk and minimising harm	Self-regulation of driving exposure Pre-cursor to strategies for reducing self-efficacy Pre-cursor to need for increasing experience
Putting driving into context (driving as a means to other ends)	Lifestyle choices The journey or the destination
The importance of the peer group	Collective experience as positive reinforcement Collective experience as negative reinforcement
The importance of others	Facilitation, not formulas Rewarding strategies
Intention to Behave	
Anticipated outcomes	Behavioural costs Behavioural benefits Resolving of benefits and cost dilemmas
Normative Pressure Personal Standards	Self Image and behaviour Social and behavioural influences Differences and similarities Developing Collective behavioural standards
Emotional Reaction	Low individual probabilities, high individual costs
Self Efficacy	Achieving accurate assessments of behaviour
Ability to Behave	
Actual performance is not perfect performance	
Competence and consistency	
What is around the corner: Open- and closed- loop skills	
Uncertainty of circumstances	
How do I see the world: Beyond Rules	
How do I see the world: Mental View of World	
How I don't see the world: where did that bus come from	
Demanding less effort	

Interpreting the Model

The current project took this model and the areas and concepts defined by the previous work and interpreted them in terms of how each may relate to education of pre-drivers. By way of example, "Environmental Constraints" was interpreted by Newman et al. (3) as reflecting "*barriers that restrict a given behaviour from occurring...therefore, if environmental constraints are present, it is unlikely that an individual will or can perform a given behaviour*" (p20). The areas and associated concepts of each factor were also interpreted in terms of pre-driver education. For example, the interpretation offered by Newman et al. (3) for the "Importance of Peers" area of environmental constraints read:

"The application of issues associated with the importance of one's peer group, as environmental limitations restricting the development of safe novice drivers, are less tangible. This concept area advocates that an individual's participation in, and control of, the process of preparing to drive can result in more effective learning...."

... peer group influences can provide collective experiences that can be both positive and negative in preparing individuals to drive more successfully. It can be positive in terms of reinforcing correct behaviour and introducing the concept of learning networks, which can lead to more positive driving experience under controlled conditions than if left to individuals. However, collective experience can also have negative consequences. Some individuals may over or under estimate the manner in which they drive when involved in peer group discussions. This can lead to the development of false subjective norms regarding driving behaviour as many may feel the need to validate real world behaviours in preference to complying with appropriate behaviours. These false norms have the potential to negatively influence an individual's behaviour..." (p23).

Delivery Mediums

Given that there are a range of influences operating on young people during the 'learning to drive' process, each of these can be considered as a potential medium for the delivery of part of the educational experience that supports the behaviour change process. While schools are central to this process, they may not always reflect the best medium for delivery. In many cases, parents, driving instructors, the mass media, licensing authorities, the police and others such as friends and relatives may have just as a significant role in influencing an individual's driving behaviour.

Therefore, for each concept within the *behaviour change model*, the relative role of schools and other mediums for delivery were identified. The current examination identified that the formal education process can contribute to the effectiveness of the influence of many *environmental constraints* on the behaviour of young drivers and their *intentions to behave*. Due to the close relationship between one's driving abilities and the driving experience itself, the school environment is not seen as a primary medium for a major influence on the area of *ability to behave in a given way*. The specific concepts addressed, and the nature of the learning experience for each, are further detailed in the Final Report by Newman et al (3).

Age Appropriateness of Concepts

Having identified a number of concepts of the *behaviour change model* related to young driver education that can be addressed in the school setting, a further aim of this study was to provide some guidance as to the age appropriateness of these behavioural factors, areas and concepts: especially in the context of the danger of encouraging young people into driving. Based on research findings, an understanding of the appropriate age for and sequence of introducing various elements of the *model* were established.

In appreciation of the importance of students obtaining a deep understanding and transfer learning from the classroom to the driving environment, three overlapping stages of 'learning to drive safely' were used:

- The pre-learner (approximately Years 7, 8 and 9, ages 12-15 years)
- The learner (approximately Years 10 and 11, ages 16 –17 years)
- The novice driver (approximately Years 11 and 12, ages 17-18 years)

Figure 2 illustrates the linkages and sequencing of the concepts within *environmental constraints*, *intention to behave* and *ability to behave* across these three categories of novice drivers. Once again it is important to highlight that while components have been identified for each level of driver, the school setting does not necessarily provide the best environment for the delivery of every concept. Those highlighted in dark grey are perceived to be most appropriate for introduction in the school setting. This figure highlights the sequencing of concept areas from pre-learner (where they are yet to develop basic vehicle control skills but are increasingly using the road as passengers, cyclists and pedestrians), to the learner stage (where they begin to acquire vehicle control skills and begin to understand road and traffic laws), and finally to the new driver stage (where driving becomes more automated).

Using the earlier example, this figure also illustrates that the area "importance of peers" has the potential to be addressed in high schools from the beginning of Year 7, through the entire 'learning to drive' process.

Phase	Pre-Learner				Learner	Provisional	Provisional P2	
Year	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12		
Age	12 years	13 years	14 years	15 years	16 years	17 years	18 years	19 years
Environmental constraints						Driving as skilled performance		
	Managing risk and minimising harm							
						Putting driving in context		
	Importance of peer group							
Behavioural intentions	Anticipated outcomes							
	Normative pressure							
	Personal standards							
						Emotional reaction		
						Self-efficacy		
Ability to behave						Actual is not perfect performance		
						Competence and consistency		
						What is around the corner		
						Uncertainty of circumstance		
						How do I see the world: beyond rules		
						How do I see the world: mental model		
						How I don't see the world: where did that bus come from		
					Demanding less effort			

Figure 2: Sequencing Areas of the *Behaviour Change Model* across Learning to Drive

Learning outcomes

Based on the identification of the age appropriateness of various concepts of the *model*, a comprehensive list of learning outcomes for each concept area, across each stage of the young driver learning process, were drafted. These learning outcomes were based on close consultation of two key resources: *A Framework for Driver Education* published by the RTA (4), and the *Novice Driver Education Model Curriculum Outline* by Lonero et al. (5).

It was anticipated that these learning outcomes would provide a working checklist of activities to ensure that the concept areas of the *behaviour change model*, identified as well suited to delivery in the school environment, were addressed by the resources under audit. Some learning outcomes were also provided for concept areas identified as better addressed outside the school curriculum or for *new drivers* rather than *pre-learner drivers*. Overall, these learning outcomes generally relate directly to the student as a driver, but consider the application of a range of activities with the student as various road users – such as a pedestrian, cyclist, passenger or wheeled toy user.

By way of example, take the area “importance of peers”. Newman et al. (3) suggest that learning outcomes at the pre-learner stage may require students to “*identify emotional reactions and responses to a range of situations they find themselves in when using the roads...as a passenger with different drivers, as a pedestrian with a group of friends or as a cyclist on a busy road/bike path*”. At the learner stage, students may be asked to “*identify emotional reactions and responses to a range of situations they find themselves in when using the roads as a driver with different passengers*”, while at the new-driver stage students may be asked to “*explain differences between direct and subtle peer pressure and explain the relationship between social pressure and risk taking*” (p68).

Application of the Process

Stage Two

During the second stage of this project, the activities within each resource in the NSW 'Young Driver' program were audited against the proposed learning outcomes, to determine which components of the *behaviour change model* were addressed by the current suite of resources, which were not addressed by the current program and which concepts may be better addressed outside the school setting.

Based on the results of this assessment, recommendations regarding the development of, and the technological opportunities available for, future resources for the education of young drivers in the school environment were prepared.

Conclusion

In conclusion, it is anticipated that the evaluation using the method outlined above will assist the RTA to review and, where required, redevelop components of the current *Young Driver* education program. It is further noted that the process developed by this study for auditing the educational resources in the NSW program may have application to young driver education programs offered by other agencies throughout Australia.

References

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