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The Development of Traffic Safety as a Profession: Tertiary Education

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Abstract

This report investigates the potential for the professionalisation of Traffic Safety. The multi-disciplinary nature of Traffic Safety is discussed and justification is provided for the provision of tertiary studies in Traffic Safety to unify the body of knowledge. From a review of literature, it has been found that the improvement of knowledge, through continuing learning (education, peer review, discussion, reading publications, attending conferences, etc) is the dynamic in professionalisation. The project has included successful negotiations with the University of New England to establish articulated courses in Traffic Safety.

Keywords

tertiary courses; curricula development; traffic safety; professionalisation; multi-disciplinary; continuing education

THE DEVELOPMENT OF TRAFFIC SAFETY AS A PROFESSION: Tertiary Education

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' ..... but the excellency of knowledge is, that wisdom giveth life to them that have it'.

Ecclesiastes 7: 12

1. EXECUTIVE SUMMARY

The former Institute of Road Safety Officers, IRSO (now merged with the Australian College of Road Safety) initiated the investigation of the means of establishing tertiary courses in traffic safety in 1988. EastAus Management Unit, initially working with the IRSO and since supported with a seeding research grant from the Federal Office of Road Safety, has conducted this investigation.

The goal has been to further the development of Traffic Safety as a profession. The definition of 'professional' has been studied and the important link with continuing learning has been uncovered as a factor supported in literature.

Recognition has been given in the literature to the importance of other criteria to complement education in the development of an occupation as a profession. In Australia, a conference movement; traffic safety publications, libraries and resources centres; and a professional association (Australian College of Road Safety), with its Code of Ethics, provide the bases for this professionalisation of Traffic Safety.

Traffic Safety is only a minor component of courses which are currently offered by tertiary institutions in Australia. Independent Traffic Safety courses have been developed overseas, but this investigation has attracted offers of collaboration to further refine and extend these courses.

As an outcome of the research, consultations and negotiations, the University of New England, ideally equipped and placed in the supportive Armidale environment, will offer an articulated programme of tertiary courses in traffic safety by distance education. The programme will be supervised by a Board of Studies within the School of Health.

2. TERMS OF REFERENCE, GOAL AND OBJECTIVES

The former Institute of Road Safety Officers (Australian Group) operated in conjunction with the parent body in the United Kingdom. The organisation merged with the Australian College of Road Safety in 1989.

Members of this Institute, recognising the need for tertiary level education for those working in traffic safety, resolved to take action in 1988. A number of tertiary institutions were contacted but either no interest was shown or expectations of large amounts of funds for course development were expressed.

EastAus Management Unit was contracted to investigate the means of establishing new courses. A number of meetings were held between the Manager of EastAus Management Unit, Colin Grigg, and a representative committee of the Institute of Road Safety Officers which included Ray O'Dowd, Jim Johnstone, John Marsh and George Goddard. EastAus Management Unit agreed to initially research the matter on the understanding that payment for services would follow the establishment of the courses.

Preliminary investigations included discussions with traffic safety personnel, staff at the University of New England and a preliminary survey (see Appendix 8). After EastAus Management Unit had completed the initial 'ground work' in the project, assistance was provided, with a 'Seeding Research Grant' from the Federal Office of Road Safety, in 1992. The funds provided by the Federal Office of Road Safety have supported the research and initial curricula development as outlined in this report. The curricula development has been carried out in consultation with traffic safety personnel across Australia and in conjunction with the University of New England (School of Health and University Partnerships, the entrepreneurial unit of the University).

The research in this project has been completed and reported in accordance with the conditions of the Federal Office of Road Safety Seeding Research Grants Scheme.

The goal of this project is *to further the development of Traffic Safety as a profession.*

The objectives set for the project are:

* *To consider traffic safety in its societal context and its relationship to its constitutent disciplines .*

* *To consider the provision of tertiary studies in Traffic Safety as a possible complementary development to the other major initiatives in fostering Traffic Safety as a profession .*

* *To investigate the justification for tertiary education, within a profession of Traffic Safety, for Administrators, Educators, Health Advisors, Law Enforcers, Planners and Researchers .*

* *To review the precedents for professional development in Traffic Safety in overseas countries .*

* *To examine the basis for tertiary studies in Traffic Safety which already exists in Australian Institutions .*

* *To examine job descriptions and job specifications of personnel who have traffic safety duties to assist in the assessment of educational needs .*

* *To design a proposed curriculum and consult with people across Australia on its suitability in satisfying the identified educational needs .*

3. PROFESSION, PROFESSIONISATION, PROFESSIONAL, PROFESSIONALISM

'Excellence, if attainable at all, is achieved by those who realise that no such condition exists'.

Robert Hill [Bell R.R. and Burnham J.M. (1991) p. 3]

The goal of this project is to further the development of Traffic Safety as a profession. It is useful at the outset to consider what is implied by the term 'professional'.

3.1 Definition

The word once referred mainly to the three learned professions - theology, law and medicine.

The symbol of a profession was developed in the 19th and 20th centuries by the efforts of leaders of numerous occupations to 'establish standards that would entitle each one to be called a profession' (Houle, 1980, p.1).

Generally, the terms profession and professionalisation relate to an occupation or the group which is backing the particular occupation. The terms professional and professionalism relate to the practitioner (Jarvis,1983, p.20).

'In the United States, the first classic work on professionalism was a paper published in 1915 by Flexner. To define professions, he named six criteria: they involve essentially intellectual operations with large individual responsibility; they derive their raw material from science and learning; this material they work up to a practical and definite end; they possess an educationally communicable technique; they tend to self-organization; they are becoming increasingly altruistic in motivation ' (Houle, 1980, p.22).

A profession, according to Carr-Saunders in 1928 may be defined as 'an occupation based upon specialized intellectual study and training, the purpose of which is to supply skilled service or advice to others for a definite fee or salary' (Jarvis, 1983, p. 21).

Hughes (1963, p. 656) gave a definition which has been repeated by both Schein (1972, p. 7) and Jarvis (1983, p. 20): 'Professions profess. They profess to

know better than others the nature of certain matters, and to know better than their clients what ails them or their affairs'.

The search for a definition has gone on. In 1964, Millerson reviewed the work of twenty five writers who, before him, had studied the professions. He listed twenty three different occupational characteristics which had been listed by these writers as requirements for a profession (Jarvis, 1983, p.21).

Another composite definition derived from a number of writers in the 1957-1970 period was derived by Schein (1972, pp. 8-9). This appears in Appendix 1.

Houle (1980, p.23) notes that almost sixty years and hundreds of definitions of professionalism after Flexner stated six criteria , 'another writer on the same subject,
Rose (1974), gave a far different answer. After a survey of other definitions, he proposed his own which, like Flexner's, contained six criteria: association with high-status knowledge; association with universities; association with high social class; association with activities that have high value to many people; association with beliefs in processes that have acquired a high degree of mystique; and association with power bases'.

Up until about 1960, there was a reasonably well accepted conception of a professional. This was someone 'deeply versed in advanced and subtle bodies of knowledge' (Houle, 1980, p.1). They learn by 'study, apprenticeship and experience' (Houle, 1980, p.1) or a combination of theory and practice. They protect one another and have 'special protection' in society provided that they maintain good performance and show ethical behaviour.

Houle (1980, pp. 35-73), in the context of the concept of a dynamic process of corporate improvement within an occupation - professionalisation, identifies fourteen characteristics:

Clarifying the defining functions
Mastery of theoretical knowledge
Capacity to solve problems
Use of practical knowledge
Self-enhancement
Formal training
Credentialing
Creation of a subculture
Legal reinforcement
Public acceptance
Ethical practice
Penalties
Relations to other professions
Relations to users of the service

Jarvis (1983, p. 20, 22) singles out the essential feature for a profession as **excellence of knowledge**. 'Beneath the kudos implicit within the word, there still lies the idea that this status is founded upon a greater degree of knowledge, skill or something that ordinary occupations do not have'. He considers that 'those occupations to
which the status of 'profession' is usually attributed are occupations which seek in some ways both the mastery of an identifiable body of knowledge and the control of its application in practice'.

When reviewing this long saga in which attempts have been made to describe a profession, we encounter terms such as intellectual operation, learning (education), intellectual study and training, superior knowledge, high status knowledge, advanced knowledge, mastery of theoretical knowledge and formal training, mastery of a body of knowledge. **Knowledge** is the key word and the **means of acquiring it** becomes equally important. This provides relevance to the objective of this study, *to further the development of Traffic Safety as a profession* (professionalisation): *with tertiary education..*

3.2 Change in the Concept of Professional

At this point it is appropriate to discuss the term professionalisation. It is used to refer to the dynamic process in which some occupations are developing the characteristics which are identified with the status of profession. For example, it has been suggested that such things as the formation of a professional association, change in title of the occupation, the establishment of a code of ethics, establishment of training facilities and the control of qualification and entry into the profession have to be developed in the process of professionalisation. Jarvis (1983, pp. 24-25) discusses how these ideas were put forward by Caplow, Greenwood and Wilensky in the period 1954-1964.

Schein (1972, pp. 9-10) states that 'the ultimate criterion of professionalization according to most sociologists is the achievement of 'autonomy' which implies (1) knowing better what is good for the client than anyone else because of extended technical education or training (2) subjecting one's decisions only to the review of colleagues and (3) setting all one's standards pertaining to jurisdiction of the profession and entry into it through peer-group associations'.

In noting that the concept of a profession has changed, (Houle, 1980, p. ix) defines this change in the following terms:

From - a 'solitary, disciplined, highly educated and deeply ethical practitioner dealing with clients one by one' ; to - a 'collective group enterprise that is shared by many people who represent layers of specialism and that is alleged to be flawed by a lack of concern for comprehensive and dedicated service, by a marked self-interest and by incompetent performance'.

Whereas the concept of a profession was once static in nature according to which occupations were ranked into rigid categories, a more dynamic approach has emerged since 1960. This new approach had been enunciated by the mid 1960s but it took some years for widespread adoption. The change resulted in the new use of criteria associated with professions. There was a shift from identifying occupations which could be called professions to observation of how professionalised a given occupation is at a point in time and how it is 'working towards further refinement' (Houle, 1980, p.27). Houle's 'working policies' are given in Appendix 2.

The development and implementation of tertiary education curricula and courses in Traffic Safety is one important link in the dynamic process of 'working towards further refinement'. Other indicators of development of the characteristics which are identified with the status of profession have emerged in Australia in the last decade. In particular, conferences have been organised and the Australian College of Road Safety has been established. Conferences have enabled the presentation and discussion of ideas, trends and developments. The Australian College of Road Safety is progressively preparing 'position statements' on important issues in traffic safety by means of a process involving statement, discussion and review by colleagues. The College has also issued a Code of Ethics. Clauses of the code which particularly relate to the professional characteristics discussed in this report are as follows:

Members are expected to -

* maintain a standard of excellence in their safety specialty and to continue to upgrade their skills and training in that area.

* share information freely about the implementation of safety programs.

* encourage professionalism amongst all traffic safety workers.

3.3 Professional Education

In 1972, Schein predicted change for the education of the future professional. He drew attention to the importance of linking the needs of the professions with planned educational change. 'The professions are a set of occupations that have developed a very special set of norms deriving from their special role in society. These norms and this special role must be clearly understood if we are to make any sensible and realistic recommendations for planned change' (in the education of the future professional) (Schein, 1972, p.8).

In this project, attention has been given to job descriptions and job specifications for personnel employed in road safety organisations. The appropriate competencies or 'norms' have been taken into consideration in designing the curricula.

Many different responses have been made to assure quality performance of professions in a changing environment. Houle (1980) suggests that an important approach is the use of continuing learning. The term learning is purposefully used in preference to education to encompass 'three modes of learning - inquiry, instruction and performance' (Houle, 1980, p. xii). He defines learning as 'the process by which people gain knowledge, sensitiveness or mastery of skills through experience or study' (p. xi). Jarvis (1983, p.5) refers to a 'planned series of incidents'. These definitions emphasise the importance of both formal education and other learning experiences on a recurrent basis.

Houle notes that professional learners often wish to be formally instructed but such a choice 'does not relieve a professional of the ultimate responsibility for the conduct of his or her education' (p. xi). The importance of learning other than formal education necessitates self motivation of the professional and the use of opportunities, other than formal education, to improve professional knowledge. Many practitioners have found ways to maintain continual learning in their professions which suit their individual needs and their obligations to clients. 'Despite limited resources, particularly time, these professionals are constantly observing, reflecting, reading, discussing and taking part in organised programs of instruction, incorporating into their performance what they learn by all means' (Houle, 1980, p. 303).

It should be noted that, in the professionalisation of traffic safety, other forms of learning, apart from the proposed formal university courses, should be maintained. There is need for information sharing, discussion, debate and

research. As many as possible of the people involved in some aspect of traffic safety should be encouraged to participate in this ongoing process.

Writers have emphasised the relationship to professional education of professional basic education, continuing education and lifelong education.

Jarvis (1983, p.17) describes professional basic education as 'education that a new recruit to the profession receives prior to commencing practice'. This may be in the form of a formal course or on-the-job training.

Jarvis (1983, p.18) also refers to continuing education which, in the field of professional education, 'has assumed significance in as much as it is recognised that continuing learning or education is essential to good practice and that basic professional education is no longer sufficient for a lifetime of practice'.

Continuing education serves the purposes of updating the knowledge of practitioners concerning new developments in their profession; enabling people to move from one field of the profession to another; or acquiring specialist knowledge.

Lifelong education has been defined by Dave (1976, p. 34) as 'the process of accomplishing personal, social and professional development throughout the life-span of individuals in order to enhance the quality of both individuals and their collectivities'.

3.4 Changing Environment

With the industrial revolution came the principles of division of labour and specialisation. The objective was and has been better efficiency and productivity. In contemporary circumstances, however, specialisation is often necessary to solve societal problems because of the expertise required.

The modern world in which professionals work is undergoing rapid change. Technology, economics, politics, social and cultural factors, environmental issues, global diplomacy, etc., all contribute to the change and uncertainty. A part of the change is the explosion of knowledge. The problems to be solved are becoming so complex that no profession alone can effectively deal with them.

To illustrate this, reference is made to the observations of Albrecht, Karl (1979) .p. 30, .concerning .human .health. He stated that 'all .disease .has .both

psychic and physiologic components'. His justification for use of the concepts of 'wellness' to replace 'health'; and an 'holistic' approach to human health are based on the belief that by 'subdividing professional practitioners along arbitary lines of 'mind' and 'body' makes it virtually impossible for them to develop an integrated methodology for treating the entire person'.

A further example is given by Schon, Donald, A. (1987) p.4, in discussing that specialists approach the same problem from different perspectives. 'When a practitioner sets a problem he chooses and names the things he will notice. In his road-building situation, the civil engineer may see drainage, soil stability and ease of maintenance; he may not see the differential effects of the road on the economics of the towns that lie along its route'.

'The capacity of professionals to learn everything they need to know diminishes with the growth of knowledge and development of specialization and the dependence of the individual practitioner on others in different specialties or even different disciplines is therefore increasing' (Schein, 1972, P. xi).

On the basis of these opinions, traffic safety, because of its multi-faceted nature, requires input from many specialisations and disciplines to ensure a balance of expertise.

In addition, from the point of view of achieving an organisational or societal goal, action which should always be concomitant with division of work and specialisation is coordination within organisations and collaboration between organisations which are working towards the particular goal. Any one specialisation alone will be inadequate if it fails to work collaboratively with other specialisations.

4. THE MULTI-DISCIPLINARY TRAFFIC SAFETY PROFESSION

4.1 Organisations

A description and understanding of the input which diverse institutions contribute to the study of traffic safety is of fundamental importance to any study of the topic. Largely by evolution, a range of government, commercial, road user and community interest organisations have become involved for various reasons. Even in the public sector in Australia some aspects of traffic safety have received attention from all three levels of government. At any one level, federal, state or local, more than one department has usually been involved .

A wide range of other commercial and community based organisations also have some interest in traffic safety. The list is extensive and includes, for example, motorists' associations; driver training centres; the motor industry; post-trauma support groups; rehabilitation units; private consulting and research organisations; heavy vehicle operator groups; vehicle fleet operators; parliamentary standing committees e.g., STAYSAFE, Travelsafe; medical organisations; insurance companies; etc..

This diversity is not peculiar to Australia. It has been the pattern in most countries as the use of motorised transport has been adopted. Trinca, et al. (1988) have explained the historical background to this tendency. 'The early history of traffic safety in almost every motorised country was characterised by disperse, uncoordinated institutional units performing isolated single functions - road building, traffic management, law enforcement, public education. The dominant official view that traffic accidents were caused by inadequate or reprehensible behaviour created a climate in which the community simply did not see a need for help from the scientific and technological sector. In the 1950's in Australia, for example, the then Prime Minister dismissed a proposal to have the nation's chief scientific body study traffic safety as a preposterous suggestion'.

4.2 Disciplines

In parallel with the diversity of traffic safety institutions, is the various disciplines in which people are working on some aspect of traffic safety. There has been growing recognition of the need for an inter-disciplinary approach to traffic safety. This involves simultaneous collaboration or joint effort by individuals from two or more disciplines e.g., educators, engineers,

enforcement personnel, medical professionals, health staff, social scientists, working together for the solution of traffic safety problems.

The inter-disciplinary nature of traffic safety is dealt with in a Discussion Paper prepared by the Australian College of Road Safety members (1992).

Road safety, as a profession, depends on a wide spectrum of skills and disciplines. Its expertise derives from and builds upon substantive contributions from an extraordinarily wide variety of occupations including ambulance officers, driving instructors, engineers, educators, environmentalists, insurance agents, lawyers, managers, media consultants, medical practitioners, policemen/women, politicians, psychologists, social scientists, statisticians, teachers, town planners and traffic educators.

The discipline operates most effectively when it involves contributions from professionals in these fields.

There have been problems in the past, with opinion being divided over the relative contribution made in particular by engineers and educators. However, it can be argued that these contributions may complement each other, particularly as solutions to road safety problems increase in complexity. Engineering advances continue to make a major contribution to road safety in Australia and, as these developments become even more sophisticated, the role of educators, in ensuring their implementation, becomes critical. Educators may have felt marginalised in road safety debates and with the growing sophistication of their practices, engineers may be unsure of implementation practices. However, the role of both professions is critical in the promotion of a safer Australia.

There is a certain lack of understanding of professional roles in the community and the relatively low status of inter-disciplinary qualifications may heighten the concerns regarding professionalism in road safety. A relevant suggestion relates to the possibility of initially adding on road safety qualifications to existing training programmes. It is important to stress that road safety should also be part of the learning programmes not only of engineers and educators but also other professionals e.g., ambulance officers, lawyers, medical practitioners (primary care and specialists), occupational therapists, police officers and town planners.

It is essential that road safety workers have skills in networking and collaboration. This requires a realisation that the problems which are confronted in road safety demand an understanding of human behaviour

and its interaction with the environment. It has become increasingly recognised that these issues are ill-served by rigid intra-professional and territorial boundaries. It is thought that the problems of the future will only be resolved by cross-territorial consultation and planning (ACRS members, 1991).

4.3 Traffic Safety as a Vocation

It can be recognised that there are many devoted people who give expertise, time and personal finance to support the improvement in traffic safety. These people participate as members of service clubs, probus, parents and citizens associations, groups of volunteer marshalls at school crossings, advisory groups to local government councils, regional road safety councils, rescue groups, trauma counselling and care groups, instructors at community safety centres, etc.

While these people may not be classed as professionals in the true sense of the word, many have a professional approach. Many certainly apply a depth of knowledge and experience to the road trauma problem. It may be more appropriate to say that traffic safety is their vocation. This indicates a dedication that may not necessarily be evident in one following a profession and it implies a long-time commitment which is not necessarily equated with earning a livlihood (see Glossary of Terms). Indeed, these people may contribute to the cause at their own expense.

A growing number of states and territories have developed or are developing strategic plans. *The Strategic Plan for Road Safety in NSW* (Road Safety Bureau 1992) was released in September 1991. Also in 1991, *Road Safety: Challenges and Strategies for the Next Decade* was implemented in Victoria (Vic roads et al. 1991). Likewise, at a federal level, the recognition of the usefulness of this approach, led to the development of *The National Road Safety Strategy* (Australian Transport Advisory Council 1992) which became available in April, 1992. The Northern Territory road safety strategy, titled *Road Safety Our Responsibility* (Implementation Task Group, 1993) and *The Queensland Road Safety Strategy* (Road Safety Division, Department of Transport) were released in 1993 . In these plans, there has been an emphasis on community involvement in the fight against road trauma. Such a scheme is reliant on these devoted people in the community at large.

Those who have a vocation in traffic safety may earn their living in other pursuits or they may have retired from their former careers. Nevertheless, it

is conceivable that they are potential candidates to undertake the proposed courses in traffic safety.

4.4 Impacts and Linkages

In Australia during the 1980s, the recognition had come that Traffic Safety problems cannot be solve by any one type of institution or discipline. There is a trend for closer collaboration of the specialists. Other important trends include:

*The reduction in road trauma is being perceived as a problem for the community to solve.
*Traffic safety has been designated as a public health issue .
*Traffic safety has been broadened to aspects of health, other than casualties of crashes.
*Traffic systems are being studied in terms of their sustainability in the environment.

These trends broaden the range of specialisations which require integration when dealing with problems of traffic systems. A framework for an integrated approach by local communities, community groups, state authorities and national organisations is essential. This framework is commensurate with the need for cooperation, consultation and coordination between many different groups. The essential mechanism for this is communication.

The communication process has many applications in traffic safety (Grigg, 1993). For example:

-for cooperation and coordination between institutions
-for facilitation of community development
-for public education campaigns and political pressure
-for traffic safety research
-for education of traffic safety professionals
-for discussion of traffic safety issues
-for imparting knowledge, skills and attutudes in road user education and training
-for evaluation of the effectiveness of traffic safety programmes

At the second biennial National Traffic Education Conference held in February 1988, the Australian College of Road Safety was formed. This move was supported by delegates who considered that traffic safety personnel needed a permanent professional network.

The *National Road Safety Strategy* (Australian Transport Advisory Council, 1992), states that the objectives of the plan will be achieved through, together with other matters, 'coordination and involvement among all agencies to make the best use of their resources. It will also increase community participation in road safety decision making'; and, 'Stakeholder commitment through a partnership of governments, police departments, motorists' associations, industry and community groups in developing the strategy and them agreeing on ways to measure the success of the strategy'. This once again emphasises the need for coordination of diverse disciplines and interests.

5. JUSTIFICATION

The development of traffic safety as a profession in its own right currently requires consideration from two different perspectives. The first is the availability of suitable continuing education through to post graduate level for those involved in some aspect of traffic safety. It is this aspect that is pursued in this project. The second issue is the acceptance and integration into the culture of major public and private organisations, which employ staff with traffic safety responsibilities, of the policy of career paths for traffic safety workers.

The matter of employment of traffic safety personnel has been raised on previous occasions. There seems to be a lack of incentives for continuity of employment in the fields which are related to traffic safety. For example, it is reported that Dr R F Soames Job expressed concern about the matter and 'called on those responsible to recognise the value of specialists by providing an attractive career path and suitable remuneration to maintain professionalism and stability in road safety work and stop the drain of skilled personnel from critical yet unrewarding areas'(Clark J, 1990).

Schools and faculties based at various tertiary institutions usually encourage education and research streams. The justification for the development of traffic safety with this dual direction, can be given on **economic, social, environmental, health** and **educational** grounds.

5.1 Economic Importance

In economic terms, road traffic is estimated to cost an average of 20% of the Gross Domestic Product of all O.E.C.D. countries (Mackay, 1989). The existence and likely growth of traffic systems as an essential mechanism for economic exchange and trade is of major economic importance to societies of the world. Road networks dominate the landscape of even the less developed countries, with social and environmental side effects. The various fields related to design and use of traffic systems, which are of such economic importance, should be a unified discipline which focusses on the science and management of road traffic, with human health and safety as a major theme.

5.2 Social Impact

The social impact of roads and traffic is often overlooked. Residential development; the price of housing; the cost of travel and parking; the cost of time wasted and energy consumed in congested traffic, are related to traffic

systems and/or commuting distances. Also derived from traffic systems is the spatial separation of homes from other locations of individual activity such as work and recreation. This has a fundamental impact on family life and lifestyle patterns.

5.3 Environmental Impact

The environmental impact of dominant traffic systems is also significant and worthy of research and education. With the increase of traffic density has emerged the adverse effects of a variety of unhealthy forms of pollution eg gaseous emissions, particulate matter (brake linings, rubber tyres, diesel soot), noise and vibration.

5.4 Human Health

Human health is at risk in certain respects as a result of environmental pollution. The other indirect effects of a traffic system are the most serious. This is the matter of safety of road users and the trauma which consistently results from traffic crashes. In 1989, an estimated 500,000 road traffic fatalities occurred worldwide - based on 120,000 fatalities in 24 O.E.C.D. countries with well established statistical information (O.E.C.D., 1988). It has been predicted that, as developing countries motorise, fatalities could rise to one million per annum (Trinca et al. 1988).

In terms of human health, traffic injury ranks as number one problem in most O.E.C.D. countries for the first thirty years of life. Research and education are very much needed to provide understanding and control of road trauma. Because of the enormity of the problem for human well being, this proposal gives prominence to health and safety in future studies of traffic science and management.

5.5 Education

The justification for a separate approach to traffic safety (science and mangement) also can be discussed in educational terms. Traditional education subjects of road engineering and traffic planning (by-products of civil engineering) are available. The existence of these subjects is evidence of both the significance of transport and traffic infrastructure as an item of public expenditure and of the relative ease in researching and teaching them due to the existence of definitive concepts and empirical techniques.

In the context of causal factors of road crashes, these established courses are dealing with factors which research has shown to be lesser determinants. In other words, the standard of vehicles, roads and traffic systems account for, at the most, ten percent of the contributing causes of road crashes, whereas the human factors are the sole or partial cause in more than ninety percent of the cases. The established subjects need to be supplemented and expanded with knowledge from other disciplines.

The areas of road engineering and traffic planning are also the domain in which most advances have been made. The scope for improvement in road trauma management is diminishing when using only these basic subjects and their expansion is required.

These conventional subjects need to be supplemented with the knowledge and material of social and behavioural sciences and other disciplines. There is need for an extension of enquiry into the psychological and behavoural factors involved in driving, riding and walking in traffic and an understanding of the function and priority of road traffic in society. This should occur in conjunction with the resources of engineering and planning.

Environmental and social issues stemming from traffic systems require more than the previous piecemeal attention. This requires research and education on a range of issues not previously considered because of the difficulties involved in experimental research or because some factors have been considered in isolation. A unified discipline would facilitate the development and teaching of theories about the interactions between individual, societal and political values and would investigate, through transport economics, priorities related to the dilemmas involving people, freight, drivers/riders, pedestrians, roadsapace, parking, traffic control, pollution, conservation of energy, public transport, two car families, time management, etc..

The importance for professional education to be constituted with professional basic education, continuing education and lifelong education was discussed in section 3.3. The proposed Certificate, Graduate Diploma and Masters Degree will cater for these types of education and hence will facilitate the professionalisation of traffic safety.

Progressively, land traffic has been recognised as an important part of daily life. This recognition is linked, in general, with the increase in concern for safety as a health issue, and in particular, with the growing emphasis on occupational health and safety and the legislation related to workplace

practices. As a result, more human resources, commensurately are being assigned the responsibility for health and safety matters. Executives in a diverse range of organisations who are being given the responsibility for health and safety, including traffic safety, (a vehicle is now defined as a place of work) may have become executives because of their expertise and qualifications in a wide range of fields and disciplines respectively. Post graduate courses will serve in professionally endorsing these specialists in their new responsibilities. These studies will provide for continuing education for professionals and will be a component of lifelong education. The Masters Degree will also enhance the contributions to traffic safety research.

A set of articulated courses will enable future students to embark, from the outset, on a career path in traffic safety either as researchers or managers. If there is a deficiency in the present system whereby it is difficult, for several reasons, to follow a career in traffic safety, educational opportunities in a profession would help to overcome this deficiency.

Studies in a Certificate course, with non matriculation entry, will serve the needs in basic education of practitioners such as road safety officers, driving instructors, ambulance officers, police staff, etc.

6. OVERSEAS PRECEDENTS

Certificates and Advanced Certificates in Road Safety Studies have been offered in the U.K. since 1974 at Middlesex Polytechnic and since 1980 at Central Manchester College of Technology. More recently, action has been taken to introduce post graduate Certificate, Diploma and Master of Science awards in Safety Management Studies at Bournemouth Polytechnic.

The availability of safety, including road safety courses in at least three institutions in U.S.A. also provides a precedent in offering similar courses in Australia. At Central Missouri State University, a student may choose a Master of Science Degree (in safety management or industrial safety) or a Master of Science in Education Degree (in general safety, transportation safety, system safety or industrial safety). This range of courses makes it possible to obtain a general understanding of safety issues or to undertake specific studies in transportation and traffic safety.

The Netherlands Institute of Tourism and Transport Studies was established in 1987 with the merger of The Netherlands Institute of Tourism and Leisure Studies and the National Institute of Planning, Traffic and Transport. It has a Department of Town and Country Planning, Transport, Logistics and Traffic Studies. This Department offers courses in Traffic Studies with specialisation in traffic control, research, public transport and management. Traffic Safety is one of the themes in Traffic Studies. The Institute also collaborates with other European and UK tertiary institutions in presenting masters degrees in its fields of study.

7. OTHER AUSTRALIAN INSTITUTIONS

Other academic institutions in Australia have involvement in traffic safety. By means of university handbooks and direct contact with institutions, the extent of this involvement was investigated.

The information sought was to determine 'the extent of research and education in traffic safety at Australian Universities' and the specific questions were as follows:

(a) Is your interest in research only?
(b) Are you involved in teaching any course with Traffic Safety units?
(c) Do students under the supervision of you or your colleagues undertake assignment or thesis work on Traffic Safety topics?

A summary of details is given in Appendix 3.

From this part of the investigation, it can be seen that the involvement of academic staff at Australian Institutions in traffic safety is mainly in research activities within specific specialisations. Members of staff, working in particular fields related to traffic safety, are actively involved in research. In this category are the NHMRC Road Accident Research Unit, Adelaide University; Monash University Accident Research Centre; Safe Drinking Project Research, University of Queensland Medical School; and Road Accident Prevention Research Unit, Division of Public Health, University of Western Australia.

In addition, students at most tertiary institutions are involved in traffic safety. Because of the interest in traffic safety as a topic, many students choose some aspect of traffic safety for assignment and thesis work.

In the cases where some content pertaining to traffic safety is included in educational courses, this is very limited. In most cases, matters related to traffic safety form only part of a one semester unit.

For example:

University of Queensland
In the Faculty of Civil Engineering there is a unit 'Transportation Engineering I'. The content of this unit includes - role of transport in modern society, operational characteristics and capacity of transport modes, data collection, driver characteristics, vehicle characteristics, safety, control of transport systems: roads, railways, airways.

Melbourne University
Some aspects of road safety are included in courses offered in the Faculty of Engineering and the Faculty of Economics and Commerce.

Transport Engineering 421-340 :
This is a 5 credit point unit. It aims to introduce students to the basic fundamentals of traffic engineering and planning. The content includes introduction to transport engineering; the transport planning process; the road/traffic system; elements of traffic flow; gap acceptance analysis; traffic queues; site impact assessment.

Transport Engineering 421-440:
This is a 7 credit point unit. It aims to introduce students to the fundamentals of transport and highway engineering. The content includes traffic engineering; traffic signal design and traffic management; traffic surveys; geometric design of roads; road pavement design.

Transportation Planning 421-441:
This is a 5 credit point unit. It covers the theory and practice of transportation planning. The content includes transport planning and modelling; transport network modelling; travel behaviour modelling; travel surveys; travel survey process; sample design; questionnaire design; public transport system design; models of public transport; performance measure for public transport.

Traffic Engineering 421-442:
This is a 5 point unit. It covers some advanced aspects of traffic engineering and planning. The content includes environmental impacts of transport; transport safety; parking systems; local area traffic management; simulation modelling of traffic systems; transport logistics.

Urban Economics 316-314:
This is a one semester unit. The content includes a range of concepts in urban studies such as urban welfare, housing, urban environment and urban transport. The latter deals with interrelation between transport and land use; demand for urban transport; trip generation; modal choice; pricing of private and public transport; investment criteria including cost-benefit analysis.

There is also research interest in ergonomics, road user behaviour and vehicle safety at Melbourne University.

Even the most extensive traffic safety courses which have been introduced are only limited in nature. Courses at Deakin University, University of New South Wales and University of New England are examples.

Deakin University, Rusden Campus
A Certificate of Traffic Safety Education was introduced at Hawthorne Institute of Education, Melbourne, in 1977.

It is now offered by Deakin University at the Rusden Campus.

Since its introduction, the content and venue has varied but the course has occupied 170-210 hours during a 4-6 week period.

This is not an official University course but is offered on a contract basis with the Victorian Ministry of Education (Hawthorne, Graeme, 1991).

It is a requirement of the Victorian Ministry of Education that teachers must complete the course as an in-service programme, before teaching pre-driver education (Hawthorne, G & Strong, S, 1990).

University of New South Wales
At the University of New South Wales, Department of Safety Science, 'SAFE 9544 Transport Safety' is one of some forty four subjects/units listed in the handbook. The range of coursework awards which incorporate these subjects are as follows:-

Master of Engineering Science (Industrial Safety)
Master of Safety Science
Graduate Diploma in Safety Science
Graduate Diploma in Ergonomics

The Department of Safety Science provides courses designed for ergonomists, hygienists, safety engineers and occupational and health practitioners.

'SAFE 9544 Transport Safety' is a course occupying 13 weeks of study and valued at 3 credit points.

8. DEVELOPMENTS AT UNIVERSITY OF NEW ENGLAND

Traffic Safety Education

The first accredited, tertiary traffic safety subject offered in Australia was at the Armidale College of Advanced Education (now amalgamated with the University of New England) in 1987. The subject entitled "Child Traffic Safety Education" was accredited as a professional teaching option for Bachelor of Education degree students (Maye, Brian and Jarman, Lynn, 1988).

Transport Planning

A unit entitled Transport and Land Use, Geoplan 350-1 is offered in the Department of Geography and Planning. The unit introduces students to a range of transport issues. These include transport planning; land use and transport interdependence; transport in economic development and growth; the urban transport problem; goods and freight movement; policy making in transport, land use and development. In association with Geoplan 350-1, the Department of Geography and Planning also has a special reading unit, Issues of Safety in Transport Planning Geoplan 454-1.

Disaster Management

The Centre for Disaster Management is a world-wide pioneer in tertiary level studies for emergency services personnel. It presents a unique inter-disciplinary approach to disaster and hazards study. The departments of the University of New England working with the Centre include sociology, public administration, psychology, politics, economics, Centre for Water Policy Research, engineering and health. There is a dynamic relationship between research and teaching. The Centre for Disaster Management is offering units such as Concepts, Models and General Principles; Hazard Analysis, Risk and Vulnerability Assessment ; and Disaster Psychology which can be incorporated as optional units in traffic safety studies.

Traffic Safety

Many meetings have been held with staff at the University of New England concerning the development of Traffic Safety courses. The matter discussed above concerning the multi-disciplinary nature of traffic safety was again evident in these discussions. There was no ready recognition that traffic safety was the obvious jurisdiction of a particular faculty. It has been ultimately adopted by the School of Health.

The original curricula developed by the author of this report and distributed to a cross section of road safety personnel across Australia, is included in Appendix 4. Subsequent modifications have been made as a result of comments received from various sources acknowledged in this report.

At the time when the Road Safety Bureau (NSW Roads and Traffic Authority) was invited to comment on a draft curriculum for the Certificate of Traffic Safety, there was a requirement for in-house training of RTA staff, in an overview of Traffic Safety. The first unit of the certificate course has already been developed for this purpose.

Development of the course content will continue. There are two dimensions for this development. Firstly, input will be derived from evaluation of the courses as they are presented. Secondly, an interaction of future research with the educational process, similiar to what is occurring in the above mentioned disaster management courses at University of New England, will provide updated knowledge.

Approval has been obtained to introduce a Certificate and a Graduate Diploma, with indications that a Masters degree will be added in 1994 in a fully articulated programme.

9. SUPPORTING ARMIDALE INITIATIVES AND RESOURCES

The University of New England is located in Armidale, New South Wales. Apart from the experience already gained in introducing Road Safety Education as part of the B Ed degree and the other related courses mentioned above, there are other resources which will contribute to the implementation of the traffic safety courses.

The University of New England was for a long period the only rural University in Australia and Australia's first distance education University. Consequently, it has considerable experience in distance education and extension programmes. In the current scheme, it is one of four designated distance education centres in Australia. Presently it is offering some 700 courses to over 17,000 students annually. It is well equipped with communication technology and has excellent facilities for video-conferencing, satellite broadcasting, tele-conferencing, E-mail and other forms of electronic communication. This provides the experience and resources for delivering new courses to students across Australia and even to overseas students.

In addition to this expertise, the University of New England also has an entrepreneurial unit, University Partnerships Pty Ltd, which was established, following research into the concept ([Grigg, Colin], 1983), with a seeding grant of $1 million from the New South Wales Government. University Partnerships Pty Ltd, as the commercial company of the University, is active in technology transfer, publishing, consulting and the development of special training programmes. Assistance has been provided by this group in discussions with the University, development of a curriculum document and negotiations with potential sponsors for course development.

The Australian College of Road Safety has established, in conjunction with the University of New England, the Australian Road Safety Resource Centre. This is based in the Dixson Library at the University of New England. It is linked by computer with other major Australian and international databases and has a growing collection of shelf references. This would be a very useful resource for students and researchers (see Appendix 5 for details).

Another resource which could be used in field work for students is operated by the Commonwealth Rehabilitation Services (CRS), Commonwealth Department of Health, Housing & Community Services . Two programmes of relevance to traffic safety are operated by occupational therapist Margaret Entsch.

The first is a specially equipped vehicle, used to rehabilitate disabled people as drivers of motor vehicles. The off-road facilities at the New South Wales Traffic Education Centre are used in providing this service. The CRS programme and equipment was initially provided by the the State Government from the Armidale and New England Hospital in 1987 as a pioneer service in New South Wales. (New South Wales Traffic Education Centre, 1987).

The second is driving simulation equipment which measures driver reaction times. In commenting on this equipment, Dr Gates, a neuropsychologist at the University of New England, believes that general practitioners should work more closely with neuropsychologists in assessing patients with closed head injuries and their ability to satisfactorily control a motor vehicle. Inability to do so, may be due to impairment of higher order brain processes, reduced vision, deficient motor coordination skills, etc, which can only be detected in a driving simulation situation (Clark, Jennifer, 1991). Details of the CRS programmes are given in Appendix 6.

The history of the involvement of the community of Armidale has been documented ([Grigg, Colin],1987). This document is included in the kit produced by the Federal Office of Road Safety (1987) for community groups. A major outcome of the Armidale community programme was the establishment, now with strong state government support, of the New South Wales Traffic Education Centre (see appendix 7). Within the complex is located the New South Wales Roads and Traffic Authority's Driver Education Unit for researching, developing and evaluating programmes for education and training of road users. The RTA motorcycle rider training and testing programme for licensing requirements was initially based at the Centre to train the instructors involved in the statewide programme. These facilities could provide an education and research resource for the courses and an opportunity for field studies and demonstrations for students.

10. COLLABORATION WITH OVERSEAS CONTACTS

In the course of the research, many contacts have been made with traffic authorities in overseas countries. Independent reference has already been made to the investigation which is the subject of this report, in overseas publications and correspondence in USA, UK, Papua New Guinea, New Zealand and India. Similiar development in traffic safety education is being considered currently in England and the United States of America. Correspondence and telephone calls have been received with proposals of collaboration in designing and developing courses.

11. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

*The key to professionalisation of any occupation is knowledge gained through continuing education.

*There is justification for basic and continuing education within a profession of Traffic Safety for career traffic safety personnel and for Administrators, Educators, Health Advisors, Law Enforcers, Planners and Researchers who provide specialisation in traffic safety.

*No comprehensive course in traffic safety is presently offered from any Australian tertiary institution.

*Negotiations have lead to agreement to offer articulated Certificate, Associate Diploma and Masters Degree courses in Traffic Safety, by distance education, from the School of Health, University of New England.

*Although Certificate courses and units related to traffic safety have been taught for many years at tertiary institutions overseas, requests have been received from USA and England to collaborate in the development of the proposed higher level courses at University of New England.

*At the time when the Road Safety Bureau (NSW Roads and Traffic Authority) was invited to comment on a draft curriculum for the Certificate of Traffic Safety, there was a requirement for in-house training of RTA staff, in an overview of Traffic Safety. Funds have been provided from this source and the first unit of the certificate course has already been developed as a stand-alone introductory course. With some modification it will be made available as the first unit for those wishing to enrol in the Certificate of Traffic Safety.

*In the selection of topics for student research, assignments and thesis preparation, there is considerable interest in traffic safety.

*With limited promotion of the proposed courses, interest has been already expressed from potential candidates from around Australia, as well as from New Zealand, Papua New Guinea and India.

*Other elements which have been identified in literature as important for professionalisation already exist or are being developed in Australia. These include a professional association (Australian College of Road Safety); the ACRS Code of Ethics; publications; specialised libraries and resource centres; conferences; and visiting lecturers.

Recommendations

As a result of the research carried out for this project and the successful outcome in negotiating for the establishment of courses to provide for a professional need, the following recommendations are made:

*that major agencies which employ staff in positions involving traffic safety responsibilities, should establish a policy of career development in the profession of traffic safety (see section 5).

*that the traffic safety fraternity consider the importance of continuing education and research and support and participate in the newly established courses for the benefit of themselves and their profession (see section 3.3).

*that offers from overseas contacts to collaborate in the development of higher level traffic safety courses be pursued (see section 10).

*that public agencies, the Australian College of Road Safety and associated professional organisations support continuing education, traffic safety publications, conferences and other measures to progressively advance the development of traffic safety to professional status. The working policies for professionalisation given in Appendix 2 could be used as a guide.

12. ACKNOWLEDGEMENTS

The members of the former Institute of Road Safety Officers (Australian Group), in particular, Ray O'Dowd, Jim Johnstone, John Marsh, George Goddard, were prime movers in this project.

When success requires perserverence, it is an advantage to have support and encouragement. This was provided by Dr Brian Connor who, as a medical practitioner and one who has made traffic safety his vocation, is an advocate for the development of traffic safety.

Earlier negotiations with the University of New England were with the Dean of Education, Nursing and Professional Studies, Professor David Teather and Dr Brian Maye. All Faculty Deans were consulted in the process of identifying the appropriate area for the administration of 'traffic safety' (this met the usual difficulties of a multi-disciplinary proposal).

Later discussions with the University, including development of curriculum documents, have been facilitated by Leonie Henschke and Ken Shearman at University Partnerships Pty Ltd (this is the commercial company of the University involved in consulting, training and technology transfer).

The Australian College of Road Safety has included in its current plans to 'be involved in the development of the Certificate of Traffic Safety ' (Australian College of Road Safety, 1993).

Mr Harry Camkin and staff at the NSW Road Safety Bureau have provided assistance in development work for this project.

Acknowledgement is made of the following people who have contributed information for the investigation:

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Mr Dick van den Dool	NRMA, Sydney
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Ass. Professor Laurence Hartley	Department of Psychology, Murdoch University, WA
Ass. Professor Tim Stockwell	National Centre for Research into the Prevention of Drug Use, Curtin University of Technology, WA
Dr A Peter Vulcan	Accident Research Unit, Monash University , Victoria
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Mr I M Clark	Personnel Division, Brisbane City Council
Mr Paul Circosta	Department of Transport, Queensland
Ms Jean Dann	Department of Transport, Queensland
Mr John Walker	Office of Road Safety, South Australia
Assistant Commissioner J Beck	SA Police Department
Snr. Sgt. Geoff Dungey	SA Police Department

Respondents to the initial survey to measure interest in traffic safety courses are acknowledged. These are listed in Appendix 7.

13. GLOSSARY OF TERMS

Occupation is a term used to described a group of similar jobs found across many organisations eg accountant, electrician

Profession suggests a position that cannot be attained without a considerable amount of continuing, higher education and that requires the command and application of superior knowledge (see section 3.1 for discussion on multiple criterion).

Vocation indicates a dedication that may not necessarily be evident in one following a profession and it implies a long-time commitment which is not necessarily equated with earning a livlihood.

Field is an informal word for referring to smaller groupings within a profession or occupation; it is a sphere of study, investigation or practice.

Specialisation is a formal word for referring to smaller groupings within a profession or occupation.

A *discipline* is the studies collectively embraced in a course of learning.

A *course* is a definite period of instruction and study in a certain subject or subjects.

A *subject* is a branch of learning.

A *career* represents a sequence of positions, jobs or occupations that any one person has over their working life.

14. BIBLIOGRAPHY

Albrecht, Karl, 1989, *Stress and the Manager*, Simon and Schuster Inc., New York.

Australian College of Road Safety, 1993, *Australian College of Road Safety Plans 1993.*

Australian Transport Advisory Council, 1992, *The National Road Safety Strategy*, Federal Office of Road Safety, Canberra.

Bell R.R. and Burnham J.M., 1991, *Managing Productivity and Change* , South-Western publishing Co, Cincinnati.

Calow, Philip (Ed), 1969, *Use the Right Word*, The Reader's Digest Association Pty Ltd, Sydney.

Clark, Jennifer, 1990, 'National Traffic Education Conference', *RoadWise*, Vol. 3 No. 2, EMU Press, Armidale.

Clark, Jennifer, 1991, 'Head Injuries Need Expert Assessment', *Australian Doctor Weekly* , 9 Aug..

Dave, R.H. (ed), 1976, *Foundations of Lifelong Education* , Pergamon Press, Oxford.

Federal Office of Road Safety, 1987, *Road Safety Resource Package for Community Groups*, Department of Transport and Communications, Canberra.

Gregg, David J and Roy, A. Peter, 1983, 'Road Safety Development Middlesex Polytechnic 1964-1983', *Compendium of Technical Papers, 53rd Annual Meeting, Institute of Transportation Engineers (USA).*

[Gregg, David], 1988, 'Certificate in Road Safety Studies', *Course Book*, Middlesex Polytechnic, London.

[Gregg, David], 1988, 'Advanced Certificate in Road Safety Studies', *Course Book*, Middlesex Polytechnic, London.

[Grigg, Colin] 1983, *The Transfer of Technology - The Potential of and Possible Mechanisms for a Technology Park*, EastAus Management Unit, Armidale.

[Grigg, Colin] 1987 , *A Community Model for Traffic Safety - The Armidale Experience* , EastAus Management Unit, Armidale.

Hawthorne, Graeme, 1991, *Pre-Driver Education: An Evaluation of a Traffic Safety Education Program for Senior Students in Victorian Post-Primary Schools*, Doctor of Philosophy, Monash University.

Hawthorne, G and Strong, S, 1990, *Certificate of Traffic Safety Education - Evaluation of 1989 Course*, Hawthorne Institute of Education.

Houle, Cyril, O. 1980, *Continuing Learning in the Professions* , Jossey-Bass Inc., San Francisco.

Hughes, Everett, C. 1963, 'Professions', *Daedalus* , Vol 92, Fall.

Implementation Task Group, 1993, *Road Safety Our Responsibility* , Northern Territory Department of Transport and Works, Darwin.

Jarvis, Peter, 1983, *Professional Education* , Croom Helm, London.

Mackay, Murray, 1989, "Towards a Unified Traffic Science", paper presented at International Scientific Initiatives on Road Traffic, First Round Table, de Wipselberg, Netherlands

Maye, Brian and Jarman, Lynn, 1988, "Implementation of Educational Programs - Tertiary Training", *The Proceedings of the Second Biennial National Traffic Education Conference 1988*, EMU Press, Armidale

New South Wales Traffic Education Centre, 1987, *6th Annual Report*, Armidale.

O.E.C.D., 1988, *Roads and Road Transport: Facts and Figures*, twentieth anniversary seminar, Paris.

Registrar's Office and Office of the Dean of Graduate Studies and Research, 1988, *Graduate Catalog 1989-1991*, Vol. 8 No. 6, Central Missouri State University, Warrensburg.

Road Safety Bureau 1992, *Road Safety 2000: The Strategic Plan for Road Safety in NSW*, Roads and Traffic Authority of NSW, Sydney.

Robbins, Stephen P, Low, Peter S and Mourell, Mark P, 1986, *Managing Human Resources* , Prentice-Hall of Australia, Sydney.

Rowlands G.A. 1991, *Information and Courses,* Manchester College of Arts and Technology, Manchester.

Schattel, John L. 1991, 'The Safety Professional of the 1990s', *WSO Tech-Letter,* July, 1991, World Safety Organisation, Warrensburg.

Schein, Edgar, H. 1972,*Professional Education* , Mc Graw Hill, New York.

Schon, Donald, A. 1987, *Educating the Reflective Practitioner,* Jossey-Bass Publishers,San Francisco.

Trinca, G. W. et al. 1988, *Reducing Traffic Injury - A Global Challenge,* Royal Australasian College of Surgeons, Melbourne.

Vic roads et al. 1991, *Road Safety: Challenges and Strategies for the Next Decade,* Roads Corporation of Victoria, Melbourne.

15. INDEX OF APPENDICES

Appendix 1

COMPOSITE DEFINITION OF PROFESSIONAL

Efforts at a clear definition of the concept of professionalism have had a long history. The problem of definition derives from our attempt to give precision to a social or occupational role that varies as a function of the setting within which it is performed, that is itself evolving, and that is perceived differently by different segments of society. Furthermore, the concept of the professional cannot be defined by any single criterion, but all have agreed on the necessity to use a multiple criterion definition such as the following:

1 The professional, as distinct from the amateur, is engaged in a *full-time occupation* that comprises his principal source of income.

2 The professional is assumed to have a *strong motivation* or calling as a basis for his choice of a professional career and is assumed to have a stable lifetime commitment to that career.

3 The professional possess a *specialized body of knowledge and skills* that are acquired during a prolonged period of education and training.

4 The professional makes his decisions on behalf of a client in terms of *general principles, theories, or propositions* , which he applies to the particular case under consideration.

5 At the same time, the professional is assumed to have a *service orientation*, which means that he uses his expertise on behalf of the particular needs of his client. This service implies diagnostic skill, competent application of general knowledge to the special need of the client, and an absence of self-interest.

6 The professional's service to the client is assumed to be based on the *objective needs of the client* and independent of the particular sentiments that the professional may have about the client. The professional promises a 'detached' diagnosis. The client is expected to be fully frank in revealing potentially unlikeable things about himself; the professional as his part of the contract is expected to withhold moral judgment, no matter how he may feel personally about the client's revelation. Thus, the professional relationship rests on a kind of *mutual trust between the professional and the client.*

7 The professional is assumed to know better what is good for the client than the client himself. In other words, the professional demands *autonomy of judgment of his own performance.* Even if the client is not satisfied, the professional will, in principle, permit only his colleagues to judge his performance. Because of this demand for professional autonomy, the client is in a potentially vulnerable position. How does he know whether he has been cheated or harmed? The profession deals with this potential vulnerability by developing strong ethical and professional standards for its members. Such standards may be expressed as codes of conduct and are usually enforced by colleagues through professional associations or through licensing examinations designed and administered by fellow professionals.

8 Professionals form *professional associations which define criteria of administration, educational standards, licensing or other formal entry examinations , career lines within the profession, and areas of jurisdiction* for the profession. Ultimately, the professional association's function is to protect the autonomy of the profession; it develops reasonably strong forms of self-government by setting rules or standards for the profession.

9 Professionals have great power and status in the area of their expertise, but their *knowledge is assumed to be specific.* A professional does not have a licence to be a 'wise man' outside the area defined by his training.

10 Professionals make their service available but ordinarily are *not allowed to advertise or to seek out clients.* Clients are expected to initiate the contact and then accept the advice and service recommended, without appeal to outside authority.

Appendix 2

WORKING POLICIES FOR PROFESSIONALISATION

The following are the working policies stated by Houle (1980, pp. 303-316) together with some comment on each:

1. 'The primary responsibility for learning should rest on the individual'. The motivation for learning must be strong for professionals. In addition, a profession has the collective responsibility to state or imply in its code of ethics, the importance for its members of learning througout the years of preparation and practice.

2. 'The goals of professional education, including those of continual learning, should be concerned with the entire process of professionaisation'. Characteristics which define an occupation's growth towards professionalisation need to be considered in the total educational programme.

3. 'Continuing education should be considered as part of an entire process of learning that continues throughout the lifespan'. The institutions offering the preparatory education for professions are no longer the "centerpiece of education" but merely one of the providers in a continuous process.

4. 'The patterns and methods of continuing education should be planned and conducted in terms of one or more of three modes of education: inquiry, instruction and performance'. Methods from the three basic modes should be selected and integrated to achieve effective continuing education.

5. 'The provision of continuing education should expand so that it pervades all aspects of professional life'. The gradual acceptance of the worth of continuing education will lead to its growth and diversification.

6. 'Professions should collaborate on the planning and provision of continuing education'. While each profession is unique they have similar problems. Many benefits can be derived from cooperation and interdependence between the professions.

7. 'The processes of recredentialing should be thoroughly rethought and redeveloped to determine the appropriate role of continuing education'. A primary need in the advancement of professionalisation is for a systematic, flexible and sophisticated approach to credentialing and recredentialing.

Appendix 3

RESPONSES FROM TERTIARY INSTITUTIONS

Institution	Question 1	Question 2	Question 3
Monash University (Accident Research Unit)	Primarily	Staff have given lectures on traffic safety issues within Departments of Social & Preventive Medicine; Psychology	Yes - post graduates
Murdoch University, Dept. of Psychology	Yes, as well as teaching	No specific lectures on 'traffic safety' but it is referred to in illustrating the importance of human factor principles or ergonomics	Yes, growing number of honours students
University of Tasmania	Yes	No	Possible, but none have done so
University of Sydney	Yes, as well as teaching and promotion of awareness in the community	Two courses in which traffic safety issues are raised but are not the central focus	Yes,undergraduates honours and post graduate students
University of Western Australia, Road Accident Prevention Research Unit	Yes	No	Yes, undergraduate and post graduate students

KEY:

Q1 Are you interested in research only?

Q2 Are you involved in teaching any courses with traffic safety units?

Q3 Do students under supervision of you or your colleagues undertake assignment and thesis work on traffic safety topics?

Appendix 4

THE ORIGINAL CURRICULA DISTRIBUTED TO A CROSS SECTION OF TRAFFIC SAFETY PERSONNEL ACROSS AUSTRALIA

(pages 44 - 53)

CERTIFICATE IN TRAFFIC SAFETY

1. Principles of Traffic Safety

Major themes in the subject:

Cost of road trauma
Basic models of causes and countermeasures
Legislation and countermeasures
Government and enforcement procedures
International context
Post-accident procedures

Learning Objectives:

*To provide basic knowledge of the importance of road safety and its causes and preventive measures.

-the economic and personal costs of road trauma.
-causes of road crashes.
-models eg. Haddon matrix; engineering, education, enforcement, equipment, evaluation; community development model.
-road hazards for road users (drivers, riders, passengers, pedestrians).
-driver impairment (drugs, alcohol, fatigue)
-approaches to accident prevention.
-post-accident procedures
-post-injury management

*To provide a basic knowledge of the nature and regulating function of government legislation and enforcement procedures for pre-crash and post-crash situations.

-the Australian legal system - including sources of law, machinery of justice, distinction between civil and criminal law.
-road traffic legislation; the present structure of the road traffic Acts, regulating function of the Acts, enforcement machinery and the contribution of the law to solving road safety problems.
-Federal, state and local government responsibility; law relating to highways; powers and duties of police, wardens and other officers.
-Australian Design Rules and other standards.
-Driver and rider testing and licensing.
-equipment registration.

*To inform people about the government and community structures which have developed in Australia to study road trauma and to promote and administer traffic safety.

-national and state strategies for traffic safety.
-institutions and organisations involved (government,business, community).
-role of government and the relationship of community concern to government policy priorities.
-networks and resources.
-working links between government departments.

*To study the principles involved in the administration of traffic safety programmes.

-methodology of strategic planning.
-planning, including cost and benefit analysis
-traffic safety audits
-evaluation of traffic safety programmes

*To enable people of all disciplines involved in road safety, who are undertaking professional training in Australia, to relate course content to international context.

-international trends in the extent and cost of traffic injury and death.
-national comparisions in mobility, road trauma and approaches for reduction in road crashes.
-the transference of traffic safety knowledge from one nation to another,
especially from industrialised countries to those yet to mobilise.
-Worldwide data networks which exist for researchers and programme developers.
-professionalism in road safety promotion - careers and tertiary training.
-major contributions to road safety from institutions in U.S.A., Britain,etc.
-institutions involved in a multinational role in research and road trauma prevention.
-strategies for an international approach to road safety.

2. Human Factors and Countermeasures

Major themes in the subject:

Ergonomics
Behaviour patterns which contribute to crashes
Methods of raising public awareness
Community initiatives
Traffic safety education
Driver and rider training

Learning Objectives:

*To study the behaviour patterns which can contribute to road crashes.

-natural laws - vision and speed.
-human error - interaction between anatomy, physiology and psychology (ergonomics) ; examination of how human responses can be understood in the context of road safety.
-road/driver/vehicle interaction ; studies of how people react in traffic (man, machine and physical environment).
-road user attitudes, motivation, aggression and over-confidence.
-stress factors.
-individual differences in ability, skill and knowledge.
-the theory and application of learning.
-the acquiring and elimination of bad habits.
-analysis of psychological aspects of safety, with reference to accident proneness, man/machine interaction and social factors which determine attitudes and motivation.
-attribution.

*To provide education for teachers and instructors who will be responsible for imparting knowledge, skills and attitudes to road users, in a life-long process.

-pedestrian and bicycle education
-pre-driver education
-novice driver
-post-licence driver training
-motor cycle rider

*To provide information on methods of raising public awareness of traffic safety issues.

-public education through the media
-government programmes

*To study methods by which community committees, working in conjunction with local government, may develop programmes and facilities which are appropriate to road safety in a particular town/city/ region.

-the principles of community development through participation.
-social marketing to promote traffic safety in a cultural context.
-community development as the basis for a variety of measures.
-specific approaches for specific conditions.
-case studies.

3. Vehicle Design and Operation

Major Themes in the Subject:

Vehicle design standards (roadworthiness; injury minimisation)
Assessing vehicle safety - crash tests
Occupant protection
Vehicle maintenance

Learning Objectives:

*To review developments in automotive engineering and occupant constraints aimed at reducing road trauma.

-design regulations - Australian Design Rules.
-trends in internal design of motor vehicles.
-strength of vehicle bodies under impact.
-vehicle crash, impact patterns.
-safety features of bicycles.
-windshields.
-tyres and wheels.
-lights, traffic indicators and windshield wipers.
-braking systems.
-steering mechanisms.
-vehicle inspection procedures.
-crash laboratory testing and vehicle safety assessment levels.

-truck speed moderators.
-the dangers of towing trailers and caravans.
-road transportation of hazardous materials.
-occupant constraints - seat belts and child capsules; air cushions; bus seating.
-vehicle owners' obligations.
-fire extinguishers and first aid kits.
-effect of rust in older vehicles.
-vehicle maintenance.
-removal of injured occupants from crashed vehicles.
-new electronic technology eg IVHS.

4. Road Engineering and Traffic Planning

Major Themes in the Subject:

Traffic planning, traffic flow patterns, road and intersection capacity.
Quality of roads; road layout and markings; roadside hazards.
Transport and traffic impact - economic, social and environmental.
Pedestrian safety

Learning Objectives:

*To provide an understanding of factors involved in the preparation and review of *traffic* engineering schemes and *carriageway* specifications.

*The traffic planning topics introduce the process of quantitative layout design, particularly the various forms of junction layouts and the calculation of their capacity limitations. This includes reference to:-

-conventional intersections
-roundabouts
-overpasses
-railway crossings
-traffic calming
-local area traffic management
-school crossings
-bike plans
-safe routes to school
-pedestrian malls
-elderly citizen care

Related to this is the control of traffic flow using limited access roads, business district bypasses and encouragement of use of public transport.

*The road engineering topics provide an understanding of the necessary mathematical and engineering rules for modern road layout. This will include:-

-road delineation (line markings, guide posts and median strips)
-warning signs and signals
-frictional grip of road surfaces
-recovery zones (width and surface of shoulders; truck safety beds)
-overtaking lanes
-sight distances (roadside vegetation; roadside earthen banks; road curvature; approaches to hills)

*To study the economic and environmental impact of transport.
impact of traffic systems on social and family life

-environmental pollution and its effects on health
-the study priorities related to the dilemmas involving people, freight, drivers/riders, pedestrians, roadspace, parking, traffic control, pollution, conservation of energy, public transport, two car families, time management, etc.

GRADUATE DIPLOMA IN TRAFFIC SAFETY

Methods of Information Collection, Analysis & Usage
Note: This is an existing unit NS 451-13 within the School of Health.

The unit will continue to examine and extend the students' appreciation of the link between research theory and practice and this knowledge can be utilised to direct and develop traffic safety practice.

There will be emphasis placed on quantitative research methodology and on extending students' knowledge of data analysis up to the utilisation of inferential statistical models at the bivariate level. However, qualitative methods of data collection and analysis will also be discussed. To put these different methodologies in context the paradigm debate will be addressed and the notion of mixing the methodologies explored.

The unit includes assignments biased towards the following:-

*The elements of traffic safety research.
-the **causes** of traffic crashes and road trauma
-the **extent** and **effects** of crashes and near-misses
-**countermeasures** used to reduce crashes
-**forecasts** of road trauma trends

*The research methods and evaluation techniques which are used to study these factors.
-surveys
-statistical methods for the collection, collation and interpretation of
-road crash data.
-cost benefit analysis for justifying choices between countermeasure
-options.

*Specific applications of research
-road crash casuality statistics and trends; accident profiles.
-costing of accidents and application of this data in programme development and evaluation.
-studies of driver/rider perceptions, attitudes and behaviour in terms of alertness, judgement and response rate.
-speed surveys.
-fleet safety analysis.
-identification of so called black spots and hazard locations.

-evaluation of the effectiveness of advertising campaigns and training programmes.
-evaluation of the effectiveness of seat belts, helmets and child restraints and surveys of their useage.
-evaluation of the effectiveness of traffic and road engineering measures. (crash rates v road standards; crash rates v road types;
-evaluation of the effectiveness of law enforcement.

*Preparation of statistical information and sources of traffic crash databases and dissemination mechanisms.

Occupational Health & Safety Law

Note: This is an existing unit within the School of Health.
The unit will include assignments biased towards the following:-

*The importance of regulation and training; improving safety and financial savings in fleet operation and occupational driving.
-the Acts of Parliament relating to occupational health and safety.
-the inclusion of the vehicle as a place of work.
-fleet operation and the pressures on drivers with delivery schedules.
-organisational training, policies, procedures and rules.
-bus safety
-dangerous goods and requirements for storage and transportation.
-farm safety.
-fork lift safety
-the rehabilitation to driving of permanently injured persons.

Leadership Skills and Organisational Change

Note: This is an existing unit HM 201-13 within the School of Health.

The aim of this unit is to develop student' interpersonal communication knowledge and skills, and to introduce them to a range of management theories and concepts to aid their understanding of the function, activities and skills required to successfully perform the role of administrator. To these ends, the unit involves an introductory sociological and psychological consideration of the behaviour of individuals, groups, management, and the organisation and its environment; how they interact, and how these interactions affect interpersonal and organisational communication in organisational administration.

Reading Course

Note: This is an existing unit NS 454-13 within the School of Health

This unit provides the opportunity for detailed study of a particular relevant area which the student nominates and pursues under the guidance of a supervisor approved by the Head of Department. Choice of subject is limited by the availability of appropriate supervision.

MASTER OF HEALTH MANAGEMENT (TRAFFIC SAFETY)

This post-graduate work will require 3 units and a thesis on an approved topic
from the following general areas:-

Traffic Safety Education and Training
Safety in Vehicle Design
Road Engineering and Traffic Planning
Public Awareness of Traffic Safety
Occupational Driver Safety
Traffic Safety Research

Appendix 5

AUSTRALIAN ROAD SAFETY RESOURCE CENTRE

Background

In 1989 the University of New England libraries were approached by Dr Brian Connor and Mr Colin Grigg from the Australian College of Road Safety with a grant to establish a resource centre for road safety. After this meeting it was decided to establish the centre within the library system. With the assistance of the $1,000 grant the Australian Road Safety Resource Centre was established in 1990.

Aim

The main aim of the Resource Centre is to provide an information service for members of the public conducting research or who have general inquiries in the area of road safety and traffic education.

Services

The services provided include access to printed material held in the University of New England libraries, CD-Rom databases (eg. Medline and Eric) as well as online database search facilities through vendors such as Dialog and Ausinet. The Resource Centre also acts as a referral centre to other facilities in Australia which may be able to assist users with their enquiries.

Requests and Outcomes

In the first three years of its operation, the Resource Centre has had a growing demand for assistance. Several major searches have been carried out, using a variety of sources, on such topics as traffic calming, skid pans and driver skills, and effectiveness of driver education programs.

Developments

There are many facilities and organizations throughout Australia that work or are interested in the areas of road safety and traffic education. The Resource Centre has been planned as a complementary service rather than one taking over or encroaching too far into the operations of the other facilities.

The development of a national database which can be used as a referral guide is planned. What is intended is that the database will list the other facilities and organizations as well as their areas of research and/or interest so that researchers, in the future, will be able to make contact with others working in the area.

Work on behalf of the Australian College of Road Safety also includes the preparation of a members directory and a directory of organisations in New South Wales which have some interest in road safety.

Funding

The initial grant of $1,000 has been used mainly for the costs incurred with database searching - particularly overseas databases. Other costs have been absorbed by the library.

It is intended that some journal subscriptions will be introduced. In addition the services provided by the Resource Centre continue to grow. This will required additional financial support.

The Roads and Traffic Authority NSW has provided funds to assist with the preparation of the directory.

Other measures, including sponsorships and contributions from fee-paying students are under consideration.

Contact

The Australian Road Safety Resource Centre may be contacted by the following means:-

Mail:	The Librarian Australian Road Safety Resource Centre Dixson Library University of New England Armidale NSW 2351
Telephone:	Phone Robyn Warwick on (067) 732840
Facsimile:	(067) 711602
In Person:	Dixson Library University of New England

Appendix 6

COMMONWEALTH REHABILITATION SERVICE
- Driver Rehabilitation

It is well recognised that for many people driving is an important part in maintaining their independent lifestyle. Driving is an extremely complex task and in some cases individuals may be concerned about their ability to return to the road with safety following illness or injury.

One objective of the Commonwealth Rehabilitation Service is to assist disabled people to enter or re-enter the workforce. This often has a prerequisite of driving a motor vehicle.

Occupational Therapists can assist people with the following disabilities:

Spinal injuries	Stroke/CVA
Head injuries	Amputees
Multiple sclerosis	Spina bifida
Slow learners	Cerebral palsy
Back and neck injuries	Alzheimers disease
Motor neurone disease	

Other physical, neurological, psychological impairments

Occupational therapists can provide professional help to people with these disabilities. They can:

Determine the effect of an individual's illness or disability on their driving safety

Rebuild confidence and skills to return to driving after illness or disability

Give advice and prescribe appropriate vehicle modifications

The assessment programme and equipment was initially provided in Armidale, in 1987, by the the State Government from the Armidale and New England Hospital. Occupational Therapists, Margaret Entsch received additional training at the Driver Education Centre of Australia and the Cumberland College of Health Sciences. Armidale was the first centre in New South Wales to provide this type of service.

Several centres have now been established by the CRS in New South Wales. In conjunction with an assessment by an Occupational Therapist, advice may be sought when appropriate from other professionals such as Doctors, Neuropsychologists, Eye Specialists and Driving Instructors. Unlike the other centres, Armidale has the additional facilities for reaction timing. This is a computerised driving simulator with programmed runs requiring responses for turning right or left and stopping. A print out of all responses is recorded for assessment purposes.

Appendix 7

NEW SOUTH WALES TRAFFIC EDUCATION CENTRE LTD

The New South Wales Traffic Education Centre Ltd (NSWTEC) is a community owned non profit organisation established in Armidale in 1981. Its mission is the provision of innovative education and training programmes which can positively influence road user behaviour and contribute to reducing road trauma in Australia.

To achieve this end, the Centre is committed to providing superior value to its corporate, government and individual clients. The programmes are the result of a rigorous process of research, trials and evaluation.

Over the last few years, NSWTEC has developed a unique approach to post licence driver training which takes into account the results of published research from around the world concerning the effectiveness of traditional approaches to driver training.

In addition to the driver education and training expertise, which includes a number of areas of specialised driving, the Centre has capabilities in the wider area of training related consultancies and curriculum development.

Specific areas of capability include:

* the provision of a range of public driver education programmes which incorporate innovative approaches to risk identification, perception and tolerance in the driving environment

* the provision of driving instruction programmes such as learn to drive and special purpose vehicle operation

* the identification of fleet and driver related training needs, the development of training strategies and the development of customised training programmes

* the provision of driving instructor training. NSWTEC is the only non TAFE body accredited to deliver the RTA's Commercial Driving Instructors Course

* the provision of consultation in all areas related to driver training

Appendix 8

PRELIMINARY SURVEY

QUESTIONNAIRE

1 Do you agree that tertiary courses in traffic safety should be introduced in Australia?
2 Do you agree that all three courses should be introduced?
3 If the answer to question 2 is no, which of the courses should be introduced?
4 If your selection includes two courses, which should be introduced first?
5 How many people in your organisation would be interested in enrolment in each of the courses?
6 Do you consider that there would be a continuous demand in the future for the courses?
7 Other comments.

RESPONDENTS

RACV
NSW Roads and Traffic Auuthority
Federal Office of Road Safety
Queensland Ambulance Transport Brigade
Queensland Department of Transport
RAC of Tasmania
Vic roads
Brisbane City Council
Road Safety Division, Queensland Department of Transport
Australian Road Research Board
Family Medicine Programme, RACGP
IAM Fleet Driver Training
Department of Defence - Australian Army, Petrie
Department of Defence - Australian Army, Puckapunyal
Queensland Department of Transport, Regional Office, Mooloolaba
Mt Cotton Driver Training Unit
Queensland Department of Transport, Gold Coast Region
Associate Professor Smithurst, U of Qld
ABC Driving School
Roads and Traffic Authority, Education Officer, Glenbrook
RAC of WA
ACT Government, Department of Urban Services, Transport Engineering
Western Australia Police Headquaters

FINDINGS

There was strong support for the introduction of tertiary courses in traffic safety, with all but three giving unqualified support. It was indicated, by this sample of respondents, that 120 candidates would be interested in enrolment.