



The EU ADVANCED Project:

**Description and Analysis of Post-
licence Driver and Rider Training**

**FINAL REPORT
September 30, 2002**

Publishing details

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This project benefitted from funding from the European Commission, DG TREN.

Published by:

CIECA (Commission Internationale des Examens de Conduite Automobile)

Sir Winston Churchilllaan 297

NL- 2288 DC Rijswijk

ISBN: 90-76408-11-4

1st edition

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Printed in the Netherlands

It is not the message which is delivered, but the message which is received by the participant(s) that counts

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Summary of report

Advanced is a study of post-licence driver and rider training co-financed by the European Commission. It describes and analyses voluntary, post-licence training and makes a series of recommendations on how to improve such training. It emphasises the importance of avoiding overconfidence amongst trainees and indicates how training can be more effective and balanced.

The report first deals with the theoretical context, in terms of research into post-licence training and current knowledge on adult learning. It goes on to describe the typical types of courses available across Europe (and elsewhere) in terms of location, programme content, methods, trainers and other forms of quality assurance. In the light of practical experience and research data, the report then draws some tentative conclusions on how and to what extent post-licence training currently meets the needs of the drivers and motorcyclists who attend. The ensuing recommendations section offers practical advice for policymakers, course providers and trainers on how to make some fundamental improvements in training and its delivery.

These recommendations are guidelines and remain voluntary in nature. The Advanced project goes one step further by investigating the possibility of the introduction of a more official “quality training” scheme in the form of a quality label for post-licence training. The results of initial discussions with course providers and road safety organisations on this subject are presented in this report.

Another - related - focus of the study is *compulsory* “2nd phase” training for novice drivers and motorcyclists (such as exists in Luxembourg and Finland –and in Austria and Switzerland from 2003 and 2004 respectively). Based, again, on practical experience and research, this section offers practical guidelines for countries considering the introduction of such a training format. It does not, however, draw any conclusions on the effectiveness of such training.

Course providers of voluntary, post-licence training rarely endeavour to evaluate the effects of the training on their participants, so they have little idea of how effective the training is. In response, an entire chapter is devoted to the subject of evaluation designs, offering guidance and tips to course organisers on how to implement a reliable and effective evaluation.

Few courses appear to address behavioural issues related to personality and the driving context which are highly influential when driving / motorcycling. In addition, courses may also benefit from innovative examples on how to train risk awareness at various different levels of driver/rider behaviour. As a result, a fully accessible Risk Awareness Database is mentioned in the report, and featuring on the CIECA website: www.cieca-drivinglicence.org .

Developed by an international interdisciplinary scientific committee, Advanced builds on knowledge in the field of driver training and highlights a number of areas which can be improved in order to better address the needs of driver and motorcyclists. It also, however, underlines various obstacles to progress as far as the trainers, course providers and trainees are concerned. It bases a number of its assumptions and conclusions on practical experience rather than scientifically valid data. This reflects the lack of relevant research into the effects of post-licence road safety training.

1. Background

The Advanced project is one of a series of studies on driver training co-financed by the European Commission of the European Community. Advanced specifically arose due to (1) Commission concern about the lack of standards in - and potential side-effects of - voluntary, post-licence training, and (2) interest amongst European Union Member States and within the Commission itself on obligatory further education (known as “2nd phase” training) for a particularly high-risk category of road users: **novice drivers and motorcyclists**.

Moreover, voluntary and obligatory post-licence training are not mutually exclusive. In countries looking to introduce obligatory 2nd phase training, experts and policymakers will undoubtedly look to existing infrastructure and resources to facilitate the implementation of training. Infrastructure and resources do, at least in some countries, exist in the voluntary sector, but whether they are suitable for providing training for this very specific target group (namely, generally *young and inexperienced* road users) is another question. Part of the Advanced project addresses this intermingling of voluntary and obligatory training.

Advanced is the third major study on driver training co-financed by the European Commission in the last 6 years. The first, GADGET, resulted *inter alia* in the development of a matrix depicting 4 levels of driver behaviour and the focus needed on each of these levels to make “a good driver”. The second, DAN (Description and Analysis of post-licensing measures for Novice drivers) concluded that:

“... the present driver education in the EU can still be improved” and that “... an extended supported learning period [for novice drivers] after the acquisition of the driving licence should additionally be implemented”.

An obligatory 2nd phase of training for novice drivers and motorcyclists is one approach to providing such an extended supported learning period. Such training already exists in Luxembourg and Finland, with Austria and Switzerland joining them in the near future (2003 and 2004 respectively). Furthermore, a project to evaluate a series of 2nd phase pilot projects and schemes in 6 EU Member States will shortly be launched.

Advanced is accompanied by a study on new training methods for (pre-licence) learner drivers in a sister project called BASIC.

2. The Advanced Project 2001-2002: structure and objectives

“Advanced” is a European Commission-supported study with two primary aims:

1. to describe and analyse the current state of voluntary, post-licence driver/rider training in Europe, leading to a series of recommendations for these courses
2. to develop practical guidelines for countries wishing to introduce compulsory “2nd phase” (post-licence) training for novice drivers / riders.

In more detailed terms, Advanced’s work has produced the following end-products:

1. a literature study covering all relevant scientific research into post-licence driver / rider training¹
2. a questionnaire survey of post-licence training (involving feedback from just under 100 courses across Europe and elsewhere)
3. conclusions and recommendations for such training, in terms of structure, content, methods, trainers and other quality issues
4. an initial conclusions paper on the possible introduction of a future, voluntary European Quality Label for post-licence (voluntary) courses.
5. a comprehensive introduction to effective and scientific evaluation designs to allow course providers to assess the effects of their courses on participants
6. a database on the internet (www.cieca-drivinglicence.org), providing examples of risk awareness exercises for post-licence training.
7. practical guidelines on how to organise 2nd phase training for novice drivers / motorcyclists.

The above products are all delivered with a single goal in mind: to encourage course providers to improve the quality of their courses, at the same time as avoiding potentially undesirable side-effects of the training on participants. Whereas the emphasis of the project is on qualitative data, some (estimated) quantitative data is shown where this offers more insight into the structure of - and supply/demand in - the sector.

As far as 2nd phase training for novice drivers and motorcyclists is concerned, Advanced has limited itself to the development of guidelines, rather than to a full-scale analysis of the pros and cons of such a training format. Suffice to say, at this stage, that previous research in this area has exposed the need for “an extended, supported learning period” for novices, and 2nd phase training is, for some, an increasingly desirable option under this definition.

In terms of voluntary, post-licence training, it is hoped that the guidelines and recommendations in Advanced will encourage initiatives leading to increased standards and quality control in the driver training sector².

Advanced was supported by a team of experts (a “scientific committee”) providing a multidisciplinary approach to the project. It was accompanied, throughout the project, by the input and contributions of scores of course providers and road safety officials from each country of the European Union. The scientific committee was composed of representatives from the following organisations:

1. Bundesanstalt für Straßenwesen (BASt), Germany
2. University of Turku, Finland
3. Centre de Formation pour Conducteurs, Luxembourg
4. Kuratorium für Verkehrssicherheit (KfV), Austria
5. CIECA member organisation (French Ministry of Transport)
6. Transport Research Laboratory (TRL), UK
7. Swedish National Road and Transport Research Institute (VTI).

The entire project was managed by CIECA, the International Commission of Driver Testing Authorities.

¹ Research into *pre-licence* training has also been addressed, where relevant.

² This report is also available in condensed format.

a) Statement on research methodology

Analysis of scientific evaluation studies on post-licence voluntary training has revealed that little can be concluded at this stage on the training and road safety effects of these courses. In addition, these studies are few and far between and focus almost exclusively on track-based courses.

Nevertheless, public policy research into novice driver training, the development of conceptual frameworks for driver/rider training and general research in the field of “adult learning” has enabled Advanced to reach some tentative conclusions and recommendations.

This research foundation has been complemented, to a significant degree, by regular meetings with course providers (5), a questionnaire survey of courses and the observation of a number of driver and rider courses in practice (see acknowledgements, page 170). Such observation (by the project team) has contributed significantly to the content of the study.

Such a practical approach does, however, have methodological weaknesses:

- Only some courses were visited by project team members
- On most occasions, only an outsiders’ perspective was gained of the course, and only part of the course was seen
- This perspective was often not supported adequately by questionnaire feedback from course providers (where detail was sometimes lacking)³
- Lack of involvement in the theoretical / group discussion sessions of the courses visited (sometimes compounded by linguistic difficulties)

These weaknesses mean that the statements in this report are only valid under these restrictions. Despite this, such weaknesses are thought unlikely to impact significantly on the findings, and particularly recommendations, of the study. However, considerable further evaluation of post-licence training is necessary before scientifically-founded, conclusive results can be drawn.

³ It is very difficult to provide a written description of driver / rider training which gives a comprehensive and accurate depiction of what actually happens in reality.

b) How to read the report

This report is split up into the following chapters:

1. Literature Study
2. The Learning Context
3. Description sections (drivers and riders)
4. Analysis and conclusions
5. Recommendations for voluntary, post-licence training (in conjunction with above)
6. Guidelines for obligatory 2nd phase training for novice drivers / riders
7. Evaluation methodologies: how to make a five star evaluation of the result of your advanced training
8. A European Quality Label for voluntary, post-licence courses?
9. Risk Awareness Database

The Literature Study and **The Learning Context** provide a useful conceptual framework for understanding and analysing the rest of the paper. They focus on scientific research into adult training in general and, more specifically, into pre- and post-licence driver training.

The **descriptions sections** for both driver and rider training are simply depictions of typical types of training in terms of context, target groups, programme content, trainers, methods, etc. These sections are complemented by annexes which offer a more detailed overview of programme content from one course to another. No analysis has been made in this chapter.

The **analysis and conclusions** sections (for rider and rider training) examine post-licence training according to the framework conditions presented in the first two sections. They raise potentially important issues and draw attention to potential fields of tension which policymakers, trainers and management should be aware of.

The **recommendations** section lists and explains the Advanced project's recommendations. N.B. It is imperative that this chapter be read in conjunction with the analysis and conclusions section.

The **guidelines for obligatory "2nd phase training** for novice drivers / riders are practical tips for any country considering the introduction of such a licensing system. These guidelines should be read in conjunction with the – highly relevant - analysis & conclusions and recommendations section of the voluntary, post-licence training.

The following chapter on **evaluation methodologies** provides practical and useful methods and explanations on how to measure training effects on participants. It addresses an important area which has been largely neglected in the post-licence training field.

The **European Quality Label** chapter addresses the feasibility and desirability of a voluntary quality label system for courses wishing to have some form of accreditation.

The Risk Awareness Database is briefly mentioned in this report but can actually only be found on the internet. It is a compilation of rider and driver training exercises which aim to develop risk awareness. Risk awareness can be trained on a number of different "levels" (see GADGET matrix, page 218), all of which are addressed in the database at www.cieca-drivinglicence.org.

N.B. Collective authorship, i.e. of the entire scientific committee, applies to each of the above sections, unless otherwise stated.

3. Literature study

G. Willmes-Lenz, G. Bartl, M. Bahr & G. Stummvoll

a) Introduction

There are a large variety of advanced training courses on offer in Europe for car drivers and motorcycle riders. In “ADVANCED“, an EU project, it is the advanced training courses aimed at giving car drivers or motorcycle riders safety competence for everyday participation in traffic which are of interest.

The first part of the following literature report presents the results of evaluation studies on these courses with some information on concepts, contents and forms of courses included. The second part contains explanations of the reasoning behind the content and methods and the third part deals with the particular conditions which exist when conducting advanced training courses for novice drivers. The explanations are rounded off with some thoughts on the efficiency of advanced training courses and on potential ways in which they could be developed.

b) Evaluation studies

Evaluations of safety training courses usually take into account the effects of the training course on the participants' knowledge, attitudes and behaviour. Training-related changes in these areas can be interpreted as indicators of improved safety competence. The interpretation of changes in safety indicators provides an indirect conclusion as to the effectiveness of the training programme in increasing safety. This effectiveness in increasing safety can be directly measured through recording the accident involvement of training participants in a before-after comparison or in a comparison with non-participants. Studies with a direct measurement of the effectiveness in increasing safety based on the accident criterion contain the “hardest” findings. Measurement via indicators leads to “softer” findings, as here there always remains a subjective element of interpretation and a real safety effect can only be inferred from the altered indicators.

In addition to observing the effects on the indicator areas or accident involvement, an increasing number of surveys are now carried out on “participant acceptance”. They measure general prerequisites for the fundamental success of training measures which may also be of indirect importance regarding a possible effect on safety.

As well as being differentiated according to the structure of their content, evaluation studies can also be differentiated according to methodical approaches; these approaches relate to the degree of objectivity with which the pertinent knowledge, attitudinal and behavioural aspects are recorded. For reasons of cost and practicability, it is often only possible to record these aspects (e.g. competence growth, accident involvement) indirectly via a self-report by the persons concerned. A direct measurement would meet the claim to objectivity to a far higher degree.

Advanced driver and rider courses are a growing market in EU-countries. Courses are conducted either in traffic or on a track. So far only track based courses have been evaluated.

Evaluation studies have been carried out considering on the one hand hard facts such as accident figures and on the other hand soft facts such as changed driver skills (braking, steering...). Furthermore it can be distinguished between long term and short term evaluation studies as well as between evaluation designs focussing on objective criteria (behaviour) versus subjective criteria (feedback of the courses by clients and trainers).

Initial evaluation in USA

The first evaluation was published in 1974 by Williams & O'Neill. The authors analysed crash-rates and traffic violations from 447 race drivers who completed at least 6 hours of an in-car skid control training. To set up a control group, these drivers were randomly matched with drivers of the same age, race and gender.

In a small subgroup also the self reported mileage were controlled. It was found that the race drivers had more crashes than the drivers of the control group (statistically significant in Florida and New York, not in Texas). Also the number of speeding violations was higher in the group of the race drivers (statistically significant in all three states). These first results seem to show that skid control training has negative effects on traffic safety. But this interpretation is not the only way to understand these results. The fact that race drivers, who have special training, did not have lower crash rates and traffic violations, does not necessarily mean, that this special training might not reduce crash rates and violations in other populations. Race drivers constitute a special sub-population, characterised by a strong interest in racing. Perhaps not the training makes the difference but – to an unknown extent - the selection of the test group and the control group, independent from the treatment. In this study the self-selection bias might result in a negative effect of the training. In other studies, presented below, it will be demonstrated that self selection bias appears to result in better crash records of the test group who completed a training in comparison to the control group without a training. Obviously, factors other than the track training have a stronger influence on safe behaviour in traffic: When primarily safety minded drivers participate in a course, then they will have lower crash rates after the training compared to a control group of average drivers. But this is not the effect of the training but of the selection. And vice versa, if unsafe race drivers complete the training they will have more accidents after the training than average drivers of the control group, but again, perhaps not as a result of the training. Anyhow, this first study shows that driving skills alone do not make a difference in traffic safety. In this first study the average age was 35 years.

Norway

In Norway a compulsory skid control training for every novice driver was introduced in order to avoid skidding accidents on icy roads. The self selection bias was excluded in this study, as the participation was compulsory for every novice driver. Hence, a comparison of accident rates of novices, before and after this new law was introduced, was possible. Glad (1988) analysed the effect of this compulsory anti-skid training in Norway. The before and after comparison showed an increase of accidents on slippery roads after course participation. The author interprets this negative effect as a result of the training which focussed on coping with skidding situations instead of emphasising how to avoid them. This might have lead to an incorrect belief of course participants that they are able to master dangerous situations and therefore had no reason to avoid such situations or to drive with very low speed. This two phase system was introduced in 1979 and abolished in favour of an accompanied driving system in November 1994.

Finland

In Finland a new two-phase driver training curriculum compulsory for all novice drivers was introduced in 1990. At that time the increase in accidents of the Norwegian two-phase system was already known, (see above). The focus of the Norwegian model was on improvement of skills for driving in difficult road-conditions. In Finland it was decided already from the outset to make a totally new curriculum, not only to add a second phase after the old training. A safe driving course on a test track was a part of this new model.

Every novice driver has to participate within 6 to 24 months after licensing in a 3 hours course on a track, but also in a one hour evaluation of driving skills in form of a feedback drive and a self-evaluation of the social driving style with a test. Additionally the basic education and the exam were changed. Consequently, the isolated safety effect of the track training could not have been measured. The effects can only be attributed to the entire driver education system. At the same time it has to be emphasized that skid training was avoided on the track. The main character of this 3 hours track training is the demonstration of danger (e.g. demonstration of braking distances when following too close another car).

The theoretical starting points of the Finnish system are embedded in cognitive, hierarchical theories of driving behaviour (Mikkonen and Keskinen, 1980; Keskinen, Hatakka and Katila, 1992; Keskinen, 1996) and in theories of constructive learning. Driver behaviour is described as a hierarchy, where any driving task can be divided into components ranging from basic manoeuvring (the lowest level) to general goals for living on the whole (the highest level). As far as driving safety is concerned, the factors that are most important for driving behaviour are located on the highest level of the hierarchy, i.e. "goals for life and skills for living".

Katila et al. (2000) analysed the effects of the Finnish driver training renewal and came to the following results and interpretations: When a 2% lower exposure (self-reported kilometres driven after introduction of the new system compared to before) was taken into account, the decrease in accidents was 25% among the younger males from 18 to 20 years old, 50% among the older than 21 years males and 16% among the younger females from 18 to 20 years. The older than 21 years female drivers had no difference in their accidents between the pre- and post-renewal groups.

When taking the exposure difference into account, it seems that the renewal has had an accident reducing effect on male drivers and young female drivers. But the renewal seems to have had little effect on older female drivers. The accident decrease among the post-renewal drivers was bigger than in the driver population in general. A general increase in traffic safety could also not explain fully the decrease in accidents as the time difference between pre- and post-renewal drivers was just two years. In an additional questionnaire study a positive change in attitudes for the post-renewal drivers was found too.

Luxembourg

In Luxembourg a compulsory second phase education was introduced in 1995. But in contrast to Finland a skill oriented safe driving track training only was added to the basic education. After having completed the one day track training within 6 to 24 months after licensing the novice driver can remove the learner plate and does not longer have to obey a lower speed limitation. General accident reducing effects have not yet been found (Peräaho et al., 2000). Changes in this programme have been implemented and more are being considered following the publication of this report. Although this training was mandatory for every novice driver, the client feedback was generally positive, since more than 70% of the participants considered that they would repeat the course at a later time (Pannacci & Margue, 2000).

Austria

As in Finland, safe driving in Austria was understood as not only skill oriented but also as a matter of personality. Therefore safe driving courses were combined with a psychological training unit.

The reason for including psychological elements was that psychological treatments for traffic violators were highly effective in order to reduce repeated offences (Bartl, 2002). And recent social-psychological studies indicate a correlation between safe driving behaviour and drivers' self-esteem. Schulz, Schabel and Ostendorf (1998) assessed 180 motorcyclists and found a significant higher crash-rate for motorcycle riders with a less positive self-concept compared to those with a highly positive self-concept, even when taking kilometres driven into account. Drivers with a less positive self-concept also reported a significantly more sport-like driving style, whereas drivers with a highly positive self-concept reported a significantly more defensive-calm driving style. Obviously, risky driving might have a compensatory character for a weak self-esteem and personality traits are directly linked with safe versus unsafe driving behaviour. Therefore training of skills alone appears to be not the only issue.

These results are underlined by studies of social-psychological studies of Stucke (2001). She found in three questionnaire studies a significant correlation between an overconfident (narcissistic), but at the same time weak self-esteem and traffic violations and aggressive driving style.

As a result of these indications, safe driving track courses were combined with an one hour psychological discussion in the so called „Road Expert“ Programme. This programme was launched in August 1999 and ran until December 2001. It can be seen as the basis for the forthcoming, compulsory two phase driver education system which will be introduced in Jan. 2003 in Austria: Every novice driver has to complete a one day safe driving track training including a two hours psychological risk-seminar and two feedback-drives with a driving teacher within one year after licensing. The voluntary Road Expert programme, under the patronage of the Minister of Transport, particularly addresses holders of a driving licence on probation who could participate in a one day track training focussing on risk awareness instead of improving skills plus a one hour psychological discussion on traffic risks for a reduced price of 36.6 Euro instead of 146.4 Euro. The difference was compensated by the Traffic Safety Fund attached to the Ministry of Transport.

At present only preliminary evaluation results are available (Piringer et al, 2000; Bartl & Piringer, 2002): 13,491 novices participated in the Road Expert programme. About 4,000 questionnaires of participants in the programme Road Expert and a control group in a before after design (before and after the training and one year later) have been processed.

Drivers of the control group reported a higher crash rate than those individuals who decided to complete the Road Expert Programme. Consequently, the self-selection bias is evident and any crash-rate results can be interpreted only very limited.

Own driving abilities were to be estimated by all drivers in the study. Here no significant differences were found between the respective groups (experimental group versus control group; before versus after the course), on a scale from 1 to 5 the mean is 2,5 (2,6 in the control group). Despite the fact that all respondents are novice drivers, the mean is better than the hypothetical mean of 3. This hints at a clear over-estimation of one's own abilities in the entire study. The self-evaluation of male participants of the Road Expert programme was significantly higher than the self-evaluation of female participants. The fact that own driving abilities are equally evaluated before and after the driver improvement training indicates that no increase of self-confidence can be expected.

A significantly stronger agreement after than before the training was found for the statement: "Young drivers often over-estimate their abilities and thus get themselves into dangerous situations more often than experienced drivers do." This indicates, that a more critical self-reflection processes could have be initiated.

One of the clearest results is the main recommendation in Road Expert made by the participants themselves. Whereas in the control group (novices after driving school) only 39% intended to take an advanced driver training-course, 97% of the participants stated that every novice driver should attend such a course.

The motivation for attending a Road Expert course is mainly explained by following reasons: "to learn to master dangerous situations" and "to learn to recognise dangerous situations, react earlier and in this be able to avoid them". Moreover the desire to learn the limits of their own vehicle played an important role for the motivation to take the course. To establish defensive strategies based on a more critical self-reflection was no main motivation. Consequently, the psychological part was evaluated less positive by the clients.

In an earlier track training initiative without psychological elements positive changes were found. This initiative was addressed to young drivers between 18 and 26 years of age. In a self-selected procedure (responses to advertisements in newspapers) drivers participated voluntarily in a driver training at the OEAMTC similar to the Road Expert Programme (described above). From a total of about 5.000 participants the questionnaires of only 1,290 could be processed in a statistical analysis. Klemenjak & Schmotzer (1997) found the following statistically significant changes in a comparison before and after the training:

"I can also control the car at high speed (100 km/h) and in the rain"

Approval decreased from 42,5% to 28,2%.

"For me it is a problem to control a skidding car."

Approval increased from 33,5% to 48,6%.

"If all of a sudden a child jumps onto the road, I can always react accordingly so that I will not hurt it."

Approval decreased from 49,5% to 44,9%.

"For me the correct safety distance is important so that I can stop in time in critical situations."

Approval increased from 97,1% to 98,4%.

These results at least indicate that this training in this self-selected group did not lead to self-overconfidence.

A later evaluation of crash-rates of a track-training initiative for young male conscripts at the OEAMTC confirmed this indications (Schmotzer et al., 1999):

Experimental group (EXG):

Participants in the driver training were recruited from the army on a voluntary basis (self-selection). From a total number of approx. 3,000 participants only 1,321 persons were included in the study. 6 weeks after the driver training (intermediate survey) 625 persons returned the questionnaire (response rate: 47%). One year after the starting survey (final survey) 541 persons returned the questionnaire which was again sent to them by mail (response rate: 41%).

Control group (COG):

854 conscripts were self-selected for the starting survey. 281 persons responded in the final survey (response rate: 33%).

In the starting survey the samples matched closely concerning the proportion of drivers with accidents: 47,4% (EXG) and 46,7% (COG) have had one or more accident at the time of the first survey. At the time of the final survey one year later a significant difference was found: The number of accidents in the EXG was reduced to 21,8%, whereas 52,8% of the drivers in the COG reported at least one accident. In a second statistical analysis only holders of a licence between 2 and 4 years were included. Here the results are even clearer: 17,8% accident drivers in the EXG versus 58,6% in the COG. Moreover a significant difference was found in the frequency of accidents.

Driving mistakes and false assessment of the situation are often the cause for *single accidents*. The course contents of the driver training suggest a clear reduction of this particular kind of accident. In both surveys a significant difference was found in the samples: The EXG showed a lower risk of single accidents already before the training (EXG: 18,8%, COG: 23,4%). Whereas the risk for single accidents could be reduced in the EXG, the number of single accidents remained almost the same in the COG. (EXG: 7,1%, COG: 24,0%). Also the number of non-guilty accidents could be reduced in the group of participants in the driver training.

Further a reduction of the total number of offences in the period after the training in comparison with drivers without the training was analysed. Whereas in the starting survey no difference was found in the number of offences, the EXG showed significantly fewer offences than the COG in the final survey.

In the starting survey significant differences between the EXG and the COG were found which underline a self-selection bias: Respondents in the EXG considered themselves more insecure, more fearful, more defensive, more reckless, with less praxis, less sportive and less aggressive than the respondents in the COG. In the final survey differences were found in only one area: More participants in the EXG than in the COG considered themselves as defensive drivers.

A before-after analysis in the particular groups showed following results: In the final survey one year after the training the respondents of the EXG described themselves more careful, more secure, with more praxis, and less fearful than before the training. Respondents of the COG describe themselves as more secure, with more praxis and less aggressive than one year before.

The authors come to the conclusion that no difference between EXG and COG could be found in the self-evaluation in the final survey. The driver training shows no effect on the self-evaluation as a driver.

One remaining weakness of this study is that participants of the experimental group and also of the control group were not randomly selected but self-selected in a voluntary procedure. Moreover, some differences in personal characteristics indicate that the experimental group and the control group cannot be compared: at the starting survey the drivers of the experimental group reported a more defensive and less aggressive driving style, were higher educated, rather white-collar workers, registered less fines for traffic offences in relation to exposure, caused significantly less loss-of-control accidents and showed more reasonable attitudes towards traffic safety.

The authors found an over-estimation of own skills and an under-estimation of risk in the group of young drivers which could not be controlled by the driver training. Therefore it is recommended to extend the training with regard to aspects of attitudes and responsibility. For example topics like alcohol and drugs, aggressive driving and distractions of concentration should be integrated in a driver training.

To find out if skill training has a sustainable effect, already in 1993 an experimental study was carried out by Kaufmann et al. A critical situation was simulated by a sudden obstacle on the road and the different reactions of the participants were observed and recorded.

After a pilot study in which only 27 participants were tested in a period of two months in 1990, a field study was conducted with 194 voluntary participants in the driver training. 136 male (70,1%) and 58 female (29,9%) persons were tested in two runs on the test-drive. The participants were between 18 and 59 years old with a mean of 33 years and the biggest age groups of 21-25 and 26-30 years. The time of holding a driving licence varied between 1 year and 38 years with a mean at 13,8 years. About 12% held their driving licence for up to 4 years.

In two subsequent sets of tests an improvement of steering and breaking confirmed the success of a learning process in this experimental design. Thus the authors consider the training of such reactions as useful, in particular since adequate reaction to avoid the obstacle could be raised from 7.7% in the first set to 56.2% in the second set. The percentage of inadequate reactions could be reduced from 50% to 7.6%.

The authors concluded that it remains unclear whether this improvement has any effect in real traffic situations, because it can be assumed that beside the learning effect also the expectation for the appearing obstacle played an important role in the experiment (some test persons started braking already before the obstacle appeared). Therefore it can be concluded that the avoidance of critical situations must be tackled beforehand by far-sighted and defensive driving which has to be emphasised in courses.

Germany

The DVR safety training course for car drivers

The DVR safety training course is characterised by being defensively orientated in that it prioritises the early recognition of risk and competence in avoidance of risky situations rather than imparting driving skills.

It consists of a one-day period of training with a theoretical part and a practical part. The practical part consists of exercises which are intended to acquaint the participants with safety limits (for a description see Fastenmeier & Gstalter, 1999).

A first evaluation of the course was made in 1976 (Seydel & Beetz, 1978). The course was characterised by being defensively geared towards the main objectives of “hazard recognition”, “avoidance of risky situations” and “coping with hazards” at that time as well.

The evaluation study by Seydel & Beetz investigates knowledge-related, attitudinal and behavioural changes caused by the training. Effects on accident involvement were not investigated.

Using a questionnaire on objectives, pictures for hazard recognition and an observation of driving behaviour in real traffic, changes in the performance of a test group which had taken part in safety training (N=64) were investigated together with a control group which had had no safety training (N=77); the groups were compared with one another and a before-after comparison was made of each group.

The test subjects were soldiers carrying out their military service, aged from 20-25 years, who had had at least half a year of driving practice and who had volunteered to take part in the project after seeing the notices in their barracks. It was intended to address a group which tended to have a higher risk of accident and where it was more probable that the group members would overrate their own driving ability rather than lack driving ability. The age limit was also supposed to make the test group more homogenous.

To evaluate the area of knowledge, a questionnaire was used which had 57 items relating to the learning goals of braking, negotiating bends, sight training, hazard perception, overtaking behaviour and safety precautions such as putting on a seat belt, using the mirrors and holding the steering wheel.

The study led to the following results:

- knowledge in the areas of “braking”, “negotiating bends” and safety precautions (using a seat belt, using the mirrors and holding the steering wheel) was increased by the safety training, in some cases very significantly;
- there were no training-related differences in the areas of “visual search/scanning”, “overtaking” or some items relating to the recording of internal and external control;
- testing hazard anticipation using the pictures did not reveal any training-related effect;
- with regard to “attitudes”, it was also not possible to detect that the assessment of personal safety in a specific traffic situation had become more critical due to the training;
- the observation of driving behaviour showed significant course-related changes in the parameters which characterise careful driving and driving with foresight;
- course-related improvements were also ascertained in “use of seat belt”, “holding the steering wheel”, “use of the mirrors” and “driving behaviour when negotiating bends”.

It was not possible to ascertain any training-related changes in the behavioural aspects “adjusting the rear-view mirror before beginning the journey”, “indicating sufficiently early”, “active/passive overtaking manoeuvres” and “distance-keeping behaviour”.

Overall it can be noted that training-related changes were detected for a large number of traffic-relevant knowledge-related and behavioural aspects; these can be interpreted as a gain in safety competence.

A second evaluation was carried out by the university of Kassel under commission to the Federal Highway Research Institute (BAST) (Kiegeland, 1999). Aim of the study was to record the effects of the safety training on knowledge-related, attitudinal and behavioural aspects relevant to traffic. It was a priority to obtain an objective record of behaviour. It was decided from the start not to examine the effectiveness directly using the accident criterion, as it had become evident from calculating the required size of random samples that there were no sufficiently large random samples available.

The investigation was conducted as a before-after measurement of a test group with course-participation (N=185) and of a control group without (N=150) which was comparable as far as socio-demographic and driving demography parameters were concerned. ‘Before’ and ‘after’ refer in the test group to the safety training and in the control group to puncture training which was carried out as a “placebo“ instead of the safety course. To record short-term and longer-term effects of the training, two after-measurements were carried out: the first in the week after the training course, the second 2 - 3 months later. The before-measurement was carried out one week before the training programme and placebo intervention.

In order to evaluate ‘knowledge’, participants’ knowledge of vehicle control and driving physics were recorded using standardised surveys at the three specified times, in accordance with the course objectives.

To evaluate ‘attitudes’, measurements were made of different traffic-relevant safety attitudes. The measurement was made using scales which, at a general level, record the subjective safety assessment of car drivers in traffic in three dimensions: an affective dimension, a behaviour-related dimension and a cognitive dimension (Holte, 1994). Standardised surveys were used to record the data at the three specified times for this area as well.

To evaluate ‘behaviour’, the driving behaviour of the test persons was recorded in real traffic at the three times mentioned, with each person making a two-hour test journey on a 75km-long route around Kassel. Vehicles with measuring instruments were used to record comprehensive data on drivers, vehicles and surroundings during the test journeys.

The investigation led to the following results. With regard to „knowledge“ it was ascertained that there was a usually significant, longer-term, course-related increase in knowledge in the areas of vehicle tyres, braking, aquaplaning and holding the steering wheel.

With regard to traffic-related attitudes there were improvements both in the test group and in the control group on all three scales, so that it was not possible to prove that there had been a specifically course-related effect. It is possible that the puncture training carried out in the control group, which picked up on risk aspects concerning tyres and roadway adhesion, also led to improvement in safety attitudes.

With regard to behaviour, the analysis of **negotiating bends**, which was based on 9,500 recordings of bends being negotiated, revealed a significant improvement in holding the steering wheel, which was also significant in the medium term. It was not possible to ascertain improvements in visual behaviour or with regard to cutting bends, as there were only a few cases of inadequate executions of the relevant actions.

The analysis of **braking behaviour** (correct execution of emergency braking technique) revealed a highly significant training-related increase in the percentage of emergency braking executed correctly, from 30% beforehand to almost 50% afterwards, and this clear increase in competence was also evident in the medium term.

It must be regarded as an important result that braking in hazardous situations is mastered by a far higher percentage of course participants than non-course participants, and that this apparently remains the case in the longer term. Together with the far greater knowledge of braking, the course effect seems to centre on an improvement in defensive car driving skills.

ADAC motorcycle safety training course

As with the DVR safety course for car drivers, the motorcycle training course is conceived as a single one-day measure (cf. DVR, ADAC, 1999).

In the beginning of the eighties a scientific evaluation was carried out (Grosse-Berndt & Niesen, 1983). The results can no longer be applied to the course of today, which is optimised since then in many aspects. Nevertheless it's worth while to report them because they add information to the general image of course-effectiveness and the problems to measure them.

The general question of the study was: do persons who have completed the motorcycle course differ from motorcycle riders who have not taken part with regard to driving behaviour, attitude to risk, hazard cognition and hazard anticipation?

The participants in the course (test group) were compared with a control group (no participation as part of a before-after survey). Written surveys and, for some of the investigation participants, observations of driving behaviour were carried out directly after course participation and again three months later.

There were 61 persons available for the survey in the test group and 47 in the control group; there were some considerable differences in biographical data between the groups. For instance, the participants in the test group were on average older, had had their motorcycle driving licence for longer, had a higher level of education and had suffered fewer accidents than the participants in the control group.

The participants in the observation (test group N=42; control group N=41) were largely similar as far as biographical data, driving history and driving patterns were concerned.

The study produced the following results:

Scales were used to measure the **attitude to risk** in the areas: "active and passive safety"; "overtaking"; "negotiating bends"; "speed and willingness to brake"; "awareness of traffic environment"; and "forms of driving". There were no clear changes in behaviour (according to the respondents) which could have been put down to the safety training. There was also a question on self-assessment of driving quality. A far higher number of the test group participants assessed themselves in the survey after the training as being better riders. In the area of **hazard cognition and hazard anticipation** the test persons assessed the risk presented in depictions of ten traffic situations. A large number of those questioned assessed the respective situation adequately in the first assessment with regard to hazard recognition. They showed considerable gaps in knowledge regarding hazard anticipation; these gaps had not, however, been closed after the training. It was therefore not possible to ascertain any effect caused by training in this area either.

For the **observation of driving behaviour** an investigation was made of a total of 47 observation parameters as they related to two dimensions: (a) prerequisites for safe driving (protective clothing, technical safety) and (b) foresight, consideration and observation of following traffic. It was not possible to ascertain any effects caused by the training.

Pilot course "Jugend fährt sicher"

„Jugend fährt sicher“ is a pilot course of two-phase driver training in Germany which was carried out at the beginning of the 90s and in which the usual driver training was modified and the novice driver was monitored for 18 months after his driving test. The programme was developed by the German Road Safety Council in co-operation with driving instructors and, in addition to the usual training, incorporated the following elements:

- the course system of the theory-lessons in driver training (all learner drivers begin and end the course at the same time);
- extended theoretical teaching (16 instead of the then usual 12 lessons of 1½ hours each);
- written interim supervision after the driving test (three informative letters from the driving instructor in the first year after the person has obtained his driving licence);

- exchange of experiences after the driving test (two group meetings, each of 135 minutes' duration and a 45-minute journey in real traffic with feedback for the participant from two novice drivers and a driving instructor who all travel with the participant in the vehicle);
- written follow-up supervision (two informative letters, three months and six months after the exchange of experiences);
- car safety training course (voluntary offer).

The aim of the model was to provide novice drivers with a longer period of pedagogical supervision at the beginning of their independent participation in motorised road traffic, to consequently promote the driver assessing his own driving ability realistically and to reduce his willingness to take risks.

An evaluation study was made to measure the extent to which the test person demonstrated changes in the areas of knowledge, attitudes and behaviour (frequency of offences and accidents) compared with a control group (Schulz, Henning & Chaselon, 1995).

The following scales were used to record the changes in knowledge-related and attitudinal aspects:

- situation-related, emotional and social influences on driving behaviour;
- emotional relationship to car;
- competition/superiority;
- situation-related adaptation of driving style;
- functional relationship to car;
- overview in an active and cognitive sense;
- awareness of risk;
- realistic assessment of one's own driving skills vs. overestimation;
- awareness of safety vs. willingness to take risks;
- naive self-assessment;
- driving experience;
- assessment of one's own driving skills;
- scale of errors;
- willingness to take risks;
- locus of control;
- knowledge-related questions.

Behavioural data on offences and accidents registered by the police were recorded via self-reports.

Three points at which measurements were to be made were fixed for the survey:

- before obtaining the driving licence;
- three months after obtaining the driving licence;
- after one year of driving practice.

The evaluations are based on random samples of up to 350 persons in the test group and the control group respectively. Due to the fact that there were unequal numbers of answers sent back at the various survey times, some of the findings are based on smaller random sample sizes.

The results can be summarised as follows:

- the mean values of the test group and the control group do not differ significantly from one another in any of the investigation areas or at any of the measuring times. It was therefore not possible to obtain proof that the „Jugend fährt sicher“ pilot course achieved a better result than conventional driving school training.

- It was also ascertained in the findings that, overall, attitudes deteriorated progressively from measuring time to measuring time. This applied both to the test group and to the control group and can be explained by the effect of the “secret curriculum“ of the road.

Sweden

Young drivers' over-estimation of own skill – an experiment on the relation between training strategy and skill:

At the skid training, in which all driving licence applicants have to participate before they take the driving test, emphasis is laid on safety margins and risk awareness. The advocates of a revised form of skid training presumed that a skilled driver is not necessarily a safe driver. First the current skid training aims to avoid drivers abusing the skills they acquire in the course and, second, the benefits of the training should not lead to overconfidence amongst the participants. In a Swedish experiment (Gregersen 1996) two different strategies for training were compared with regard to their influence on estimated and actual driving skills as well as the drivers' degree of over-estimation of own skills. One of the strategies was to make the learner as skilled as possible in handling a braking- and evasive manoeuvre in a critical situation. The other strategy concentrated on awareness of the limits of one's own skills of braking and avoiding. The "skill group" estimated their skills higher than the "insight group" before their performance was measured in a test situation after the training. No difference was found between the groups regarding their actual skills in the test situation. The results confirm the main hypothesis that the skill training strategy produces more false overestimation of one's skills than the insight training strategy, in this case even without any difference in actual skills. Recently this safety aspect has been introduced in the national curriculum for skid training and applied to most of the skid courses in Sweden. In the near future the curriculum for the Swedish skid courses shall be compulsory and binding for all training centres. In the following the change in curriculum is illustrated by quotations from the old and the new concept.

Project: "Skid training – what does it contain?"

This study was carried out on behalf of the National Road Administration in preparation for a new course schedule for skid training in Sweden. The study was planned and performed by Inger Engström and Nils Petter Gregersen as project managers in close co-operation with Sixten Nölén, who was responsible for data collection, and with support from the organisations TÖP (Association of Swedish Traffic Training Tracks) and SkidCar (National Association of Swedish SkidCar Tracks), that provided access to the skid tracks for observations.

For the study a multi-method-design was chosen: a content analysis, an observation study, an interview study and a questionnaire study were carried out. In order to make the results of these four parts comparable, three categories were used to classify contents, aims and the message conveyed: Skills, Insight, Vehicle and road characteristics.

Results of content analysis:

No major differences of exercises were found between the various skid-training courses throughout Sweden. All track centres offer braking exercises, skidding exercises and exercises to avoid obstacles on the road. In an assignment of the single exercises to one of the three categories (skills, insight, vehicle and road characteristics) most exercises were designated as skill-oriented, which is in correspondence with the overall course schedule. It was found that introductory lessons and finishing lessons are similar in the training programmes of TÖP and SkidCar with the exception that SkidCar places the discussion on vehicle and road characteristics in their introductory lessons, whereas TÖP mentions these issues in their finishing lessons. The training times for each exercise could not be compared due to different measurement (as drivers or as drivers and passengers etc.).

Results of observation study:

Group A received the highest number of statements and course elements, which means that most exercises were skill-oriented which is in accordance with the course schedule. The contents of the introductory lesson

concentrated on the required skills for a positive performance in the exercises. Only the finishing session emphasised insight issues such as risk awareness and how to avoid critical situations.

Results of interview survey:

In the interview survey trainers were asked about the clients perception whereas the clients were asked to self-reflect. A large variety of answers was given, but most answers referred to "nervousness before the training" and to the expectation of fun. A common comment by the trainees was "I was nervous but I thought it would be great fun because I heard it from so many people". Moreover, they expected to find out and learn to drive on a slippery road. Some trainees had no expectations at all, which was not considered by the trainers. It is unclear whether some trainees really had no expectations or whether they failed to formulate them. Competition between trainers and clients was also found in the answers about fulfilling of expectations, represented by one instructor: "Yes, the training fulfils their expectations. They have really felt what it is like to drive on a slippery surface and they learned how to behave." Again the fun-factor was one of the top arguments.

Most of what the instructors thought was the aim of the exercises and what they consider the trainees have learned from the exercises can be classified as skill-oriented. Together groups A1 and A2 make up 78% (instructors) and 59% (trainees) of all ascribed aims of the exercises and of what trainees have actually learned. The proportions of the trainees' answers on the categories were similar to the proportions of the answers of the instructors.

Concerning the question of lasting benefits of the training the answers of the trainees were more skill-oriented than the answers of the instructors. Generally instructors were hoping for more insight-affects than the trainees actually gained (instructors: 42%; trainees: 23%).

When asked what could be changed in the skid training the most frequent answer was a demand for more time (instructors: 50%, trainees: 31%) and the urge to give the trainees the opportunity to sit back and reflect on the experiences (instructors: 50%; trainees: 16%).

A discrepancy was found in an overall classification of the course: Many clients (44%) thought that the course mainly concentrated on learning how to manoeuvre the car in a skidding situation. In the opinion of the instructors most of the course content concentrated on teaching the trainees to drive so that they will not get into a critical situation. In comparison to only 31% of the clients, 51% of the instructors thought that the course was insight-oriented. Both groups consider that the course content is least concerned with teaching the significance of vehicle and road characteristics for the driving situation (instructors: 16%, trainees: 23%). Suggestions about what a new course schedule should contain were too manifold to be presented here. As the authors say: "It is obvious that there are at least as many opinions regarding the formulation of the course schedule as there are respondents to this question. Moreover, a lot of suggestions were contradictory and would need to be discussed by the instructors. Such is the case with the question about the future of skid-training".

Project: "PILOT - Further education of young drivers"

The Pilot project deals with further education to try to influence the motivation of young car drivers in using larger safety margins in traffic. The project was based on the view that it is more important for drivers to avoid critical situations in traffic by using larger safety margins than having high driving skills in handling critical situations when they actually occur. Therefore, the education provided in the project was focused not on improving technical skills of drivers, but on communicating insight regarding the need for larger safety margins. The target group in the project consisted of car drivers aged between 18 and 24 years who hold a driving licence. The general objective of the PILOT project was first to design and carry out voluntary further education for young drivers, focused on large safety margins in traffic and second to evaluate the education provided. The education consisted of one-day courses that were completely free of charge for the participants. In total, 137 course days were carried out in this project (80 full-day courses and 49 half-day courses), usually at traffic training centres. The full-day courses were designed for 14 participants per course, while the half-day courses were designed for a maximum of 20 participants per course. The course comprised a large number of practical and theoretical single exercises.

The evaluation comprised three parts:

1. To describe the participants' opinion and long-term benefits of the education
2. To evaluate the long-term effects of the education on attitudes, opinion and self-reported driving behaviour
3. To evaluate the long-term effects of the education on traffic injuries based on data from insurance companies

45% of the persons contacted by phone finally applied for the course. 66% of the applicants actually participated in the course. In total 18-34% of all persons contacted by phone participated in the course, depending on the type of course and the recruitment area. The evaluation was designed as a post-test with three sub-studies carried out 2 years after the end of the course:

Results:

Most participants were very satisfied with the course as a whole, considering that some segments were evaluated better than others. The practical part received the highest approval, in particular the "Aha! Demonstrations" and the "distance-keeping demonstrations". Both the interviews and the questionnaire study show a similar picture in this respect. Moreover, most participants correctly interpreted the purpose of the course, namely to motivate young drivers to keep larger safety margins. This indicates that the message of the course could successfully be communicated. Most participants have also benefited from the course in the intended way, i.e. gaining insight through "eye-openers" regarding the need for larger safety margins in road traffic. Most participants also thought that the course had a positive long-term effect on their driving by changing - or at least making them aware of - their driving style.

Effects on attitudes and opinions:

In the following aspects of the questionnaire study, significant differences were found:

- Subjective driving style/driving ability in comparison to other drivers: greater distance to the vehicle in front, getting overtaken more frequently, larger safety margins
- Self-reported use of seatbelts: increase in urban and rural areas
- More positive attitudes towards the use of seatbelts
- Beliefs about young drivers and safety margins have changed: it was believed to a higher extent that young car drivers have a higher risk and smaller safety margins in road traffic.
- Differences concerning the self-evaluation as a driver were found between course variations: Those participants who had attended a whole-day course and/or received a reward considered themselves better at "driving with safety margins", "making safe judgements" and "reacting quickly".

Effects on traffic injuries:

Altogether no significant effects concerning injuries were found for the course. Neither was it possible to demonstrate any significant effects of the course variations (whole-day vs. half-day, reward vs. no reward).

Interpretation by the authors:

The results of sub-study 3 may seem discouraging and also somewhat surprising since sub-studies 1 and 2 indicated that the course had a long-term effect on the participants. However, the concluding discussion in the report contains a number of possible explanations as to why the evaluation did not show any positive traffic safety effects expressed in traffic injuries reported by the insurance companies. The possible explanations vary from the particular course having no influence on traffic injuries at all to a lack of data to confirm the positive effect (more subjects and/or a longer period of follow-up). Finally it was stated that the project had been a source of inspiration and a model for a number of other subsequent driver education projects in Sweden. This in itself was considered a positive effect of the PILOT project.

Switzerland

The safety training programme of the "Antischleuderschule" (Anti-Skid School) in Regensdorf which was carried out in 1978/79 was evaluated by Hess und Born (1987). This study used accident involvement as an indicator of effectiveness. The basic question of the investigation was:

Do persons who have taken part in the course have accidents less frequently than persons who have not yet taken part in a training course?

Using telephone surveys, participants in the course in 1978/79 (test group) were compared with participants in courses in 1984 (control group) with regard to their accident involvement in the investigation period (1980 – 1983). The participants from the control group were therefore "untreated" in the test period. A total of over 3,000 persons were questioned. The control group and the test group each had 1,545 participants.

One hundred and sixty-two persons (10.5%) in the test group suffered an accident in this four-year period; in the control group this figure lay at 228 (14.8%). The authors underpin the smaller percentage of rear-end accidents in the test group.

The approximately 40% difference in the number of accidents in the test group and control group which was ascertained in the investigation must be regarded as exceptionally large. If the extent of accident reduction proved in methodically sound evaluation studies for different road safety measures is taken as a basis, and if the different extent of intervention in each measure is considered, it does not appear plausible that the ascertained difference can be put down to the one-day safety training course. The study does not answer the question as to what other factors could explain this difference. According to Siegrist & Ramseier (1992) the attempts made in the study by Hess & Born to render comparable the test group and control group were not satisfactory. There were particular differences regarding driving practice (fewer kilometres driven by the control group).

A survey was also carried out in this study on the subjective assessment of the effectiveness of the course. The participants assessed the training programme as having been highly beneficial.

A study of Siegrist & Ramseier (1992) investigated the effectiveness of a one-day training course for car drivers which was offered in 1982 and 1983 by the road safety centre of Veltheim.

The study places the accident criterion at the centre of consideration. The general question of the investigation can be formulated as follows:

Do persons who have taken part in the training course differ from persons who have not taken part in it as regards the parameters: accident involvement; accident types; accident causes; causing accidents; and type of mistake made. The study considered a five-year period of accident occurrence.

The investigation builds on the work of Hess & Born (1987). The questions posed, the plan of investigation and the method used are essentially the same. In the present study, course participants in 1982/83 (test group) were compared with course participants in 1989/90 (control group) with regard to the parameters mentioned for the period from 1984 to 1988.

In order to largely ensure that differences in accident frequency between the test group and the control group were due to participating in the course, the control group was selected from persons who had decided to take part in a course, but who took part in it **after** the period of investigation. This means that the same frame conditions regarding motivation to do the course can be presupposed for the investigation group and the control group.

The pertinent data were recorded between January 1990 and February 1991 by means of telephone surveys. This resulted in 4,787 interviews which could be evaluated (test group 2,480, control group 2,307). As the initial aim was to ascertain the effect of participation **in one** course, persons who had participated in several were excluded from the investigation. The random samples of test and control groups were compared with one another with regard to the parameters "age", "sex", "job", "driving experience in years", "kilometres driven per year" and "reasons for taking part in the course". It was ascertained that the members of the control group were on average younger and had less driving experience in years than the members of the test group. However, the percentage of frequent drivers (over 25,000 km/year) was higher in the control group. The percentages of freelancers and salaried employees were also higher in the control group. The most common reason given for taking part in the course by the test group was to "master the use of the vehicle"

and by the control group “initiated by employer”, which the authors put down to the organiser’s altered acquisition methods.

Examining the number of accidents revealed that the percentage of those who had had one, two or three accidents was approximately equal in the investigation group and the control group (cf. Table 1).

The application of an ordinal U-test to this finding did not result in any above-chance difference between the investigation and control groups.

Even after taking into account the control variables “age”, “sex”, “job”, “driving experience”, “kilometres driven per year” and “reason for taking part in the course” it was not possible to ascertain any interpretable differences between the test and the control group with regard to the distribution of the number of accidents per person.

Number of accidents per person	Test group (N=1639)		Control group (N=2307)	
	Absolute	%	Absolute	%
0	1.410	86,0	1.942	84,2
1	202	12,3	319	13,8
2	23	1,4	38	1,6
3	4	0,2	8	0,3

Number of accidents per person in test and control groups

There were no significant differences between the test group and the control group in respect of the relationship of accidents with personal injuries to accidents without personal injury, of the type of injury, the degree of severity of the accidents or of the extent of material damage.

The authors did ascertain significant differences between course-participants and non-course-participants with regard to some aspects. For instance course-participants had significantly fewer accidents which – according to the self-reports – were due to “not mastering the vehicle”. There was another significant difference in the figures for the accident cause: “uncooperative behaviour”. However, the percentage of these types of accidents was higher in the test group than in the control group.

With regard to the methodology, it must be noted that absolute numbers of accidents in tiny subgroups were compared between test- and control-group, and not the shares of these accidents in the respective samples. Significant differences would not be expected with the latter procedure. Attention must also be drawn to the very small number of cases. The significant difference in the accident cause “uncooperative behaviour” between the test and control groups is for example based on 7 persons in the test group (3.3% of N=241) and 2 persons in the control group (0.5% of N=416).

In addition to considering the objective criterion “accident”, the course participants were also asked about their subjective assessment of the effect of the course. In the test group (course participation 1982/83), 63.4 percent of the test subjects asserted that their driving behaviour had been different after the course compared with beforehand. In the control group the same was asserted by a significantly higher percentage of 73.1% of the test subjects which can perhaps be explained by the fact that the course had taken place more recently in their case.

23.3% of the members of the test group were of the opinion that they had prevented an accident due to having taken part in the course. It is interesting that course participants who had suffered an accident during the investigation period assumed significantly more often that they had avoided an accident due to having taken part in the course than participants who had not had an accident.

The investigation also contained comparisons between test group members who had participated in one course (N=1639) and those who had taken part in more than one (N=841), the latter not having been taken into consideration in the comparison with the control group. At 17.4% during the five-year period which was observed, the accident involvement of those who had attended more than one course was approx. 25% higher

than those who had participated in only one course (14%). No theories to explain this considerable difference can be derived from the study's data material. There were no significant differences related to the accident structures investigated (accident severity – with/without personal injury - , accident types, accident responsibility and accident causes).

The comparison of the accident frequency in the random test samples with the accident frequency in the entire population of Swiss car drivers (personal injury accidents) showed that there were much lower accident rates in the investigation samples. In the test group there were 2.56 accidents per year for every 1,000 persons; in the control group there were 3.99 and in the total population 5.86. It is evident from this that, with regard to safe behaviour in traffic, the selection of participants in safety courses does constitute a positive selection.

In conclusion it can be stated from the study that it was not possible to detect any course-related influence on accident occurrence, that the majority of course participants assume that the course has some effect as regards safety and that course participants constitute a positive selection of car drivers as far as safe behaviour in traffic is concerned.

Other results

The improvement in driving skill in advanced driver training courses does not necessarily lead to a reduction in the risk of accident. Lonero et al. (1994) gained this impression when examining corresponding evaluation studies (e.g. Mc Knight, 1982, Lund & Williams, 1985; Whitworth, 1983). In some cases participation in a course was even linked with a subsequent increase in the risk of accident (e.g. Glad, 1988; Jones, 1993; Siegrist & Ramseier, 1992). Dark driving courses in Norway, in contrast, led to a reduction of night time accidents (Glad, 1988).

Since it was proved that skill training may possibly increase risk, road safety experts have emphasised the necessity of making motivational factors central to training. Attention can be drawn in this regard e.g. to the findings of Gregersen (1996), who ascertained that drivers who had participated in a driving safety course for slippery winter roads assessed their own driving ability far higher afterwards although it was not possible to detect an improvement in driving ability. This therefore documented the classic and feared case that a skill-orientated driving training programme leads to an increase in the discrepancy between driving ability and self-assessment in the sense of an over-estimation of one's own driving ability.

An OECD report on reactive behavioural adaptations due to safety measures also collected *inter alia* the evaluation results then available of various safety training courses (OECD, 1990; Pfafferoth & Huguenin, 1991). It was generally ascertained that such training courses caused practically no measurable positive effects on accident involvement. On the contrary, the literature contained indications of negative effects, particularly when especially well-trained drivers were compared with a collective of averagely-trained drivers; drivers of emergency rescue vehicles, for example, demonstrated higher accident rates after participation in an advanced course than non-participants (Eriksson, 1983). The evaluation of the Norwegian two-phase training programme also provided indications of negative behavioural adaptations: out of three main innovations of this training course (limited driving licence, driving in the dark, anti-skidding course), the so-called anti-skidding course showed negative results (Glad, 1988). If a person is convinced that he is better trained („equipped“), it presumably allows his trust in his own ability to master critical situations to grow more quickly than it actually does according to the objective facts or to a greater extent than its significance under real traffic conditions. The discrepancy caused by training between subjective and objective safety therefore becomes an explanatory factor for increased risks of accident.

From these findings and thoughts, the authors of the OECD report derived the theory that the probability of reactive behavioural adaptations increases particularly when the driver becomes (/ is made) aware of the effect of a measure, when the measure increases his subjective feeling of safety and enables him to go beyond accustomed limits to his scope of action (for example towards higher driving speeds or more extreme driving situations). According to Gregersen's (1996) view mentioned above, training concepts must be designed to keep the desired increase in objective safety in balance with subjective safety by using accompanying measures in the attitudinal area.

c) Content and methods of advanced training courses

Content

The classic content of advanced training courses originates *inter alia* from North American accident investigations in the 60s and 70s from which it followed that a lack of vehicle control (improper control) in emergency situations was often a contributory factor in causing accidents (Drahos & Treat 1975). Inadequate driver reactions were ascertained, particularly in keeping to a lane/ skidding, avoiding obstacles, regaining control of a skidding vehicle and in effective braking. It was assumed that, through adequate driving reactions in emergency situations, 40 – 50 percent of all accidents could be avoided (cf. Mayhew & Simpson 1997). These expectations were not, however, fulfilled. Despite this, the classic driving skills of braking and avoidance manoeuvres in emergency situations and other manoeuvring skills such as negotiating bends, using the steering wheel, correct sitting position etc. remained the main content of advanced training courses. There were, however, large changes in the angle from which these driving tasks and skills were treated. Since the comprehensive new conception of advanced training courses, such as for example the German Road Safety Council's revised car safety training course of 1978, dealing with emergency manoeuvres adequately has no longer been a prime training objective. The primary aim of the new generation of driving safety training courses consists in enabling the participant to adopt a driving style based on foresight and avoidance of risky situations. Under these changed conditions, braking, skidding and avoidance manoeuvres merely have the function of making clear to the participants as part of the process of learning from experience the implications of emergency situations for physical risk.

Ideas for how to further develop driver training and advanced driver training courses have been constantly on the agenda since the beginning of Driver Improvement in the 60s. Apart from the change in perspective in the advanced training courses from dealing with situations through driving technique to a decision-based avoidance of critical situations which could potentially lead to accidents, the development of driver training has overall been characterised by decisive innovations; particular mention must be made in this regard to the inclusion of hazard perception and the consideration of individual behavioural aspects of traffic participants (human factors).

There were also new developments over the last decade; particular attention should be drawn to the concept of the phased transition into the driving career and the demand for a scientific basis for the preparation of novice drivers. The following paragraph will go into detail regarding current developments in the discussion about suitable content and methods for preparing novice drivers; the content and methods are also of importance for the advanced driver training courses.

GADGET-Matrix

In GADGET, DAN und ADVANCED, three EU projects, a central role is played by the hierarchic driving behaviour model developed by KESKINEN (1996) – which is usually described as a GADGET-matrix due to its adoption in the „GADGET“ project. The model explicitly names the behavioural qualities relevant for safe driving (critical qualities) and assigns them to four hierarchically-ordered behavioural levels.

The following description and explanation of the GADGET-matrix is taken from Hatakka, Keskinen, Gregersen & Glad (1999)⁴:

⁴ For further information on the GADGET matrix cf. Hatakka et al. (2002)

Hierarchical level of behaviour	Essential contents (examples)	Risk-increasing factors	Self evaluation
Goals for life and skills for living (general)	Knowledge about/control over how life goals and personal tendencies affect driving behaviour life situation - group norms - motives - self-control, other characteristics - personal values etc.	Risky tendencies - acceptance of risks - self-enhancement through driving - high level of sensation seeking - complying to social pressure - use of alcohol and drugs - values, attitudes towards society etc.	Self evaluation/awareness of - personal skills for impulse control - risky tendencies - safety-negative motives - personal risky motives etc.
Goals and context of driving (trip related)	Knowledge and skills concerning - effects of trip goals on driving - planning and choosing routes - evaluation of requested driving time - effects of social pressure in car - evaluation of the necessity of trip etc.	Risks connected with - driver's condition (mood, BAC etc.) - purpose of driving - driving environment (urban/rural) - social context and company - extra motives (competing etc.) etc.	Self evaluation/awareness of - personal planning skills - typical goals of driving - typical risky driving motives etc.
Mastery of traffic situations	Knowledge and skills concerning - traffic rules - observation/selection of signals - anticipation of course of situations - speed adjustment - communication - driving path - driving order - distance to others/safety margins etc.	Risks caused by - wrong expectations - risk-increasing driving style (e.g. aggression.) - unsuitable speed adjustment - vulnerable road-users - not obeying rules/unpredictable behaviour. - information overload - difficult conditions (darkness etc.) - insufficient automatism / skills etc.	Self-evaluation/awareness of - strong and weak points of basic traffic skills - personal driving style - personal safety margins - strong and weak points of skills for hazard situations - realistic self-evaluation etc.
Vehicle manoeuvring	Knowledge and skills concerning - control of direction and position - tyre grip and friction - vehicle properties - physical phenomena etc.	Risks connected with - insufficient automatism / skills - unsuitable speed adjustment - difficult conditions (low friction etc.) etc.	Self-evaluation/awareness of - strong and weak points of basic manoeuvring skills - strong and weak points of skills for hazard situations - realistic self-evaluation

Figure 1: The Gadget matrix

The GADGET-matrix is based on the assumption that the driving task may be described as an hierarchy. The idea of the hierarchical approach is that abilities and preconditions in a higher level influence the demand and preconditions on a lower level. The four levels are:

- Goals for life and skills for living
- Goals and context of driving
- Mastering traffic situations
- Vehicle manoeuvring

The highest level refers to personal motives and tendencies in a broader perspective. This level is based on knowledge that lifestyles, social background, gender, age and other individual preconditions have an influence on attitudes, driving behaviour and accident involvement.

On the next level, the focus is on the goals behind driving and the context in which driving is performed. The focus is on why, where, when and with whom driving is carried out. Examples on more detailed aspects are the choice between car or bus, day-time or night-time driving, rush-hours or not, decisions to drive under the influence of alcohol, fatigue or stress etc.; all in relation to the purpose of the trip.

The next level is about mastering driving in traffic situations. A driver must be able to adjust his/her driving in accordance with the constant changes in traffic, for example in junctions, when overtaking or when encountering unprotected road users. To be able to identify potential hazards in traffic is also on this level. Driver education and training traditionally focuses on this level.

The bottom level is focusing on the vehicle, its construction and how it is manoeuvred. To know how to start, shift gears and stop the car well enough to be able to use the car in traffic belongs to this level as well as more complex evasive manoeuvres, reducing skids on low friction and understanding the laws of nature (driving physics). The functioning and benefits of injury preventive systems such as seat belts and airbags also belong here.

A safe driver is, however, not only skilled but also aware of risks and of his own abilities. In order to cover these different dimensions the hierarchy was expanded in the EU-project GADGET to a matrix (as in Annex 1) which in addition to the four levels includes the following three dimensions:

- Knowledge and skills.
- Risk increasing factors.
- Self-assessment.

The content of the first column describes the knowledge and skills that a driver needs for driving under normal circumstances, namely, on the lower hierarchical levels how to manoeuvre the car, how to drive in traffic and what rules must be followed. On the higher levels the column relates to how trips should be planned and how personal preconditions may influence behaviour and safety.

In the second column about risk increasing factors the focus is on awareness of aspects of traffic and life that can be associated with higher risk. On the basic level it may be worn-out tyres, poor brakes, lack of routine in performing basic manoeuvring, etc. Higher in the hierarchy the column refers to risky driving in darkness, on low friction roads, among unprotected road users, excessive speeding, mental overload, etc. It also relates to dangerous motives and risk increasing aspects of lifestyle and personality.

The third column is about how the driver is assessing his/her own situation on the four levels. It emphasises measurement of one's own skills on the basic levels and awareness of one's own personal preconditions and tendencies as well as abilities in decision-making about trips and in life in general on the upper levels.

The cells in the matrix thus define frames for definition of detailed competencies that are needed in order to be a safe driver. The matrix may be used for defining educational goals and educational content in driver education and training. The suggestion from the constructors of the matrix is that driver training strives at

covering as much as possible of the whole matrix, not only the lower leftmost cells that traditionally are covered.

Naturally, it must still be clarified in single aspects how this guiding scheme can be successfully applied to different areas of the driver qualifying process. The structure of advanced driver training courses, which are usually single educational interventions with comparably short periods of influencing, raises the question as to whether the content of the course should relate to all model levels or only to certain levels or aspects. These and other questions must of course be clarified in the future in practical tests.

Action theory models for driving behaviour

The GADGET matrix which has been selected as the framework of the ADVANCED-project is supported by other hierarchical driving behaviour models which had been presented earlier Hacker (1977), Michon (1985) and Van der Molen & Bötticher (1986). A short look on these models gives a more precise idea about the specific contribution of advanced training to covering the contents of the GADGET matrix. These models attempt to describe driving behaviour and must be seen in relation to other well-known driving behaviour models such as for example Wilde's risk homeostasis model (1982) or the 'Zero risk model' by Näätänen and Summala (1974).

Van der Molen & Bötticher (1986) attempted to integrate previous model ideas into their model which was based on decision theory and which built on the so-called SEU principle (SEU=subjective expected utility). In their model they divide driver actions into strategic, tactical and operative dimensions. Kerwien (2002) adds a further dimension to these, namely the level of fundamental personality aspects, which also decisively determines action-related decisions made by the individual. This additional level also creates a parallel to the four levels of the GADGET matrix.

In this action theory model, the primacy of the „upper“ decision and action levels over the operative driving action is clear, as is evident in the following hypothetical example: *„I consider myself to be an experienced and sound driver (constituent level), I choose to travel by car to an appointment in a place 500 km away, despite the fact that high traffic volumes are to be expected (strategic level), I decide, in view of my driving competence which I subjectively assess as high, to travel at a high speed for the journey and overtake frequently (tactical level); overall I cope successfully – or not - with the above-averagely demanding driving tasks including some critical driving manoeuvres (operative level).“*

The determination in this hierarchical chain of decisions is admittedly not absolute; in some cases it may perhaps be not even decisive, for example in cases when other factors, such as unforeseen traffic occurrences, force the driver to make operative reactions.

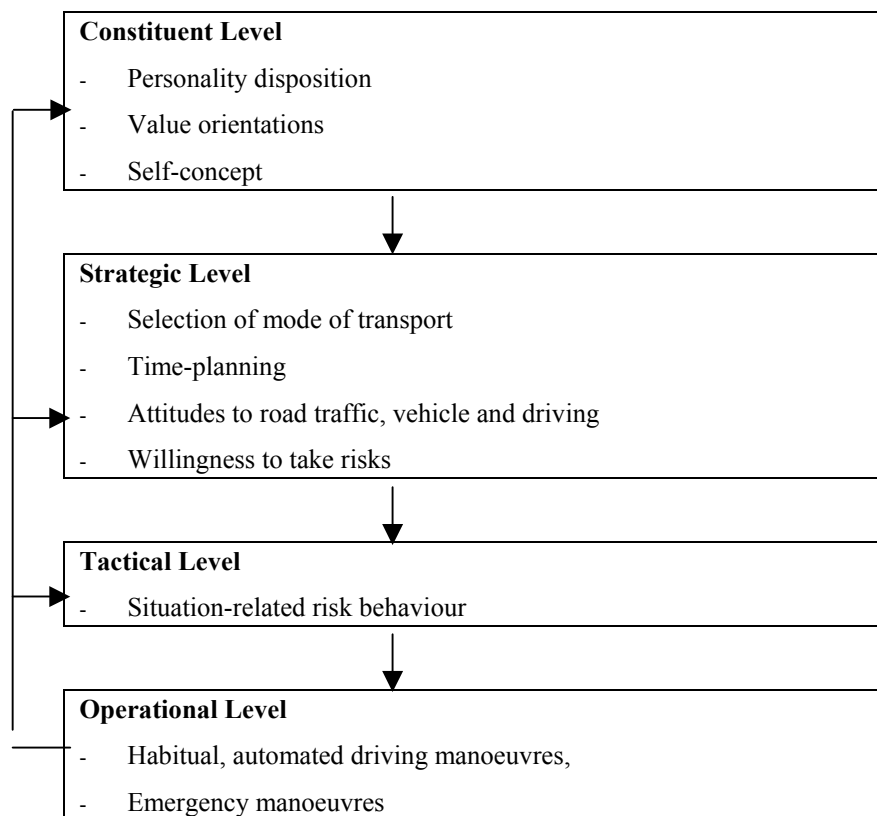


Figure 2: Action theory model of traffic behaviour after Kerwien (2002), building on Van der Molen und Bötticher (1986)

Kerwien (2002) draws attention to the feed-back loops from the subordinate to the prime decision levels. They represent a balancing of prospects for possible courses of action – for instance the revision of the strategic decision to reach the destination on the same day – and the possible occurrence of learning experiences from actions which were not successful (learning from experience) and which may then affect future (prime) decisions.

The tactical driving decisions follow a simplified cost / benefit calculation, taking into consideration the subjective perception of driving competence at the time.

According to Kerwien (2002), the driver has very good possibilities for controlling the journey at the strategic and tactical level and therefore also the conditions for sufficient driving safety. He can escape from the obligations of unfavourable preliminary strategic decisions or external influences and make revised plans with more favourable consequences for the safety conditions at the tactical and operative levels.

In Kerwien's estimation, these levels describe the decisive competence areas where a driving safety course can be effective and towards which it accordingly ought to be geared.

Empirical reasons for objectives

In a comprehensive investigation on the difference between experienced and inexperienced drivers, Mayhew and Simpson (1995) brought together empirical proofs for the fact that there are characteristic deficits in the competence of young drivers which underlie their higher accident risk. These deficits are related to the following skills and abilities:

- steering control;
- speed control;
- parallel processing/multitasking – skill integration;
- visual search/scanning;

- hazard detection;
- risk assessment;
- decision-making;
- risky lifestyle and risk-taking.

Building on these results, Lonero et al. (1995) drew up a list of ten qualities ('educable qualities'); it was intended that these should form the subject of qualifying measures in order to build competence for safe driving in a targeted manner.

The qualities concern behavioural aspects which become important in real driving situations (real-time driving tasks). Of prime importance is the direct driving-decision. The remaining behavioural aspects can be described as factors which influence this central aspect or which result from it.

1. Motivation and drives, emotions, utility expectations.
2. Knowledge and rules, principles.
3. Attention and control, dividing, switching cognitive resources.
4. Detection and search, scan, stimulus templates, noticing.
5. Perception and expectancy, recognition, identification.
6. Evaluation and outcome expectations, situation templates, attribution.
7. Decision and option matching, response selection.
8. Motor skill and intended action delivery.
9. Safety Margin and time, speed and space.
10. Responsibility and self-monitor, transient states, social values.

This list can largely be transferred to Kerwien's decision-theory model of traffic behaviour (2002). This model also names prime determination levels regarding the crucial behavioural aspect of the direct driving decision (cf. No. 7 in the previous list).

The focus on the driving decision constitutes, however, a slight displacement compared with Kerwien's model, in which the operative level of action execution forms the objective of the prime decisions. Despite these differences, the similarity between the models is unmistakable.

In one essential point, Lonero et al.'s model is more broadly-structured than Kerwien's decision-theory model and the GADGET matrix: it incorporates to a higher degree cognitive behavioural aspects („What a driver **can** do“) as essential prerequisites for safe driving and does not limit itself to creating safe driving conditions solely by motivating the person concerned to subjectively safety-orientated behaviour („What a driver **chooses** to do“ (cf. Lonero & Clinton, 1997)).

Conclusions for advanced training courses

On the one hand the models presented here develop the spectrum of competences relevant to safe driving and on the other describe more closely the behavioural levels at which these competences are located.

Based on this there are two approaches which would ensure the prerequisites for safe driving: firstly the gaining of required competencies, and secondly ensuring safe driving with the given competences, i.e. including existing competence deficits.

The latter approach describes the actual terms of reference of advanced training courses. In view of the limits regarding time, content and the form of intervention, it is completely inconceivable to expect even an approximate elimination of competence deficits which novice drivers, for example, have regarding relevant complex skills such as searching and scanning, parallel processing/ multitasking or rapidity in making decisions. These competencies are attained through the more complex processes of gaining experience during the person's individual driving history, although here there are also educative possibilities which allow a certain guidance and most of all guarantee protective conditions (e.g. Accompanied Driving).

The first task on the agenda of an advanced training course, which can be successfully solved, consists in working with the participants to recognise the risk of driving situations and to bring about a greater sensitivity for this. Being convinced of the huge risk posed by everyday driving situations, and having this conviction strengthened in clear examples of learning through experience, is already an essential key competence which could be imparted in an advanced training course. In addition to this, competencies for coping with situations are certainly also part of an advanced training course – although these are located in a very narrow area and are mainly geared towards making one's own traffic behaviour defensive and based on foresight. The imparting of driving skills is of subordinate importance, it is also defensively orientated and, due to the lack of practice time, limited merely to imparting the basics of the skills.

One psychological hurdle for the advanced training course is doubtless the fact that these aims seem decidedly dull compared with training courses geared towards driving technique and to other leisure offers which emphasise experience. It can also hardly be expected that this plain orientation towards responsible and defensive behaviour based on foresight, will receive greater support from the models which society normally imparts to young people regarding potential lifestyles and behaviour patterns.

Methods

The didactic approach in the pedagogical setting of advanced driver training courses has been decisively shaped by the 'moderation' method ever since the modern Driver Improvement phase started in the 60s and 70s. In more recent times attention has been drawn more to the importance of the trainer-participant relationship as a basic didactic structure and, for specific course sections, also to the demonstration method.

At the start of Driver Improvement in Europe, the now well-established moderation method was an innovative pedagogical procedure which opposed the instruction method.

Whereas in the instruction method the course participant absorbs specified knowledge content in courses with fixed forms, and therefore plays a passive and receptive role, in the moderation method the participant is involved extensively in determining the work content and the work form and correspondingly assumes an active and inquiring role. The moderation approach corresponds largely with "topic-centred interaction" (*themenzentrierte Interaktion* – TZI) (cf. Cohn 1975) which became prominent in the 70s throughout the adult education sector and in which a balance between „theme“, „group“ and „individual“ is regarded as a central prerequisite for sustained learning success and personal growth.

The moderation approach is generally regarded as a very helpful didactic concept for group- learning: through the personal relationship to the subject, the learning becomes more significant for the individual and the specific forms of interaction within the learning group support the practice of autonomous and cooperative behaviour. The task of the group-leader consists above all in maintaining a balance and flow between the participants and the subject.

The following aspects may be regarded as essential characteristics and guiding principles of the moderation approach; these are also intended to be brought to bear on the driving safety training courses (cf. also in this regard the recommendations of the ADVANCED project and Hatakka, M. et al. 1999):

- inclusion of the participants in selecting and working on the subjects;
- discussion as the main form of dealing with the subjects;
- self-actualisation and self-assessment of experiences made;
- maintenance of group dynamics by the moderator;
- mediation between individual participation/non-participation interests, the content and the psychodynamic aspects of the group situation.

In view of these characteristics it is easy to understand that successful group moderation places high demands on the qualification of the moderator, a fact which obviously, despite the efforts made regarding training, cannot always be met satisfactorily. This is shown not least by the discussion on a satisfactory level of moderation competence, which has not ceased since the moderation method was introduced.

The new element in the moderation method compared with the competence and authority which the traditional instructor had regarding his subject, is the psycho-social and group dynamics competence of the

moderator, which enables him to be effective in creating a joint „research and learning process“ within a group. For the moderator, process competence is of equal or even greater importance than the competence regarding content which distinguished the instructor; process competence enables him to accompany the group's learning and growth process in a sensitive manner.

The high qualification requirements regarding moderators necessarily have consequences for an adequate qualifying procedure. There are accordingly intense debates on a suitably high level for the moderators' qualification, at least in Germany.

At the same time it can be seen that the discussion on successfully imparting course content attaches decisive importance not so much to the participant himself, his interest and his motivation for learning, but to the moderator and to the adequacy of his actions, factors which are determined essentially by the degree to which he masters the competence of moderation.

In view of the central role ascribed to the moderator in developing course participants' competence, the possibilities for assuring the quality of the course are logically thought to lie mainly in ensuring that the quality of the moderator and his competence level are sufficiently high. Apart from the basic training, the main means chosen to achieve this end are the correct selection of staff, the commitment to continual practice and further training, the use of practice-orientated advice as a form of supervision and finally quality management which focuses on the moderators' qualification.

More recently a new methodological approach has been proposed in the discussion on improving course effectiveness, or, if one would not like to describe it as an approach, a new accentuation of the ideas connected with the moderator role. It is the methodological and didactic use of the trainer-participant relationship which would of course have to be structured beforehand in a certain way so that it could be suitably used to impart competences (cf. in this regard the reports on the EU projects DAN and ANDREA). Experiences with this approach, which is reminiscent of the psycho-analytical therapy methodology of work with a so-called transference between patient and therapist, have so far been gained in the traffic psychological field in rehabilitation courses for drivers who have committed offences; these are carried out by therapeutically-trained psychologists. Starting probably in 2003, experiences with this approach will also be able to be gained in course work with novice drivers and as part of the new obligatory two-phase training in Austria which, in addition to driving and traffic pedagogy sections, also contains psychological lessons. An approach which makes the relationship between trainer and course participant into a decisive level for imparting material ought presumably to be able to develop best in genuinely psychological courses. This does not mean, however, that a course-leader who has not studied psychology could not also apply this approach with the corresponding previous qualification.

Finally, in connection with the discussion on methodology, attention must be drawn to the demonstration element which serves to prevent drivers from overrating themselves. This consists of consciously not allowing participants to make their own experiences in all cases where the gain in experience is connected with a gain in manoeuvring skills which could lead to the participants overrating their own driving ability. This to a certain extent qualifies the element of learning from experience contained in the moderation approach and represents a step backwards to an instructive approach; this is, however, justified by the necessity of preventing the participant from overrating himself. Doubts could be expressed on whether learning when in a receptive role is as efficient as learning with practical individual experiences.

d) Context conditions in courses for novice drivers

In the course of the ADVANCED project, the questions posed by the project were broadened by DG TREN of the European Commission (the commissioning agency) to include courses for novice drivers. With this in mind the following is intended to deal in detail with some central conditions which novice driver courses must take into consideration with regard to their structure and what they offer. These special conditions are on the one hand youth factors and on the other the specific competences of novice drivers.

In many highly-motorised countries the majority of novice drivers probably start their driving careers at less than 20 years of age so that problems connected with novice drivers are to a great extent linked with youth factors. It must, however, also be taken into consideration that there is a development in some highly-motorised countries towards no longer gaining one's driving licence at the earliest possible moment; this is, for example, the case in conurbations in Sweden where now only the minority of up-and-coming age-groups

take their driving test as early as possible (cf. Gregersen 2002). Under these conditions there are correspondingly a higher number of older people amongst the novice drivers and the youth problems are losing importance.

It is often assumed that the central cause of the novice driver safety problem is youthfulness and many countermeasures are primarily geared towards compensating negative consequences produced by the youthfulness syndrome. This applies particularly to the German-speaking countries of central Europe where the measures have to-date clearly concentrated on this problem.

The general aim of measures in compensatory driving and traffic pedagogy is to reduce the degree to which participants overrate themselves and promote a realistic assessment of risk and competence. Detailed descriptions of the corresponding approaches taken in the measures have already been described in detail in many publications along with the reasoning behind the concepts used (for a comprehensive overview see e.g. the DAN report, 2001); examples of the approaches are for example two-phase training, which has already been implemented in some European countries and is planned in others, the special preventative retraining courses in Germany, which are obligatory for a large number of novice drivers, and the many different road safety campaigns which comprise courses and journeys where feed-back is given. Almost everything in these measures revolves around impressing upon novice drivers the benefits of a considered, informed and responsible attitude to driving cars overall and to the individual driving decisions. It is primarily conceived for young novice drivers or even for young, reckless, male novice drivers.

However, novice driver courses have hitherto hardly reflected the fact that at the start of their driving careers, novice drivers, whether young or old, are in a phase of dynamic development of competence which is based on gaining experience and developing skills through driving practice. On the contrary, many traffic psychology and traffic pedagogy experts have assumed that the competence of novice drivers' initially decreases at the start of their driving careers. According to this theory, the reason for the enormous increase later on in the risk of accident is that „secret curriculum of the road“ has a damaging influence and that drivers abandon their initially careful and correct driving style. From this viewpoint, the second phase of the driving training course is conceived as a preventative measure which is intended to counteract a main period of risk for novice drivers which follows the initial phase of collecting experiences independently.

Follow-up investigations on accident occurrence regarding novice drivers have, however, now shown that the main risk for novice drivers is not at a later point but as soon as they begin driving independently and that driving competence clearly improves as time passes. For example, according to German and Norwegian follow-up data, the risk of accident is halved after 8 to 10 months and sinks to a tenth of the initial risk after 2.6 years (SAGBERG 2001, SCHADE 2001). The most dynamic growth in competence occurs at the start of this development. Maycock et al. (1991) drew attention to this development process in the driving competence of novice drivers of every age in a study based on comprehensive English data.

It could now be expected that advanced training courses would support this development in competence, and if necessary increase it. However, this has not yet been researched; this may be because it is a comparatively new idea to include the spontaneous learning process which takes place at the start of driving careers as a practicable learning factor into the „teaching/learning arrangement' of learning to drive. This happens for example in the accompanied driving model where the initial gain in competence through driving practice takes place under protective conditions provided by the (restraining) accompanying person. In this way, the fruits of the gain in competence caused by driving practice can be reaped without having to pay the cost of the high number of accidents which occur when competence is gained in driving practice outside protective conditions.

It must still be clarified what the relationship of the advanced training courses to this „spontaneous“ competence gain is and how the courses could contribute to this gain. This applies both to courses after a protective phase, i.e. outside driving school training and lay-instruction, and within this phase such as in Sweden at the end of the long-term driver training where the start of the driver training is brought forward.

e) Discussion and general conclusions

The conclusions discuss the main findings of the scientific investigations on advanced driver training courses and some of the prospects for further development.

From the perspective of road safety, the results of the evaluation studies on advanced training courses which have been carried out so far are of prime interest. They can be summarised by saying that it has not yet been possible to prove that the courses have any direct effect on reducing the risk of accident for course participants.

However, it was possible in empirical investigations to detect changes in certain indicator parameters related to safe traffic behaviour which can be interpreted as a gain in safety competence. These mainly concern knowledge aspects and operative behaviour aspects related primarily to vehicle handling (emergency braking, holding of the steering wheel).

With regard to the negative effects on road safety ascertained in some evaluations, the opinion prevalent among experts is that this is due to drivers overrating their own abilities after skills training in a course and that this negative learning effect can be countered with a corresponding course structure. The means of countering this effect consist largely in omitting to train skills and in emphasising the attitudinal and behavioural aspects as being the decisive parameters for ensuring safety.

A possible reason for the low degree of positive proofs is the fact that the effect criteria used so far may have been too sweeping to be able to portray the effects of the course with sufficient accuracy. It must be remembered that the advanced training courses, even if they go beyond a one-day course, are fairly limited interventions which may easily be submerged by the flood of numerous other behavioural influences which participants in motorised traffic are exposed to at the same time. In order to be able to detect these effects, they would therefore have to be recorded on an indicator level where there was no confusion with other parameters of influence. This would not solve the problem of the effects ascertained not being decisive enough to have an effect on accident occurrence by themselves. However, it would allow the effects at least to be recognised and localised so that a search could be made from this point for expedient ways of combining them with other influencing factors.

Starting points for determining possible course effects are provided firstly by the driver behaviour models described above, which suggest that the area in which effects are most likely to occur is that of competences related to indirect and direct driving decisions, and at the level of conscious decisions. At the same time theoretical findings in the field of teaching/learning research on forms of teaching and courses would have to be consulted in order to develop specific hypotheses on course effects, so that the changes in competence which can realistically be expected, for example from a one-day course, could be assessed from this angle as well.

Another question of interest, apart from the question of the specificity of the course effects, is the question of the relationship of advanced training courses to other factors of influence in complex settings which influence traffic behaviour. The Finnish experiences are sometimes used to derive legitimacy for obligatory advanced training courses; after the introduction of an obligatory second phase into the driver training system in Finland at the beginning of the 90s, longer-term improvements were observed in the accident involvement of novice drivers. The change actually involved the simultaneous change of several elements of the driving licence system; it would still have to be determined what specific contribution was made by the obligatory advanced training course which takes place after the driving licence has been granted.

However, there may be certain combinations of factors of influence which together produce a particularly favourable effect. Austria's experiences from 2003 onwards with a multi-part, two-phase training system covering a longer phase of novice driving will presumably be able to contribute further findings related to these questions.

The question of the combination of influencing factors is of particular interest with regard to advanced training courses carried out in companies or with fleets of vehicles because there are without doubt more possibilities to set up complex intervention settings in company safety management than in society. Courses can be more easily combined with different forms of influencing company staff and the effectiveness of the course assessed. This application area is particularly interesting for evaluation questions, not least due to the fact that other kinds of course functions can be investigated rather than merely the qualification function relating to the individual participant.

It could for example be investigated whether a course – regardless of its individual qualification function - could result in a company safety measure gaining a greater deal of legitimacy and acceptance in the eyes of the addressees, which would doubtless be an independent and possibly important course result.

In view of the few scientific proofs which have been gained so far of the effectiveness of advanced driver training courses, questions relating to further course optimisation and to the proof of a resulting increase in effectiveness are of particular priority. Against this background, it appears appropriate to keep courses open to further development as regards content and methods. Quality assurance systems which, it can be assumed, will be used increasingly in future, should pay particular regard to these content-related and methodical aspects of continual improvement, based on methodologically sound evaluation work.

It would be logical to gear course optimisation towards the areas where this type of intervention courses have their greatest effect, namely in motivational training ("What they choose to do") and not in skills training ("What they can do"). The main competence deficits which contribute towards the accident occurrence suggest themselves as starting points for the content of the courses; this has been the traditional approach to determining course content. Particular regard should be given in advanced training courses for novice drivers to the "educable qualities" listed by Lonero (1998) including e.g. 'skill integration', multi-tasking, practised and rapid decision-taking. The first step would be to make deficits able to be experienced, the second to show their importance in coping with driving tasks in traffic, or allow this importance to be recognised.

The main methods to-date have been the 'moderator' approach and, more recently, particularly in the EU projects DAN and ANDREA, the trainer-participant relationship. In accordance with an openness to developments, further approaches could also be considered in future, for example didactic methods from behavioural training, which are described there as exercises in which there are specific micro-didactic teaching/learning arrangements geared towards a particular objective.

Practice will show what is efficient; this will then be able to be proved objectively using the scientific methods of training research or teaching/learning research. The latter therefore assumes an important role in the further development and optimisation of the advanced training courses and, most especially in this regard, examining the effects of micro-didactic arrangements.

The coming years promise to provide further findings regarding advanced training courses: the introduction of two-phase training in several countries will result in new fields of practice, where experiences will be able to be assessed in corresponding evaluation studies.

General Conclusions

In general evaluation studies could not yet confirm an increase of safety:

This must not necessarily mean that courses are not effective but can also be attributed to difficult conditions for setting up a serious evaluation design.

The selection bias is the main problem for evaluation studies:

Studies indicate that self selection moderates the results as primarily good risks tend to participate in voluntary safety courses and bad risks do not. Consequently, lower accident figures after voluntary courses can not automatically be interpreted as a result of the course but to an unknown extent as a result of clients' self selection.

Negative results when self selection bias is excluded:

When skid control courses became compulsory for all novice drivers in Norway skidding accidents increased after the courses and also in Luxembourg an accident reduction as a consequence of a course could not yet be confirmed. In a Swiss evaluation design the self selection bias was partly excluded and also no accident reduction could have been verified.

Problem of potential self over-confidence after the skid control training:

Potential negative effects of skid-control courses in the sense of "risk-compensation" were the first time reported in the USA by Williams & O'Neill in 1974, followed by the European results mentioned above. But in some nowadays course programmes, focussing on defensive strategies no indications for self-overconfidence were found.

Consequences of negative result:

Course providers nowadays are aware of the potential “risk-compensation” problematic and begun to improve their programmes. A positive example is the Finnish model where a compulsory advanced training for all novice drivers has led to a significant accident reduction.

New training concepts to avoid self over-confidence:

Recommendations based on the Finnish model:

- All of the four levels of driver behaviour must be addressed appropriately in a course.
- Not just adding a course but a programme (feedback in real traffic, self evaluation of social driving style and track training).
- No skid control training but demonstration of danger (primarily: avoidance of risk, not cope with risk).
- Emphasis on individual feedback by moderating a discussion following the exercises.

Austrian new model: One hour psychological discussion is part of every track training (voluntary “Road Expert” Programme for novices). The ongoing questionnaire evaluation indicates that self over-confidence can be avoided.

Lack in plausibility:

In evaluation studies the link between weighted influence of accident factors (e.g. over- and under-steering of a car) and the single training exercises offered is not sufficiently described. There seems to be a lack in plausibility that on the one hand skid-control exercises are being trained, about five times, but on the other hand controlling of a skidding car can not be learned in such a short term training. Recommendation: Either leave this exercise out or offer only one skidding trail for each participant to demonstrate the danger. Then the client can not be misguided towards self over-confidence. “Not get out of risk but stay out of risk”.

Exercises with positive effects (German study by Kiegeland):

Emergency braking can be significantly improved (progress, maximal and average pedal pressure) and the correct steering partly. Knowledge about steering, braking and aquaplaning was found to be increased significantly, too. Recommendation: Emphasis on these exercises.

Clients- versus trainer expectations:

In an evaluation study from Sweden it was found that the majority of clients understood from the course that they have learned how to control a skidding car whereas the majority of trainers understood that they have taught how to avoid skidding (Engström, 1996). Recommendation: It’s a long way from intending something to do until reaching the intended goal. Consequently, discrepancies in the course expectations of the customers (want to improve skills) and the course providers (want to raise risk awareness) must be detected. This seems also to be an advertisement problem. Then trainers must be adequately trained to achieve the intended goals.

Quality of trainers:

The client trainer relationship seems to have the highest influence on what will be changed in the client through the course. But evaluation in this field is rather poor. Based on his observation-analysis of moderators Kiegeland formulated suggestions on what can be improved: how to deal with quiet clients, emphasis rather on avoiding- than on coping-strategies, not being fixed on only one accident factor in the teaching examples, improve social competence to moderate conflicts in the group discussion.

Target group orientation:

The same course programme can have different effects on different participants. Courses for different target groups must be tailored to their specific needs: E.g. young drivers lack in experience and some of them, not all, are immature. Experienced drivers might suffer from too much routine, senior citizens from medical fitness, etc.

In real traffic courses, eco-driving course etc.:

have not yet been seriously evaluated which is seen as a deficit.

BIBLIOGRAPHY: see Annex 1, page 165

4. The Learning Context

N. Sanders

This section refers to *pedagogical* research which is particularly relevant to post-licence driver / rider training. It is included, like the literature study, early in the report to allow the reader to understand the context of adult learning before consulting the course descriptions. This pedagogical dimension of training is an important one, and should be combined with the literature study in order to draw preliminary conclusions on the strengths and weaknesses of the post-licence driver and rider courses at this moment in time. The observations made in this section either come from established literary sources or from the experiences of the scientific committee during this project.

a) Training: a definition

Training is the process that amplifies, and provides a context for, learning in three key areas. First there is *knowledge* and how to apply it. The second category is *skills* learning. Hands-on experience is essential for the development of skills, from physical ones, such as steering, to interpersonal ones, like communication. The last area is learning at the level of *values and attitudes*. This kind of training is probably the most demanding on the trainer and the hardest to evaluate, but values and attitudes have the greatest influence on behaviour and performance.

Learning (which can be physical, emotional or intellectual) is about change in the trainee's knowledge, skill or behaviour (as dictated by his/her values and attitudes). Perhaps the trainer's fundamental role is to demonstrate that change is possible. The trainer creates a context in which individuals can learn.

b) Characteristics of adult based learning

There are certain principles to apply when dealing with adult in the learning process.

Firstly, adult participants have the following characteristics:

- They are not beginners, but are in a continuing process of growth
- They bring with them a unique package of experiences and values
- They come to education with varying levels and types of motivation, depending on the circumstances of their enrolment
- They bring expectations / preconceptions about the training
- They have competing interests in their lives: the training theme is just one of them
- They already have their own set patterns of learning
- Adults learn best by doing⁵

Secondly, adult education is most productive when:

- The participants are engaged in the design of learning
- The participants are encouraged to be self-directed
- The educator functions as a *facilitator* rather than a didactic instructor
- The varying needs and learning styles of each individual are taken into account
- A climate conducive to learning is established

⁵ Importantly, "doing" in the context of driver training does not mean purely the physical act of driving. "Doing" includes anything where the participants are actively applying their minds and/or bodies (i.e. analysing, problem-solving, etc).

- The participants' experiences are used in the learning process
- Learning activities have relevance to the learner's circumstance

Motivation: a precondition for effective learning

Learning needs motivation. Merely because someone attends a training course doesn't guarantee that they will learn anything. For learning to take place, the trainee must be convinced that there is some direct benefit gained by acquiring the knowledge, skills and awareness offered in the training.

Sending people on courses - to learn skills that somebody else thinks they need to learn - is not an effective basis for learning, unless they are convinced beforehand. This is important for companies who send their employees for fleet training, for instance.

The goals of the trainer and the trainee also need to correlate. Training goals are what the trainers want the trainees to know and do. Learning goals are what the trainees want to know and do. The actual training needs to be a mix and a dovetailing of these two goals if the learning process is going to have a chance to work.

Whatever the trainee learns he/she must learn personally. This means that while it is the participant's attitude which will decide how much is learned, it is the trainer's job to make him/her want to. The onus is on the trainer to make the subject matter interesting and relevant so that everyone attending receives something of benefit.

Another prerequisite is that the trainer must be motivated him/herself in order to stimulate the participants.

Responsibility increases learning

Recognising that the individual controls whether they learn and at what speed, will in itself increase the learning process. Where the trainer has passed over the responsibility for learning to the individual concerned there has been a significant increase in both the amount learned and the extent of "knowledge" retained. This is part of the "learning to learn" process. Traditional education focuses on what to learn, not *how* to learn. We are told to remember, but not how to remember. Increasing the responsibility of the trainee and liberating them from an externally imposed training format improves the learning to learn process. This, in turn, increases the chances that the trainee will continue to learn on their own after the training has finished.

c) Designing to learn

Varied content

Including a set of "varied experiences" is an effective way to retaining a good learning state. Varying the length of the exercises is advisable, as is the medium of communication⁶. The use of a range of methods—role play, case studies, brainstorming, risk awareness and skills exercises in cars, presentations, discussions, is another way of breaking up the monotony of sitting in a car, for instance. Vary the methods so there is a mix of group, interpersonal and individual activities. Finally, significant remarks made by participants should be registered on a flipchart, so good points are visually stimulating and longer lasting than the oral remark alone.

⁶ People think in different ways and have different learning styles. Variation of the structures and medium of communication allows for all learning styles to be catered for.

Breaks

Concentration and retention drops dramatically after 50 minutes to an hour. A 10 minute break at the end of an hour vastly improves group recall. Breaking at a high point is best, not whenever someone is tired.

Quantity of messages

Don't bite off more than the trainees can chew. There is a limit to how much can be addressed (and successfully retained afterwards) at one sitting or in one day. To a certain extent the quantity of messages evoked is proportional to the ability of the trainer to elicit (the right) responses. But to avoid training ending in a blur, the emphasis should be on quality, not quantity: prioritising classic problem areas and individual weaknesses. It is important to fully discuss and explore issues instead of just presenting them and moving onto the next one in fear of falling behind schedule. Missing a section of the training may be a better alternative than trying to rush through the entire programme.

The importance of a good ending

The final session of the training is an important and often neglected part of the training. Memory retention is good during beginnings and ends (and rather hazy in the middle). A final feedback session represents an ideal time to:

- Encourage the participants to think again about the main course messages (which may be individual or course-oriented)
- Check what the participant has retained
- Raise issues that remain unclear
- Question the participant on what they found useful or interesting (these are areas where the training is mostly likely to have an effect)
- Set goals for driving in the future

Above all, it is important to leave ample time for this session. It may be the most important phase in the day in terms of long-term learning effects and memory retention. To encourage a climate of ongoing learning and change after the training, it may be better to encourage a social atmosphere after the training, rather than stopping it abruptly (e.g. chatting, sandwiches and drinks). If the trainer(s) remain around at the end, instead of quickly disappearing, this enhances the feeling amongst participants that they are being invested in.

Concept versus experience

“Concept versus experience” reflects a central choice at the heart of sequencing training. The choice is as follows: do you teach concepts first so the trainees can make sense of the subsequent experience? Or do you give them experience first, so they have something to conceptualise about?

Traditional training tends to give the concepts first. There is talk *about* the skills/risk awareness and experience. Then there is the practical exercise to experience and consolidate the skills/risk awareness. Then there is integration, in the form of discussion and feedback.

The alternative approach works in the opposite direction. It gives the sensory-based experience first in the form of exercises or practice. Once the trainees have had the experience, they then have something tangible to relate to. Without the experience, the concepts may have little meaning. In addition, under the traditional training form – where concepts are given first – these concepts will inevitably be presented by the trainer (or another medium), in the assumption that these concepts are the ones the trainee needs to know. This may not be the case in reality. Each person has different needs. Also, the concepts will be given by a trainer with his/her own perceptual bias. In other words, the concepts are likely to be presented in the way the trainer

wants to, rather than in the way the trainees need it. It may therefore be much more effective (and fairer) to the trainees to give them minimum structure so they can get the most out of the experience. At the same time, participants will probably enrich and enlarge the existing theory and uses of the material and will provide important feedback for the trainer (which is important for his own learning experience and for the development of the course as a whole).

d) Training at different levels

Learning occurs at different levels. Training should be designed to reflect these different levels, the relative focus needed on one level in relation to another and the means of reaching each level. Previous EU projects in the field of driver training have developed a model to reflect these different levels, what should be addressed on each level and how. The most current conceptual framework available is the GADGET matrix (named after the GADGET project, 1999).

The model recognises that higher levels of individual behaviour (beliefs, values, self-awareness and awareness of context) heavily influence the lower levels, such as mastery of traffic situations and vehicle manoeuvring. The principle is that skills will not flow without raising awareness and empowering beliefs and values to back them up (including acceptance of the training methods and the need for change). One's beliefs and values also strongly affect one's thoughts and one's emotional state.

The GADGET matrix will be consistently referred to in this report. The full model and explanation can be found in the annex, page 218.

e) Limits of a one day course

Beliefs and values and the resultant behaviour are developed over years, beginning in childhood. A multitude of different influences affect this process: family, friends, education, the media, etc. Consequently, this leads some course providers to suggest that a 1-2 day driver / rider course cannot be expected to bring about significant behavioural change via beliefs and values. Other trainers, on the contrary, believe they can, but these (scarce) individuals have entered the driver training world through coaching and/ or psychoanalysis, on which these very concepts are based.

Taking into account the duration, type, cost and general context of driver training, it may be unrealistic to suggest that *significant* behavioural change can be induced.

As one motorcycle trainer commented:

“We see our job as just trying to give riders a few important tips to prevent them from killing themselves. That's all we can do”.

The most important task of one day courses is to give / create tools for the clients to use in driving after training. Learning something new about themselves, for instance, is one area where participants can continue to benefit once the training is over. Self-analytical tools gained from training can enable them to continue learning for some time afterwards. Participants may not be radically changed as a result of the training, but they may be more able to understand and take into account their individual characteristics and their potential influence when driving.

5. Voluntary post-licence driver training: description

N. Sanders & J-P. Fougère

The information in this section on voluntary, post-licence driver training is based on a questionnaire survey of course providers, visits to courses and a series of workshops which took place during the project. Only *voluntary* post-licence training is described below⁷. For the purpose of this report, voluntary, advanced training is any form of post-licence driver or rider training which is not required by law (either for all persons, such as 2nd phase novice driver training, or for some, such as driver rehabilitation for traffic offenders) and for Category B vehicles only (passenger cars). The training must also have a road-safety goal. This precondition therefore excludes driving-for-fun courses on driving circuits which are on offer, for instance, to companies wishing to organise a day out for their staff.

It is also important to point out that there are likely to be courses on the market who claim to have road safety objectives but, in practice, are actually offering driving-for-fun. These companies are unlikely to fill out questionnaires such as the one used during this study, and as a result they are not referred to in this study.

a) The context of driver training

Rising demand

Demand for post-licence driver training has grown over the last 5-10 years across the European Union (and, in Germany, over the last 20 years). Amongst the various reasons cited⁸, the main explanation for this rise in demand is the growth of fleet driver training. Fleet driver training involves the training of company employees who are sent by their company management to such courses. The increase in the provision of company cars over the last few years has inevitably led to higher accident and damage claims which company management are at pains to reduce and which their insurance companies are unwilling to support over the long-term.

Fleet driver training

Many companies send their employees for training because they are “quietly encouraged” by their insurers to do so; others may do it to reduce (or maintain) their premiums. Driver training can also be used as a positive public relations exercise, particularly for companies with a high profile in sales or deliveries where the staff are often on the road. Some multinationals, with long-term safety policies in place due to the nature of their business (petrochemicals, pharmaceuticals, etc) have led the way in the market by extending their safety policies to include road safety and driver training.

Novice driver training

Whilst the vast majority of post-licence driver training caters for the fleet market, it is not exclusively so. Specific courses for novice drivers (inexperienced and generally young drivers who have only recently passed their driving tests) are also provided for in some countries (UK, France, Germany, etc). Certain insurance companies may oblige their insurees to take part in novice driver training in order to benefit from favourable insurance conditions (such as in France and Belgium). Reductions in premiums may, alternatively, be used as an incentive for novice drivers, such as in the UK with the Pass Plus programme. In

⁷ obligatory (by law) post-licence training can be found on page 76 onwards.

⁸ Companies may have compulsory training budgets which they choose to spend on driver training; safety campaigns have encouraged companies to take action; the provision of more training facilities and better marketing has helped absorption and increase of demand, health and safety regulations have been extended (or will be extended) to include company cars and drivers; competition has grown between providers leading to higher quality and more client-oriented training; multinational companies (with many temporary expat workers) have created and led the market in some countries.

other countries, novice driver training may be offered on a purely voluntary basis, for instance by automobile clubs⁹.

Other target groups

Aside from training for novice drivers, some organisations or individual trainers offer (systematic or temporary) training for other target groups such as elderly drivers, women¹⁰ or insecure drivers seeking advice and tips¹¹.

Voluntary participation

Cases of individual drivers participating on a purely voluntary basis are few and far between, although this again depends on the country¹². The fact that the vast majority of courses cater for participants who would probably not have attended on personal initiative is an important one. This is because motivations for taking part in training of any kind have a significant effect on the learning process (see page 12 for more details). Driver trainers need to address the motivations (or lack of motivations) of participants and encourage them to accept course participation and the objectives and messages of the training.

The main suppliers

In terms of the supply of post-licence driver training, the main “course providers” are, in random order¹³:

1. Automobile clubs
2. Car manufacturers (perhaps in cooperation with another company)
3. Road safety organisations
4. Private training companies

b) Course formats

For the purpose of this report, a basic distinction will be made between courses based on off-road areas (“track-based” training) and courses on public roads (“on-road” training). Whether training is track-based or on-road, training will vary from one course provider to another in terms of content, methods, target groups, facilities and other quality issues. However, this basic distinction between track-based and on-road courses is a useful starting point. It should not be forgotten, however, that these courses almost always include some form of theory or group work. Practical training is not the only focus.

The vast majority of courses last no longer than one day. This is primarily due to participation costs and the availability of participants (who, being largely company employees, are effectively “taking time off” work).

⁹ Automobile clubs are highly interested in attracting young drivers to these courses, especially since they are potential future subscribers to other automobile club services.

¹⁰ Courses for women are often taught by female trainers.

¹¹ Data has not, however, been collected for these target groups during the study.

¹² One major exception to this rule is Germany, where an estimated 50% of participants come voluntarily to training

¹³ Data pertaining to the relative market share of these course providers is available in the section on driver training in each Member State on page 46.

Track-based courses

Track-based post-licence driver courses are the norm in several countries, including Austria, Belgium, France, Germany, Italy, the Netherlands, Spain, Sweden and Switzerland¹⁴. These track areas vary considerably in surface area - and facilities - from around 2,000 to 500,000m².

Although some people perceive track-based courses as racing courses in disguise, the training seen in the course of this project have genuine road safety aims.

It is interesting to note that countries with harsh weather and / or geographic conditions tend to favour the track-based format. In these countries and under such conditions, it is comparatively easier to lose control of one's vehicle than in other countries (mountainous environments, icy conditions, high-speed roads, etc). Track-based training may therefore – at least originally - have been devised in order to address this phenomenon, whether through training to provide extra skills or to show the risks involved under such conditions.

In addition, many drivers (particularly novices) are involved in single-vehicle accidents, where no other road user is involved. One reason for this may be a lack of knowledge and understanding of driving physics (speed, trajectory, steering and vehicle dynamics, etc). Track-based courses allow such drivers to experience (and exceed) limits in a safe, off-road environment, at the same time as gaining knowledge on driving physics.

Commercial and financial factors also, however, play a role in the choice of track-based or on-road training. (Large) tracks require a considerable financial investment which only automobile clubs and car manufacturers can generally afford. Some of the large ones are also used for performance testing (for consumers and by manufacturers, etc), racing and for leasing out to other companies. Others are - or have plans to become – fully-fledged “road safety centres”, focussing not only on drivers, but on a broader road safety policy, offering programmes for pedestrians, children and other specific target groups.

The individuals involved in track-based training (both directors and trainers) tend to have a racing background (rally driving or circuit racing), technical background (engineers, etc) or are (ex) policemen. However, it is important not to make assumptions at this stage, as to how this background influences the various programmes on offer and what advantages / disadvantages are associated.

Most 1-day (group) courses cost between 100 and 200 Euro per person, although there are some examples of post-licence training clearly designed for the higher echelons of the company world (costing up to 1,400 Euro for 2 days).

On-road courses

On-road post-licence courses are the norm in the UK and Ireland and can be found in other countries, such as France, Belgium and the Netherlands. (In the UK and Ireland, track-based courses are generally perceived as racing courses - which are widespread and highly popular in the UK). On-road courses are more focussed on an anticipatory and fluent driving style, based on the early perception of (external) hazards.

This market is heavily influenced by ex-policemen and trainers qualified as pre-licence driving instructors who are not familiar with track-based courses and are used to “working” on the road.

A limited number of courses offer a mix of track and road-based training.

¹⁴ ..although some of these countries will have on-road driver training too.

c) Driver training in each EU Member State

The objectives of these courses, their contents and methods, quality assurance and equipment and facilities are all addressed in separate sub-chapters below. Beforehand, however, it may be useful to gain some insight into the state of the post-licence driver training market in each EU country, in addition to the general levels of interest in such training from individuals, companies, etc.

Based on questionnaire feedback, the following sections aim to provide an overview of the structure of driver training in each EU Member State (described in alphabetical order). The information provided relates several factors, including:

- Levels of demand and reasons for demand
- The number of training organisations active in the sector
- The main training organisations
- The type of training given
- The target groups of the training
- Concerns in the sector
- Existence of legal requirements or guidelines for post-licence training
- Overall numbers of drivers trained (where available)

The data is based on feedback from course providers and other stakeholders in the sector. As a result, some country profiles may be more complete than others. It is also important to note that the project parameters did not include a commercial analysis of the sector, so the data is not cross-checked. The following information simply serves to provide an impression of the status quo in the EU-15.

1. Austria

Demand for post-licence driver training in Austria is defined as “low” but has risen in the last 5 years. This may be explained by the active marketing of the ÖAMTC (Austrian Automobile Club) in this area. Training is provided by 6 organisations, including ARBÖ¹⁵, driving schools and manufacturers / dealers, but the main course provider is the ÖAMTC itself¹⁶. The latter provided training for 36500 drivers in Austria in the year 2000. The course concept and structure also exists in Switzerland and Germany, where they train altogether roughly the same amount as in Austria.

Training is primarily track-based in Austria and the main target group is the fleet market.

Trainers are either (pre-licence) driving instructors with additional training, and/or in-house trained. No legal requirements or national standards exist for post-licence driving instructors in track-based courses (apart from a permit from a local official).

2. Belgium

Demand for post-licence driver training in Belgium is described as “medium”, with a rise in demand over the last 5 years as a result of pressure from insurance companies, competition (including car importers) and political involvement. The major players in the market are (in random order):

- Ecole Peugeot de Maîtrise Automobile*
- Centre de maîtrise du volant
- JESCO
- RACB (Royal Automobile Club) Ecole de Conduite*
- Rijvaardigheid Centrum Willemijns (Brugge)
- Driving Know How (recently ceased operation)*

¹⁵ ARBÖ: Austrian Car- Motor- and Cycling Association

¹⁶ ÖAMTC will be a major course provider in the forthcoming obligatory multiphase training programme for novice drivers.

In numerical terms, the main course providers are those marked with an asterisk. Courses are primarily track-based and rely heavily on the fleet market.

There are no legal requirements for post-licence driving instructors, leading to concerns that “certain non-recognised courses (by the advanced driving school federation), known as anti-skid courses, do not have the right aims.”

3. Denmark

No information received.

4. Finland

The Finnish post-licence driver training market is led by the Central Organisation for Traffic Safety (Liikenneturva). Training is also provided by normal driving schools. Demand has increased over the last ten years, particularly due to the discussion on problems relating to elderly drivers. However, there is still a “lack of activity generally” and a feeling that the driving schools could be more active in this sector.

Obligatory post-licence driver training for novice drivers has existed in Finland since 1990.

5. France

Demand in France for post-licence driver training is described as low, although there has been an increase in the last 5 years. This increase is largely due to the implementation of compulsory training budgets for companies in France, leading to many employees being sent for driver training. Pressure from the administration, particularly with regard to the need to take preventative action to reduce workplace-home road accidents, has also contributed.

The main course providers are:

- ANPER
- Ecole de Conduite Française (ECF)
- Centaure
- Conduire Juste (Beltoise)
- SIFA Prévention
- CSA
- ..and some regional automobile clubs.

Some courses, primarily organised in cooperation with insurance companies, are offered to - or are a prerequisite for - novice drivers (e.g. through ANPER and the ECF).

Both track-training and on-road training are given in France. Trainers must hold a (pre-licence) driving instructor qualification. However, a lack of quality standards is quoted as a concern, as is the lack of demand in general.

6. Germany

Demand in Germany is described as high (especially from international companies¹⁷), although demand could - and should, according to the DVR - be much higher. There is a high number of course providers in Germany (around 30), with most courses basing their programmes on detailed guidelines issued by the DVR, the German Road Safety Council. (The DVR designs and develops course programmes which are then implemented by the various providers). The main two training organisations are the ADAC (German

¹⁷ And on weekends!

Automobile Club) and the Deutsche Verkehrswacht. Other course providers include the TÜV (a major standards body), ACE (automobile club) and car manufacturers (such as BMW and Volkswagen).

Organisations such as the ADAC also offer courses for novice / young drivers.

Demand has increased over the last 20 years. This can be explained by a number of reasons, including:

- Better quality courses
- Better marketing
- Financial support for participants
- More availability of tracks

There is a sentiment that more evaluation needs to be done to assess the training effects of courses on drivers. Another concern is price competition between course providers.

7. Greece

No information received.

8. Ireland

Post-licence driver training in Ireland caters almost exclusively for the fleet market and is provided by 10-15 companies, although primarily by 3 organisations: Risk & Safety Services (part of the Allianz insurance group), NIFAST and IAM (Institute of Advanced Motorists).

Driver training takes place on the road. There is low demand in general but demand has risen over the last 5 years. This is mainly due to insurers pushing companies to send their employees for driver training. Corporate health and safety issues have also contributed to the growth in demand.

There is concern that no quality accreditation exists for trainers (at any level, including pre-licence) and that no quality control procedures are in place either.

9. Italy

Demand for post-licence training is described as low-medium in Italy, although it has risen in the last few years and is likely to rise due to media attention and government interest in reducing road fatalities.

Of the 5-10 course providers in Italy, the main ones are:

- Guida Sicura Quattroruote
- Guidare e Pilotare di Sigfried Stohr
- Centro Internazionale Guida Sicura di De Adamich
- ACI (Automobile Club) Vallelunga

A new course, Progetto Motor Oasi Piemonte Pista guida sicura, has just begun operations (2001+).

The main market in Italy appears to be the higher echelons of company management; this is reflected by the high participation costs.

Concerns focus primarily on the lack of quality standards for post-licence driver training.

10. Luxembourg

Training is provided for voluntary and company participants at the (track-based) Centre de Formation pour Conducteurs, where Luxembourg's obligatory 2nd phase course for novice drivers (and riders) is run (since

1996). The instructors are the same for both voluntary and obligatory training, meaning that Luxembourg is the only country in the EU with legally required standards for post-licence instructors.

11. Netherlands

Post-licence driver training mainly caters for the fleet market in the Netherlands. Demand has increased over the last ten years due to higher expectations and demands from clients and increased competition between providers. However, there are no quality standards, meaning that companies can provide driver training to clients without any form of accredited qualification. Of the 5 main course providers, the 3 principal organisations are the ANWB (Dutch Automobile Club), BOV and the VVCR (who now own BOV). Training can be both track or road-based.

12. Portugal

Increased public awareness and media coverage of driving habits and accident fatalities has led to an increase in demand for post-licence driver training over the last 5 years. Demand remains low, however. Only two companies, CR&M and Saferoad are active in the market, although the ACP (Portuguese Automobile Club) and the PRP (Prévention Routière Portugaise, a publically funded organisation) are interested in joining them in the near future. A major concern is the possibility of government intervention without sufficient knowledge of the sector or consultation. A lack of quality standards and poor facilities are other worries.

13. Spain

Demand for post-licence training is low in Spain, although companies and individuals have become more road-safety conscious over the last 5-10 years. Of the 10 or so training companies, the main providers of training are:

- CAN PADRO
- RACC Automobile Club
- RACE Automobile Club

Others include car manufacturers.

The primary concern in the sector is the lack of quality standards and the possibility of competition from poor quality providers who offer cheaper courses than the serious training organisations.

14. Sweden

Post-licence driver training in Sweden is offered by 4-5 course providers. The two most important ones are STR (Swedish Traffic Schools Association) and TÖP (Organisation for Training Tracks). Demand is described as “medium”, and has been increasing over the last ten years due to company interest and pressure from insurance companies. Training is mainly track-based. A major concern is the large variation in goals and methods used by the course providers.

15. United Kingdom

In the United Kingdom there are some 50 providers of post-licence driver training. Many of these companies (or, indeed, “individuals”) cater exclusively for the fleet market. The main market share is taken up by:

- I.A.M. (Institute of Advanced Motorists)
- RoSPA (Royal Society for the Prevention of Accidents)
- Drive & Survive UK PLC
- Driving Services
- DriveTech
- BSM (British School of Motoring)

Drive & Survive UK PLC is the largest provider of training, according to questionnaire feedback.

Demand is described as low-medium, although demand has risen over the last 5-10 years. There are two main reasons for this. Firstly, insurance companies are pressurising companies to send their employees for fleet driver training. Secondly, the government is looking closely into the extension of company health and safety regulations to include company cars and drivers as “part of the workplace”. A Fleet Driver Register has also been introduced (in 2002), designed to allow the Driving Standards Agency to monitor the fleet driver training sector – and standards - more closely.

A novice driver scheme called Pass Plus also exists.

Training is almost exclusively on-road. All trainers must be in possession of a (pre-licence) driving instructor qualification (ADI). In addition, future trainers will have to be specially trained by accredited training organisations in order to be included on the new fleet driver register. Course providers often offer full risk management services, based on a company audit and a tailored course to meet company needs.

Major concerns include the lack of agreed standards for the fleet training sector as a whole, and the lack of scientific evaluation and assessment of effects.

Post-licence driver training per country: quantitative estimate

Based on questionnaire feedback from the main course providers in each country, a basic estimate can be made on the number of participants undergoing voluntary, post-licence driver training in a range of European countries. (It is important to recall that the majority of these participants are employees sent by their company, so the term “voluntary” may be misleading in this context).

The information below is raw data with no regard to the size of the country in question, the number of licence holders or frequency with which individual drivers repeat post-licence training year after year.

Estimated number of participants in voluntary, post-licence driver training in Europe (2000)

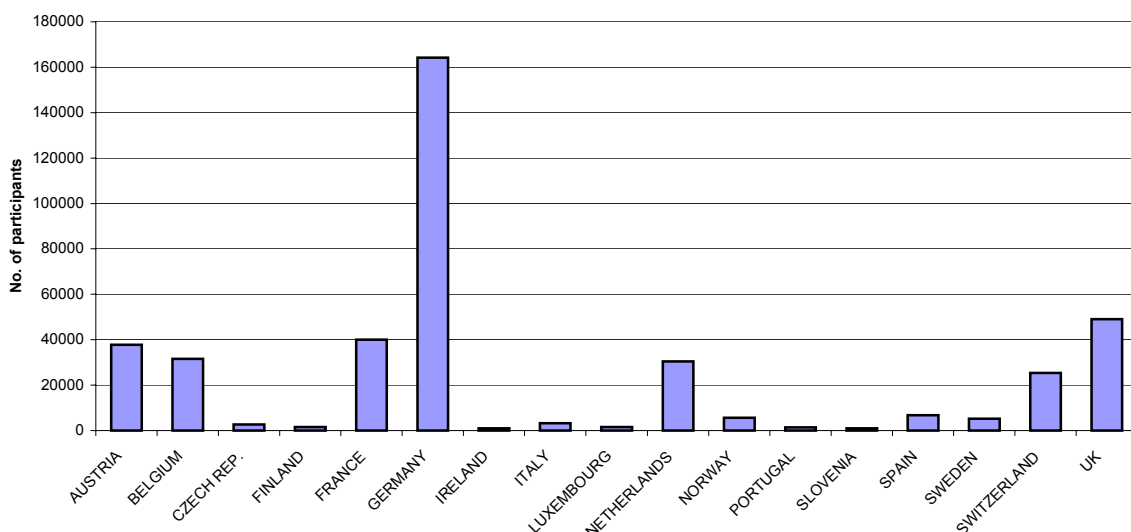


Figure 3: Estimated number of participants in voluntary, post-licence driver training in Europe (2000)

Source: Advanced questionnaire 2001 (UK figures do not include RoSPA and IAM data)

N.B. Data does not include environmentally friendly driver training (which has grown considerably in both supply and demand since the year 2000) or novice driver schemes organised through insurance companies

Luxembourg data: 2001

A cursory glance at this data shows that around 40% of post-licence, voluntary training participants are trained in Germany alone. However, when presented as a % of the national population of each country¹⁸, Austria, Belgium, Luxembourg and Switzerland train a higher % of participants than in Germany (below).

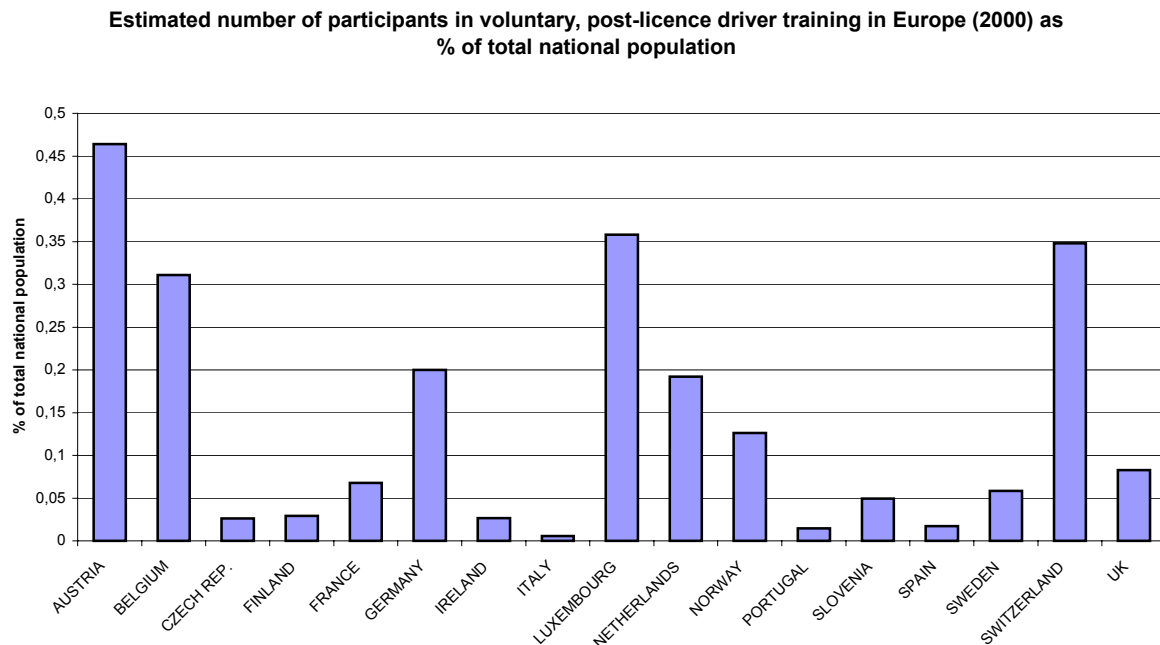


Figure 4: Estimated number of participants in voluntary, post-licence driver training in Europe (2000) as % of total national population

Population data: United Nations (data relates to 1999 figures)

Luxembourg data: 2001

UK figures do not include RoSPA and IAM data

Over 80% of participants are believed to be company employees in all countries with the exception of Germany (where the figure is around 50%). The main target group in such fleet training is the general workforce, although some courses cater primarily for top management.

The objectives of driver training

Clearly, the overriding priority of driver training is to increase road safety. The aim is to reduce the drivers' exposure to risk, thereby lowering the chances of accidents and damage (particularly ones involving bodily harm).

But each course has its own philosophy and its own interpretation of how to help drivers drive more safely¹⁹. So what are the goals of such training? What messages are the trainers trying to transmit during the course?

¹⁸ In the absence of data on the total population of licence holders, this data is presented as a % of the total national population instead.

¹⁹ The objectives of driver training may vary according to a number of factors. These include:

- the particular target group or individual
- the wishes of the individual client or company
- the needs of the individual client or company
- the training philosophy of the training organisation or trainer(s)
- the opportunities and limitations of the training environment (roughly split up into 3 types: 1) track-based training, 2) road-based training and 3) group discussion and theory)
- accident statistics and accident analysis, leading to a course designed to address perceived common driving errors

In the sections below, various texts have been selected - from feedback from course providers - in order to illustrate the objectives they set for their training.

d) Track-based training

i. Objectives

The examples below have been selected from a range of EU countries and have been chosen because they provide an accurate representation of the goals of *track-based* courses.

N.B. Each text is followed by a grid showing the extent to which each of the 4 levels of driver behaviour (according to the GADGET matrix) are focussed on²⁰. The first set of figures (3rd column) relates to the perceived priority given to each of the 4 levels during the training (1 = top priority; 4 = lowest priority). The second set of figures (last column) refers to the approximate proportion of time dedicated to each of the 4 levels (in percentage terms).

Example 1: Goals of training

(Austria)

“Personal characteristics: awareness of personal and physical limits leading to a more safe driving style.

Driving characteristics: recognise danger, read the road, understand in-car technology, defensive driving, take into account other peoples' mistakes, avoiding danger (safe distance/speed, seating/steering techniques).

Traffic situation: overcome danger (braking, steering, clutch).

Vehicle control: understanding how speed influences emergency situations; the need for a soft anti-aggressive driving style.

Every exercise is designed to allow experience of how slight speed changes can affect the situation: realising limits”.

Example 1: Priorities and proportion of time spent on each level

<i>Level of Driver Behaviour</i>	<i>Description of level (as stated in questionnaire)</i>	<i>Priority 1-4 (1= highest)</i>	<i>Proportion of time spent (%)</i>
Level 4	Raising awareness of personal characteristics and behaviour and their importance to good driving	4	10
Level 3	Raising awareness of journey-related characteristics and their importance to good driving	3	10
Level 2	Mastering traffic situations	2	25
Level 1	Improving vehicle manoeuvring, handling and control	1	55

Example 2: Goals of training

(France)

“Discovering and understanding personal limits (physical and physiological); Discovering and understanding limits of vehicle (kinetic energy, braking, friction loss, blind spots);

²⁰ As shown below, each level is described in a slightly different way to the terms used in the original 4-level model and GADGET matrix.

Discovering and understanding limits of the environment (reliability of signposting, state of the roads, visibility at junctions, being dazzled by other drivers, bad weather, etc).”

Example 2: Priorities and proportion of time spent on each level

<i>Level of Driver Behaviour</i>	<i>Description of level (as stated in questionnaire)</i>	<i>Priority 1-4 (1= highest)</i>	<i>Proportion of time spent (%)</i>
Level 4	Raising awareness of personal characteristics and behaviour and their importance to good driving	1	30
Level 3	Raising awareness of journey-related characteristics and their importance to good driving	2	30
Level 2	Mastering traffic situations	3	25
Level 1	Improving vehicle manoeuvring, handling and control	4	15

Example 3: Goals of training

(Germany)

“Make people aware of the attitudes and behaviour which can increase risk. Give people a subjective estimation of their own skills and the physical/technical possibilities of a car. Provide knowledge of technical and physical basics for safe driving; recognise importance of cognitive processes (information processing) and train them. Awareness of typical danger areas and ability to judge them better. Learn ways of avoiding danger. Learn standard techniques for acting directly in dangerous situations. Learn limits of overcoming direct danger”.

Example 3: Priorities and proportion of time spent on each level

<i>Level of Driver Behaviour</i>	<i>Description of level (as stated in questionnaire)</i>	<i>Priority 1-4 (1= highest)</i>	<i>Proportion of time spent (%)</i>
Level 4	Raising awareness of personal characteristics and behaviour and their importance to good driving	2	25
Level 3	Raising awareness of journey-related characteristics and their importance to good driving	4	20
Level 2	Mastering traffic situations	1	30
Level 1	Improving vehicle manoeuvring, handling and control	3	25

Example 4: Goals of training

(Belgium)

“Understanding danger on the roads, skidding, their causes and possible action to rectify the situation. The circuit is particularly difficult to manoeuvre, thereby showing clients that it is best to avoid danger rather than dealing with it directly”.

Example 4: Priorities and proportion of time spent on each level

<i>Level of Driver Behaviour</i>	<i>Description of level (as stated in questionnaire)</i>	<i>Priority 1-4 (1= highest)</i>	<i>Proportion of time spent (%)</i>
Level 4	Raising awareness of personal characteristics and behaviour and their importance to good driving	3	20
Level 3	Raising awareness of journey-related characteristics and their importance to good driving	4	10
Level 2	Mastering traffic situations	2	30
Level 1	Improving vehicle manoeuvring, handling and control	1	40

ii. The context of track-based courses

The underlying philosophy of many track-based courses is “recognising and experiencing limits”. These limits may refer to personal limits, limits of the vehicle and the limits of the road environment. Participants should gain personal experience of such limits during the training, in order to make them aware of a range of risks and to try to encourage them to adjust their driving style accordingly (appropriate speed, proper safety margins, etc).

The focus may differ from course to course, however. Whereas one course may focus strongly on limit situations, another will spread its attention over a wider sequence of events. An example of this is the German DVR²¹ model which is run under the slogan of “Gefahren erkennen, Gefahren vermeiden, Gefahren bewältigen” (recognise danger, avoid danger, cope with danger).

As far as limits are concerned, courses tend to focus more heavily on the limits of the vehicle and the road environment, than on personal limits. This, again, varies from course to course.

An important distinction to make at this stage is the one between “skills-oriented” goals and “risk awareness” goals in track-based courses. Skills refer to a wide range of competencies related to vehicle manoeuvring such as effective steering, braking, braking and avoiding obstacles, and possibly regaining control of the vehicle in a skid. Some courses surveyed during the project cover all such skills; others include only some of them. Risk awareness goals refer to the risks associated with all of the above skills and a lot more, such as the effect of speed and other factors on braking distances, the difficulty of successfully avoiding obstacles (i.e. other road users) in practice at high speeds and the ease with which one can lose control of the vehicle on road bends.

Courses will vary in terms of the relative attention given to both skills training and risk awareness. In general, however, one can perceive a shift away from an overriding focus on skills training towards a more balanced approach of skills and risk awareness²². This shift has occurred over the last few years as a result of research and the introduction of new driving philosophies. Some courses, however, remain heavily influenced by programmes developed in the 1970s and 80s which focus heavily on improving (manoeuvring) skills.

²¹ Deutsche Verkehrssicherheitsrat (German Road Safety Council)

²² This point will be addressed in some detail in the analysis & conclusions section, page 76

As a general overview, manoeuvring skills training is, simply put, designed to improve one's handling of the car, especially in emergency situations. Risk awareness training in this context, on the other hand, focuses on a great number of potential risks related to loss of vehicle control (on bends, while swerving, skidding or braking) caused by excessive speed, poor road and environmental conditions, poor vehicle conditions, lack of fundamental manoeuvring skills, poor reaction times, the wrong assumptions, panicking (overreaction), etc.

The indirect objective of training risk awareness at this level in track-based training is to encourage drivers to regulate their speed and maintain suitable safety margins according to the prevailing conditions.

iii. Content of track-based driver training

The content and methods of track-based driver training can be roughly divided into 3 categories:

1. Theory: presentation and discussion of theoretical aspects of practical exercises (which may take place before and/or after the theory)
2. Practical exercises on the track
3. Active classroom methods: group discussion, accident analysis, case studies, self-evaluation, etc

All 3 of the above may or may not be interlinked.

There are a number of different programmes used by track-based trainers in practice, but a “typical 1-day programme” may look like the following:

1. **Opening session**: introductions, expectations, course objectives and programme, etc
2. **Handling exercises**: sitting position, steering, slalom, viewing techniques
3. **Braking exercises (straight)**: theory and practice (with and without ABS)
4. **Braking exercises (one side slippery)**: theory and practice (with and without ABS)
5. **Avoidance manoeuvre**: theory and practice
6. **Braking and avoidance**: theory and practice
7. **Cornering (and braking on bends)**: theory (under- and oversteering) and practice
8. **Skid plate**²³: experiencing loss of control of the vehicle
9. **Closing session**: Feedback session, questions and answers, etc

Courses may also include the theme of **skidding** or **aquaplaning**, again in theory and practice²⁴.

Such a programme as above is meaningless, however, without outlining the goals that are set for each session. Again, the basic distinction between manoeuvring skills-oriented training and risk awareness training is particularly important here. What is being taught? The skills to be able to steer, brake and handle the car better? The risks involved in manoeuvres at high speeds, on poor roads and when the driver is slow to react (braking distances, loss of control of the vehicle, etc)? Or perhaps a blend of the two? If so, what is the balance struck between them?

For instance, a braking exercise may be purely focussed on providing the necessary skills to bring a car to a controlled standstill in the shortest period possible. Or it may focus on understanding the:

- effect of speed on braking distance, reaction times (and distances) and overall stopping distances
- effects of different surfaces (and conditions) on the above distances

²³ A skid plate is a small conveyor belt which jolts the car when it drives over it. The result is a destabilised vehicle.

²⁴ a “moose test” may be an alternative or complement to braking and avoidance manoeuvring training. A moose test involves avoidance (steering around an obstacle) without braking, sometimes at relatively high speeds. The exercise is originally a Scandinavian innovation designed to simulate steering around a moose which has strayed onto the road.

- rationale of respecting the speed limit because the stopping distances are so much shorter than at higher speeds (where “residual speed at impact” can be quite considerable)

In many cases, these risk awareness and skills dimensions are combined in the same exercise or at least during the same day.

The annex, page 202+, looks in detail at this distinction between manoeuvring skills training and risk awareness training, presenting a description of each exercise and its specific goals. Beyond skills and risk awareness objectives, exercises may also be designed to assess participants (“assessment”). For the sake of clarity, there is a clear split made between skills training and risk awareness training. In practice, both forms of training are likely to be included in the same exercise.

iv. Principles & Methods of track-based training

Many of the methods used in track-based training are based on common principles shared amongst a number of course providers (at least, on paper).

Learning by doing

“Learning by doing” is, it is probably fair to say, the *leitmotif* of all track-based courses. This philosophy is based on the principle that learning is most effective when experienced firsthand. Although themes and “limits” can be discussed and demonstrated by others, most believe that the learning effects will be far more intensive if the participant himself is sat behind the wheel. In practice, this means that training focuses often considerably more on practice than on theory. The exercises create experience, stimulate the senses and awaken thoughts (which may then be used to build a discussion on). Although “doing” can involve other active learning methods than practical driving exercises, “doing” in this context usually means just driving exercises.

Experiencing limits

Many track-based courses emphasise the importance of “experiencing limits”. This philosophy refers to the limits of the car, road environment & conditions and of the driver (or other road users). In practice, the first two kinds of limits are focussed on to a much higher degree than personal ones. The idea is for participants to experience the fine line (or threshold) between safe driving and a critical situation. This fine line is generally experienced and illustrated first in terms of speed, e.g. driving around a corner of a slippery road is fine at 30kmh, but the car loses control at 33kmh - only 3kms higher. This experience can provide the basis for further discussion on how blurred these limits are, and all the factors which can influence and change these limits, such as speed, road conditions, trajectory, weight of the vehicle, tyre condition and pressure, etc. The basic message is: limits are difficult to determine, so don't try to push them.

Using the participants' prior experiences (links to reality)

Another important principle which is linked to “learning by doing” is that of building the learning tasks of the training on the previous driving experience of the participants. Here, examples are taken of previously experienced road situations and exemplified for the purpose of transmitting key training messages. In addition, once experiences are had during the training, these experiences are then linked to previous driving experiences (or at least potential scenarios) in order to illustrate and reinforce the point.

Interlinked theory and practice

The content of the theory sessions and the content of the practical sessions are often designed to be “seamless”. As a result, the theory complements reality (during practical exercises), and vice versa. The intention is to provide for a more intensive learning experience and to convince participants that the theory is correct in practice, and that it will apply when they are out on the road.

Balance of presentation, moderation & instruction

The aim of any form of training is to improve the knowledge, skills and behaviour of the participants. Three main teaching methods may be used for this purpose:

Presentation / demonstration: presenting information, explaining facts and figures and showing people how to perform / not to perform certain tasks

Instruction: assessing needs and performance, and giving feedback

Moderation / coaching: Moderation²⁵ (based on the German term) involves questioning techniques to involve the participant more actively in the learning experience, guiding discussions and raising poignant points when they arise. Coaching is a slightly stronger form of participant-centred teaching involving questioning and guiding each individual to evaluate their weaknesses and needs, set targets to improve on them and help them to find ways of meeting these targets in practice.

Variation of tasks and methods to maintain interest and intensify learning experience

Since a major principle of adult learning is the need to maintain motivation and interest, some course providers have stressed the need for a wide variety of teaching/learning methods, such as:

- *Presentations* (knowledge building)
- *Demonstrations* (Showing how things should or should not be done)
- *Personal experience* (each individual should gain first hand experience)
- *Discussions* (learning from others' experiences)
- *Self-evaluation exercises* (assessing one's own abilities)
- *Assessment and feedback* (being assessed by an expert and learning from it)
- *Analyses*: accident analyses, analysis of driver behaviour, etc (intellectual application)

Etc

Number of participants per trainer

Track-based training takes place in groups of participants. Group sizes range from 2 to 12 participants per trainer. Clearly, the size of the group is a question of cost (more instructors = higher fees), but there is also the question of quality assurance. In other words, up to what group size can trainers cope with and still maintain the necessary training standards? This is a question which will be addressed in the analysis and conclusions chapter, page 76.

Other important teaching principles

Other important teaching principles include the need to take regular breaks, with a view to both regaining concentration and allowing for feedback and question time. Limiting the number of basic messages is another important learning principle. An excessive number of messages may undermine the ability of individual to process and retain the information and experiences over time.

v. Equipment and facilities

The equipment and facilities of track-based courses is a science in itself and is not a major focus of the Advanced project. There is no doubt, however, that specific tools can facilitate the learning process and can

²⁵ In the moderation method, the participant is extensively involved in determining training content and plays an active and inquiring role in the training. This method can be contrasted with instruction where the participant are supposed to absorb knowledge which is presented to them, thereby playing a far more passive and receptive role.

be useful tools to illustrate certain themes (although not alone). Roughly split into categories, equipment ranges from different surface types, to obstacles, mechanical equipment, electronic data collection and audiovisual tools. A brief listing can be found below:

Obstacles (avoidance or manoeuvring exercises):

- Cones
- Sponge
- Water fountains (automatic or manual)
- Dummies

Surface types: different friction co-efficients (including mobile training surfaces)

Machinery:

- Hydraulic skid plate
- Skid cars on stabilisers
- Crash simulators
- Rollable vehicle
- Paint shooters (for measuring braking and reaction distances)

Audiovisual equipment²⁶:

- In-car cameras (facing inwards / outwards)
- In car diagnostics: electronic data collection: speed, friction, braking, fuel consumption, braking / reaction distance and time, deceleration, braking curves, etc
- Radio (one-way communication between instructor and participants)
- Pulse meters to measure when pulse is high (perhaps in combination with camera). Understanding of emotions and stress in driving

Geographical features: hills, bends, etc...

Some stakeholders in the project strongly felt that the equipment and facilities, in addition to the safety features of tracks, should be an integral part of the study. Whereas there is no doubt that safety should be a priority during training and that certain facilities can enhance the learning process, the project team lacked the time and expertise to analyse these issues properly.

²⁶ This apparatus can also be used and is regularly found in on-road training too.

e) On-road training

i. Objectives

On-road post-licence driver training is almost exclusively fleet driver training. No other market exists apart from a small market for novice drivers (presented from page 63 onwards). On-road courses (or elements of courses) were visited in Belgium, Holland, France and the UK. However, in most cases the training was not sufficiently structured or observed for long enough to draw any major conclusions. The following examples are from UK and Ireland only and from companies relying almost exclusively on the fleet market.

Example 1: Goals

(UK)

“The overall goal is to reduce or eliminate the risk of the driver being involved in a crash (or incident that may cause a crash). Drivers can drive better if they want to and that is our objective (motivation). Hazard perception, observation, anticipation, planning and restraint are also needed”.

Example 1: Priorities and proportion of time spent on each level

<i>Level of Driver Behaviour</i>	<i>Description of level (as stated in questionnaire)</i>	<i>Priority 1-4 (1= highest)</i>	<i>Proportion of time spent (%)</i>
Level 4	Raising awareness of personal characteristics and behaviour and their importance to good driving	3	10
Level 3	Raising awareness of journey-related characteristics and their importance to good driving	4	5
Level 2	Mastering traffic situations	1	70
Level 1	Improving vehicle manoeuvring, handling and control	2	15

Example 2: Goals

(Ireland)

“Raise drivers awareness of hazards and introduce techniques to improve concentration and observation. Improve awareness of cost effective use of vehicle (wear and tear; fuel economy). Identification of correct position, speed and gear for all situations. Correct use of speed can improve safety margins so that the driver is in control of the vehicle”.

Example 2: Priorities and proportion of time spent on each level

<i>Level of Driver Behaviour</i>	<i>Description of level (as stated in questionnaire)</i>	<i>Priority 1-4 (1= highest)</i>	<i>Proportion of time spent (%)</i>
Level 4	Raising awareness of personal characteristics and behaviour and their importance to good driving	1	35
Level 3	Raising awareness of journey-related characteristics and their importance to good driving	2	30
Level 2	Mastering traffic situations	3	25

Level 1	Improving vehicle manoeuvring, handling and control	4	10
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Example 3: Goals
(UK)
 “Raising hazard perception and awareness by improving observational and anticipation skills. Encouraging positive behavioural change in the following areas: Attitude, Maintenance of space, Use of appropriate speed, Environmental impact & vehicle control.
 Creating a consistent and safe hazard approach system, leading to lower vehicle incident and less cost via lower fuel usage & less vehicle maintenance. Helping to create a safety culture in our clients' organisations by selective data capture and ongoing targeting of high risk practice”.

Example 3: Priorities and proportion of time spent on each level

<i>Level of Driver Behaviour</i>	<i>Description of level (as stated in questionnaire)</i>	<i>Priority 1-4 (1= highest)</i>	<i>Proportion of time spent (%)</i>
Level 4	Raising awareness of personal characteristics and behaviour and their importance to good driving	1	50
Level 3	Raising awareness of journey-related characteristics and their importance to good driving	3	15
Level 2	Mastering traffic situations	2	25
Level 1	Improving vehicle manoeuvring, handling and control	4	10

Example 4: Goals
(UK)
 Helping individual drivers, their employers and their insurers reduce their exposure to driving risk. Improving perception of risks, concentration and observation skills. Developing awareness with responsibility.

Example 4: Priorities and proportion of time spent on each level

<i>Level of Driver Behaviour</i>	<i>Description of level (as stated in questionnaire)</i>	<i>Priority 1-4 (1= highest)</i>	<i>Proportion of time spent (%)</i>
Level 4	Raising awareness of personal characteristics and behaviour and their importance to good driving	1	50
Level 3	Raising awareness of journey-related characteristics and their importance to good driving	3	15

Level 2	Mastering traffic situations	2	30
Level 1	Improving vehicle manoeuvring, handling and control	4	5

As is clear from the above descriptions, the market is highly tailored towards fleet training, catering not only for the individual drivers but also for the needs of the companies which employ them. Some course providers are keen to go beyond mere driver training and to broaden their road safety activities with the client companies. For instance, a few develop full risk management programmes for companies, especially those with a significant proportion of “on-road employees” (logistics, sales or delivery firms, for instance). As such, driver training can be tailored towards the needs of the client company (and individual employees) following in-house audits which analyse vehicle usage, accident frequency and accident type of the company fleet. Specific courses are then customised to address the deficiencies exposed during the audit. Cost-effective driving is also stressed, with finance being an additional concern to companies than just the health of their employees.

Fleet driver training companies may get work “by referral”, i.e. the insurance company of a particular organisation convinces this organisation to arrange driver training for its employees due to rising accident claims. More often than not, however, fleet driver trainers have to be pro-active in convincing companies with fleets of the benefits of training. The typical targets for driver training are large companies with an established record for safety and for looking after their employees (often petrochemical companies, pharmaceutical companies, etc). Other training companies may tap into the “stress management” policy of a company to make their product attractive. Smaller companies have recently become interested in fleet driver training for the employees too.

ii. Description of on-road courses

With 1:1 or 2:1 (participant:trainer ratio) training over an entire day, there is a clear potential for a very intensive training/learning experience (although 1:1 training for a whole day is not generally recommended by the trainers themselves because it is often too tiring for the trainee).

A standard approach (which does vary...) for the day’s training would be:

1. Theory and introduction
2. Assessment drive by trainee
3. Tips and guidelines from the trainer
4. Demonstration drive by trainer
5. Training drive(s) by trainee (including driving with commentary and co-trainee observation)
6. Feedback and evaluation session (with formal assessment form)

Training, if delivered properly, is tailored to the individual’s strength and weaknesses, concentrating on hazard perception and anticipation, communication and positioning, speed control and safety margins. A less competent trainer will try to impose a blanket formula on each trainee, regardless of their individual driving style and needs. The potential of the training would appear to be largely determined by the level of motivation of the participant and the ability and interest of the trainer to guide him or her towards an improved driving style.

In terms of theory and classroom content, this information is provided in the table contained in the section beginning on page 202.

iii. Principles and methods

The “System”

Most training sessions and trainers (in the UK, as the main example of on-road training) appeared to use a particular driving system or philosophy. The most prevalent system is Roadcraft, a long-standing system originally designed to train policemen to drive. The system implies that there is a systematic approach to every situation: Information – Position – Speed – Geer – Acceleration.

Another company had a different approach, claiming that the Roadcraft system presumed that the driver is good at anticipation. Most every day drivers, it claimed, are not though. Their preferred approach is:

1. Identify risks (expanding the number of triggers which warn people of potential hazards..)
2. Space management (keep space, chose your neighbours and always have an escape route)
3. Communication and Positioning (front and back and sides), including positioning to assert position on road and to gain better and longer view..

Anticipation can be improved by encouraging the participant to stop as little as possible. This is a technique used in environmentally-friendly driving which forces the driver to look as far ahead as possible and continually scan the environment for hazards which may present an obstacle to the goal of driving without stopping.

Driving with commentary

A commonly used feature of on-road training is a *commentary drive* given by the trainee. The trainee drives at the same time as giving a commentary on what he is doing, what he is seeing and how he anticipates hazards in terms of speed adjustment, positioning and communication). The act of commentating is designed to encourage a more pro-active mental approach to driving, with more anticipation and more depth of vision. It also provides insight for the trainer to understand what the driver is perceiving and what escapes his/her attention.

Driver observation

Driver observation is used in a number of courses, including France, UK and some environmentally-friendly driving courses, for instance in Germany.²⁷ The principle is that not only the trainer but a co-participant (if the training is 2:1) should be encouraged to observe the driving style of the driver and to enter actively into discussions based on the driving of the other participant. An additional perspective is supposed to enrich the debate, introduce new perspectives and involve the non-driving participant when he/she is not actively driving. This is similar to a test in organisational psychology called “360 degrees” which involves evaluation of an individual by peers, management and employees under the individual in the company hierarchy. Where participants come from the same company, this principle can be applied in the training process.

Challenging truisms

An interesting approach seen in these courses is that of challenging truisms, such as:

²⁷ The Advanced project is aware of several environmentally-friendly and economical driving schemes and supports these techniques which aim *inter alia* to develop a fluent, anticipatory driving style. Such techniques largely coincide with a safe driving style (so environmentally-friendly driving will not be considered separately during the project: see the *Eco-driving Europe* project at www.ecodrive.org). Furthermore, they serve to reduce fuel consumption and wear-and-tear of the vehicle. As such, the financial benefits of environmentally-friendly driving are an attractive means of motivating course participants to adopt this driving style. With the right in-car computer equipment, a before-and-after comparison can show, in concrete terms, the benefits of these techniques and can serve as an extra motivation for participants to maintain this driving style in the future.

“The faster I drive, the faster I will reach my destination”

“if I leave a decent safety margin between me and the car in front, another car will come in between”

“the (emotional) fault / no fault philosophy and converting it into a more reasonable and (rational) responsibility / avoidability issue”

Hazard Perception

On-road hazard perception focuses on the identification and anticipation of hazards relating to the road conditions and surface, signposting and the road environment and other road users. In particular, signposting was used as an indicator of approaching hazards.

Some courses preferred a more methodical approach to hazard perception involving both theory and practice. Training may look firstly at the human weaknesses and difficulties such as limits of vision, concentration and multi-tasking. It may then examine how one can look for hazards (and “clues”) on the road, using techniques such as scanning. Moreover, such techniques should also be combined with training on what clues or hazards to recognise (“seeing”, not just looking). So, in short:

1. What are the difficulties for humans in “reading the road environment”?
2. How can we use our brains and eyes best to spot hazards?
3. What types of hazards should we be looking for?

As far as the hazard types are concerned, they are broadly split up into 3 main categories²⁸:

1. Physical features such as junctions, roundabouts, bends or hill crests
2. Risks arising from the position or movement of other road users
3. Problems arising from variations in the road surface, weather conditions and visibility.

f) Young driver training

Examples of voluntary, young driver courses are few and far between. Of the ones which do exist, many are co-organised by insurance companies (which may stipulate completion of the course as a prerequisite for joining their insurance scheme). This is likely to have an effect on the course design: purely voluntary training may have to be more “attractive” to young drivers in order to get them on the course. Training where insurance companies play an active role is often no longer voluntary, i.e. the driver either attends the course or he/she must seek insurance elsewhere. Consequently, these courses can – potentially – be designed according to purer road-safety objectives.

The three courses below (from Germany, France and the UK) represent the full spectrum of driver training in terms of location: track-based, classroom-based and road-based or a mixture of the above. The course in France is a precondition of membership with a motor insurance company and the UK training offers the incentive of lower premia with selected insurance companies. It is important to note that alternative schemes do exist in each country (at least, in France and Germany); to this extent, these courses should not be considered as “typically French” or “typically German”.

Each course has its own perception of the needs of young drivers in their respective countries and the ways to address them. Here follows a brief overview of each course²⁹.

²⁸ Roadcraft, 1997 (p22)

²⁹ It is important to mention that both the German course is a new model whereas the French courses has since been adapted (although perhaps not universally in France). This new German model emphasises risk awareness and discussion to a far higher degree than before, whereas the French course has made its classroom training far more interactive, using role plays and case studies. Positively, these changes both correspond to Advanced guidelines which are presented later in this report.

i. Germany: course example

Objectives of course:

The participants in the novice driver course should:

- critically assess their driving experiences so far
- recognise and critically assess the changes in their driving style compared to the style learned during pre-licence training
- recognise weakpoints and ways to address them
- gain practical experience of problematic driving situations and understand the consequences in order to avoid risks
- improve their emergency braking skills
- have a critical look at typical dangerous situations in urban, countryside and motorway environments
- examine driving situations which are particularly problematic for novice / young drivers
- learn and practise the basics of safe, economical and eco-friendly driving
- recognise the need for safety margins in the form of moderate speed and sufficient safe distance
- recognise that it is right and important to drive cautiously and according to traffic rules after the probationary period and to continue to reflect critically on personal driving habits.

Course structure:

The programme is based on 3 group discussions of 90 minutes each, a driver observation and driving session on the open road (of 60 minutes per participant) and track-based exercises (and discussion) lasting 240 minutes. The course begins and ends with a group discussion. The order may vary but the following structure is recommended:

1. Group discussion
2. Driving on open-road OR track exercises
3. Group discussion
4. Track exercises OR driving on open-road
5. Group discussion

Course content:

Group discussion 1:

- introduction round
- overview of course content and the relationship between the different sessions
- reports from participants on their driving experiences since the test
- differences and commonalities in driving style since initial training and the exam.
- self-evaluation of participants: where do I stand, what am I good at and what still causes problems?

Driving on open-road

The driving tasks may vary according to the wishes of each participant. These wishes can be made based on the preparation in the first group discussion. Where possible, the driving task should include 3 elements:

1. observation of the normal driving style of the other participants (based on criteria provided to them in advance). Feedback and comparison with one's own driving style.
2. Practising particular situations which the individual participants finds difficult or has problems with.
3. Practising "modern car driving" in the form of environmental, economical and anticipatory driving based on the instructions of the courses leader (trainer commentary method).

Group discussion 2

In the second group session, discussion focuses on how external factors affect driving behaviour, and how to recognise and act upon them, so as to avoid dangerous situations:

- typical dangerous situations on urban, countryside and motorway roads
- predicting the behaviour of other road users
- effects of rain, snow, fog and darkness on driving behaviour
- influence on driving behaviour of passengers
- distraction due to other activities while driving

Track exercises

- see the connection between seating position and braking as well as seating position and driving around bends;
- braking at different speeds, on smooth and rough surfaces, in a straight line with and without ABS, alone and with 3 passengers, thereby estimating braking distances and braking point, understanding residual speed, influence of tyres, shock absorbers and electronic driving aids, influence of passengers and loads
- driving on bends or in circles: estimating possible speed on bend; experience the "feeling good" speed, influence of seating position, steering and eye technique; the increase in centrifugal force with apparently minor speed increases (often 3-5 kmh between "feeling good" speed and "limit" speed), change of surface on the bend, stability problems, braking on the bend, influence of tyres, tyre pressure, shock absorbers as well as ABS and ESP; driving alone on the circle and with passengers to highlight the influence of passengers and loads.

Group discussion 3

Reporting back on experiences and results from the on-road and track-based sessions:

- comparison of driving during the course and "normal" driving
- how emotions can negatively impact on safe driving
- dealing with traffic rules
- need for safety reserves/margins (moderate speed, sufficient distance-keeping), in order to be able to drive safely even in particular conditions
- strategies to practice safe driving over time
- tips for further exercise and training possibilities

Ideally, the course should be spread out over more than one day, with gaps in between. The trainers for the on-road, track and discussion sessions are also supposed to be specific to each session, each with his own speciality.

ii. France: course example

Objectives of course:

- Develop the behaviour of young people on the road
- Make them aware of danger on the road
- Impart knowledge on alcohol, fatigue, alertness, speed, seat belts
- Develop a responsible and defensive driving style in everyday traffic,
- check out what they have learned by practical application,
- Self-evaluation of driving,
- Illustrate differences in perception

Structure of course:

3 months after signing up with the insurance company, the young person participates in a day of group discussion. There are 15-20 participants in each group, accompanied by two trainers. 6 months afterwards, an

on-road driving audit takes place, involving 3 young people in each car, each one completing a driving circuit on the open road of about 45 minutes.

Course content:

Group discussion

- Each individual provides an account of his/her driving experience (kms driven, type of initial training, car type and use, speeds they drive at, accidents, drinking habits, likes and dislikes on the road). Discussions arise as a result of these accounts
- Theme: What are the consequences of accidents?: human, economic, moral
- Video of the day in the life of a handicapped teenager (as a result of a road accident)
- Theme: What are the main causes of accidents and injury? Speed, alcohol, non-use of seatbelts, lack of concentration/observation (e.g. fatigue)
- Case Study in groups: analysis of an accident scenario
- Theme: how to act in the event of an accident
- Theme: Defensive driving: tips on how to drive responsibly and safely
- Summary of the day's discussions

Each theme is discussed in detail, using individual and group feedback guided by the two trainers who may assume specific roles (one serious, one funny; one moderator to guide the discussion, one trainer to provide expert input, etc).

Driving audit (6 months later)

The on-road driving audit is preceded by an evaluation phase to contextualise the notion of collective responsibility on the road. During driving, the participants take into account the driving and actions of their peers at the wheel and the instructor points out differences, etc. A specially-made form is used by the participants and the instructor to fill out on themselves and the other participants. The instructor produces an individual evaluation for each participant at the end, following exchange of views.

iii. UK: course example

Objectives of course:

To enable young drivers to gain experience in different road environments, to improve their skills and to reduce the risk of being involved in an accident

Structure of course:

Practical on-road training, with the possibility of theory tuition. Between 6-12 hours training is recommended.

Course content:

Town driving

This involves observation and awareness of other road users. Particular emphasis is required for the safety of pedestrians, cyclists and the elderly.

All weather driving

This part of the course deals with driving, bright sunshine, rain, snow and fog. Some part of this session may be theory tuition depending on current weather conditions.

Out of Town Driving and Country Roads

Speed and road positioning on single carriageways. Deal with overtaking safely, reading the road ahead and vehicle handling at higher speeds. Awareness of agricultural vehicles and horse riders on country roads and pedestrians where no pavements are provided.

Night Driving

Adjusting to darkness, using lights, problems with dazzle from other road users. Importance of clean windscreen, street lighting in towns and unlit open roads.

Dual carriageways

Joining and leaving dual carriageways safely, speed limits, use of mirrors, overtaking and lane discipline.

Motorway driving

Adjusting to longer periods of driving, motorway signs, exits, overtaking, joining and leaving the motorway. Locating a motorway service area, entering and leaving safely. Breakdown procedures and dealing with motorway contraflow systems, road works and temporary maximum speed limits.

g) Trainers of post-licence, voluntary driver training

i. Background and skills

As previously mentioned, advanced driver trainers tend to be either (ex-)policemen –especially in the case of on-road courses in the Anglo-Saxon world - , standard (pre-licence) driving instructors, engineers or people with a background in either competitive rally or track driving.

To a large extent, trainers are freelance. Course providers may retain a core staff of full-time trainers, but in general, trainers are called up on demand. Track-based trainers in Germany, for instance, may work for several employers, such as the ADAC, Deutsche Verkehrswacht or car manufacturers. On-road trainers, such as those in the UK, are mostly freelance and are called upon by course providers to give training in the particular region they are based in. (This is a reflection of fleet driver training, at least in England, where course providers are increasingly trying to offer their services on a national scale).

ii. Qualities of the trainer

It may be interesting at this point to reflect on what trainers should - and should not - be like; in other words, what sort of qualities they need to effectively carry out their job, and what should be avoided at all costs. Based on questionnaire feedback from the course providers themselves, the following points were repeatedly mentioned:

Trainers should:	Trainers should not:
Be communicative	Be a Show-off
Be knowledgeable (regulations, driving dynamics, etc)	Be a Risk-taker
Skilled in teaching, listening, assessing and summarising	Have an aggressive driving style
Have good interpersonal skills	Be ego-centric
Have psychological insight	Be dictatorial
Be flexible / responsive	Be patronising
	Have a rigid approach to teaching
	Be “Everything that makes people think they are technically better drivers than before”

In addition to the positive skills listed above, ideal trainer characteristics were also mentioned, (ones which may be difficult to “learn” if the individual is not already blessed with them). These include calm, modesty and patience.

Perhaps the most comprehensive questionnaire response was the following from the DVR, Germany:

A good trainer should have the “psychological ability to deal with different participants, teaching skills, ability to recognise strengths and weaknesses of drivers, experience with group dynamics, communication skills, association with course goals and a realistic judgement of abilities”.

iii. Role of the trainer

As for the role of the instructor (what is he/ she supposed to do during the training), the most frequent responses from course providers can be categorised as follows:

- motivate participants (to drive more safely and to think for themselves)
- identify and address the strengths and weaknesses of the participant(s)

- listen, analyse and summarise
- use variety of teaching methods and to adapt methods to the participant(s)
- provide information
- deliver the goals of the course

All in all, the primary factors determining the quality of a trainer seem to revolve around the following skills:

- driving skills
- teaching skills,
- knowledge (technical, regulatory)
- individual/group interaction skills,
- insight into traffic psychology

The issue of the training-of-trainers is addressed in the section below.

iv. Teaching methods

A wide range of teaching methods are used in post-licence training, with each of them influencing the participants to varying degrees and in different ways. Below can be found a list of such methods, with a short description of how they influence the learning process.

Classroom methods:

The classroom can be used for a wide range of training, focussing on:

- General information, such as accident statistics and typical accident scenarios *INFORMATION*
- An introduction to practical exercises (linked to personal experiences) *THEORY*
- Discussions and active learning to train higher level themes (the driving context and driver characteristics and behaviour) *ANALYSIS AND SELF-REFLECTION*

3 main types of group discussion can be distinguished:

1. "open discussions", based on driving experiences to date, what we like / don't like about driving, what would be my typical accident if I ever had one?, etc.
2. "feedback discussions" which take place after a track exercise and are designed to consolidate on the message transmitted during the track exercise (and check for undesirable secondary messages)
3. "focussed group sessions", centred on pre-prepared case studies or role play where the participants can actively analyse a situation or scenario, try to work out what happened, what were all the factors involved, etc..

More specific micro-didactic methods include:

Theory	
• <i>Presentation / lecturing</i>	Knowledge building: heavily didactic (oral)
• <i>Demonstration (e.g. video)</i>	Knowledge or risk awareness building: didactic (visual stimulus)
• <i>Group discussion and feedback</i>	Interactive, thought-evoking, links to personal experience, learning through others
• <i>Self-evaluation</i>	Highly participant-centred, self-analytical (written or oral exercises)
• <i>Role play</i>	Realistic, practical, addressing themes (demanding)
• <i>Problem solving (how can we do this..)</i>	Self-projection, team building, constructive
• <i>Case studies (what happened and why)</i>	External analysis, team-building, deconstructing

Practical	
• <i>Instruction</i>	Heavily didactic, e.g. appropriate for improving manoeuvring skills where the learner is dependent
• <i>Demonstration</i>	Didactic: risk awareness or skills improvement
• <i>Learning through experience</i>	Highly personal, intense learning experience
• <i>Learning limits</i>	Experiencing limits (personal, vehicle, environment)
• <i>Learning through (electronic) comparison (before and after)</i>	Highly visual and convincing. Comparison of electronic data before and after training. Comparison of video recording before and after training.
• <i>Learning through repetition</i>	Appropriate for developing automatisms. Practice-based
• <i>Learning through failure</i>	Recognising limits (see learning limits)
• <i>Learning with the instructor</i>	Personal interaction in-car
• <i>Learning without instructor</i>	Increasing responsibility of driver
• <i>Learning through other participants (in the car)</i>	Benefiting from other participants' views. Peer pressure
• <i>Simulation</i>	Practising wide range of scenarios

In the vast majority of cases, these methods are combined, i.e. they are not used in isolation. The above lists are designed to give the reader more insight into the various methods open to the course provider to stimulate the learning process.

h) Quality Assurance

i. Guidelines and standards for training and trainers

Guidelines and standards for advanced driver training are few and far between, at least at national levels. As a general benchmark, it is important to state from the outset that no country, with the exception of Luxembourg, has obligatory nationwide standards for post-licence driver trainers³⁰. Certain countries, such as the UK, may have obligatory standards for post-licence trainers, but which only specify the need to have a pre-licence driving instructor certificate. This is a start, especially as far as on-road courses are concerned, but such standards do not appear to address the extra requirements needed to be an effective post-licence instructor. The DVR (German Road Safety Council) issues guidelines and training for trainers, but such training is not obligatory and, on their own admittance, does not provide more than a basic framework for trainers to do their job.

In terms of standards, there is a basic distinction to be made between on-road courses (and trainers) and track trainers. In countries where on-road post-licence driver training is given, many of them state that a pre-licence driving instructor certificate is a basic minimum, by law (e.g. France and UK). There are exceptions to this rule, however, as in some countries no obligatory measures are specified at all for on-road trainers (e.g. the Netherlands). Track-based courses, however, are in a rather different position. Whereas some countries may require track trainers to have a pre-licence driving instructor qualification too (e.g. Finland), others may require track trainers to be registered on a registry and to have a track training certificate (e.g. in Sweden) or may follow guidelines from a national road safety organisation (e.g. Germany). Others may need to be granted the right to train by the local administration (e.g. in Austria), although in practice this is more of an administrative measure than a qualitative one.

In summary, it is clear that, to a large extent, the lack of systematic training given in some courses to their trainers is explained not only by management decisions but also by the absence of standards or guidelines altogether in the country in question. In short, if no national agreed guidelines exist, what other options are open to course providers who want to provide the right training for their trainers?

In practice, course providers and trainers are faced with 3 possible options³¹:

³⁰ even Luxembourg's standards are most destined for the obligatory 2nd phase driver trainers. In practice, no other company offers voluntary post-licence training in the country.

³¹ One exception to this rule is the recently introduced requirement in the UK for all (new) post-licence "fleet driver trainers" to be trained or at least recognised by a designated provider of training for trainers (currently numbering 7). However, the training given in these "training for trainers" organisations is not standardised, because it is not yet clear at this stage what the standards should be.

1. External vocational training (e.g. teaching certificate, or in the case of on-road courses, a comprehensive advanced driver instructor course³²)
2. Adopting the guidelines from another country (e.g. one course in the Netherlands which respects German-led DVR standards)
3. In-house training

In-house training and continuous training is the norm in the majority of courses, whether in isolation or in addition to previously earned qualifications and certificates. However, despite numerous requests for information on training-the-trainer (course syllabus, requirements, etc), very little data was received from course providers. The dearth of information would lead one to believe that either:

- The course providers chose to ignore the request (perhaps due to concern that their intellectual property would be made public, despite assurances to the contrary)

OR

- No written information is available on the in-house training-of-trainers. If so, this would suggest that training is far from systematic.

OR

- Course providers are reluctant to make available information which may be construed as sub-standard.

Continuous training / auditing of trainers

The majority of track-based course providers claim to provide standardised continued education for trainers. Such ongoing training is generally organised on a yearly or biannual basis. Examples of training includes:

Technical Training:

- New technological innovations (in-car devices, such as ESP)

Pedagogical Training:

- Presentation training
- Coaching
- Group dynamics
- Update of trainer handbook

Regulatory Training:

- Updates on changes in traffic rules and regulations

On-road trainers in the UK also claim to have standardised continuous training, although details are unavailable as far as content is concerned. Due to the structure of the market in the UK, all on-road trainers will need retesting at some stage: trainers with pre-licence driving instructor qualifications need to be regularly retested to maintain their grade (instructors are graded 1-6); trainers with advanced driving qualifications (an advanced driving certificate, which reflects a high standard of driving rather than high teaching ability) must also regularly undergo retesting. The retesting of advanced trainers' in terms of their teaching ability (instructional skills) is not required, however (and the difference between teaching at pre-licence level and post-licence level is substantial).

³² Such as those existing in the UK.

Course manuals (for trainers)

The existence of a manual outlining the goals, description, methods and processes of the course can be regarded as a sign of how systematic the training and the trainers are. It should include important tips for the trainer to think about during the programme. A systematic approach is important for training in order to ensure quality control.

As track-based courses are highly structured (split into different sessions, each with its own clear goal[s]), one should expect all track-based courses to have a written, standardised approach for each exercise and for the programme as a whole. In fact, the vast majority of track-based course providers do claim to have a course manual. In practice, however, little evidence has been seen of such manuals during the Advanced project.

Road-based courses all claim to have course manuals, although these will differ substantially in content to the track-based course manuals. Road-based courses lack the obvious structure of their step-by-step track-based peers. In practice, road-based course manuals are often a mixture of a training-the-trainer handbook and a course manual.

Minimum teaching requirements

Just under 1 in 5 voluntary, post-licence courses require their trainers to conduct a minimum number of courses per year, in order to maintain the skills and experience necessary to perform the job.

ISO certification

A substantial proportion of the (bigger) course providers do have – or have had – ISO certification. Many claim they are working towards it. Such a qualification is awarded to companies with written, recorded and systematic processes, thus going some way to guaranteeing that their product is being delivered in the same way to each client. Such a certification is to be applauded, to the extent that it systemises the way in which participants receive training. However, ISO focuses on business processes more than the content of the product or for whom the product is intended. Course providers MAY potentially be “systematically training the wrong thing” to its participants; but still be granted the ISO certificate. This is not to suggest that this is the case at the moment, but merely to point out that ISO only goes some way to ensuring quality delivery of a quality product.

Individual Assessment

On-road courses generally include a formal pre-assessment and post-training assessment of the driving style and driving ability of individual participants. Whilst this could be considered as a remnant of the driving test (a type of examiners’ assessment form) it is regarded by course providers as an important feedback tool for themselves, the individual client and the client company. Written assessments are considered important records for the course provider (for dealing with the perceived individual faults of the driver and for feedback to the client company), for the participant (as a feedback tool on where the faults are and what to do to address them) and for the client company who ultimately wants to see improvement (for safety and financial – insurance – reasons) in the driving of its employees. The content of the assessment form may vary in terms of the training provided, but most are simply grades or ticks and crosses according to classic driving situations or skills.

Some road-based course providers (in the UK) are also researching methods to pre-assess individual participants before they come for training (using external human capital consultants). Such methods, including a personality test and a skills/ability test would potentially give trainers a headstart in preparing their approach to the training. It could potentially liberate valuable time during the training – because part of

the assessment will already have been made - and can be an interesting soundboard for the trainees themselves when they recognise their characteristics, skills and ability in the assessment results. This can often increase their sense of self-awareness and put them in a more open frame of mind to the training. Such techniques are in their nascent phase at the moment and, as the course providers freely admit, it is important to check the accuracy of such tests before implementing them in practice.

In track-based courses, formal assessment is rarely given by the trainer to individual participants in the group. Individual oral feedback may be given, but the general philosophy of track-based exercises is that all people have certain specific driving faults (basic skills deficiencies, inadequate safety margins, excessive speed, etc). Consequently, such courses, at least in terms of the practical exercises are designed to highlight these common weaknesses. There may be more of an opportunity to attend to individual needs in the discussion and feedback sessions, making it possible to address more individual weaknesses, although this has only been witnessed in 1 or 2 courses.

The important issue of self-assessment can be carried out by a self-evaluation questionnaire (and discussion), for instance. Although a rarity in voluntary post-licence training, some courses do use them (see page 164 for further details). This form can be used both at the beginning of the training and at the end, in order to allow each participant to reevaluate his/her opinions in terms of his strengths and weaknesses. These strengths and weaknesses can apply to any or all levels of driver behaviour: level of manoeuvring skills, mastery of traffic situations, awareness of the importance of the context of each driving situation and how ones beliefs and values affect driving behaviour.

Client Feedback

70% of course providers state that their clients are required to fill in feedback forms at the end of the training. In the majority of cases, these feedback forms are assumed to be largely client satisfaction questionnaires³³, rather than questions relating to what they have learned and how, if at all, they are planning to change their driving style (which can realistically only be assessed some time after the training). Other course providers conduct surveys of clients companies to assess client satisfaction, without wanting to burden each individual with a questionnaire at the end of the course. In fact, some course providers question the use of such feedback forms at all. They claim that, generally speaking, client satisfaction is always high (because it is natural to be positive immediately after training) and that clients are unable to answer questions of a higher order (such as the standard of teaching and exact course content) because they have no benchmark with which to compare the course.

There should be a clear distinction between the feedback forms distributed at the end of a course (to assess client satisfaction) and scientific evaluation of the course and the participants (to assess the training effects of the course and whether the messages of the course have been understood and the goals have been reached). There is only one example of a course going to such lengths to assess the effects of the training on the participants (using a 3 stage pre-, post- and follow-up questionnaire over a 6 month timeframe). Such evaluations, and how to create them, are explained in detail from page 141 onwards.

i) Evaluation of training effects

Evaluations are considered expensive and, to a large extent, beyond the reach of course providers who do not possess the scientific know-how to avoid the numerous pitfalls of evaluation designs. Course providers with direct or indirect links to the participants' insurance companies therefore prefer to be told, over time, whether their clients' accident or damage claims drop after the training. This, they feel, is a far more concrete and simpler means of measuring the training effects of the course. However, a reduction in insurance claims may be a result of other factors not linked to the training, as is explained in the section on evaluation methodologies, (see page 141 onwards).

³³ Satisfaction with the reception, documentation, trainer, general proceedings during training, etc.

j) Strengths and Weaknesses

Before drawing some conclusions on the strengths and weaknesses of post-licence driver training (page 76 onwards), it is interesting to see how the course providers perceive their own courses according to these terms. Below is a series of selected comments made by trainers and training organisations:

Weaknesses (as perceived by track-based course providers) :

The real high risk driver is not being reached through this training. Voluntary participants are already safety-minded (track-based, Germany)

We need highly competent instructors for these courses (track-based, Germany)

There is a risk that some drivers think they can drive faster afterwards (track-based, Germany)

Originally sporty methods give wrong impression (track-based, France)

There is no opportunity to practice the handling of aquaplaning, no equipment for putting the car into a skid, etc (track-based, Czech Republic)

Not enough instructors per participant (track-based, France)

No systematic written feedback (track-based, Germany)

Our training still corresponds too little to real accident situations (track-based, Germany)

There are no weaknesses in our training (track-based, Belgium)

Strengths (as perceived by track-based courses):

The « learning by doing » method - where everything which is said in theory and group discussions can be proven and experienced in their own vehicle with very low risk of damage (track-based, Austria)

Learning through others ; learning in groups is fun (track-based, France)

Our trainers encourage participants to evaluate their own strengths and particularly weaknesses when driving (track-based, Belgium)

The course addresses the limits of the vehicle, person and environment; it leads to people questioning their driving ability and behaviour (track-based, France)

Understanding the difficulty of regaining control of a car which has gone out of control (track-based, Sweden)

Our clients learn how to read dangerous situations on the street and if they occur they are trained to react in a critical situation (track-based, Slovenia)

We concentrate on only the most important issues...we don't waste time focussing on trivia (track-based, Finland)

The participant can try it his/her own ideas in relation to different situations..(track-based, Germany)

Weaknesses (as perceived by on-road course providers):

We don't have enough training time and the effects are short-term (repeated comment)

A lack of direct substantiated evidence that the training carried out is correct as there are no current standards (on-road, UK)

Evaluation of results takes years to complete and is reliant on individual clients (on-road, UK)

Strengths (as perceived by *on-road* courses):

Our training is tailored to our client's individual needs (on-road, Ireland)

Training is provided by highly skilled ex-police instructors (on-road, UK)

The participant is made aware of his personal weaknesses (on-road, UK)

We consistently monitor our clients through continual follow-up (on-road, UK)

Apart from providing more insight into the challenges faced by course providers, many of the above remarks are pertinent to the study and will be addressed in more detail in the analysis and conclusions section.

6. Analysis & Conclusions for voluntary, post-licence driver training

Demand for post-licence “voluntary” driver training has steadily increased over the last 5-10 years across the European Union. In Germany, the trend began already 20 years ago. In the year 2000, over 400,000 drivers received such training across Central and Western Europe³⁴. However, this still only represents a fraction of the total driving population.

The growing demand, which has been primarily led by the company fleet market, has arisen as a result of a number of factors, such as pressure on organisations from their insurance companies to reduce accident and damage costs, the influence of government regulations (health & safety; mandatory training budgets for companies), the fact that training is perceived as an important public relations exercise for fleet companies and significant marketing efforts on the part of the course providers themselves (particularly automobile clubs and manufacturers). Many countries have also perceived a growing empathy for road safety issues amongst the public and in government and the media in the last few years. Whether this rise in demand for post-licence training will continue depends on the future economic climate, government interest in the sector and the perception of the added value of driver training amongst companies and individuals.

Whilst effective driver training is undoubtedly a step in the right direction, many course providers lament the fact that they are training the wrong target group. In the voluntary market, company employees and voluntary individual participants, they believe, are inherently road-safety oriented, whereas the real need for improved road safety lies amongst high-risk categories, such as novice or young drivers and the low socio-economic population. This may be true to a certain extent, but, particularly as far as fleet driver training is concerned, trainees may still fall into relatively high-risk categories (young men, salesmen, etc) due to either their high exposure or their general profile.

Training designed for novice (or young) drivers does exist, but demand is limited for the moment. Private sector course providers require considerable investment in time and resources to develop suitable courses for this target group, yet demand remains low. In most commercial environments, this situation would be untenable. Fortunately, some course providers are either prepared to carry the costs or are financially supported by government funding or insurance companies.

Growing interest in an extended (post-licence) support period for novice drivers has meant that the issue of voluntary driver training has entered the public policy domain. Government interest has provided the framework and funding for a closer examination of post-licence training. Thanks to this research, interest is now filtering into the voluntary market (whose course providers could, after all, be the future implementors of obligatory continuous or 2nd phase training for novice drivers).

The voluntary, training programmes for young drivers (as described in the description section, page 63) show that the objectives for these courses can vary quite considerably from one course to another. It is possible that young drivers in different countries have different needs, but the different emphases in these courses on, for instance, human factors, external hazards, practical experience and theoretical discussion is quite remarkable. (Much course content and methodology may simply be defined according to the resources available – in terms of infrastructure, knowledge and trainer skills - in a given country or region).

Whatever the goals of post-licence voluntary training, the basic objective must be to change the driving behaviour (for the better) of the participant(s). Whether a 1 day training course can be expected to change driving behaviour permanently and systematically is subject to some dispute³⁵. But at the very least, training

³⁴ 40% of them were trained in Germany

³⁵ The ability to deliver these objectives depends on:

- The assessment skills of the training organisation / trainer in identifying these wishes and needs (knowledge of the target group, pre- and post-training assessment systems, trainer assessment skills, trainer coaching skills)
- The pedagogical skills and knowledge of the trainer in developing methods to respond to these wishes and needs
- The flexibility offered by the course structure in responding to these wishes and needs (track, road and discussion-based training all have limits to what kind of training can be effectively performed)
- The time available to both trainer and trainee and the cost of delivering the service which is necessary to meet quality training objectives

should be an opportunity for drivers to realise their risk-increasing behaviour in specific situations. In this way, the training should aim to result in “mental triggers” which alert the driver to potentially risky situations when driving on the road (peer pressure in the car with a young driver at the wheel, the influence of an argument a man has just had with his wife, being late for work or preoccupied about a deadline from the boss, etc). These triggers are both useful and present at all 4 levels of the driver behaviour model.

Training is organised on tracks (specially designed off-road areas) and on public roads. In a limited number of cases, both locations are combined in the same training programme. Track-based training still appears to focus heavily on manoeuvring (as opposed to traffic situations, the context of driving and goals for life and skills for living), but the balance between improving manoeuvring skills and gaining awareness of the risks involved in vehicle manoeuvring varies from one course to another. On-road courses depend heavily on the ability and skills of the trainer in interacting with the participant and providing the necessary motivation and context for positive behavioural change behind the wheel. These abilities and skills are not always evident.

What is clear is that standards are sadly absent in this field. This is probably a result of both a lack of government/road safety organisation interest and general uncertainty (amongst experts and policymakers) as to what constitutes “good” driver training. Research thus far, such as the GADGET matrix, has provided us with a useful indication of where to focus training in theory, but more evaluation must be undertaken to assess whether training in practice that is focussed in this way produces measurable safety benefits.

The following passages address a number of relevant themes and deliver some preliminary conclusions on the state of the post-licence driver training sector. The issues are categorised according to different levels: the sectoral / policy level, as well as the level of the course provider, the trainer and the client (participant / fleet company). The section finishes with a closer look at track-based and on-road courses.

a) Sectoral / policy level

The vicious “lack of standards” circle

It is often mentioned how ironic it is that the training, certification and control requirements for pre-licence driving instructors are so regulated, whereas in some countries it is possible to become an “advanced” driver trainer with no qualifications at all. A lack of qualifications does not necessarily make a bad trainer of course; in fact, there may well be good trainers without any relevant qualifications. However, the chances are significantly higher that standards will be missing in some part of the trainers’ job (teaching / coaching skills, lack of theoretical understanding of driver training, insufficient knowledge of driver types and traffic psychology, etc). A lack of standards also makes quality control for course providers a practically impossible task.

Why are standards so sadly lacking in this sector? As shown in figure 5 below, there are a range of interlinked explanations. Post-licence voluntary driver training is a relatively new phenomenon, especially as far as the fleet driver market is concerned. Prior to the arrival of the fleet market, it was largely considered as a “voluntary pastime” by authorities and was therefore left to self-regulate. Although now governments are realising the socio-professional significance of fleet driver training (and the extension of the workplace to include the company car), the sector remains largely unregulated at this stage. Clearly, the lack of scientific evidence to support one form of training over another makes it difficult for government to introduce standards or quality control (although the UK and Germany have recently begun their venture into this relatively unknown territory).

A lack of standards from policymakers or guidelines from researchers has meant that course providers have little incentive to change or improve, other than their own personal initiative. This problem is compounded by the fact that customers (primarily fleet companies) are not discerning enough: they are generally ignorant of the pros and cons of one type of training compared to another. Their concern is largely insurance-related so as long as the insurance premia are held in check, they are satisfied. (Several course providers have

-
- The level of individual attention given by the training organisation / trainer to each participant, in terms of guiding the individual towards an improved driving style and driving behaviour

claimed throughout the project that accident and damage claims have dropped following their training, although it remains to be seen what other factors could explain these drops, and to what extent such reductions are universal or even as widespread or significant as we are led to believe). Successful marketing and professional client relations, as opposed to the content of the training programme, explains a lot of the growth in the fleet training sector.

The Advanced project is, it is hoped, one step in the enlightenment process towards the introduction of clear, unbureaucratic standards for the industry.

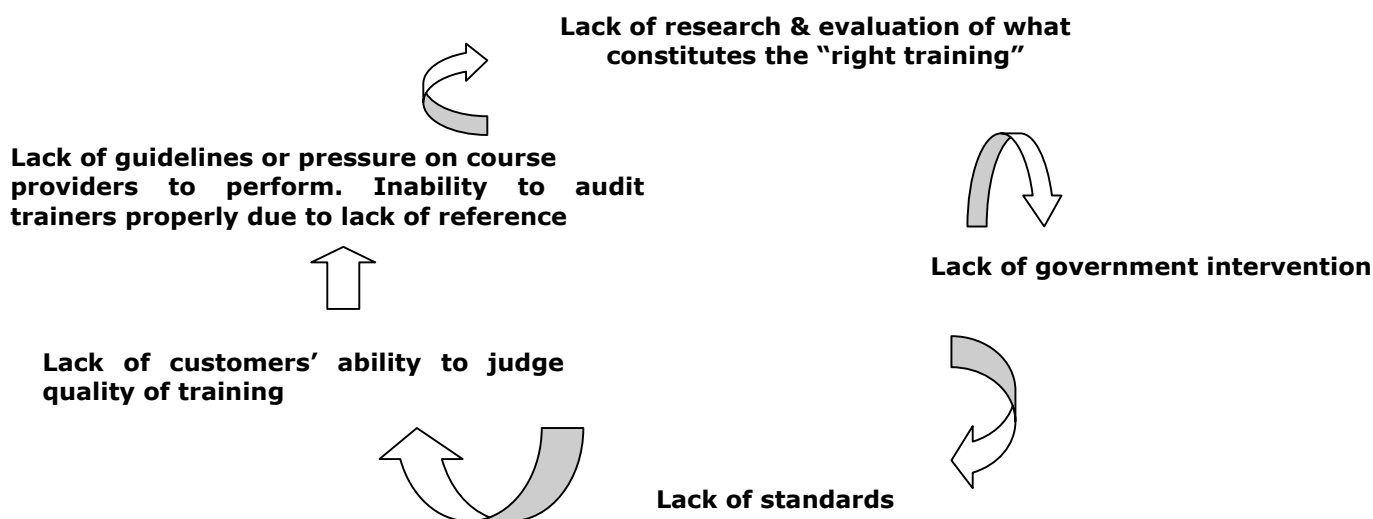


Figure 5: The vicious lack-of-standards circle

One other side-effect of this phenomenon, is that countries lacking in standards may look to other countries for guidance. This incurs the risk that they are one step further "out of the loop" when it comes to revising standards in the light of new research and new driving philosophies. There is some evidence to suggest that certain course providers in Central and Eastern Europe, for instance, still focus heavily on manoeuvring skills exercises and coping with danger. This attitude is reminiscent of an increasingly out-dated concept based on the initial Western skid training courses in the 70s and 80s.

Road safety versus commercial interests

All course providers have commercial interests to one extent or another. Some companies, such as in the UK, are "pure" private sector firms who rely on their income from fleet driver training to survive in the market. Others, such as some automobile clubs, have sufficient income in their other operations to justify losses or minimum profits in the training sector (at least at the moment). Aside from the value of the training to the participants, the provision of training is an important public relations component of their organisations and it provides access to individuals who may be interested, in the future, in other services they offer.

The question is to what extent these *private sector* organisations can be expected to achieve a *public sector* goal (namely, improving road safety)? To provide an example in the novice driver training field, one automobile club was recently visited to see a new novice driver training programme. The programme development and training-of-trainers to deliver the programme (to say nothing of the marketing, etc) had clearly required considerable investment in knowledge, time and money. Even when the programme was ready for implementation, considerable effort was required to attract participants to the course. So, the investment required to build the programme can be enormous compared to the actual demand for such training. Although the course is being carried out, the financial rewards will be minimal, if any. In fact, the course is likely to be a loss-maker. Perhaps relatively small financial losses can be sustained by some automobile clubs, but not by course providers who lack the infrastructure and support of a large organisation. This work would seem to be a typical public sector task, where financial losses are supported by the government for the benefit of the public good.

This blurring of responsibility between the private sector and the public good raises the question of whether some form of public/private partnership would be appropriate. In this way, the government and the private sector would join up with the common goal of enhancing road safety through post-licence driver training. One possibility would be to identify a major weakness in the sector at this stage and address it through government subsidies. For instance, trainers could be encouraged to take “coaching” (or moderation) classes. Government could reimburse the cost of the course for the trainers (from 0-100%) on condition that they attend and pass the coaching training. Such courses may already exist in the form of vocational training for adults, or a scheme could be set up purely for the sector (depending on demand).

Driver training: a cure for society’s ills?

Although a handful of trainers claim that they can significantly change the driving behaviour of an individual during a one-day course, the vast majority would dispute this. Driver training, they say, constitutes only one or two days out of several years of driving activity. On their own admittance, many course providers lament the fact that one day is insufficient to improve a person’s driving behaviour and that, even if the behaviour does change for the better, refresher training will be needed regularly afterwards in order to maintain these gains. Driver training also represents only one (probably short-term) influence amongst a multitude of longer-lasting and more deep-rooted driving-related influences via family, education, friends, work, the media, etc. In addition, a significant proportion of deviant driving behaviour is linked to socio-economic factors which clearly cannot be remedied over a single day’s training. (After all, risky drivers not only have problems with driving but often in other areas of life too). Furthermore, only a fraction of the driving population actually take part in voluntary training and it is fair to say that high-risk drivers are not generally involved when training is voluntary.

What is also beyond doubt, following this study, is that driver trainers require immense skills and ability over a wide range of disciplines (pedagogics, psychology, engineering, physics, driving skills, etc). These disciplines cover a rather unique range of skills which are difficult to find in any professional in our society. A dearth of sufficiently skilled trainers will make successful driver training all the more difficult to achieve. This issue is addressed in more detail, under the Trainer section below. In practice, it is also very difficult to find individuals who can bridge the gap between the programme designers (the “theorists”) and programme implementors (the pragmatists).

The above comments are not designed with the aim of criticising the entire concept of post-licence voluntary training. To the contrary, driver training is a useful experience and the quality of training will undoubtedly improve with time. One should not, however, expect a short driver training programme to cure society’s ills.

The filter effect: distortion of the intended course messages

“It is not the message which is delivered, but the message which is received by the participants that counts”

There are four main stages in the implementation of a training programme. The programme developer conceives the training content, methods and delivery. This is, one would hope, recorded in a written manual. Next, this course manual is presented to trainers who learn how to implement the training, according to the guidelines in the manual. Then, the trainer is ready to train and he delivers the course according to the goals he has learned, which come in the form of a series of explicit and/or latent “messages”. These messages are then received by the participant who leaves the training with a certain understanding which will, hopefully, lead to improved driving behaviour.

However, as proved in research and admitted by course providers in practice, there is a risk of the message being distorted or lost during the different stages in the implementation of the training programme. In fact, even if the message is accurate until before the final stage, there is still a risk in practice that the message given by the trainer is interpreted differently by the participants. This process is illustrated in the flowchart below:

1. Programme developer: what he writes
- ↓
2. Programme trainer-of-trainers: what he presents
- ↓
3. Programme trainer: what he says
- ↓
4. Programme participants: what they think he says

<i>Examples of possible distortion</i>
Lack of clarity or detail in the initial course concept / manual
Lack of clarity or detail (or cross-checks) in presentation of manual to trainers
Misunderstanding of course objectives / Conflict with earlier conceptual frameworks / delivery of message with too many possible interpretations
Lack of understanding of original message / Understanding other unintended messages (perhaps undesirable)

Figure 6: *The Devil is in the Detail: Possible distortion of the course message(s)*

Distortion of the message can arise not only as a result of poor presentation of the messages, but also a result of conflict with existing conceptual frameworks in the heads of the various people involved, particularly the trainers. If the trainers, for instance, have grown used to a certain course philosophy and to a set series of messages, they may interpret the new messages according to the old “comfortable” messages they already have.

To take an example, the DVR-led slogan “Gefahren erkennen, Gefahren vermeiden, Gefahren bewältigen” in Germany (Recognise, avoid and cope with danger) may potentially lead to two undesirable effects although, it must be stressed, there is no scientific proof of this. Firstly, although the first “recognition” phase is meant to include all forms of potential hazards, there may be a tendency amongst trainers to interpret such hazards as immediate dangers only – dangers which require immediate response just before a potential incident. Secondly, although there are three phases in the slogan (and in the training as a result) the balance (proportion of time and focus spent) of one phase in relation to another may differ from trainer to trainer. In practice, there may be a tendency to shift towards avoiding and particularly coping with danger, rather than recognising potential hazards.

This problem may be compounded by the very construction of track-based courses which appear to focus on immediate danger situations, (although the objective of such situations is often, quite to the contrary, to encourage drivers not to get in these situations in the first place – by regulating speed and respecting sufficient safety margins). As a result, insufficiently trained or skilled trainers may inadvertently shift the focus of the training towards the skills aspects and immediate coping with danger.

So, despite the intended effects of the slogan, such conceptual frameworks may serve to inhibit the growth of more progressive ideas and frameworks in the future.

Distortion in the message during the programme trainer stage (n°3) can also arise due to the course construction itself, such as the exact exercise type (how they are presented and performed). In other words, in track-based courses, it is not only the trainer who may deliver the message in an unclear manner, the exercises themselves may also lead to ambiguity and undesired results. It is thus also extremely important to continuously develop new exercises and to refine the old ones so that such distortions can be avoided.

Distortions have been recognised in the filter process by at least one major course provider. Its response has been to include far more detail in the trainer handbook, in order to try to prevent trainers from interpreting the messages in a different way.

A typical example of the filter effect was shown in a Swedish study concerning the mandatory (pre-licence) half day skid training³⁶. A comparison was made between 10 different "levels" of the education process where the national curriculum was the first and the student's interpretation of the message was the last, with local education plans and subjective estimations and researcher's observations in between. The content of the education was classified in 3 categories: car control skills, insight/risk awareness, and road/vehicle characteristics. The results showed that the car control skills part holds 70% in the national curriculum, 70% of what the instructors were observed to teach, 60% of what the instructors believe that the students learn and 40% of how the students estimate the distribution of the content after their training.

Major course providers in large organisations (and countries) with a large number of trainers may be particularly affected by this phenomenon. Despite the inevitable extra costs involved, it makes quality control and trainer audits all the more important, in the case of both track-based courses and on-road courses, where trainers are largely left to their own devices and are outside the influence of superiors and colleagues for the majority of their working life.

Where to focus training?

At one of the Advanced project meetings, course providers were able to agree on a series of driving-related areas where training could concentrate. Apart from point 5 below, the areas are presented in chronological order, leading up to a car crash. Ideally, a driver would never have to get passed the first 2 areas (if he/she was competent enough and constantly focussed on the driving task). In reality, however, some courses are more fatalistic and, consequently, areas chronologically nearer to a crash are focussed on more intensively.

- 1: Anticipate potential danger and avoid dangers altogether, especially by using large safety margins
- 2: Recognise dangers if they appear
- 3: Apply strategies to avoid becoming involved in dangers that have been recognised
- 4: If involved, have the skills to cope with the situation
- 5: If involved in a crash, be in a position to use safety equipment such as the airbag, safety belts, good seating posture, neck protection etc. in order to reduce injuries

Two points should be added to clarify this listing. Firstly, the above series does not take into account the higher levels of driver behaviour. It only perceives dangers/risks in the form of external physical objects, and does not consider attitude, personality or the context-related aspects of the trip, for instance, which are rarely addressed in training. Secondly, the project team wish to stress that it is not realistic to expect that objective n°4 can be achieved in a short advanced training course. This is a reason to focus more on the other objectives. In fact, objective n°4 can easily create problems in terms of overconfidence, the use of skills for motives other than safety and by sending the wrong message to the participants (namely that manoeuvring skills are the most important aspect of driving).

b) The Course Provider level

Clarification of the 4 level model

Some course providers have taken issue with the 4 level model, stressing that it is possible to influence the higher levels of driver behaviour (levels 3 and 4) through training on the lower levels (levels 1 and 2). This claim has never been disputed. It is, indeed, possible to influence higher behavioural levels through the lower ones.

³⁶ Engström, I., Nyberg, A., Gregersen, N. P. Evaluation of new course syllabus for skid training. VTI-report 472. Swedish National Road and Transport Research Institute. Linköping, Sweden, 2001

For instance, one (track-based) course begins with a level one practical exercise where the goal stated by the trainer is to complete the course as quickly as possible. Each individual is timed around the course. The exercise entails:

- A slalom
- A narrow passageway
- Two parking exercises (frontways and reverse)
- A stretch of 100 metres to be covered as quickly as possible
- A finish line symbolised by a line and a traffic cone.

Although the goal stated by the trainer is a speed-related one, the actual goal of the exercise is to make participants aware how difficult it is to drive under pressure. This pressure is manifested in many forms.

- Just before the start, the trainer encourages the driver to increase the volume of his favourite music in the car; and
- asks a technical question, requiring some thought, which the driver must think about when covering the course before answering the question when he arrives at the finish line
- The driver begins the exercise with the slalom. He is penalised for every fault he makes: this generally involves knocking over traffic cones around the course (on the slalom, in the parking zones, etc)
- He feels the peer pressure due to the onlookers (or, perhaps, his passenger) and to the desire to complete the course in a respectable time compared to other drivers in the group
- He is timed, believing that he will be ranked afterwards.

In fact, there is no ranking and the penalties are noted but never added up. Group discussion and feedback afterwards is designed to reveal the difficulties individuals had in coping with all the pressure, including the links with similar pressure in real driving situations. Most of the pressure relates to level 3 risk-increasing factors, but also level 4 (if the person recognises his own behaviour in the discussions and exercise).

Level 3 and 4 issues can also be addressed solely in group or individual “class” work, particularly when linked with prior driving experience. This experience is the equivalent to the principle of gaining experience on the track, thereby serving as a trigger for discussion and analysis.

The added value of discussion and feedback

The practical component of training should only be considered as one element in the learning process, however. What is learned or assimilated during practical training needs to be reinforced through analysis and discussion in groups or individually. This serves not only to intensify the learning process but also to check for undesired training effects (things that participants have learned through the course, other than the intended messages).

In practice, few courses currently seem to employ such methods. Class activity is often confined to theory and providing information, rather than to more participant-oriented methods such as discussion and feedback³⁷. The conventional “theory + practice” method allows participants to check the validity of the theory in practice. But what if the participants never doubted the theory in the first place? What if the theory does not address the personal needs and weaknesses of the participant? Then, it may make sense to use the “experience + discussion of experience method” which is more participant-centred. This approach centres on the experiences of each individual participant rather than focussing on an externally-imposed theory.

³⁷ This is not to suggest that theory and knowledge building should be avoided, but that they are only components of a much larger learning process.

Fixed programme v open coaching method

Why, then, do so few courses employ these participant-centred methods, despite the above-mentioned benefits? A fixed (or set) training programme, which is systematic and process-oriented is much easier to implement for trainers than a participant-centred one where trainers are required to be much more flexible and reactive to the wide range of issues and questions that participants may raise. Once a trainer is properly trained on a fixed training programme (the delivery of a detailed set of messages in an ordered, structured fashion), there are few surprises in store for him. However, an open coaching method, based heavily on the experiences of participants and involving discussion and feedback, requires coaching skills, an understanding of group dynamics (if groups are involved) and perhaps a knowledge of traffic psychology and driver types - to name but a few. In short, coaching is more demanding than delivering a fixed programme. It is also, however, likely to be more satisfying and varied for the trainer as a result (this will be dealt with in the Trainers section).

In practice, a good training programme will involve a mixture of fixed (or structured) training (through presentations, introduction to theory, etc) and open coaching (self-reflection, participant-centred). In the absence of the latter, developing strategies for each individual to improve their driving style and behaviour will be practically impossible at post-licence level.

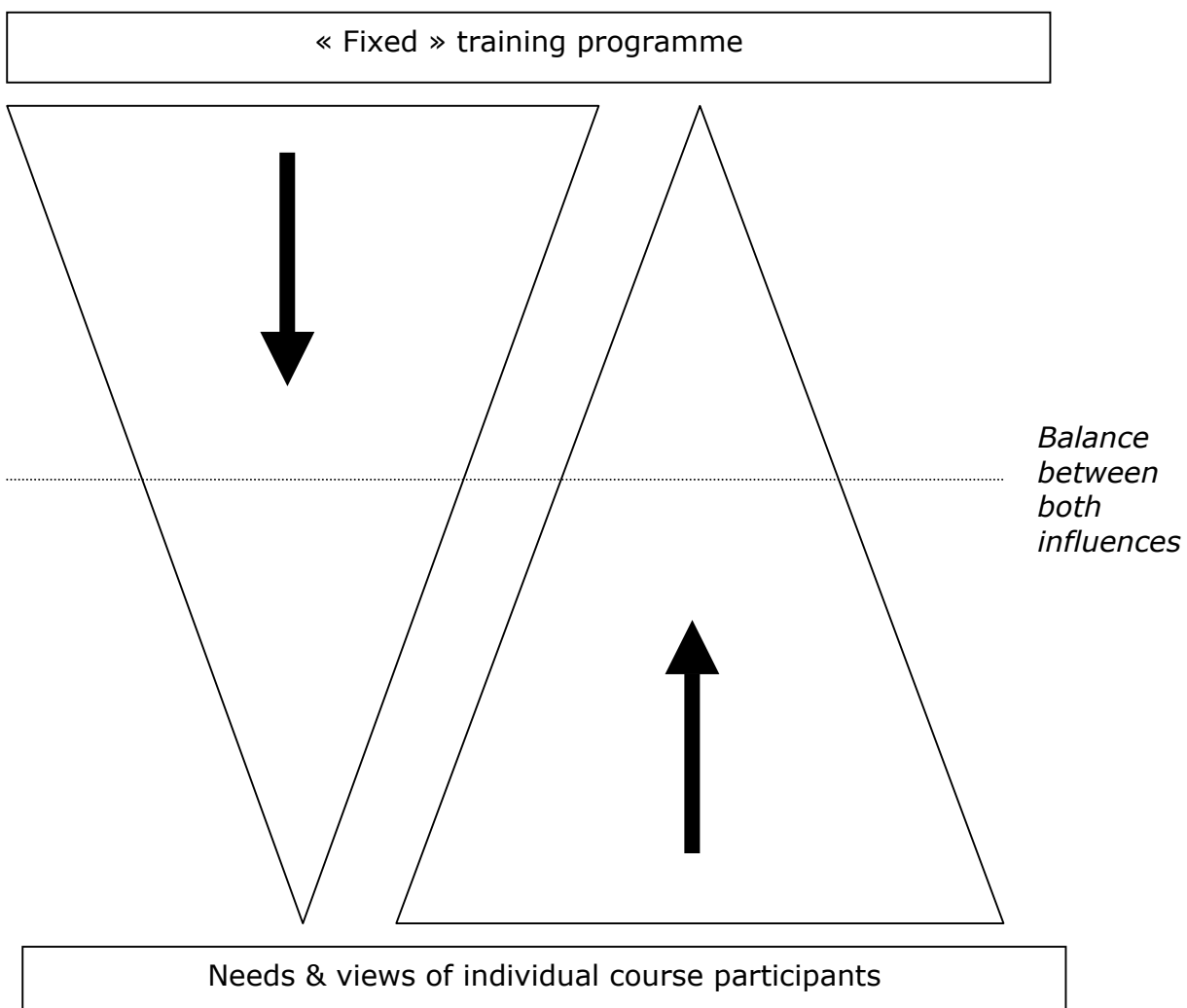


Figure 7: Finding a balance between a “fixed” training programme and the needs & views of each individual trainee

The benefits of course evaluation

As described in the description section, little to no course providers have formally evaluated their training. Course providers are either content to rely on figures provided by the insurance companies of their participants or they remain oblivious to any post-training effects. Professionally implemented evaluations, can, after all, cost significant time and resources. As we have seen, however, the potential for the desired course message(s) to be distorted prior and during the training, plus the possibility that the training itself is flawed and the likely disparities in trainers' skills due to lack of standards, would seem to provide a healthy incentive to undertake a well-designed evaluation of the training effects on a decent sample of participants. The section on evaluation methodologies aims to provide the necessary support for course providers wishing to do so. Failing this, it is not difficult to conduct a small questionnaire survey amongst ex-participants – some months after training – to at least see what they remember of the course, what was understood as the main objective(s) and, potentially, how they think their driving behaviour has altered as a result.

Evaluations could and should be seen by course providers as an important feedback tool in an ongoing process of change and improvement of the training. As a by-product, it can also be marketed positively as a public relations exercise (“We care about what we do in training and how it affects you”).

Course construction

Course providers offering training for one day are, unsurprisingly, keen to use the time as intensively as possible. There is a danger, however, of “system overload” for participants. Various aspects of the training can make it an exhausting experience, to the point where the learning effects could be undermined:

- Fatigue (track-based courses: the climate, physical and emotional exertion, group pressure and noise on the track; on-road training: the intensity of 1:1 courses over the whole day)
- Lack of variety in training (insufficient use of a range of teaching methods to stimulate the participant(s))
- Too much talking to or at the participants rather than questioning and discussing

c) The Trainer

Of all the factors influencing the quality of driver training, the issue of the trainer is a critical one. Hence the concern of some policymakers that most countries have no set quality standards, let alone laws, for post-licence driver trainers. In fact, although many trainers have prior experience - such as pre-licence driving instructors and traffic police or police instructors – many course providers employ trainers who have none of the above. In-house training can overcome this deficiency, but on the whole, insufficient evidence has been found to suggest that such training is enough to provide the fundamental skills needed for driver trainers. (It is a fact that many trainers are given their training by one member of the organisation who has no recognised skills of his/ her own, apart from a conviction that “their way is the best way”). Even trainers with prior experience, such as mentioned above, would require additional skills that are specific to the voluntary, post-licence driver training market (coaching skills, traffic psychology, group dynamics, use of a variety of teaching methods, understanding of adult learning needs, assessment skills, etc).

Certain other factors also affect the quality of training in the sector. As most trainers are freelance and often work for different companies, continuous training may be neglected. For course providers wishing to provide training for a national market, they may need to rely on trainers who they only know by word of mouth. (Having a trainer recommended does not mean that he is a good trainer). In addition, the fact that trainers are mostly freelance leads to suggest that course providers are unwilling to provide contracts for trainers, due to fluctuating demand. If this is the case, and some trainers do not work regularly enough, some trainers will lack the practice they need to maintain and improve their skills. Proper auditing of trainers may also be lacking.

The following sections address some key issues for trainers and areas where improvements may be needed.

In search of advanced driver trainers

Good advanced driver trainers are hard to find. As mentioned in the introduction to this conclusions section, the ideal driver trainer requires pedagogical, psychological, technical and driving skills - skills that very few people have (unless separate people are responsible for different parts of the training³⁸). Even though it is possible to train trainers to acquire new skills, it does not seem that course providers are ready, at this stage in the development of the market, to invest in these areas.

Many course providers have openly admitted the difficulty in finding good trainers, or persons with the potential to become a good trainer. In areas of the market where training is still a part-time hobby more than a profession, it is clear that the time and resources necessary to improve and learn is even more limited than those who are full-time professionals. Many course providers have gone to some length to find good people. In one case, even after extensive advertising, only 20 applicants were invited to interview and only one interviewee was actually accepted for the role of trainer.

A brief analysis of the working conditions of a trainer may provide more insight into the issue. The vast majority of track trainers, for instance, have full-time (or at least part-time) jobs elsewhere, meaning that training is a part-time / weekend activity. As for working conditions, they are undoubtedly demanding. Depending on the exact course construction, trainers will spend considerable time outside, whatever the weather, and inside. As well as the teaching element, trainers are also responsible for the safety of the participants. The blend and juxtaposition of skills required for the job, and its both physical and intellectual nature, make it undoubtedly challenging in terms of the content too.

In short, despite the immense potential benefits and satisfaction of providing training in such a worthy area, the blend of skills required and general working conditions are extremely demanding. As for the growth potential of trainers, a good trainer would undoubtedly be in a position to give training in sectors other than driver training, should he choose to do so. But this potential has not been fully exploited at this stage.

That this report pinpoints the lack of coaching / moderation skills (and insight into traffic behaviour) of the trainers does not mean to suggest that trainers should be replaced by trained psychologists with PhDs. In fact, traffic psychologists themselves still have a difficult time mastering the techniques needed to stimulate discussion, question, listen and summarise.

Addressing the coaching skills deficit

Coaching and participant-centred individual or group discussion is not yet an integral part of advanced voluntary driver training. Of the many courses visited during the Advanced project, only 3 showed signs of real participant-centred techniques. The alternative to such techniques (instruction of various kinds) are not only limited in effect (if used in isolation) but can also be perceived as authoritarian, preaching and patronising. Furthermore, although level 3 and level 4 issues (on the driver behaviour model) can be raised through practical exercises on the lower levels, real analysis and the reinforcement of these issues into real, long-lasting “messages” can only be achieved through discussion and feedback afterwards. In the absence of these techniques, the result is likely to be only half-baked messages (and the possibility of unchecked, undesirable learning effects).

The skills required for coaching / moderation / participant-centred techniques can be learned, although there is little evidence that such skills are part of the training programmes for aspiring advanced driver trainers. Teaching skills are often addressed in continuous in-house training by some course providers, although the focus still remains on presentation skills. These are important when delivering facts and figures (knowledge building) during training, but they remain instructional in character³⁹.

³⁸ This does not seem to be the case so far in voluntary driver training, and even if it were to be introduced, it introduces new complexities into the training, such as maintaining consistency and continuity of the message throughout the programme.

³⁹ **Alternating between instruction and coaching**

The provision of coaching training for advanced driver trainers remains largely the responsibility of the course provider. It will require time and effort (including regular auditing of trainers) to see the benefits coming through, but these skills can be learned. As many a good coach will say, once coaching has been learned, there is never a boring day at work. Because a coach is questioning, listening, summarising and guiding, it is far participant-driven work – and every individual is different. This is a far more stimulating approach to training than instruction, where instructors are confined to repeating the same things over and over again.

There are many good books written on coaching, but an effort has been made to introduce these techniques in the annex, page 202 onwards).

The background of advanced driver trainers

Page 68 described the backgrounds of advanced driver trainers. Whereas the track-based courses tend to attract ex-racing or rally drivers, policemen and engineers, on-road courses are more often than not given by policemen or (ex -)pre-licence instructors.

Aside from the lack of focus on coaching training for trainers, these various backgrounds may offer some clues as to why coaching techniques are difficult to come by in the advanced driver training field. Although each individual is different, and some trainers with these backgrounds excel in their jobs as advanced driver trainers, these backgrounds may not be perceived as conducive to coaching.

Ex-racing or rally drivers have outstanding knowledge of manoeuvring issues, driving physics, vehicle technology and vehicle behaviour. However, this knowledge focuses largely on level 1 issues. This may be to the detriment of other levels of driver behaviour, especially considering many track-based courses still focus primarily on this level.

Policemen represent authority and may not be used to their opinions being challenged. They can sometimes be perceived as authoritarian and may assume, incorrectly, that their approach to training is the only effective method. Furthermore, they come from a professional sector where (police) drivers are naturally motivated to drive well, whereas every-day drivers do not necessarily share the same motivations. Good drivers do not always make good teachers.

Engineers are, again, technically oriented, knowledgeable individuals who may have a tendency to overfocus on the delivery of facts (most of which are likely to be level 1 themes).

(Ex-)pre-licence instructors are examined independently in the section below.

All in all, the above remarks are not designed to cause offence and, admittedly, they are generalisations. But they are based on experience during the project. Course providers and policymakers should be aware of the fact that the background of the “typical” trainer may present an obstacle (albeit temporary, if addressed) to the demands of advanced driver training, most notably as far as skills such as coaching, group discussion / moderation and risk awareness are concerned.

Effective training generally involves a mixture of instruction and coaching, a blend of information to build knowledge of facts and coaching to build self-awareness. Switching from one teaching method to another requires training and practice. As trainers possess considerable knowledge, they have a natural desire and tendency to want to share this knowledge with their participants. In some cases this is appropriate, in others trainers must recognise the need to guide and help participants to think for themselves (or to switch from facts to personal matters). Drivers will lack the motivation and insight to change their driving behaviour if training is just based on knowledge passed on from the trainer.

Pre-licence instructors as advanced driver trainers?

When considering pre-licence instructors as advanced driver trainers, it may be helpful to examine the context of their pre-licence work. Pre-licence driver training is, for most candidates, a means to an end. Participants are keen to learn in order to be able to pass their driving test and gain untold freedom and mobility in the – generally young – adult life. Because training is a means to end for learner drivers, they are ready to listen and learn. The role of the instructor is largely instructional. Instruction is more readily used during the early phases of learning (although coaching can be beneficial too). Furthermore, learner drivers in their late teens and early 20s are used to being taught, as these techniques still pervade most classrooms around Europe.

Post-licence voluntary training represents a paradigm shift in terms of the techniques and target group that the (ex) pre-licence instructor needs to deal with. To the participant, such driver training is no longer a means to a piece of paper, it is a means to further personal development. As is the case in all fields of adult education, the purpose of post-licence voluntary training is to help the participants to learn, not to teach them all the trainers knows and thus stop them from carrying on learning for themselves. Adults bring with them a unique set of experiences and values which need to be addressed if the full benefits of training are to be accrued. This is where the need for coaching comes in.

There is a potential obstacle for driving instructors to learning coaching techniques, however. A characteristic of the driving instructor profession is that they spend the majority of their working life “alone” in a car, outside of the influence of peers and colleagues. If the instructor is not familiar with coaching techniques already, the chances are that this solitary lifestyle, often over a number of years, may limit his ability to learn new skills. (Although the instructor “works” in the presence of learner drivers, the disparity in knowledge and skills between the two is so great that the instructor is unlikely to gain much benefit from feedback and exchange). They may also have a tendency to become reluctant or closed off to change.

In summary, the shift from pre-licence to post-licence driver training has its challenges. There is particularly a need for coaching training and more psychological and behavioural insight into driver types and categories. As part of the coaching ethic, there is also a need to realise that weaknesses in driving style and behaviour are symptomatic, and are largely caused by beliefs and values which govern the individuals’ lifestyle.

Despite these challenges, taking motivated pre-licence driving instructors and making them advanced trainers may be a good way of bridging the gap between pre- and post-licence training in policy terms. It would also be a positive link between pre-licence and 2nd phase training, if 2nd phase comes into force in the particular country in question.⁴⁰

Advanced, voluntary trainers as 2nd phase trainers?

The experience of the project team has shown how difficult it can be to “convert” trainers of voluntary, post-licence courses into trainers for obligatory 2nd phase training for novice drivers. In most countries visited during Advanced, trainers tend to:

- present facts rather than raise questions
- lead rather than guide discussions
- focus more on skills aspects than risk awareness
- concentrate almost exclusively on levels 1 and 2 of driver behaviour (according to the GADGET matrix)

⁴⁰ In turn, the introduction of a 2nd phase programme would have the knock-on effect of improving voluntary post-licence trainers. 2nd phase trainers will be more regulated, highly trained, audited, etc because they are in the public policy sphere and government is responsible. The availability of such instructors will undoubtedly filter through into the voluntary market, if this market maintains its growth and potential which it currently shows.

The *obligatory* nature of 2nd phase courses (where participants from all socio-economic categories are represented, and whether they like it or not) and the *youth* and *inexperience* of the participants means that training in such courses is a highly sensitive affair. Trainers require not only coaching skills but also considerable motivational skills and extreme attention to detail (one sentence out of place can literally undermine the intended effects of the whole course).

It is imperative to provide in-depth training as well as trial and rehearsal periods for 2nd phase trainers, so that their actions can be closely monitored and corrected before real training begins.

d) Participant / fleet company

The target groups of training

The voluntary post-licence driver training market primarily caters for the fleet market: companies sending their employees (who drive company cars) for training. The major exception to this rule is Germany, where an estimated 50% of participants undergo training on an individual, voluntary basis. Unfortunately, the data to breakdown and analyse these two main target groups (which must vary considerably in age, sex, experience and socio-economic status) is not available.

The assumption, however, that these participants are all taking part on a voluntary basis – and that as a result they must be inherently road-safety oriented – is not always true. There is nothing to suggest that fleet drivers, for instance, are not vulnerable drivers. In fact, the risk of an accident significantly increases in relation to the mileage driven. Salesman, company executives, etc will spend a great deal of time in their cars and can therefore be defined as one vulnerable group. They can, for instance, be young, inexperienced and have a company car as a result of their rising prospects in the firm, rather than the driving ability. In addition, other voluntary individuals may have been sent by their parents or may be, somewhat reluctantly, participating with friends.

These are all opportunities to provide training services which may ultimately help to save lives, money, and material and physical damage.

The motivations of “voluntary” participants

The motivations of the participants for taking part in the course are an important determining factor in driver training. Voluntary participants may not be as motivated as one might expect to undergo training. In the absence of motivation, the onus on the trainer to provide this motivation is considerable.

Participants may be sent by their company, parents, friends, their insurance company, etc. In other words, many participants would never have taken the driver training if the decision was left purely up to them. It is therefore important for the trainer to be aware of the context and reasons for participation of each individual. For instance, is the participant taking part voluntarily? Is so, who is paying (insurance company, work, parents, him/herself?). Are there financial or other benefits for taking part in the course? Is work (the participants' company) organising the training? If so, is it voluntary or obligatory, is there a payment involved, or does the training have to take place in work time or free time? These factors, and others, will affect the motivations, attitude and approach of the participant(s) to the course.

The role of the client company in promoting the training

Whatever the reason may be for companies sending their employees for fleet driver training, the companies themselves (namely the management) can play a major role in determining positive outcomes of the training. Some fleet driver trainers have stated that companies do not go far enough in “selling” the benefits of driver

training to their employees⁴¹. As a result, many trainees arrive at the training unmotivated or with misconceptions of the training - some even think that they are being penalised for something. Even if company managers are firmly in favour of training for their staff, this message can easily be lost in the company hierarchy. Ultimately, it is the fleet manager who is left the task of organising the training and the schedules with the course providers and the participants. This is an administrative role, and the main job of the fleet manager is to manage the cars rather than the training, so the positive aspects of the training may be obscured in all the paperwork.

e) Specific comments: Track-based training

The pros and cons of track-based training

As presented in the description section, track-based training is considered particularly effective due to the emphasis on individual experience. It is an established fact that learning can be more effective if the subject of learning is experienced personally. Track-based training can be highly physical, involving the stimulation of the senses, adrenalin, fear, excitement, etc. This is a particularly intense experience which, in the words of some trainers, helps create memory in the form of “mental triggers”. If conditioned properly, the triggers can help the participants when driving in normal life. Some form of scenario or stimulus when driving creates an association with the training, thereby setting off a mental trigger to warn the driver and help him /her drive (more) safely (e.g. recognition of slippery road conditions on a bend).

Another important feature of track-based training for some course providers is that it provides an effective way of convincing (perhaps sceptical) participants that “the theory” (on physical forces) does actually apply in practice. (Or rather, the participants convince themselves because they are the ones behind the steering wheel). In conventional track-based courses, the trainees see the effects of speed, road conditions and trajectory on the stability of the vehicle which they have been presented in theory beforehand.

A third advantage is that participants can “experiment” in safe surroundings, i.e. without posing a risk to themselves or others. Participants may join the training in order to test a new car, new technology (e.g. ABS, ESP) and “get a feel” for the limits of the vehicle. Other courses, for young drivers for instance, allow experimentation in a different way. They can feel the effects of driving a car with worn or flat tyres in comparison to a car with new tyres. They may test the effectiveness of applying the handbrake on a bend (something which clearly endangers the driver and other road users but which remains, in certain circles, a popular myth as a last resort measure for dealing with danger).

Track-based courses can simulate a number of different scenarios and conditions which can be repeated *ad infinitum*. This is also regarded as an advantage, particularly for drivers with a specific weakness which needs addressing.

There are also benefits to having training in groups because it allows participants to become aware of the different personalities, attitudes, strengths and weaknesses of other road users.

There is concern, however, that some track-based courses may engender undesirable as well as desirable effects. The main undesirable effect is overconfidence amongst participants. In certain situations and with certain participants, the latter may leave the course thinking that they are more skilled and that, as a result, they are better able to deal with dangers on the road. The perception of their skills is likely to be higher than their real ability. As early as the 1970s, traffic experts pointed out that training focussing on manoeuvring skills could have negative side-effects and that the perceived improvement of skills after the training (amongst participants) was often not true in practice. One consequence of this may be that the drivers tend to take more risks than they did before. Such overconfidence has been detected or inferred in studies linked to young drivers. This situation has been described as a classic Catch 22: high risk categories, such as young, male drivers need the personal experience to learn (from their mistakes, etc) and as a result, track-based

⁴¹ One course provider claimed that the first hour of the course is needed to redefine the preconceptions of the participants and to persuade them of the benefits of the training.

training would seem ideal for this purpose. However, certain factors in the track training are also thought to lead to overconfidence, particularly with this driver category. The best solution thus becomes, potentially, the worst option.

Whether this phenomenon applies to other driver types remains subject to further evaluation, but the following sections raise a number of issues which may help course providers to bear this undesirable effect of training in mind.

Another limitation, in a more conventional sense, of track-based training is the lack of interaction with other road users. That which is vital in the eyes of on-road trainers (the use of mirrors, positioning, hazard perception & scanning and other forms of communication with road users) is totally absent from track-based training. Track training seems to be based on more fundamental messages in road safety: the effects of speed, conditions and vehicle more than the influence of other road users on driving behaviour and the training of observation and anticipation skills. Perhaps also the track philosophy is based on the assumption that many accidents are single vehicle accidents which involve no other road users. To this extent, interaction with other road users is more or less redundant. Cost is another, deciding factor. Track-training provides for larger groups per trainer than on-road training (with all the added benefits as well as disadvantages) and should, strictly speaking, be somewhat cheaper for participants as a result. Either way, track-based course providers are convinced that their training provides a more intense learning experience than on the public roads.

The 3 schools of thought

In one EU Member State, where track-based courses are particularly popular, there is an ongoing discussion on the pros and cons of voluntary track-based training. The discussion is led by protagonists reflecting 3 schools of thought.

The first school can be called “the traditionalists”. This school believes that the standard form of training which has existed over the last 10-20 years is essentially correct. The emphasis remains on developing manoeuvring skills and raising awareness of the limits of the road and the vehicle.

Another school is keen to move on from the traditional training format. These “modernists” recognise that the training may only be effective for intelligent and motivated individuals. They see, moreover, that certain training for certain participants may have undesirable side-effects, such as overconfidence. More thought is needed to develop more risk awareness oriented training and more participant-centred methods. Such training would move towards concepts designed for compulsory 2nd phase education for novice drivers.

The “nihilists”, on the other hand, would prefer to see no training at all. They believe that track-based training will always have undesirable effects and that overconfidence is inevitable with such a course format. (Perhaps they underestimate the potential for training and/ or are basing their opinions purely on the old-school courses which remain heavily skills-oriented).

General trends: a shift from skills towards risk awareness?

During the course of the Advanced project, discussions amongst course providers seemed to indicate a trend that training was shifting away from manoeuvring skills and towards risk awareness and reflection, (or at least a readiness to do so). In practice, however, there is often a difference between what is said and done, and what is taught and actually learned. There are still a number of signs that, for many course providers, manoeuvring skills remain the order of the day.

“In 90% of road accidents, no avoidance manoeuvre is carried out. We need more emphasis on emergency skills in general”.

This quotation from a course provider clearly demonstrates the continued intention, in his course, to focus on manoeuvring skills and coping with danger. Whilst evaluation has shown that simple emergency

manoeuvres, such as emergency braking, can be improved through training, there is no evidence to suggest, at this stage, that average drivers are able to master emergency manoeuvres, maintain these skills over time (without further training) and apply them in practice as a result of a one-day training course.

There appear to be, moreover, a number of reasons to suggest that such training is both ineffective and potentially dangerous:

- A particular emergency manoeuvre (such as braking and avoidance of an obstacle) would probably need to be trained intensively, over time and in a number of different situations and conditions to develop the automatisms necessary to perform such a manoeuvre in practice. A one-day training course is unlikely to develop such automatisms for the average driver.
- Such manoeuvres cannot be readily trained and maintained over time after training (on the open road), so there is a strong chance that the automatism, if ever created, would not last.
- If needed, the driver would need a split second to react and perform the manoeuvre. The lack of time –and potential freezing up of the driver in a critical situation – makes it even more unrealistic, especially at high speeds.
- Heavy focus on such manoeuvres during training may lead to the wrong signal being transmitted to the participants, namely that “coping with danger is more important than regulated speed, adequate safety margins, anticipatory and defensive training”. In addition, developing automatisms would require so much repetition that after a while it may become too much like fun (and the bigger road safety picture may be lost). A side-effect of such training is overconfidence amongst - at least some - participants.

“The chances of panic reactions decrease as the training progresses”.

On a similar note, the above quotation, again from a track-based course provider assumes that the training creates an automatism which can be easily repeated in practice. Whilst it may well be true that “panic reactions decrease as the training progresses”, how likely is it that this effect will last until the moment when such an automatism is needed in practice? Again, the abovementioned bulletpoints apply.

It may be easy for some highly skilled trainers and course providers to assume that average drivers can learn the skills that they themselves have learned and take for granted. However, these trainers may be overestimating the ability of participants to obtain the same skills. The trainers’ skills were mostly likely honed over a significant time period, and possibly during racing careers where these skills are needed and used regularly in practice. However, the vast majority of driver training participants are average drivers with only a one-day course to point them in the right direction. And there are no realistic and safe opportunities to practice these manoeuvres in everyday traffic (and thus to maintain these skills over time).

As seen on page 79 (the filter effect), there is a strong chance that certain exercises are still being taught in “the old style”, despite policy changes. For example, exercises which are fundamental to track based training, such as combined braking and avoidance of an obstacle, may still be being taught according to the skills-based method, rather than the new school exercise which focuses more on risk awareness (the difficulty of performing the manoeuvre in practice and the need to avoid having to carry out the manoeuvre in the first place). This is because trainers may have difficulty in adjusting existing exercises to meet new goals and so ultimately it remains the same, (or at least the message which the participants receive is the same).

Course providers that have adopted standards from another country are one step further away from policy changes and may therefore lag even one step further behind, in “best practice” terms, than the countries where the policy originates.

Where can overconfidence occur: the guilty ingredients

“In the average driver there is a significant gap between real and perceived ability and a key objective of driver training [should be] to bring perceptions in line with reality”⁴²

An overquoted truism of driver behaviour is that “90% of licence holders think that they are above-average drivers; they cannot all be right”.

If, as the above quotation (in italics) states, the average driver thinks he/she is better than they actually are in reality, this increases the likelihood that participants of track-based training are already overconfident before they arrive at the course. Could certain forms of track-based courses be actually reinforcing this undesirable outcome?

Overconfidence may occur in the following non-exhaustive list of cases:

- in courses where there is considerable emphasis on exercises involving vehicle manoeuvring skills and coping with danger, and not enough on risk awareness training (including risks associated with the higher levels of driver behaviour).
- where the practical training is not properly supported by post-training discussion and feedback to analyse (or “relate to practice”) the experience, to reinforce the learning process and check for unwanted learning effects.
- where the course design (exercises) and/or course execution (such as proper feedback and communication of the message) has not achieved its goals (or produces undesirable side-effects...)⁴³
- where high-risk groups are involved, such as the young, the unmotivated, the inexperienced and people with below-average learning capacity. These groups may either misinterpret the course messages or simply misconstrue them for their own personal benefit.

Even what is designed as a risk awareness exercise may have undesirable side effects if there are too many potential secondary messages. An exercise showing how difficult it is to perform a manoeuvre in reality, but that it is totally impossible with worn or under pressure tyres, may lead participants to think “as long as my tyres are new and at the right pressure, I can handle that manoeuvre, no problem”.

There also appears to be a tendency amongst certain course providers and trainers to rely too heavily on the practical exercises to transmit the safety message. Whereas this experience can be highly intense, it should be considered more of a starting point for the learning process than a complete process in itself. The practical exercise creates the sensations, experience and learning context which should then be built on with further reflection, analysis, debate and discussion. An exercise without sufficient feedback and discussion may lead to an incomplete learning process which is exposed to undesirable side-effects.

Figure 8 depicts in basic terms how track-based sessions can be organised, and how the balance between coaching and instruction, risk awareness and manoeuvring skills can vary, thereby affecting the learning outcome considerably. Other many courses are moving away from the “old school” segment of the model, several courses remain there. The courses that remain may be either convinced of the rationale of their methods or are still passing on the same “message” to participants, even though they have made efforts to change.

⁴² Roadcraft, p22

⁴³ See Conflicting Goals of Skid Training, annex 9.

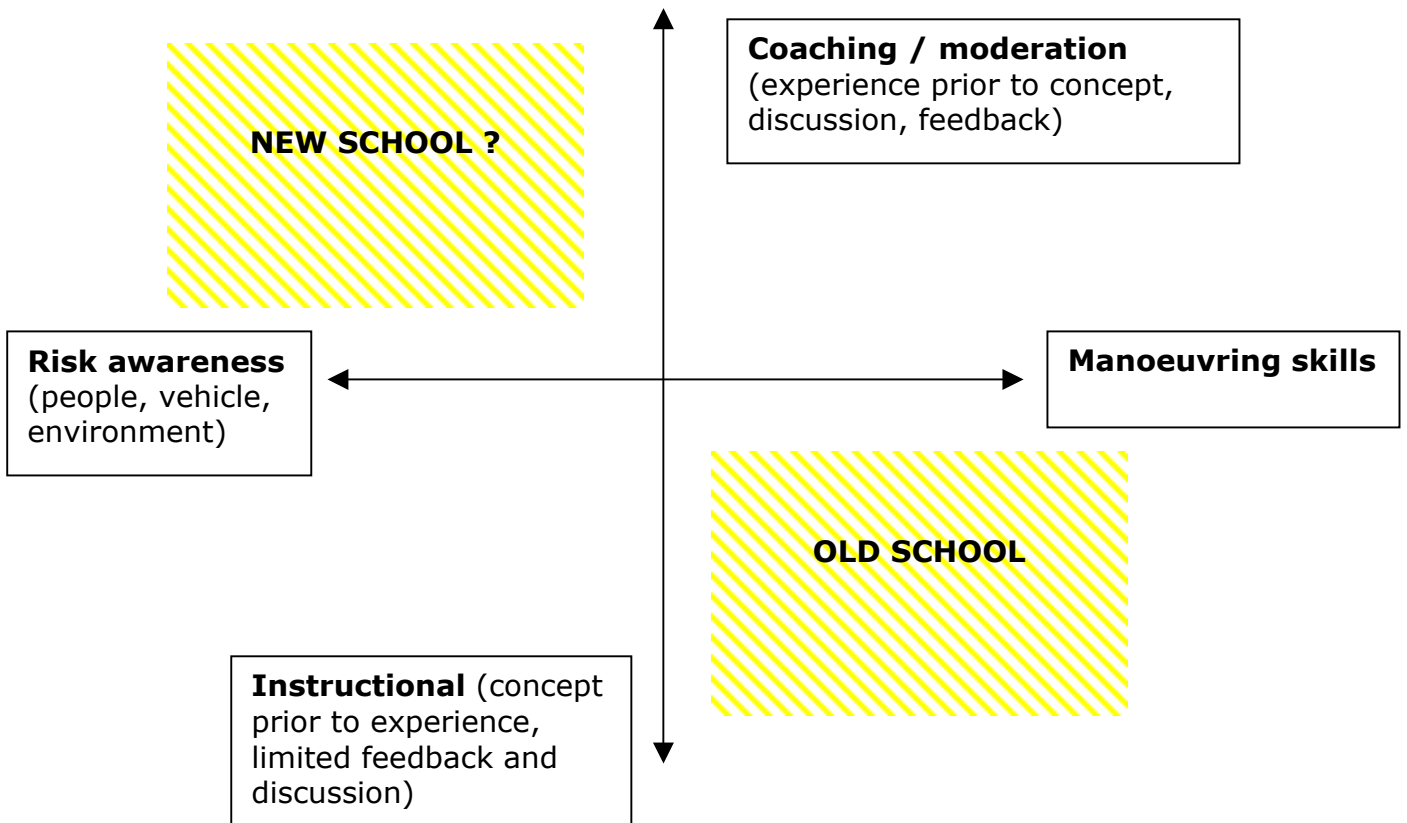
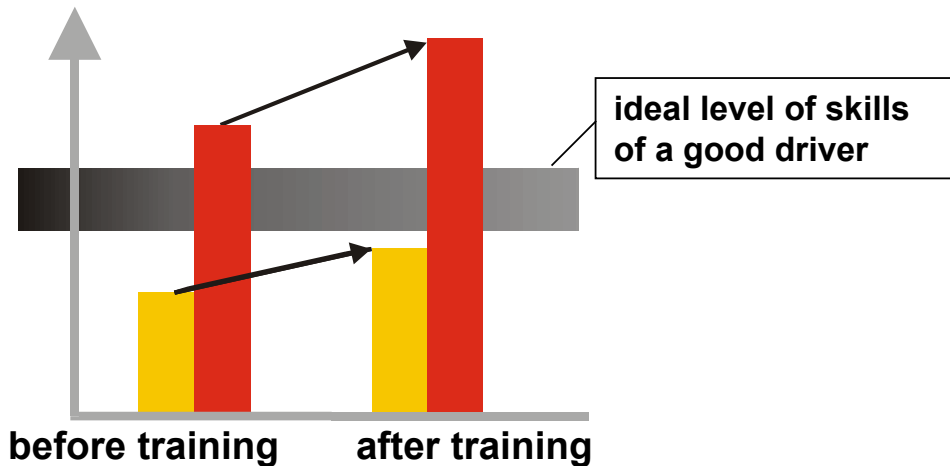


Figure 8: The balance of focus and delivery of a track-based exercise

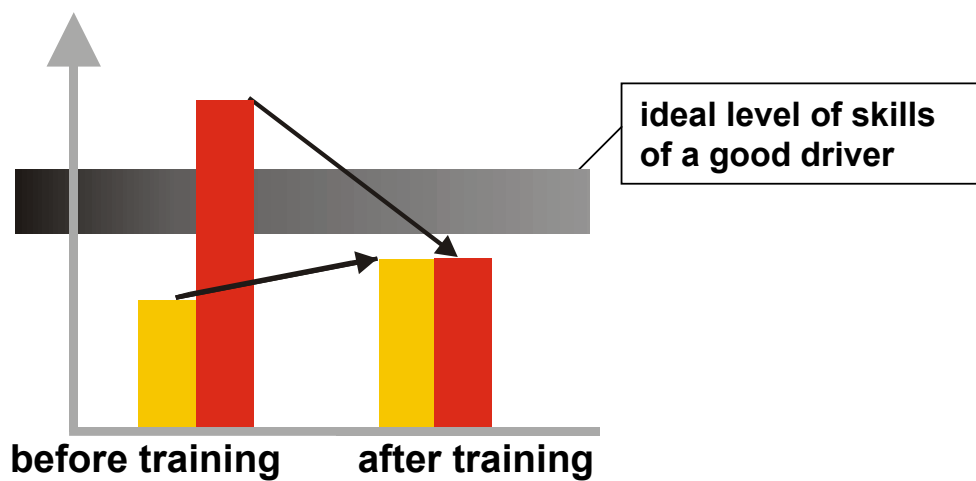
Safe driving courses should be able to improve skills (if necessary) and to decrease the level of self-overestimation at the same time (if it exists). The EU DAN project illustrates this in the following graphs:

Example for a young male high risk driver

This effect of training must be avoided



This effect of training must be achieved



- level of driving skills (objective)
- self estimation of own driving skills (subjective)

Figure 9: Objectives for driver training (DAN project)

Example for an insecure driver

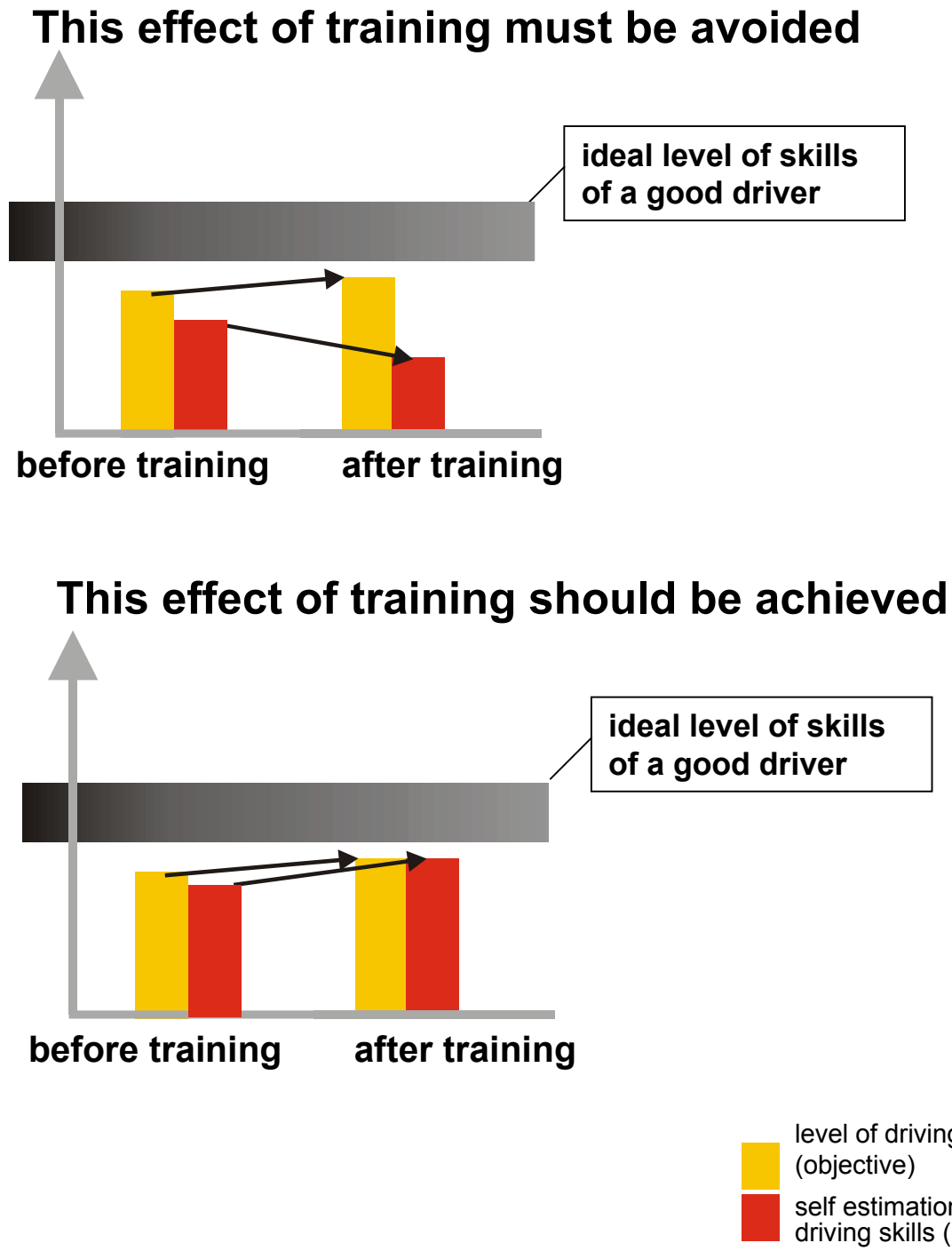


Figure 10: Objectives for driver training II (DAN project)

How can undesirable training effects be prevented?

Whilst further research is necessary to examine how overconfidence can occur and be avoided, some preliminary remarks can be made at this stage, offering some possible solutions to the problem:

- Courses may tend to regard the practical exercise as a complete learning product in itself. Only, however, with proper post-exercise analysis, thought and discussion can the real messages of the exercise be reinforced and the undesirable alternative messages be dispelled. The intense experience of the practical exercise needs to be “harnessed” and contextualised by the post-training feedback.
- As a result, it is fair to say that trainers require developed coaching / moderation skills, in order to moderate or guide the discussion and feedback sessions, to encourage reflection and summarise the most important conclusions.
- Practical exercises tend to focus on the limits of the vehicle and road conditions, but rarely address the weaknesses of human beings. The drivers are, after all, both responsible for the vehicle and for their own actions. If more practical exercises were designed to evoke level 3 and 4 themes (stress, haste, peer pressure, fatigue, alcohol, impatience, anger, etc), the training and focus on driver behaviour would be more balanced as a result.
- The staple exercises that are seen throughout Europe at the moment tend to focus on lower level themes: consequently, a great deal of creativity would be needed to develop new, forward-thinking higher order exercises which bring the driver him or herself into the centre of attention which they deserve. The Risk Awareness Database (www.cieca-drivinglicence.org) was designed with the purpose of stimulating course providers into searching for new ways to train drivers in a balanced and effective manner.
- The phenomenon of overconfidence is no secret and can be openly discussed with participants. It should also be emphasised, quite simply, that driving is a self-paced task. This means that it is up to each individual to make their driving trips more or less dangerous. Here lies the richest source of safety. Highly developed skills are meaningless if drivers are not motivated to pace themselves according to their own ability and circumstances.

Courses themselves have revealed a number of methods to counteract such overconfidence. These include:

1. Abandoning certain exercises and situations which may lead to overconfidence
2. Demonstrating certain exercises (followed by discussion), instead of allowing participants to do them, so that the participants do not misinterpret the exercise as a purely skills-based exercise instead of a risk-awareness exercise
3. A predominance of risk awareness exercises, and minimal skills-based training.
4. Making sure that participants “fail” (e.g. hit obstacles, lose full or temporary control of the vehicle, experience fear/shock) during skills-based exercises (experiencing limits)⁴⁴
5. Varying exercises to prevent easy mastery of the manoeuvre and linking the exercise with a variety of different real-life situations (feedback from the trainer is important)
6. Comparing the situation in exercises on the track to situations which participants might meet on the road. Make them think to what extent a certain kind of manoeuvre is possible in real traffic situations.

However, even when the above suggestions are taken into account, some degree of caution may be needed. Even courses which focus solely on risk awareness may still cause undesirable side effects. The practical exercises represent such an intense learning experience that the group discussion and feedback phase (to rationalise the emotions felt during the practice) may fail to make any impression at all on (some) participants. The damage, if the exercise design allows for other, unwanted learning effects, may already be done. In other words, in the learning and memorisation process, to what extent may the sensation and excitement of a practical exercise⁴⁵ eclipse the rational, reflective discussion which follows?

⁴⁴ It is important to point out that failure may not be appropriate for certain participants and that these measures are recommended where the trainer is aware of the potential for overconfidence amongst his/her clients.

⁴⁵ the thrill of the screeching of tyres, speed, loss of control, opportunity for speeding when the instructor’s attention is elsewhere, peer pressure from others in the group, waiting impatiently in queues for the next exercise, etc.

In summary, according to scientific evaluation and the extrapolated theories posited in the above section, there is, in some courses and with some participants, a distinct possibility that overconfidence may occur. Only further research will tell under what circumstances and with which target groups this phenomenon is most prevalent.

Corporate sponsorship: the invisible hand

Many track-based courses benefit from corporate sponsorship. In some cases, this may lead to tensions between the sponsor (often a car manufacturer) and the course provider. Depending on the level of involvement in the training, car manufacturers may skew the objectives of the course towards selling or enhancing the image of the cars used (for example) rather than genuinely trying to make the clients more competent and reflective drivers. In practice, this may mean that the training focuses more on technical and physical factors than human factors.

Other courses may be organised directly by the car manufacturers themselves. In these cases, it is small wonder if the emphasis of the course is heavily biased towards vehicle dynamics and vehicle technology. An important function of these courses is to maintain a solid client base and demonstrate new technological innovation. It also offers clients an opportunity to test the limits of their cars and get a feel for it, especially if it is new. To this extent, such courses are catering for “niche markets”.

In a commercial environment, where investments are considerable, such involvement of sponsors such as car manufacturers is inevitable. It should be taken into account, however, that the objectives of the training are not limited to driver improvement. These companies often have wider objectives in mind.

“It’s a great track!” - but what about the training?

Investments in tracks are considerable, and the results are highly visible. The people concerned are, understandably, very proud of their achievements and the state of the infrastructure. It should not overshadow the fact that, without a well-designed training course, such magnificent engineering feats are worthless. There is a potential field of tension between, for example, the director of a track, whose job it is to attract clients and to make the investment financially worthwhile (but who lacks the intricate pedagogical know-how which is necessary for the training), and the trainers, who are responsible for the training alone. Although there should be some overlap between the technical directors or engineers, responsible for the track, and the instructors, responsible for the training, the course should be designed to fit the participant, not the infrastructure. People remain the primary concern, whatever the state of the facilities.

Infrastructure can be easily developed and transferred. The transfer of human capital is a lengthier process. Naturally, well-constructed tracks and facilities have the potential to offer good courses, but a good course requires considerable time and resources, and constant scrutiny, to make it worthwhile.

Group sizes

Group sizes in track-based courses range from 2- 12 participants per trainer. The participant:trainer ratio depends on the type of course and has a considerable effect on price. It also clearly has an effect on quality, in terms of the attention received by the trainers and the ability of the trainer to coach each individual towards new strategies for driving. Some courses were constructed with the express purpose of including larger groups and making the course more profitable as a result (through the use of radio communication with the trainer, observation towers, etc).

As a general rule, it would seem fair to say that the higher-risk the group, the more trainers are needed to guide each individual, provide the necessary attention and exchange feedback in sufficient depth. Small groups (of around 6 pax) during the practical exercises reduces waiting time and focuses more intensively on the task in hand. A similar size group during discussion and feedback provides the opportunity for more

intensive exchange of views between the trainer and each individual. Too small, however, and the benefit of group discussion (with its range of different characters, views and experiences) is lost.

The intensity of exchange and level of attention to each individual does not only depend on the size of the groups, however. It also depends heavily on the ability of the trainer to involve each individual in the learning process, i.e. his/her moderating or coaching skills. In discussions with course providers during the project meetings, the consensus was that group sizes should never exceed 10 participants per trainer.

The question of the homogeneity of groups is a difficult one, and will depend on a number of factors. Heterogeneous groups may provide considerable insight and experience from a number of different perspectives. As this reflects reality on the roads, it may be a useful tool as a result. If courses are specifically designed for one particular target group, logic requires that the participants are relatively homogeneous. Some participants may prefer to take part in training which involves only people similar to themselves (in terms of sex, attitude, ability, experience, perceived weaknesses or any other factor). The homogeneity of groups is an interesting subject, but one which probably needs to be dealt with on a case-by-case basis.

f) Specific comments: On-road courses

No scientific evaluation has, to the knowledge of the Advanced project team, been conducted on post-licence fleet driver training courses. As a result, there is little scientific foundation to base analysis and conclusions. The following section results largely from *observation* of on-road courses (the vast majority in the UK, as Europe's largest on-road driver training market). It is therefore heavily based on opinion, not fact. It is hoped, however, that some use can be made of the forthcoming passages.

Pros and Cons of road based courses

Advantages of on-road courses include:

- the level of individual attention given to participants by the trainer
- hazard perception training and anticipatory driving (interaction with other road users)⁴⁶
- raising awareness of the variety of different road and traffic situations in real-life, especially once exercises on the track have taken place
- training in an ecologically valid learning environment

However, whereas track-based courses provide a structured learning context within which the trainer can work, on-road courses are totally dependent on the ability of the trainer to create the right learning environment and manage the learning process. In other words, in the absence of a track-based exercise to awaken the senses and instigate the learning process, the motivation for becoming a safer driver in on-road training is fully dependent on the trainer. This puts pressure on the on-road trainer who requires a high level of interpersonal and coaching skills.

Training highly motivated individuals would be much simpler in on-road training, but motivations vary and fluctuate heavily amongst on-road participants, especially fleet trainees who have been sent on the course by their company, and young drivers. Road-based courses may also have difficulty making certain drivers fully understand certain risks. (As danger cannot be directly experienced on demand, as it can in track-based courses, it may be very difficult for trainers to convince these drivers of the potential of risky situations). Because Roadcraft (see below) was originally designed for policemen, who are clearly motivated to reach the high driving standards the police force demands, there seems to be a lack of focus in much on-road training on the motivational aspects of driving and coaching principles. Training in practice would seem, in many cases, to focus almost exclusively on external hazards, whilst overlooking the influence of attitude and internal behavioural issues which can have just as much influence, if not more, on driving style and road safety.

⁴⁶ this includes environmentally friendly driving techniques (for drivers, as opposed to riders) which also emphasise anticipation

This imbalance may be compounded by the fact that the UK, with its tradition of producing “good drivers”, has a market for individual drivers looking to gain “advanced driving certificates” (IAM, DIAMOND; RoSPA). These individuals are as highly motivated as policemen because they take great pride in their driving ability. In summary, a system created for policemen and used largely by both the police and motivated good drivers does not seem to have adapted yet to the fleet market where the trainer requires considerable motivational skills to create the will amongst participants to accept and change.

In addition, one negative side-effect of the fleet market is that many trainers appear to focus more on making rather “static” risk assessments (for the client company) of trainees than on exploring dynamic ways of encouraging these individuals –through participant-centred techniques - to reduce their risk exposure and to drive differently. Some driver training can thus result in an examination type drive where the trainer does little more than observe faults in the trainee’s driving style.

Coaching while driving

As seen above and mentioned on numerous occasions in the other parts of this report, the on-road trainer needs to be a good coach of individuals. Without this skill, training will be purely symptomatic, e.g. the trainer will observe the participant driving too close to other cars and will tell him to hang back, instead of questioning the rationale of inadequate safety margins, finding out the reasons why the driver behaves in this way, etc.

Whilst the coaching style is highly conducive to self-reflection and discussion, is there a limit to the learning effects of coaching while driving at the same time? In other words, to what extent can one concentrate on two things at once? Coaches may claim that such techniques detract attention away from the immediate driving task, so the driver is really only thinking about the subject of the coaching. But it would be interesting to see, possibly through evaluation, whether this is the case in reality. Perhaps a more structured approach to the training, involving more regular stops and coached discussions with the car at a standstill would be justified, or perhaps sessions where the trainer drives whilst the participant is actively engaged in a particular task, such as a hazard commentary (see Demonstrative Drive, page 100)?

Roadcraft / The System

Several trainers admitted that Roadcraft, (the driving manual used almost exclusively in the UK as THE guide to proper driving) was an extremely comprehensive system which could not be realistically taught to a trainee in a one-day course. To a large extent, however, that was the only tried and trusted system. Moreover, Roadcraft has its uses as “mental map” for trainers, but it was up to the trainers to use this mental map in a flexible way. The mission found that Roadcraft was sometimes too rigidly adhered to (as if it was a bible which must be obeyed to the word). One trainer claimed that Roadcraft was too much focussed on “making progress”. Whereas this may be the leading principle of driving for police drivers, other modern-day objectives, such as road safety in general, driver fatigue and comfort at the wheel⁴⁷ should take priority for modern-day, civilian drivers.

Attention to “minor details”

Furthermore, some trainers may tend to give too much focus on the need for “minor” changes (such as how to hold the steering wheel and the use (or rather non-use) of indicators), which were obviously not going to be implemented by the trainee afterwards and which risked coming across as too authoritarian or “bossy”, thereby undermining the learning experience for the trainee. The best experiences were gained when trainers clearly mentally prioritised the trainee’s deficiencies, selecting the main problem areas rather than picking out every minor issue and alienating the trainee in the process.

⁴⁷ Roadcraft has, moreover, been recently adapted for the fleet driver training market: “Fleetcraft”, The Advanced Driving School / Police Foundation 2001

Theory

In terms of participant-centred techniques, there is a question mark over the use of powerpoint slides during class sessions. Powerpoint slides are useful for visual presentations and it is easy to understand how tempting it is to use powerpoint due to its professional appearance. But powerpoint is rarely interactive and is probably rather ineffective for portraying dull information such as statistics. Statistics can be useful to highlight the context of driving, dangerous scenarios or accident types, etc, but they should be brought to life with examples and more context. The effectiveness of the slides ultimately depends on the level of motivation for the participants to take the course. Considering most drivers are being sent by their company, there is a good chance this motivation is lacking.

Demonstration Drive

Demonstration drives (by the trainer) may be useful for trainees who learn by copying. However, demonstrations can be perceived as too authoritarian or they may be seen by the participant as an opportunity for the trainer to show off. In these cases, demonstrations may be counterproductive to the training. One interesting approach of the demonstration drive was for the trainer to drive at the same time as asking questions and testing the participant's awareness of hazards and road features. (The conventional demonstration drive involves the trainer giving his own commentary while driving). The demonstration drive with questions (coaching) allows the participant to concentrate fully on the questions and on hazard perception instead of being preoccupied with vehicle control. This frees the participant's mind and addresses what may be a common failing amongst on-road courses: how effective is on-road training if the (mental) training occurs when the participant has to drive at the same time (being trained – responding to questions – and driving simultaneously may be too much for many individuals to handle).

Assessment or training?

Many courses seem to involve the trainer assessing the client, rather than training him/her. There is a distinct difference between assessment of the status quo and training to encourage improvement. This emphasis on assessment may be encouraged by the companies who send their employees for fleet driver training; it is, after all, in their interest to have feedback on the performance of their workforce. It may also be because trainers lack the necessary tools for effective training. Certain forms of assessment are a kind of training: namely encouraging the trainee to assess his/her own ability (and, in particular, to recognise their weaknesses). Most assessment seen during the project was a trainer assessment of the client, however. In the absence of subsequent training, such assessment may have little use or effect on clients.

Driver observation (by other participants)

Driver observation, in other words a participant observing –from the back – another participant drive, works on the same principle as participants learning from each other in group discussion. Participants can observe how other drivers drive, react, anticipate, etc. This is designed to give insight into the ways of other drivers and to become aware of the fact that each individual driver acts differently and to varying standards. Participants rotate in the car to allow for both observation and driving time. The process can be structured using observation forms which participants are supposed to fill out, based on their analysis of the “performance” of the participant who is driving.

Drive with commentary

Although some trainees have difficulty talking fluently during such an exercise, the principle of making an oral commentary while driving would appear to be sound. The act of commentating encourages more anticipation and more depth of vision and, with time, would seem to create a systematic approach to observation / hazard perception. It may make sense to have at least 2 commentaries per person if it is suited to them, allowing more time for the habit to sink in.

Hazard perception

The success of hazard perception training depends on the ability of the trainers to develop curiosity in the participant(s), by using coaching/questioning techniques. For instance, instead of telling the participant what a signpost means, the process appears to work better when the trainer questions and encourages the participant to read the signs, to identify why the signs are there and for what purpose. In other words, telling someone to respect a speed limit sign will not have a lasting effect on that individual. The important point is not what the signs mean but why they are where they are. The trainee needs to be convinced of the rationale of such a speed limit (for instance by being encouraged to identify the number of potential hazards in that zone and realising, through prompting by the trainer, that the human brain is not able to perceive these hazards properly or effectively at higher speeds).

Again, it is important to make the participant think and for the trainer to build on the participant's train of thought in order for the learning goal to be reached.

g) Conclusions in bulletpoints: voluntary, post-licence driver training

- Post-licence voluntary and fleet training varies considerably in popularity from one country to another
- Fleet driver training accounts for the vast majority of training in all countries, with the notable exception of Germany (where an estimated 50% of participants take part on a purely voluntary basis)
- Voluntary training still accounts for only a fraction of the driving population (400,000 participants in 2000)
- Voluntary trainings misses some significant high-risk populations, but remains an important catchment area for drivers who would no doubt benefit from sound, further driver training
- However, 1-day driver training cannot be expected to solve society's ills: socio-economic factors, deviancy, individual behaviour and a multitude of other factors influencing road users cannot be all addressed and remedied in this type of training
- No legal requirements exist at national levels in the EU, which are specifically tailored to the post-licence, voluntary driver training market. Standards are slowly being introduced as governments begin to take an interest (UK, Germany..)
- Trainers require a wide range of technical and interpersonal skills which are difficult to find in individuals. The general working environment is not attractive enough to many individuals with – or with the potential for – these skills.
- With some exceptions, trainers lack the necessary coaching / moderation skills which are a fundamental part of adult based learning. “A person convinced against their will is of the same opinion still”. If participants' individual needs are not being met by the solutions that arise, there is no motivation to change their behaviour.
- Real change in driving style and behaviour can only be achieved through addressing the fundamental issues of beliefs and values. Courses not aspiring to these goals should at least try to raise awareness of the potential risks which originate in these higher levels of behaviour.
- Training is organised either on the road or on off-road tracks (in combination with some kind of theory session). Each has its advantages and limitations.
- Based on research and experience to date, there is a distinct possibility of certain track-based courses with certain participants inciting overconfidence amongst trainee drivers. Exercises need to be consolidated by discussion and feedback and possible undesirable side effects should be monitored and reported.
- Whilst in some courses, a shift towards risk awareness, higher level skills and anticipatory forms of thinking and driving can be perceived, other (track-based) courses still have too much emphasis on reacting in dangerous situations. Even courses designed to focus on risk awareness can be perceived as skills based courses by participants.
- On-road courses lack the structure and learning context provided by the track-based exercises (which relieves the trainer of part of the learning process). The on-road trainer is thus 100% responsible for setting the learning context and encouraging the learning process.
- In terms of the GADGET matrix, training remains largely focussed on the bottom two levels (manoeuvring ability and mastery of traffic situations) and on skills and risk-increasing factors. Higher order risk awareness and self-reflection are largely unaddressed. Clearly, the focus of training will vary according to the specific requirements of the course and of the individuals on it, but the current focus in most driver training is imbalanced and possibly conducive to counterproductive effects (i.e. overconfidence).
- “If you don't do it properly, don't do it at all...”
 - *Classroom sessions can be boring and irrelevant if they fail to engage the participants.*
 - *Track-based courses can be counterproductive, if poorly designed (vis-à-vis the target group) or too heavily focussing on skills.*
 - *Road-training can be a useless experience, if the instructor is bent on imposing a system with blind disregard for the needs and motivations of the participant.*

7. Voluntary post-licence rider training: description

The following section focuses on:

- The context of rider training
- Rider training in each EU Member State
- The objectives of Rider training
- The contents and methods used in rider training
- Quality assurance (standards, trainer qualifications, evaluation and assessment)

52 course providers in 18 different countries, including as far afield as Australia, were requested to fill out a questionnaire survey on the rider training they provide. 20 of them, from 12 countries, replied. In addition, motorcycle trainers, course providers and representatives of international federations (FIM, FEMA) were invited to a total of 4 project meetings.

N.B. Although rider training and the safety of motorcyclists is of great importance and interest to policymakers, less time and resources were devoted to the rider training component of the Advanced study, than the driver training issues. Many issues do, however, overlap, and the reader is advised to consult the driver sections for common pertinent themes.

a) The context of rider training

Motorcycling is to a higher degree than car driving regarded as a pastime or hobby. Many riders use their motorcycles primarily for transportation but a large number ride their motorcycles because it is fun and provides a special feeling of freedom. Furthermore, riders may not use their bikes on a regular basis and, especially in countries with cold, winter climates, may stop altogether during these months. One expert referred to the majority of motorcyclists as “permanent novices”. In the words of a motorcycling instructor:

“We see our job as just trying to give riders a few important tips to prevent them from killing themselves. That’s all we can do [in such a short time]”.

Other novice riders may also be older because they don’t start until they are over 30 (an increasingly common trend..), or they return to motorcycling during the classic “mid-life crisis” period, when riding becomes a symbol of rejuvenation and rediscovered freedom.

Training courses should cater, therefore, for riders who need “refresher training” to maintain their basic skills and risk awareness and, for those who drive cars, to shift their mental focus to motorcycling as opposed to driving.

Training also caters for specialist groups (depending on the type of motorcycle) and for groups with more experience and skills. Motorcycling training may kill two birds with one stone. Firstly, it provides for the training and secondly, it represents an opportunity to meet with like-minded individuals. The dividing line between fun and training is often more blurred than in the case of driver training.

Due to the lack of a fleet market for motorbikes, the market is considerably smaller and less stable for rider training organisations than for driver trainers. As a result, there would appear to be very few rider trainers who work as such or are employed by a company on a full time basis. This means that the majority of rider trainers train in their spare time, around a full-time job in another sector. Motorbike associations and other trainers generally lack the financial resources available to advertise properly, and to design and provide regular and consistent training-of-trainers, etc.

Finally, there are considerable behavioural obstacles to participation in formal rider training. These will be discussed in the analysis section.

b) Rider training in each Member State

As in the driver section, the following sections are based on questionnaire feedback and aim to provide an overview of the structure of rider training in each EU Member State (described in alphabetical order). The information provided relates to several factors, including:

- Levels of demand and reasons for demand
- The number of training organisations active in the sector
- The main training organisations
- The type of training given
- Concerns in the sector
- Existence of legal requirements or guidelines for post-licence training
- Overall numbers of riders trained (where available)

The data is based on feedback from course providers and other stakeholders in the sector. As a result, some country profiles may be more complete than others. It is also important to note that the project parameters did not include a commercial analysis of the sector, so the data is not cross-checked. The following information simply serves to provide an impression of the status quo in the EU-15.

1. Austria

In Austria, demand for rider training has risen over the last 5 years as riders begin to see the benefits of lifelong learning, and thanks to the efforts of the ÖAMTC (Austrian Automobile Club). The 3 main course providers are the ÖAMTC, the ARBÖ and the MAG (Motorcycle Action Group). Rider training takes place on tracks in Austria.

2. Belgium

There are 3 main course providers of rider training in Belgium: VOC (Bruges), Centrum voor Motorbeheersing (Tongeren) and Nijvel. Training is a mixture of on-road and track training. Although demand is described as low, it has increased over the last 5 years. This demand is explained by active advertising on the part of the course providers and a rising awareness amongst riders of the dangers of motorcycling. There are concerns, however, due to the lack of good (read: qualified) instructors and the short-termist attitude of some “showy” courses.

3. Denmark

The main course provider is the DMC (Danish Motorcycling Council) which offers bronze, silver and gold courses for motorcyclists. No other information is available.

4. Finland

Demand for post-licence rider training has increased for the 3 main course providers in Finland: MP69, ZOO MC and SMOTO. Training is generally on tracks. This may be explained by improvements in the economy and the abundance of affluent middle aged riders. Finland suffers from a lack of qualified trainers and is currently engaged in efforts to attract more potential trainers to the market. Finland also has a short riding season, due to the long winter period.

5. France

Of the thirtysomething course providers in France, the main players are:

1. Conduire Juste (Beltoise)
2. ANPER

3. ECF (Ecole de Conduite Française)
4. Association de la Formation des Motards (AFDM)

Training can be both on tracks or on road. Demand has increased over the last five years but remains low in general. An increase in road accidents involving motorcyclists and efforts by some insurance companies go some way to explaining this rise in demand. A lack of quality standards amongst trainers remains a major concern.

6. Germany

Rider training in Germany is provided by the same course providers as for driver training. The main training organisations are ADAC (German Automobile Club), DVW (Deutsche Verkehrswacht), TÜV and ÖAMTC (Test & Training). Training is on tracks.

Although demand is described as low-medium, the number of riders undergoing training in Germany far exceeds numbers in other European countries.

7. Greece

Volos Motorcycling Club is one organisation providing training. Resources are limited and demand is extremely low. No other information is available.

8. Ireland

Of the 6 course providers in Ireland, the main 2 rider training organisations are IRTA (Irish Rider Training Association) and Star Rider. Training is on-road.

Demand for courses is low but has increased over the last 5 years due to increasing road deaths and the introduction of localised education for riders. The general lack of demand and lack of incentives to take part in post-licence training are the main concerns in the sector at this stage.

9. Italy

No information available.

10. Luxembourg

Luxembourg offers training to voluntary participants at the CFC, where the compulsory 2nd phase education for novice motorcyclists is run. Training is track-based.

11. Netherlands

Rider training in the Netherlands is provided by 5 main organisations, the two main ones being KNMV (Dutch Motorcycling Association) and NVVM. Demand for training has increased over the last 5-10 years as a result of raised general interest, a buoyant economy, higher traffic-safety awareness and discussions in the sector on better qualified instructors. Some course providers are concerned about the lack of properly training instructors and of recognition of courses. Training can be either on-road or on tracks.

12. Portugal

No information available.

13. Spain

Only information from RACC (Automobile Club) was received. No sectoral information is available.

14. Sweden

The SMC (Swedish Motorcycling Club) is the only provider of post-licence rider training in Sweden. Demand is described as “medium” and has risen recently due to the setting up of a national (as opposed to local) scheme for training instructors.

15. United Kingdom

Of some 50 course providers in the UK, the main training organisations are:

- BMF (British Motorcycling Federation)
- RoSPA (Royal Society for the Prevention of Accidents)
- IAM (Institute of Advanced Motorists)
- Ride/Driver Ltd
- Bike Safe

Demand for voluntary training is low but has risen in the last five years as people begin to have more leisure time and disposable income. Some participants wish to improve their riding standards; others are more interested in lowering their insurance premium. The general lack of standards (read: qualifications for instructors) remains a concern and some providers are taking steps in the long process of introducing training syllabuses. Considerable growth of leisure-time, track days for motorcyclists (basically providing an opportunity to hone skills and open up the throttle) may be undermining the formal post-licence training market.

Quantitative estimate of post-licence, voluntary rider training participants

Based on the questionnaire feedback available to us, figure 9 below provides a quantitative estimate, per country, of the number of rider training participants in the year 2000. These figures are estimates and reflect only the participant levels that the primary course providers train. They do, however, provide a useful snapshot of the level of demand for such training across the EU.

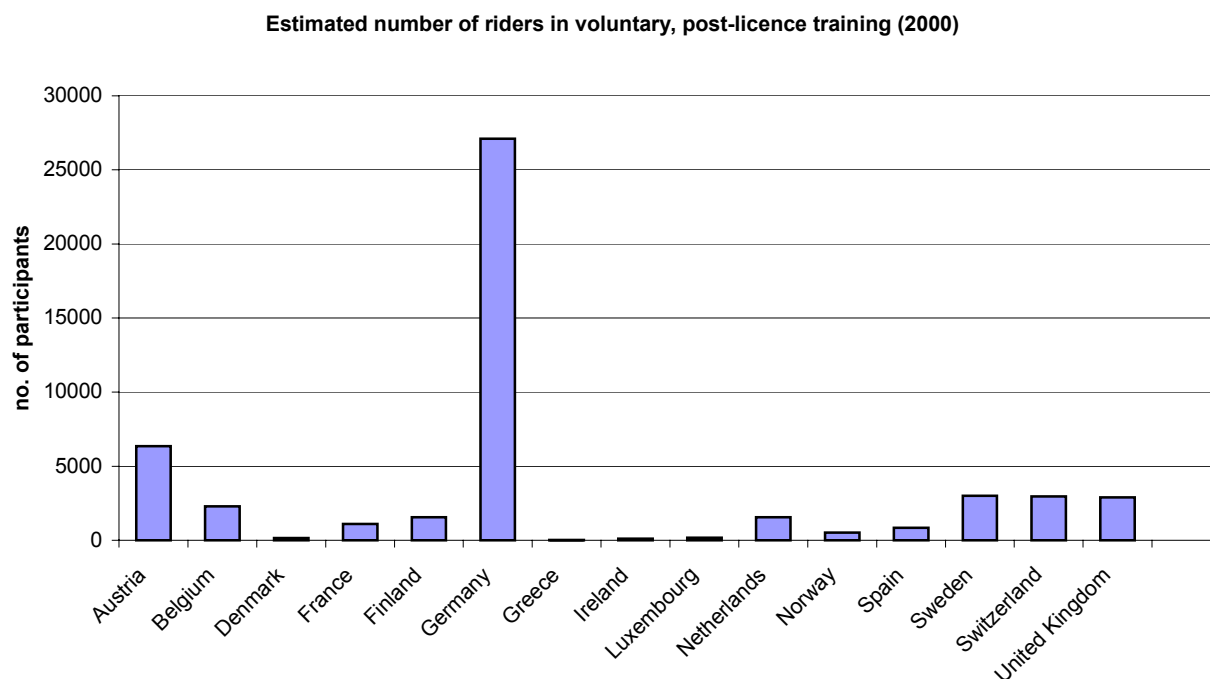


Figure 11: Estimated number of riders in voluntary, post-licence training (2000)
 Source: Advanced questionnaire survey 2001 (UK figures do not include RoSPA and IAM data)

c) The objectives of rider training

The objectives or goals of post-licence, voluntary rider training will vary according to a number of factors, including

- target group (particularly levels of experience/ability)
- track (off-road) courses
- on-road courses

Some course providers cater for at least two levels of ability: genuinely “advanced”, experienced riders and inexperienced riders (of all ages). There is a distinct difference in emphasis between track-based and on-road courses (see driver section), although the differences in stated goals on paper appears to be minimal.

The goals of courses tend to focus on a mixture of risk awareness and basic skills, often coupled with technical discussions on the characteristics of the bikes brought to training by the participants.

It appears that track-based rider training for inexperienced (i.e. the majority of) riders focuses primarily on refreshing basic skills (braking, taking bends, slow manoeuvring in traffic) and possibly manoeuvres such as braking and avoidance which may need to be used more regularly than when driving a car. On-road courses stick to fundamental aspects of riding on public roads, such as hazard perception, positioning (see and be seen) and bike control in traffic. As the training begins to cater for more advanced riders, the discussion shifts towards more higher-level risk awareness, such as recognising personal limitations, understanding how the characteristics of the motorcycle and of the rider can affect riding style and road safety, taking into account peer pressure when riding in groups, etc⁴⁸.

⁴⁸ Other forms of advanced training includes speed training on circuits which cannot be defined as road safety-oriented for the purpose of this report.

The objectives below refer to a small sample of track-based and on-road courses from a range of both European and North American countries:

Ex.1

Level: Advanced
Country: Norway

Goals of course:

“Make motorcyclists aware of personal limitations and teach them to take these limitations into account when riding. Provide participants with understanding of the relationship between motorcycles and their riding characteristics and how these characteristics should affect our riding style”.

Ex.2

Level: Advanced
Country: USA

Goals of course:

1. To advance both the mental and physical aspect of riding
2. To advance specific information on how to manage risks of riding
3. To advance training and practice in critical riding skills found lacking in riders who have accidents.
4. To advance riders' awareness of their machines handling characteristics.”

Ex.3

Level: Basic post-licence
Country: Denmark (Track-based)

Goals of course:

“To teach the riders better and safer handling skills to deal with situations involving braking and evasive action in traffic”

Ex.4

Level: Basic post-licence
Country: Netherlands (On-road)

Goals of course:

“Improving the ability to gather targeted information in traffic. Using this information he can perceive risks and take action accordingly. Able to choose best and safest solution to particular situations”

d) Content of rider training

Track-based courses (practical exercises)

In terms of the content or exercises used in track-based rider training, they can be categorised as follows:

- Preparatory drill (physical preparation, technical checks, etc)
- Initial ride (for a wide range of purposes)
- Balancing and handling exercises (steering, slalom, slow manoeuvring skills)
- Braking exercises (front and back braking, combined braking, emergency braking, residual speed)
- Riding around bends (including riding off the road / on negative camber / swerving on bends)
- Avoidance manoeuvres: Braking and Avoidance & Avoidance without braking
- Riding over obstacles

These exercises can be used for manoeuvring skills training and to raise awareness of the risks involved in such manoeuvres: classic problem areas, effects of speed and trajectory. All these exercises tend to focus on common themes such as body positioning and eye movement / viewing technique. Group sizes are generally 6-10 participants per instructor. Practical exercises are generally preceded by theory (largely focussing on technique in relation to riding physics).

Road-based courses (practical exercises)

Road-based courses focus on classic traffic-related areas, such as:

- observation skills
- correct road positioning
- speed selection
- keeping safe distances
- overtaking
- risk perception

The sequence of events may be similar to driver training: a rider assessment by the trainer, a demonstration and practical training, normally in groups. Communication between the trainer and participants can either occur via radio or through regular stops. Those who prefer radio communication claim that it is the most practical and most effective method for training and for learning. Apart from transmitting directions during the training, the trainer can point out various hazards along the route which would be difficult to refer to at a later stage. Trainers preferring the stop-and-talk method say that this is the best way to discuss and “mentally digest” the experiences recently encountered. Trainees can focus completely on the issues, and cover them in more depth, than when they are riding and need to concentrate on the road.

On-road courses are the norm or are popular in the UK, Ireland, the Netherlands, Switzerland and Belgium. Group sizes hover around 2-3 participants per trainer, which is the maximum amount that one trainer can handle on the road due to the riders being inevitably spread out over some distance (although one course has two trainers, for instance one leading and the other assessing at the back).

Theory / Classroom⁴⁹ sessions

Such sessions vary from course to course and cover a wide range of topics and themes when presented together (below). They include discussions and analysis of classic risk areas, presentations and theory, motivational aspects of motorcycling and self-analytical themes (such as how one's behaviour can effect riding style)

1. Motivation

- Introductions (instructors and participants), explanation of course activities (goals)
- Discussion of expectations of participants
- Discussion of participants' experiences

2. Knowledge/Skills

- Theory of riding physics (centrifugal force, countersteering, rotating forces)
- Handling skills (steering, bend techniques [traction management], braking techniques)
- Discussion about Protective/visible clothing
- Safe driving model (5 tips for safe driving, controlling vehicle at low speeds and technical controls)
- Presentation on first aid
- Importance of technical checks
- Information on new motorbike regulations, new technology, vehicle-specific information

3. Risk awareness /Hazard perception

- Reaction times and braking distances
- Discussion: Is motorcycling dangerous?
- Analysis of accident situations involving motorcyclists, hazards...
- Defensive riding strategy (predicting other road users behaviour).
- Discussion on observation skills in traffic, road positioning, position and speed, overtaking..
- Discussion on effects of impairment of judgement (alcohol, drugs, fatigue, lack of concentration).
- Mental training (exercises to address certain (particularly emergency) scenarios

4. Self-evaluation

- Personal motivations for motorcycling / choice of motorcycle
- Discussion on peer pressure
- Discussions on how the characteristics of the bike and rider can affect riding style and safety.

Training may cover 2 days, not necessarily consecutive ones, and thereby cover both basic skills training on an off-road area and on-road training. Due, often, to the need to refresh basic skills (for instance after a lengthy break from motorcycling), time in a one day course is extremely limited. This is perhaps why courses cater for a greater variety of different wishes (e.g. skills training, on-road training) and ability (inexperienced or experienced) than driver training courses. Higher order skills do not seem to play a major role in standard motorcycling training. Rather, they become a part of training for more advanced riders.

Training for riders, including young riders, may also be offered sporadically in events and competitions, such as the European Young Rider of the Year.

Page 207 onwards (annex) contains the full range of programme content and objectives seen during the Advanced project.

⁴⁹ Some classroom sessions may simply take place on the roadside. The term is simply used to describe theory presentation, discussion of themes, etc.

e) Principles and methods

Due to the nature of motorcycling, most courses tend to cater for riders in need of some basic – and indeed, more advanced - skills training / refreshment. The following methodology for teaching and coaching skills training from Germany reflects this need. It is based on a number of principles espoused by the Advanced project (e.g. participant-centred methods, links to real situations, variation of exercise conditions). It allows for both instruction and moderation/coaching according to the circumstances.

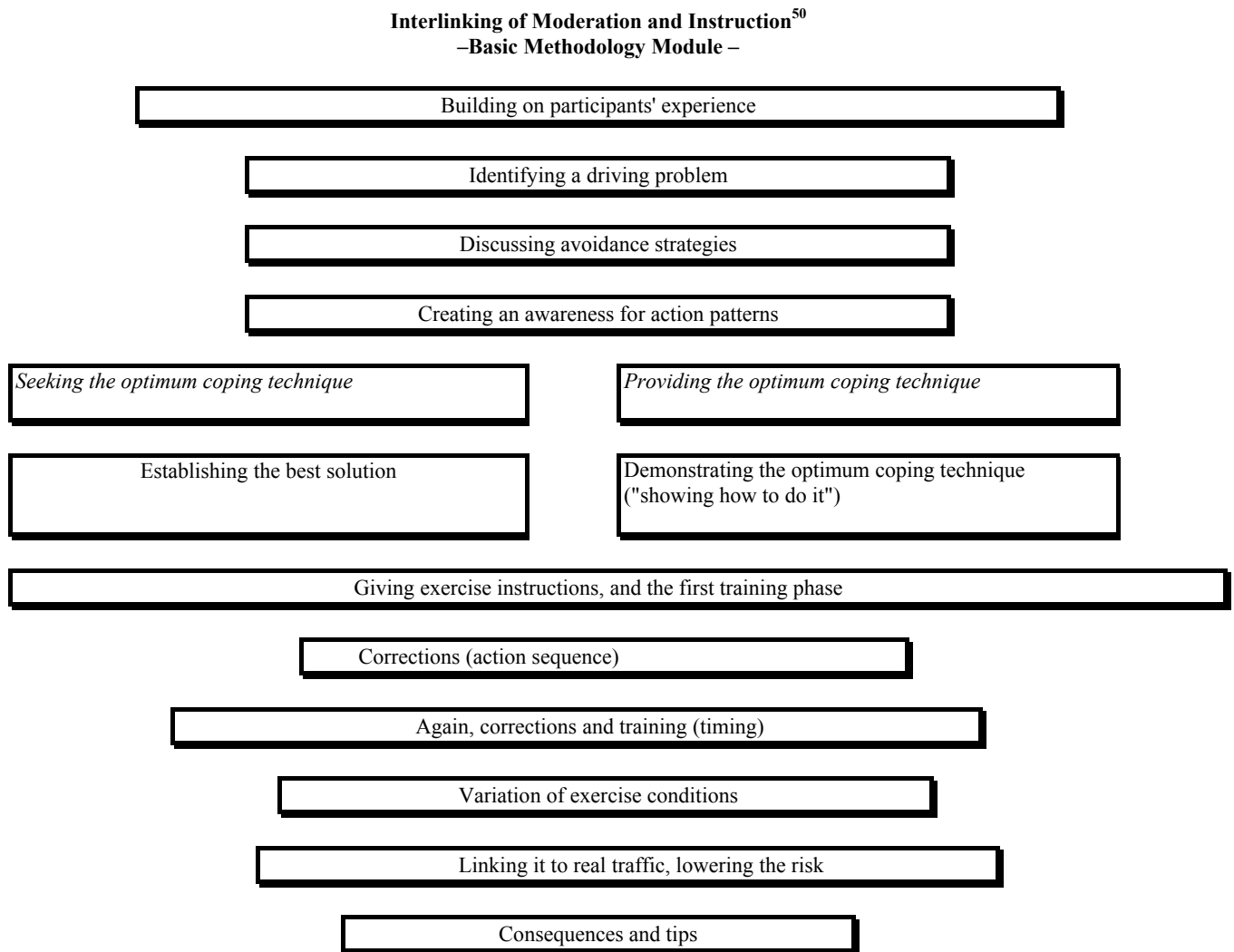


Figure 12: Interlinking of Moderation and Instruction –Basic Methodology Module

Whilst some course providers constantly stress the need to emphasise the responsibility of each individual rider to think and act for him/herself, others may be more didactic. This will depend on the riding ability of the trainee and the teaching skills of the trainer. Trainers in track-based courses may use different micro-didactic techniques such as “walking with the trainee”, for instance during small manoeuvring exercises, or the use of radio from towers overseeing the training area.

Whereas track-based training generally focuses on theory + practical exercise, on-road training presupposes the possession of basic skills and takes the alternative approach: riding (experience) followed by discussion and feedback. Again, the emphasis on discussion and feedback will vary, but suffice to say that courses prefer to emphasise practice more than theory / discussion because they believe that this is what most participants are interested in.

⁵⁰ Gerhard Falk, ADAC Munich, Germany

f) Quality assurance

Standards

The issue of standards in the post-licence, voluntary rider training world is a rather blurred one. In a sector where the division between profession and pastime is unclear, standards in the field depend heavily on the involvement of road safety organisations, government (which has showed little interest so far) and the individual initiative of leading members of motorcycling clubs.

Whereas course handbooks and guidelines for advanced rider trainers have been seen, many courses do not have a training manual for trainers at all.

Standardised training-of-trainers exists in 3 or 4 countries, but little evidence has been found elsewhere.

Activity in the field of standards is high in Germany, where an accreditation system led by the DVR is shortly to be introduced for trainers.

Meanwhile, active or retired police motorcyclists (or police motorcycling instructors) are particularly active in post-licence training in most countries visited. The search for good trainers continues, however, and in some countries (such as Finland, where post-winter refresher training is popular) the shortage has reached critical point.

Clearly, one of the most obvious ways of improving standards is for trainers to obtain recognised qualifications for post-licence training. (Especially the teaching dimension of motorcycling instruction, compared to the need for advanced riding skills, does not seem to have been much of a priority in the past). However, in many countries such qualifications do not exist, beyond the pre-licence instructor requirements.

The lack of good trainers appears to be a problem. Firstly, many current trainers may well lack the ability to coach at all. In addition, the other traditional source of trainers, the transport police, is being watered down due to other priorities in policing. This means less police motorcyclists (and instructors) and consequently less of a pool of potential instructors from the police world for advanced rider training.

For a national association, even getting trainers together over the whole country can be difficult (for training, exchange of ideas, etc). If trainers are also only doing it part-time, they lack resources, focus and time for additional learning requirements, cooperation and meetings, etc. (One might also argue that the need for organisation and a pro-active business approach to a motorcycling club/federation is in conflict with the original libertarian motorcycling philosophy).

It can be difficult for many rider training organisations (read motorcycling clubs) to provide the kind of support that the trainers need in such a situation. Moreover, trainers are often just loosely affiliated to the clubs, and are simply training because they enjoy it, not necessarily as a major source of income. If they think they can continue doing what they have always done, and they still receive regular clients, then many are reluctant to accept change, especially those who have been training for many years.

Qualifications, even if they did exist, cost time and money which many trainers are not prepared to give, in addition to their normal training and their full-time jobs elsewhere.

Next, the whole philosophy and enjoyment of motorcycling, some fear, could be undermined if standards are imposed on them and if the clubs have to think commercially and professionally.

In spite of these constraints, many clubs have recognised the fact that more systematic standards are needed and that there is a commercial need to develop standards before competitors do. But for an underresourced club with part-time and generally unpaid management (aside from the training they may give), there are considerable, long-term obstacles to designing and implementing a recognised qualification for trainers.

One club claimed that to produce a decent course for their trainers it took over 1000 man hours to research, design, test and accredit the course. This is the equivalent of half a year of full-time work for a single worker. But in their case, the work was spread between a group of trainers who all had full-time jobs elsewhere. The job, of course, does not finish there. Existing trainers have to be persuaded to take the course (implying both money and time commitments) and trainers-of-trainers need to prepare, administer and assess candidates⁵¹. Although accrediting trainers on the equivalent qualifications and experience they have will take less time, the whole process of introducing standards from zero is a considerable one in both time, money and commitment. Whereas road safety organisations can achieve this without too much hardship, provided they have the expertise, many clubs lack these essential resources to make the introduction of decent standards a reality.

Evaluation / assessment

Although client satisfaction forms are given out systematically in at least half of the rider courses covered in the survey, no formal evaluations of their courses have taken place. A full evaluation in road safety terms of their rider training would be difficult and expensive in terms of isolating the effects of the course from other intervening factors (due to low group samples, sporadic usage of motorbikes, etc). A questionnaire-based subjective evaluation of changes in knowledge, skills and behaviour would be more readily accessible, although again this would take time and resources. Without standardised training of trainers, it would also be difficult to draw any major conclusions due to the variable influence from one trainer to another on course participants.

g) Equipment and facilities

Many off-road courses, focussing primarily on basic skills (slow manoeuvring, braking, cornering..) do not actually use a customised track. Often, disused car parks or other suitable areas are used. Other courses are provided by the full-scale automobile clubs such as ÖAMTC and ADAC (which include speed displays, different surface frictions, audiovisual equipment for presentations, etc).

⁵¹ For a 90 hour course, of which 30hrs of that time is face to face teaching and assessment, tutors would need to budget for about 40 hours background / preparation time when dealing with 4 candidates.

8. Analysis & Conclusions for post-licence rider training

Little evaluation has been undertaken of post-licence voluntary rider training, especially in the last few years. As a result, the lion's share of the conclusions drawn in this section are based on feedback from experts in the field, including the two major international federations.

Post-licence rider training touches only a fraction of licence holders in Europe. Numbers remain in the low thousands, with the exception of Germany where post-licence training is more popular. Training is mostly offered through clubs, although private companies also offer courses.

a) Obstacles to participation in formal rider training

Research (in the UK⁵²) has exposed a number of obstacles which prevent riders from taking voluntary, post-licence training. Although they may be considered logical, it may be useful to list them here.

- Spontaneous and impulsive nature of motorcycling experiences

Motorcyclists often refer to the joys of spontaneous decisions about where and when to ride. Planning ahead and commitment to ride with others is seen as a constraint on this "freedom".

- Perceived cost of formal programmes

A commonly held belief amongst motorcyclists is that riding with friends is a means of acquiring motorcycling skills whilst money spent on training programmes is seen as unnecessary, optional expenditure. The addition of accessories such as a replacement exhaust is given priority.

- Threat to rider's ego

A motorcycle is a symbol of personal identity and is a strong statement about the individual's personality. The surrounding fantasy and hype in the motorcycling world only contributes to this phenomenon. Placing the individual into an exposed and insecure training environment often provokes feelings of anxiety: a threat to the ego and image which riders may have of themselves.

- Lack of perceived relative advantage against alternative methods of gaining experience and riding skills

Many of life's skills are accumulated slowly through the gradual gaining of experience and this includes motorcycling.

- Fatalism

There may be a tendency amongst riders to consider their safety on the roads as being at least partly in the hands of circumstance and other road users (i.e. fate). According to this view, training would do little to enhance their safety.

- Risk compensation

For some riders, they consider their riding equipment as a major contributor to their success in dealing with risk. Risk compensation theory suggests that the motorcycle rider may have the impression that by wearing high protection clothing and equipment he/she possesses an enhanced ability to engage in risk.

⁵² Crowther, G. ongoing. Future research will look into triggers to participation in rider development.

b) Interpreting the motivations of rider training participants

Rider motivation is an important issue for the trainer. Motorcycling course participants are generally motivated to participate in training⁵³. However, it is not clear what these motivations exactly are. Course participants may be purely interested in skills training, for example. Others may be meeting for the group spirit and to exchange information and ideas with like-minded people. Consequently, it is important for rider participants to be motivated by the trainer to take full responsibility for their own actions on the road, because, in comparison to drivers, there is a smaller margin for error. Motivating them to assume such responsibility may be in conflict with the image they have of themselves - carefree, rejuvenated / young, with a desire for freedom of expression and identifying strongly with their motorbike. Over-optimism and competitive tendencies should also be addressed.

c) Why are rider training programmes often heavily skills-based?

If many people can agree that rider training should ideally not just focus on manoeuvring skills, why is this type of training still widely used? There are a number of possible reasons:

1. Course providers are convinced (often justifiably) that most riders need refresher training in basic skills. Moreover, they do not wish to compromise on the course content as it currently stands, stating that their training already provides only the bare minimum. There is therefore no more time - in a 1-day course - to fit in other training goals.
2. Participant-centred methods and focus on high level risk awareness issues (group discussions, self-analysis, accident analysis and reflection, the use of personal experiences, etc) all require moderation / coaching skills from trainers which many do not have. The trainers would have to step outside the - often - highly-process oriented, structured environment of the course programme.

“It is difficult to do much theory in a one day course. There is not enough motivation or interest. We have to concentrate on bringing people’s vehicle handling skills up to standard”.

In the above quotation from a course provider, there may be a confusion in the use of the word “theory”. Whereas theory, in terms of the presentation of physical forces, proper manoeuvring techniques etc, may become tedious for participants, more participant-centred discussion (on personal experiences, analysis of motives for motorcycling) can be far more stimulating and insightful if led well by the trainer. As another trainer pointed out:

“The key is not so much what they are taught, but how they are taught it. Participants must be motivated in a lively learning environment. Important to keep communication simple and clear. Encourage self-evaluation to stimulate participants to continue learning after they have left the course”.

3. The inclusion of on-road training for track-based courses poses challenges in terms of both trainers’ skills and logistics. On-road trainers require different training and riding skills to those of track-based, manoeuvring oriented courses which focus very little on other road users. In addition, a typical track-based group of 8 participants would have to be split into at least 2 groups during on-road training. This would require at least one extra trainer to be brought in just for the on-road session, involving extra costs which would inevitably be passed on to consumers.
4. Rider training participants simply want skills training and may be far less interested in the risk awareness components.

⁵³ The vast majority of rider participants pay their own course fees.

In summary, a combination of the perspective of some course providers, perceived lack of time and the need for different skills and organisation of trainers prevent, at this stage, the development of many track-based courses beyond the manoeuvring level or on-road courses beyond the traffic-based level⁵⁴.

d) The need for basic skills refreshment

Course providers and sectoral representatives agree that, to a large extent, most riders remain “permanent novices” due to infrequent and sporadic use of their motorcycles. As a result, voluntary post-licence training should aim to refresh and build on basic vehicle control skills (such as slow manoeuvring and braking, focussing on body positioning, hand-eye coordination and balance).

e) Balancing skills with risk awareness

However, beyond these skills, analysis amongst sectoral experts and some researchers have concluded that attitude and personal characteristics should be included in the training. As a basic rule, increased skills training should include increased risk awareness training to balance out the skills effect of the training, (otherwise the riders’ [perceived] improving handling skills are not matched with the necessary risk perception and foresight). Risk awareness training should not only involve low level risks such as the risk of blocking a wheel when braking or freezing prior to a critical situation, but also higher level risks, such as:

- Personal motives for motorcycling (and their effect on safety)
- Why this choice of motorbike (and what this says about the rider)
- Peer pressure when riding in groups
- Analysis of classic accident situations, based on and involving the personal experiences of the participants

f) Blending class, road and track training

Sound basic vehicle control is obviously a prerequisite for safe riding. But these skills require a context in which manoeuvring and speed will be constrained, relative to other road users and to prevailing conditions. Discussion and scenario-analysis can cover this context in part, but on-road training is the only way to incorporate track-based skills in a real-life context. Psychologically and in practice, manoeuvring skills become just one part of a larger picture of safe and enjoyable motorcycling. On-road training provides the ideal opportunity for using vehicle control AND ironing out basic problems such as road positioning (see and be seen), observation and hazard perception.

Although it may mean reducing the emphasis in terms of depth or breadth of manoeuvring skills training (for track-based trainers), this blend of training locations is advised if this is the only training that riders are likely to get.

Again though, proper discussion, analysis and feedback relating to prior experiences and experiences during the course should be an integral part of the track and road-based training. Improving risk perception in traffic may lead to the same results as improving manoeuvring skills. The rider may become overconfident of his ability to perceive danger. There are two things which a rider can do after hazard perception training. He can either become safer at the speeds he is used to riding at OR he can ride faster and maintain the same level of risk as he had before.

⁵⁴ Rider training also has the disadvantage of not being able to benefit from the track-based exercises used in driver training where exercises involving “loss of control” open and initiate the learning process into understanding risk-increasing factors at all levels of driver behaviour. Loss of control of a motorcycle is clearly not an option in training.

g) The views of international representatives

The opinions of the international motorcycling federations (FIM and FEMA) on post-licence training largely coincide with the above findings. For instance, based on sessions held in the late 1990s, a FIM committee (made up of members of the federation) found that:

- Courses often have no clear goals
- Safety does not equal skills
- Courses tend to focus too much on skills and not enough on attitudes
- Braking is vital, however (a lot of riders cannot brake properly)
- Technical support is needed (skill is not enough): braking systems, etc
- Risk recognition/detection and risk avoidance should be trained more, for instance in the classroom or in small groups on the road
- If hazard perception is not taught, then skills training should be stopped (otherwise the riders' improving handling skills are not matched with the necessary risk perception and foresight)
- There is a balance to be found between theory, track and on-road training

FEMA recognised similar needs, although in less detail. In their view, post-licence rider courses should include:

- Evaluation of individual needs
- Tailored to individual needs
- Training on attitude and behaviour
- Training on hazard awareness and avoidance

They also added that typical rider training programmes tend to be skills-based.

The Austrian Motorcycle Action Group (MAG) was heavily involved in the organisation of the European Young Rider of the Year competition in 2000. An analysis of the results of the competition led to a series of (extremely comprehensive and demanding) conclusions being made on post-licence rider training for youngsters. These detailed guidelines included:

- Updates on technological innovation for motorcycles,
- Motorcycle control in all speed categories used in practice
- Exercises to increase skills levels (must be in relation to realistic situations),
- Traffic behaviour: alone, with bike group and respective to other road users
- Theoretical education should have more emphasis on realistic traffic situations,
- The course should include one or two rides on open road accompanied by specially educated driving instructors,
- Attention to safety equipment and clothing,
- Basic first-aid guidelines

According to the MAG guidelines, such training for young riders should be given by experienced bikers, instructors and traffic psychologists (re. attitude and behaviour).

In summary, the training should include the necessary theoretical knowledge, correct handling of the bike, adequate and safe behaviour on the road, good conditions of bike and equipment and a first aid course. Additional motivation should be provided by a specialised psychologist.

In fact, these guidelines may be more relevant to post-licence obligatory training for novice riders, concerning the wide range of skills and focuses required in the course (and the heavy investment in training of trainers as a result).

9. Recommendations for post-licence driver / rider training

The section below gives a brief overview of the general recommendations to be made for post-licence training. Thereafter follows a more detailed chapter of specific recommendations on individual aspects of the training. Certain recommendations may apply more to some courses than others and should therefore be interpreted flexibly.

N.B. These recommendations should be read in conjunction with the analysis and conclusions sections, which set the context and raise pertinent issues in more detail than in this chapter.

GENERAL RECOMMENDATIONS :

- Many courses have a fixed programme or system which is « imposed » on the participant(s). Courses should focus more on the specific needs of each participant and how to encourage them to improve their driving style and behaviour. This can only be achieved through more participant-centred methods, designed to encourage participants to reflect on their strengths and weaknesses (self-reflection) and to provide the motivation to change.
- For the above to be achieved, trainers need stronger coaching skills (for individuals) and moderations skills (for groups). They should receive specific training for this, and courses should be adapted accordingly (as above).

- TRACK-BASED DRIVER COURSES (in addition to the above)

- Track-based courses should focus more heavily on risk awareness than on manoeuvring skills. Course providers should note that risk awareness on the (important) higher levels of driver behaviour (see GADGET matrix) can be learned through specifically designed level 1 manoeuvring exercises, as well as through discussion and analysis sessions).
- Track-based courses should be aware, however, that practical exercises designed to focus on risk awareness may still be interpreted by participants as skills exercises (leading potentially to overconfidence). In addition, a range of secondary unintended messages, some potentially undesirable, can be learned by participants through practical exercises. The only way to check this during training is to engage in comprehensive feedback and discussion sessions after each practical exercise has been completed. (This also has the advantage of consolidating on the intended messages of the session – the practical exercise should only be considered as the trigger for the learning process ; it is not an end in itself).
- In addition to the above, track-based courses should assume the responsibility of evaluating the effects of the training (over time) on a representative sample of the participants. Such evaluations should, at the very least, aim to assess what the participants remember about the course (for instance, 1 month and 6 months after the training), what they think the various goals of the training were and how their driving behaviour may have changed as a result. This can be achieved through questionnaires and structured telephone interviews, for example. Without such verification, course providers will remain oblivious to the positive and potentially negative effects of the course.

- ON-ROAD DRIVER COURSES (in addition to the general recommendations)

- On-road providers of training should consider breaking up the day's training (or half-day training) into more easily recalled and varied sessions (in order to provide a more stimulating learning environment and more focus on the participant's higher level needs). Discussion sessions, at the roadside or in a café for instance, should address personal strengths and weaknesses (through specially made questionnaires, for instance) and discussions of how that has already - and might - affect their safety on the road (and what strategy to employ to reduce the associated risks).
- Course providers and trainers should be aware that being an exemplary driver is not sufficient to be a good, post-licence trainer. Trainers require a range of teaching skills to « help the participant help

themselves ». Being told what to do will have no lasting effect on the majority of participants (unless they are incredibly motivated). Participants must be convinced that it is in their personal interest to adopt a different driving style.

- Course providers should reconsider the benefits of in-car trainer demonstrations in terms of the positive and negative effects this can have on participants.
- As with track-based courses, road-based course providers should take steps to evaluate a range of participants over time, to assess what they have - and have not - retained from the training and what difference this has meant in practice. A reduction in accidents and damage claims following training may not be as a direct result of the training and are therefore not an accurate portrayal of the effectiveness of training (when used in isolation).

These following, detailed recommendations are listed under the following headings: *course construction*, *course content*, *quality of the trainer* and *other quality issues*. Certain points may be duplicated. Certain issues may be more relevant to track-based courses than to on-road courses (or vice-versa). In fact, the major focus of the recommendations is on track-based courses. We strongly recommend consulting the relevant sections of the analysis and conclusions sections.

a) Course construction

Basic principles should apply to the construction of any post-licence course for drivers or riders⁵⁵.

a) Target group orientation

Courses should be designed with the participant(s) needs in mind. Theoretically, there are varying degrees of target group orientation⁵⁶, but courses should at least recognise that the same course programme can have different effects on different participants. At a basic level, courses should differentiate between young/novice drivers, experienced drivers and older drivers, due to their different profiles and needs.

b) Limit group sizes

Groups should never exceed 10 participants per trainer during exercises in track-based courses, above which even the best trainers will be unable to give the necessary individual attention and feedback. Ideally, such training should accommodate no more than 6 participants per trainer. On-road groups of drivers and riders should not exceed 3 participants per trainer for the above reasons, as well as for practical ones. Theory lessons allow more flexibility in terms of participant numbers, but depending on the exercise there should be enough time to allow for discussion and feedback and for each individual to be receive sufficient personal attention from the trainer.

c) Clear goals, effective delivery and verification of goals reached

Clear goals should be set for the course (and individual exercises), in terms of what the course intends to achieve and how it will achieve them. Goals, exercises and methods should be clearly documented. Instructors should be trained on how to reach these goals. Measures should also be taken to check that participants have understood the course message(s) and to see whether the goals have been reached. With clear goals, it will also be much easier to evaluate the courses since it will become much clearer what the effects are that should be measured.

⁵⁵ These issues will be enlarged upon in the Quality of trainers section

⁵⁶ For instance, prior identification of individual learning styles, risk-profiling or splitting into groups according to confidence levels (over-confident / under-confident).

d) Working climate and cooperation between trainer and participants

In terms of the order of activities during the course, it is important to respect certain principles at the beginning of the training:

- Establish a relationship amongst the trainer(s) and participant(s)
- Put the participants at ease
- Encourage the participants from the outset to adopt a self-analytical approach in terms of their skills, knowledge, experience and behaviour.
- Discuss the experience(s), problems and needs of the participants, as well as their motivations for taking part in the course
- Communicate the activities and general goals of the course to the participants
- Focus on clear messages which should be connected to the rest of the course and referred to consistently throughout
- Answer questions and verify that the participants understand and accept the general goals of the course

A similar approach should be adopted for each individual exercise.

- A link should be established between the exercise and (other) real-life driving situations.
- Where possible, individual participants or the group as a whole should be encouraged to identify driving problems related to the exercise and to agree on the rationale of the exercise. (This depends to some extent on the participants' experience and their ability to recognise problems as a result).
- Participants should constantly be encouraged to discuss their experiences during the exercises and to identify problems they have with them.
- The trainer should use a range of up-to-date and varied educational methods (see page 131)
- Feedback from the participant(s) and the trainer is vital once the exercise has been completed. In terms of skills training, the trainer should highlight the strengths and weaknesses of the participant(s) and suggest improvements. In terms of risk awareness training, the participant(s) should be encouraged to discuss their understanding of the exercise and to give feedback to the trainer, so that the trainer can assess whether the goal of the exercise has been reached. The trainer should not just focus on the content of questions but should constantly ask him/herself why a question is being asked. Again, the exercise should be linked to a variety of examples in real-life driving situations. Where possible, this feedback should be individual, as well as in groups.
- Regular, short breaks should be built into the course, to optimise concentration levels, motivation and retention of the course "messages".

At the end of the course, a final feedback session should take place in order to:

- Check that the participants have understood the message(s) of the course
- Give the participants an opportunity to ask additional questions or clarification.
- Summarise the principal messages of the course
- Ask participants to reflect on where their individual weaknesses lie.

b) Course content

a) Take into account the 4 different levels of driver behaviour⁵⁷

The good driver Hierarchical model



Course providers are recommended to use the following hierarchical model, depicting 4 levels of driver / rider behaviour, when designing their course content:

Figure 13: The good driver hierarchical model

It may be too demanding to expect to address all 4 levels in considerable depth in a one-day voluntary course. However, at the very least, participants should be made aware of the most pertinent risk factors (depending on the target group) at each level. Ideally, this should be achieved through discussion, not presentation by the trainer. Discussion on the top two levels can be triggered through specially designed practical exercises (particularly in the case of track-based training)

Research has emphasised the importance of motivational and attitudinal factors when driving, so training on the top two levels of the hierarchy is recommended. This is important due to the lack of focus on these aspects in many types of pre-licence training, and because these higher levels influence the ability of the driver to perform properly at the two lower levels.

Trainers should not be expected to be able to change attitudes and behaviour during such a short timeframe. Such training should rather be designed to improve the participants' awareness of both their typical driving habits (and situations) and typical living habits which can affect their ability to drive safely. Understanding oneself is a crucial factor in anticipating potential problems when driving. In this regard, the participants' own driving experiences should be discussed and referred to constantly.

In general, the Advanced project places particular importance on the use of risk awareness exercises during post-licence training. Risks can occur at all 4 levels of driver behaviour, such as poor road conditions (level 1), insufficient safety margins in traffic (level 2), peer pressure in the vehicle (level 3) and a propensity to be impatient when driving (level 4) – see GADGET matrix and the Risk Awareness Database examples at www.cieca-drivinglicence.org.

b) Balance skills training with risk awareness exercises

Research has also exposed the risk of over-emphasising skills training on the lower levels of the model (vehicle manoeuvring and traffic-based situations). As a general rule, therefore, level 1 and 2 skills training (if focussed on at all) should be combined with or followed by training to raise awareness of the risks linked to the use of such skills. In addition, according to the 4 levels of driver behaviour, risks at the higher levels should also be discussed, again, because of their influence on the lower levels.

⁵⁷ Keskinen 1996

In the absence of such risk awareness training, participants may be deterred from taking a defensive approach on the road in the assumption that their newly acquired skills will enable them to cope with situations requiring immediate action. They will not have been given the tools to perceive the risks associated with the (perceived) new skills they have acquired. Moreover, it has been shown that in certain skills training, participants have not actually increased their skills at all, although they automatically assume they have.

c) Use on-road, track and classroom⁵⁹ exercises⁶⁰

Training should ideally involve on-road, track and classroom exercises.

Outstanding features of on-road courses include:

- hazard perception training and anticipatory driving (interaction with other road users)⁶¹
- driver observation (participants watching another participant drive)
- the level of individual attention given to participants by the trainer (provided the trainer is an adequate coach)
- raising awareness of the variety of different road and traffic situations in real-life, (also once exercises on the track have taken place)

The advantages of track-based courses include:

- Developing and refreshing basic skills
- Directly experiencing risks (in safe, simulated conditions) and demonstrations of risk
- Learning limits of vehicle, drivers and road environment

The classroom can be used for a wide range of training, focussing on:

- General information, such as accident statistics and typical accident scenarios
- An introduction to practical exercises (linked to personal experiences)
- Discussions and active learning to train higher level themes (the driving context and driver characteristics and behaviour)

All of these locations have their limitations, however. Track-based courses are generally unable to simulate a wide variety of real-life situations, especially as far as the actions of other road users and communication with other road users are concerned. Road-based courses may have difficulty making certain drivers and motorcyclists fully understand certain risks. (Because danger cannot be directly experienced on demand, it may be very difficult for trainers to convince these drivers of the potential of risky situations). Classroom activities can be very effective in consolidating on practical exercises, communicating and training risk awareness and imparting knowledge, but, if used in isolation, its usage may be limited for individuals who tend to learn through hands-on experience (which is the most effective learning pattern).

As a result, the use of all 3 locations is recommended, in order to reach all 4 levels of driver behaviour and to be able to vary the teaching methods sufficiently enough for all participants' learning styles to be reached.

d) Training must be relevant to real-life situations

The contents of training should be valid not only in training but also in real life. Exercises and discussions should relate to real scenarios which participants can identify with, and should be expanded upon to include other scenarios (where awareness of the associated risks is raised) . Training should be meaningful both during and, especially, after the training.

⁵⁹ The term "classroom" refers to group discussions and theory sessions which may not necessarily take place in a classroom.

⁶⁰ Although driving simulators are becoming increasingly available, in general more improvements need to be made before they can be considered as as useful for category A and B training as conventional training forms.

⁶¹ this includes environmentally friendly driving techniques (for drivers, as opposed to riders) which also emphasise anticipation

e) Avoid overconfidence

Countermeasures must be taken to avoid overconfidence amongst participants. Overconfidence is clearly counterproductive and could lead to more risks being taken, and potentially, more accidents occurring, than prior to training. Overconfidence has been shown to occur:

- in courses where there is too much emphasis on exercises involving vehicle manoeuvring skills and coping with danger, and not enough on risk awareness training (including risks associated with the higher levels of driver behaviour).
- Where practical exercises are not followed up with sufficient participant-centred discussion, designed to consolidate on the intended message of the exercises and to dispel unintended, secondary messages.
- where the course design (exercises) and/or course execution (such as proper feedback and communication of the message) has not achieved its goals
- where high-risk groups are involved, such as the young, the unmotivated, the inexperienced and people with below-average learning capacity.

f) Use counter-measures to avoid overconfidence

Courses have revealed a number of methods to counteract such overconfidence⁶². These include:

1. Abandoning certain exercises and situations which may lead to overconfidence
2. Demonstrating certain risk awareness exercises (followed by discussion), instead of allowing participants to drive, thus incurring the risk of the participants interpreting the exercise as skills-based.
3. A predominance of risk awareness exercises, and minimal or no skills-based training.
4. Making sure that participants “fail” (e.g. hit obstacles, lose full or temporary control of the vehicle, experience fear/shock) during skills-based exercises (experiencing limits)⁶³
5. Varying exercises to prevent mastery of the manoeuvre and linking the exercise with a variety of different real-life situations (feedback from the trainer is important)
6. Comparing the situation in exercises on the track to situations which participants might meet on the road. Make them think to what extent a certain kind of manoeuvre is possible in real traffic situations.

Many driver courses stress the importance of experiencing physical limits, beyond which it is impossible to maintain control of the car. However, it is crucial to point out that, even if physical limits are not exceeded, it may not be possible to perform certain manoeuvres in sudden emergency situations in traffic (due to the element of surprise, lack of automatism, space limitations, weather and surface conditions, etc). In addition, it is important for participants to recognise their own personal limits, whether psychological or in terms of individual ability. In this respect, experiencing and recognising ones own personal limits is at least as significant as experiencing physical limits. The impact of speed on physical limits should not be referred to in absolute terms: everything is relative to the varying conditions and circumstances and participants must be encouraged to understand this. Trainers should be aware that certain participants may be tempted to seek physical limits and/or to take the physical limits too literally.

⁶² The measures in points 4 and 5 may not achieve their objectives if participants only remember the success factors of the exercise prior to failure or variation. To prevent this, discussion and feedback with the trainer is vital following such exercises.

⁶³ It is important to point out that failure may not be appropriate for certain participants and that these measures are recommended where the trainer is aware of the potential for overconfidence amongst his/her clients.

DRIVER-SPECIFIC ISSUES

g) Exercises to experience skidding (rather than to control skids)

For the reasons stated in e), exercises which only aim to regain control of a skidding vehicle should be avoided. It should be understood that to become proficient in skid control, road users would have to practice for many days over a long period of time before reaching a satisfactory level. 4 or 5 attempts during track training do therefore not suffice⁶⁴. In addition, the element of surprise in a real-life situation and the lack of room for manoeuvre on a normal road make it highly unlikely that the manoeuvre would succeed. Secondly, the particular danger of this exercise is that it can result in over-confidence in certain target groups, leading to a false impression of one's ability to cope with emergency situations and, in some cases, to higher accident levels than prior to training.

Skid exercises may start off with the supposed goal of regaining control of the vehicle but the end result should be to show participants how difficult it is to perform this in reality, and why. It is important to show, in post-exercise discussion, that skidding is a result of a mistake, whether in vehicle manoeuvring or in terms of behaviour, and that avoiding the mistake is better than getting into a critical situation. To point this out and prevent overconfidence amongst participants demands a lot of the trainer.

Experiencing loss of control of the vehicle, as opposed to training to regain vehicle control (as above), can be a very useful tool for raising awareness of certain risks and to deter the driver from getting into a skid in the first place. It is also important to use the strategy of experiencing skids or loss of control with care. It must be part of a carefully designed strategy and the risk that participants may start considering it as fun and forget about the real message must be avoided.

h) Exercises to improve braking

Studies have shown that braking technique can be significantly improved (although whether it can be applied in an emergency situation is not clear). Such exercises should be in combination with techniques to raise awareness of the effect of speed, road and vehicle conditions, reaction times, etc, on stopping distances and the need to maintain sufficient safety margins in traffic. Effective braking in real-life situations is clearly dependent on a number of factors and these must be conveyed to the participants.

i) Other skills-based exercises...

Other basic skills-based exercises, such as cornering are useful to maintain and develop a basic level of skills required to maintain proper vehicle control on the road. If combined braking and avoidance exercises are used, course providers should reflect on the purpose of such exercises. If they are intended to improve the manoeuvring skills of participants, they must be focussed on for a considerable amount of time, in a variety of conditions and scenarios. Course providers should also be sure in their minds that such exercises are suitable for the specific target group in question, and that the training is relevant to their needs in daily driving life. If, on the other hand, participants only have the opportunity to have 4 or 5 attempts, the primary intention of such exercises should be to raise awareness of the difficulty of performing such manoeuvres in practice.

Evaluation studies have yet to prove the validity of these exercises, in terms of their effectiveness over time. This does not mean that other skills-based exercises are redundant or ineffective, and it is widely recognised that a balance of both basic manoeuvring skills and comprehensive (4 level) risk-awareness training is needed.

⁶⁴ Trainers who regularly practise skid control (or, for instance, with a rally driving background) may tend to overestimate the ability of every-day drivers to master such manoeuvres. They should realise that such drivers would be overloaded if required to perform these in real situations.

j) Use of in-car and other technical equipment

A range of in-car and other technical equipment⁶⁵ can be of major use to highlight reactions, make comparisons, etc. It is important, however, that technical equipment is recognised only as a tool which must be accompanied by other methods to convey a message. There may be a natural tendency amongst trainer towards over-reliance on technical equipment. First of all, the use of such equipment should be clearly stated and explained. Once the immediate results of the devices have been referred to, it is crucial to interpret the results and discuss what the results mean in practice. Clients must be activated and encouraged to think in response to the results of the equipment and the questioning technique of the trainer.

In conclusion, technical equipment can be useful when used correctly, but, in many cases, there are alternative methods which can work just as effectively.

RIDER-SPECIFIC ISSUES

a) See and be seen

On-road training is particularly recommended for riders, with an emphasis on road positioning and hazard perception (“see and be seen”).

b) Braking exercises

Braking exercises are an essential part of a post-licence rider course, because it is widely recognised that braking techniques need to be improved and regularly practised.

c) Manoeuvring skills and risk awareness

Motorcyclists require a higher degree of manoeuvring skills to ride a motorcycle safely, especially if they do not ride frequently or are getting the feeling back after a winter break. Training should therefore include basic, slow manoeuvring exercises, balancing, steering and observation techniques. Braking and avoidance exercises, if used, should focus on the goal of making the rider aware of the difficulties/risks with such a manoeuvre in practice and thereby indirectly encouraging the rider to anticipate more. Braking and swerving exercises are also good exercises for helping riders to bank properly. Banking is important and is generally not performed very well. This type of exercise ultimately depends on the ability, motivations and needs of the participants in question, however.

In summary, skills-training should play a major role in rider training where it is needed. However, riders have exactly the same problems with risk awareness, overconfidence and negative side effects of skills training as drivers have. Besides, since many riders ride for fun and the risks for riders are so much higher than for drivers anyway, this compounds the problem. In conclusion, therefore, riders must be given sufficient risk awareness training so that participants are aware of the risks linked to the more advanced skills they have acquired (or think they have acquired).

⁶⁵ In-car technical equipment is used to raise risk awareness and encourage self-evaluation. Such equipment varies from inward-facing and outward-facing cameras, to paintguns during braking distance exercises and to diagnostic computers giving readouts on speeds, driving fluency, fuel consumption, braking intensity, and vehicle/road friction, etc. Other technical equipment, such as on track-based courses, include speed displays which allow participants to assess the effects of speed on their ability to perform a certain manoeuvre.

d) Mental training

A specific form of mental training is also recommended for riders. A lot of situations in traffic cannot be trained in real life (such as a collision). Riders can be trained to develop expectations and to mentally process the steps before and during emergency situations, in order to be able to react more quickly if the situation arises. The alternative is an instinctive reaction (i.e. panic).

e) Fun v seriousness

Motorcycling is an enjoyable pastime and courses should reflect this. Course providers should be aware, however, that they need to strike a delicate balance between fun and the core training, due to the risk of losing the safety message.

c) Quality of trainers⁶⁶

The quality of the trainer is a major factor in the success of a course. A good trainer can make a poorly constructed course a success, but a poor trainer cannot succeed in doing this, even if the course is perfectly designed. The client-trainer relationship seems to have the greatest influence on what will be changed in the participant throughout the course.

The following principles have been established as far as the quality of the trainer is concerned:

a) Coaching / moderation: Encourage participants to adopt a self-analytical approach

The trainer should be seen as a facilitator who helps participants understand and recognise, on the basis of appropriate assessment criteria, their strengths and weaknesses related to driving and to their relationship with society in general. It is important to begin and continue the training in this way, so that participants begin to evaluate themselves from the outset, without having to be consistently told by the trainer where their faults lie. Such a self-analytical approach can be developed even before training, by encouraging participants, perhaps in the form of a questionnaire, to think about the abilities, realise their weaknesses and focus on their particular needs which could be addressed in training. Self-evaluation should be expanded into a group discussion, where possible. In short, advanced training should shift from classic teacher-based methods (e.g. lecturing), where students are only a passive recorder of information, to a participant or learner-centred approach where participants actively process and construct information for themselves. This creates a more intensive learning experience and increases the chances of participants continuing to learn for themselves once the course has ended.

b) Establish a dynamic relationship with your participants

Although it may be difficult to establish an intricate relationship between the trainer and participants in a standard one-day course, the trainer should try to gain an understanding of the different needs, experiences, ability and attitudes of the participants, as well as their motivations to take part in the course⁶⁷. These features can be used to develop discussions, to highlight examples relevant to the course content and to “connect” with participants to a greater degree than otherwise. This is especially important if the trainer is dealing with a group, where a distinction should be made between one individual and another.

⁶⁶ This section applies to trainer requirements for 2nd phase novice driver / rider training also. Additional requirements for novice training feature under general principles in the relevant chapter (page 137)

⁶⁷ Some course providers send out questionnaires to participants prior to training, in order to have a better understanding of the individual circumstances and needs of each participant and to save valuable time during the course.

c) Clarity and relevance of message

i) Delivering the course messages

The delivery of a message which is clearly understood is an art itself and is the very basis of communication. The ability to communicate messages successfully to participants during driver / rider training depends on the communication skills of the trainer, the course design and the learning ability / motivation of the participants. *Where any of these factors are in doubt, the clarity and simplicity of the message must be emphasised to an even greater degree than usual.* Trainers and course providers should be aware of the possibility of unintended messages (especially undesirable ones) seeping into the course design.

Furthermore, the mixing and retention by participants of two (potentially conflicting) messages in a single exercise may be possible for some participants but not for others. This is particularly the case where skills training is mixed with risk awareness training, where the “success” element of the skills training may be all that is retained by the participant.

ii) Level of detail of message

Trainers should be careful not to alienate course participants with excessive detail or a disproportionate emphasis on one aspect of the training. Trainers clearly possess an enormous wealth of knowledge on vehicle dynamics, driving techniques, etc, and should be able to answer detailed questions if necessary. Any enthusiastic professional may, however, have a tendency to relay more knowledge and information than is actually necessary. Within a one-day course, the amount of information communicated to participants should therefore be limited to a basic minimum and should be repeated, according to standard pedagogical principles, to ensure that these messages are understood and will be maintained over time. In particular, many courses appear to go into unnecessary levels of detail as far as the technicalities of vehicle dynamics and driving physics are concerned. Many participants may have difficulty understanding such technical issues, or issues in such a high degree of detail, so trainers must be careful to present the basics in an easy-to-understand format⁶⁸.

In short, the trainer should be constantly asking him/herself whether a certain piece of information is really “important” to convey, simply “of interest” or, in fact, “unnecessary”. Furthermore, the trainer should find out why a certain question is being asked, by questioning the participant(s) and thereby determining whether the question reflects an interesting behavioural trait.

iii) Questions on emergency manoeuvring

In the case of courses where the training focus is on anticipatory and defensive driving, some participants may still want to know about emergency manoeuvring. The insight of the trainer is important here if it is clear that the participant(s) have false assumptions on such manoeuvring techniques and sequences. Trainers should be able to correct these assumptions, perhaps by showing what not to do, but should keep the explanation to a bare minimum to avoid it becoming a major focus of the training.

iv) Verify that the course message(s) has been properly understood by the participant(s)

The trainer should, using a participant-centred coaching approach, constantly question the participants on their views on the training and what has been learned from the training, in order to check that the messages have been understood. At the same time, he should check that participants draw a link between training and

⁶⁸ If individual participants are keen to receive more detail, the trainer should be willing to do so (especially if there is a need to clarify false assumptions on the part of the participants), but this should not necessarily take place in front of everyone else.

real-life situations: what does the training experience mean in terms of future driving tasks? Only in this way can measures be taken to correct false assumptions and misunderstandings relating to the information received and activities pursued during the course.

d) Training the trainer: initial training

The basic training requirements for trainers of post-licence courses will vary according to the location of the course (road, track, classroom), whether it is a rider or driver course, the specific role of the trainer and on the course content and specific goals.

In general, however, all-round trainers will be required to have knowledge and skills relating to:

1. Driving and safety issues:
 - 1.1 Human behaviour, motives⁶⁹ and emotions in driving
 - 1.2 Social issues: the driver and other road users
 - 1.3 Road environment and the vehicle
2. Principles and applications of learning and teaching: basic pedagogical skills, coaching / moderation, assessment skills
3. Theory of environment, transport and mobility (social, economical, safety)
4. Driving at all 3 levels: manoeuvring, traffic situations, trips
5. The vehicle & maintenance, and of vehicle dynamics (driving physics)
6. Road laws and regulations
7. Safety precautions and procedures⁷⁰ during training

Training-of-trainers should be written down in a training syllabus, without which systematic standards cannot be reached or monitored.

It is important to note that trainers require additional knowledge and skills to those needed as a standard (pre-licence) driving instructor. In particular, extra skills are required in the field of adult teaching methods, group dynamics and on the particular characteristics of the course in question.

Although the training of the trainer is an important issue where post-licence courses are concerned, the Advanced project does not have the time and resources to go into any depth as far as the vast majority of these individual requirements are concerned.

One exception to this, however, is the pedagogical (teaching, and especially coaching) skills required for trainers. The Advanced project team feels that it is the trainer that will have the greatest influence on the quality of the course.

REMEMBER THE RULE: *A person convinced against their will is of the same opinion still!*

The following section (split into 1. general pedagogical principles, 2. differentiating between participants, 3. assessing exercise/course results and 4. teaching methods) looks at a series of trainer skills which Advanced considers important in this project. They highlight in particular the importance of a participant-centred approach to training, the clarity of the message delivered, differentiation between participants and stimulating and motivating participants. They repeat, to a large extent, recommendations which have appeared in the rest of the document.

⁶⁹ Motives for life and motivations for taking part in the course. Even “voluntary” participants may actually be there against their will. Some fleet drivers, for instance, may consider training as some form of punishment and this has an effect on their perception and approach to the course.

⁷⁰ Safety procedures should be described by the course provider according to the specifications of the training.

1. General pedagogical principles

- a) The trainer is able to organise each activity into distinct phases: planning and introduction, implementation and accompaniment during the exercise, discussion/feedback and evaluation (assessment to what extent the goal of the exercise has been reached).
- b) During the implementation phase of the training, the trainer understands and is able to use the following skills:
 - Activating participants to think for themselves
 - Providing information (and demonstrating where necessary)
 - Questioning and feedback to consolidate on the message and dispel unintended side-effects of the training
 - Stimulating the group process (exchange of ideas, debate, etc)
 - Observing and interpreting non-verbal behaviour of the participants
- c) In conjunction with the lesson plan, the trainer can:
 - Distinguish between skills-based goals and risk awareness goals
 - Understand the relevance and use of *concept before experience*, and *experience before concept*
 - Assess the knowledge and experience of the participants
 - Explain the sequence of events
 - Adapt the exercise to the participant or participants
 - Relate the exercise to a variety of real-life situations
 - Give feedback, encourage individuals to give their views and relate these experiences and emotions to all the participants
 - Summarise and evaluate the exercise on the basis of discussion and observation
- d) In terms of social skills, the trainer is able to:
 - Recognise, avoid and, if necessary, resolve conflicts between participants and trainer
 - Motivate participants to reflect on, understand and accept their limitations (in terms of the vehicle, road environment/conditions and particularly their personal limits)
 - Generate discussion, steer debates and make incisive remarks where necessary, both in group and one-on-one scenarios.
- e) The trainer can and should engage the participants more actively in training by:
 - Directly questioning participants, especially the passive or disinterested ones
 - Linking the participants' experiences with training material
 - Using active, participant-centred learning methods (see s and w)
 - Rotating the roles of participants (e.g. during on-road training)
 - Getting participants to assess - and give feedback on - each other
 - Getting participants to give on-going commentaries during practical exercises

2. Differentiating between participants

- f) The trainer understands the importance of getting each individual participant at the outset of the training (during introductions, exchange of experience and initial driving exercise) to reflect on and recount his/her motivations, needs, experience and character (attitudes).
- g) The trainer is aware of fixed characteristics such as age and sex and their influence on driving behaviour.
- h) The trainer is able to identify whether a participant is over-confident or under-confident in their abilities and should be able to devise suitable methods to correct these imbalances.
- i) The trainer is able to differentiate between participants who can learn more independently and through observing and listening to other participants and those who need more constant guidance from the trainer.
- j) The trainer will spread his/her attention evenly amongst participants and will encourage passive individuals to participate in the group process.
- k) The trainer is able to recognise participants who are naturally motivated to take part in the course and those who need encouragement to become motivated. He/she knows how to motivate both types.
- l) Trainers is aware of participants with a low cognitive ability (slow learner and / or inability to process a lot of information at the same time) and is able to take measures to address this and, above all, checking whether the message has been understood by such participants.
- m) Trainers (and course providers) are able to take action to avoid excessive differences between individual participants in the same group, such as:
 - Pre-selection in advance
 - Pre-selection at the beginning of training
 - Splitting into groups during particular parts of the course
 - Individual training where necessary

3. Assessing course results

- n) The trainer is able to assess participants during the course and at the end of the course. He is also able to engage the participants in assessing themselves.
- o) The trainer is trained to manage feedback sessions through moderation / coaching, questioning and summarising.
- p) The trainer understands the different questioning techniques and where to use them in order to be able to assess participants, according to question type, answer type and target of question. *Question types* can be either open or closed (yes/no, multiple choice) and *answer types* distinguish between “questions of fact”, in other words, reproducing factual knowledge, and “questions of attitude/opinion/interpretation” where individuals create their own answers. The *targets of questions* range from affective questioning which refers to attitude and emotions, cognitive questioning to test someone’s knowledge or experience or to action questioning where the individual is asked to perform a certain exercise.

- q) The trainer knows how best to test the factual knowledge, insight (ability to apply knowledge to other scenarios), skills and risk awareness of the participants
- r) The trainer is able to summarise (and encourage participants to recognise) the individual strengths and weaknesses of the participants and the most pertinent observations they have made (without imposing a pre-conceived view on them)
- s) The trainer is able to relate, in a final feedback session, the results of the course to the original goals of the course. He / she uses this session above all to check what has been learned by the participants during the training and to encourage participants to reflect on how they may adapt their driving style accordingly.

4. Teaching methods

- t) The trainer is able to use a variety of teaching methods including: *practical training directly involving participants, demonstrations by the trainers, observing other participants during training, group and individual discussion and feedback, independent written exercises and tests, distance-learning (including e-learning), video shows, presentations, active group exercises such as role play, analysis of case studies, problem-solving exercises, etc.*
- u) The teacher understands the need to vary methods during the training to maintain motivation and stimulate course participants
- v) The trainer knows when a certain teaching method is appropriate during the course of the training
- w) The trainer knows what level of detail to go into for each target group, without overfocussing on irrelevant information or alienating participants from the learning process.
- x) The trainer is able to distinguish between skills-based training and risk awareness training and have the ability to deliver these messages clearly using the appropriate teaching methods (e.g. *experience prior to concept* or vice versa)
- y) The trainer is familiar with participant-centred coaching/moderation techniques which encourage the participants to think for themselves and assess their own strengths and weaknesses: questioning, summarising, self-evaluation exercises, guiding and use of group discussions amongst participants, individual attention, etc.

e) **Training the trainer: Continuous training**

i) Regular, continuous training for trainers is a must

Continuous training is required for two main reasons. Firstly, humans are creatures of habit, and trainers, like anyone else, will tend to develop habits and use the same techniques and routines, unless they are periodically given training and inspiration to change. Secondly, the road safety sector is in a constant state of flux: new perceptions of safe driving emerge, road regulations may change, new vehicle or road technologies are developed, etc. In addition, course providers may modify certain features of the course, which trainers clearly need to be informed and trained on.

ii) Trainer audits/ quality controls

Trainer audits or quality controls are useful ways to gain feedback and to learn from independent experts. In the case of track-based courses, they are also vital for ensuring that the trainer does not deviate from the course manual in such a way as to incur the risk of undesirable learning effects amongst participants. Audits are another form of training and feedback for trainers, and are particularly useful for trainers who tend to work individually, in other words in isolation from other experts. Such audits, where an auditor monitors the trainer during training, should be promoted in a positive way so that trainers perceive them as an opportunity to develop their professional skills, rather than as a test which is designed only to criticise. The auditor could be an external expert (for instance from a road safety organisation with a mandate to check trainers) or an internal quality controller. It is vital, moreover, that the auditor is a specially trained expert for the job. In the absence of such expertise, the task of carrying out quality controls is pointless.

iii) Trainer shadowing

Trainer shadowing is a cost-effective means of self-analysis and learning “on the job”. If trainers are given the opportunity to “shadow” or follow colleagues during they work, they will, again, become exposed to new methods of training and will be encouraged to analyse their own professional actions as a result. Shadowing other trainers is a cost-effective way of (informal) continuous training, and may be especially useful for course providers who do not have the resources for as much formal continuous training as they would otherwise prefer.

iv) Exchanges or visits to other courses

Exchanges with instructors from other courses or visits to other courses as participants is a refreshing way of offering a different perspective on their roles as trainers and the main focus of the training. It offers the opportunity to gain new ideas on how to adapt training to meet more specific and relevant needs, or what to avoid in training. Some course providers send a small group of trainers (often incognito) to courses elsewhere each year.

v) Regularity of work

Regular work as a trainer is necessary to maintain skills and familiarity with course specifics. Some part-time trainers may work very infrequently in their role as post-licence rider or driver trainer. Large intervals between one training assignment and another increases the likelihood of the trainer losing his pedagogical skills and familiarity with the course programme, thereby affecting the quality of the course. As studies have shown that poor communication of the course messages can have counterproductive effects, it is important

that trainers respect a basic minimum of training assignments. Below this basic minimum, trainers should be required to undergo refresher “training of the trainer”.

f) ADDITIONAL RIDER-SPECIFIC ISSUES

Recognising differences in ability

Although the vast majority of riders have been described as “permanent novices”⁷¹, there will inevitably be differences in riding ability amongst course participants. This can be a source of tension for participants who are unsure of themselves, lack experience or are sensitive to the opinions that the rest of the group have on them. It is thus the trainer’s responsibility to put the participants immediately at ease and to explain that these differences are perfectly normal and will be taken into account during the training. Where appropriate, ability levels should be ascertained in advance of the course (through a basic questionnaire or telephone discussion), in order to avoid massive differences between participants during the course. Due to the focus of rider training and the nature of motorcycling, differences in ability are more obvious and have more consequences for rider training than driver training.

Rider motivations

Rider motivation is an important issue for the trainer. Motorcycling course participants are generally motivated to participate in training⁷². However, it is not clear what these motivations exactly are. Course participants may be purely interested in skills training, for example. Others may be meeting for the group spirit and to exchange information and ideas with like-minded people. Consequently, it is important for rider participants to be motivated by the trainer to take full responsibility for their own actions on the road, because, in comparison to drivers, there is a smaller margin for error. Motivating them to assume such responsibility may be in conflict with the image they have of themselves - carefree, rejuvenated / young, with a desire for freedom of expression and identifying strongly with their motorbike. Over-optimism and competitive tendencies should also be addressed.

The on-road perspective

On-road rider trainers must be able to perform the difficult task of monitoring 1-3 participants at a distance during on-road training and as such must be highly qualified to do so.

Track-based trainers should undergo basic on-road training (of trainers) to gain insight into the needs and difficulties of trainees on the road. With this perspective, this will help them relate track-based exercises to practical and important on-road scenarios, when dealing with their participants.

⁷¹ Due to irregular use, winter breaks, etc.

⁷² The vast majority of rider participants pay their own course fees.

d) Other quality issues

a) Systematic feedback from – and evaluation of - participants

Feedback on the course should be collected, monitored and summarised on a systematic basis. Feedback can assess a number of different quality issues:

- General satisfaction with the course and the quality of service
- Satisfaction with the trainer (social behaviour, level of attention to individuals, clarity of messages, level of feedback, etc)
- Verification of whether the participants have understood the messages of the course
- Assessment of whether the group dynamics worked (observation, participation, listening and reflection)
- Assessment of whether individual participants have gained more insight into their own strengths and weaknesses which are relevant to driving
- Assessment of what has been learned in terms of knowledge, skills, attitudes and emotions
- Assessment of to what extent (and for what duration) training can affect the participants' driving behaviour and driving style⁷³.

Such feedback, which can be oral and / or in the form of a questionnaire, is considered an essential part of quality control and can help course providers to identify weaknesses in their course and to address them accordingly. Studies have shown that trainers and participants often have a different understanding of the goals and message(s) communicated during training and, clearly, this should be avoided (when the participants' interpretation contradicts or distorts the intended message). Feedback from the participants in the final session is absolutely crucial, in order to recall the main messages of the day and consolidate on the participants' retention of these messages. Trainers should consider, for instance, the benefit of noting down the most pertinent and relevant remarks from participants on a flipchart. This is visually stimulating and has a longer lasting effect in terms of retention.

In order to gain an impression of what participants remember and retain from the course, feedback via questionnaire a few weeks/months after the course would be useful. Ideally, well-established before-and-after evaluations (see evaluation methodologies section, page 141 onwards) should be performed from time to time, especially after changes in the course programme, trainers, etc.

b) Essential Documentation

Course content and goals, the training of the trainers and consumer information should be carefully documented and maintained:

i) Course manual

To ensure a systematic approach to training and a uniform level of quality assurance, the goals, content, methods and role of the trainer should be written in a course manual. The course manual should not be so detailed and strict that it limits the trainer in his/her ability to show individual flair, but it should be carefully adhered to, especially where counterproductive effects could occur if an exercise is poorly delivered. The manual should outline the sequence of activities, range of methods to be used and tips should be provided for the instructor where appropriate.

⁷³ Such an evaluation would require a series of assessment phases both before and after the training.

ii) “Training the trainer’s” handbook

A detailed catalogue of trainer requirements should also exist in written form to ensure a systematic approach to training of trainers. This is particularly important in countries where no specific training requirements are set by law for post-licence driver/ rider trainers. Courses responsible for training their own trainers should have their own trainer handbook. Course providers that work with trainers who have gained, for instance, a nationally recognised driving instructor qualification, should ensure that these trainers receive the necessary additional training so that they are familiar with their individual training philosophy and are able to carry out the specific course programme in question.

iii) Consumer information

Providers of voluntary courses may offer a number of different courses, according to age, experience, road usage, etc. It is important therefore that consumers are able to decide which course best meets their needs, before registering. Such consumer information helps both to ensure that the consumer chooses the right course and to avoid trainers having to deal with groups which are too heterogeneous to function properly together. Detailed consumer brochures are especially important for courses which make no effort to assess the experience and needs (etc..) of participants before the training itself begins. Then, the consumer, as opposed to the course provider, must decide which course to register in.

10. Guidelines for countries wishing to introduce obligatory “2nd phase” training for novice drivers/ riders

a) Introduction

Novice drivers - especially young drivers - continue to be over-represented in accident fatalities throughout the EU⁷⁵. Many Member States have thus taken steps over the last few years to address this problem by introducing post-licensing measures for such drivers. Post-licence, obligatory “2nd phase” training is one such measure which has already existed for several years in Luxembourg and Finland. Austria will begin its “multiphase” training in 2003, followed by Switzerland one year after. Germany is planning to introduce a voluntary, 2nd phase programme from 2003 onwards.

Such an approach to driver training - and the reduction of road fatalities and injuries amongst this target group - fits within a recommendation of the EU DAN project which stated that:

“... an extended supported learning period [for novice drivers] after the acquisition of the driving licence should // be implemented”.

The role of the Advanced project in this regard is to produce practical guidelines which may be used as reference material by countries who are considering the introduction of a 2nd phase driver/ rider training scheme for novices. However, these guidelines are simply recommendations and they leave considerable flexibility for countries to develop their own concepts and methods for achieving the goals we have prioritised⁷⁶. It is important to note, moreover, that the Advanced project has not been commissioned to determine whether 2nd phase training is an effective road safety measure for novice drivers/riders (this is being done by the countries with 2nd phase programmes and by others who are launching 2nd phase pilot projects⁷⁷), or if it is more effective than other measures (driving restrictions, penalties, extended initial training, etc).

N.B. This section should be read in conjunction with the (highly relevant and vital) conclusions and recommendations of the voluntary, post-licence training part of this report.

Designing a course of 2nd phase training for novices requires an understanding of:

- a) The profiles of young people⁷⁸ today

Psychological profiling of young people today has revealed various categories or “character types”, each with their own set of attitudes, values and priorities in life (the quiet, diligent type, the boy-racer, the tired-of-life type, etc..). These differences should be recognised and taken into account by trainers. However, in general, contemporary young people share a common attribute: the need for mobility and to reach an immediate state of perfection. Perfection is important for one’s self-image in relation to one’s peers, and today’s society generates the assumption that perfection can be reached with minimal effort, i.e. by missing the learning process altogether.

- b) Their needs in relation to the driving task

Novice drivers/riders should be encouraged to accept the need for a learning process where driving is concerned and to adapt their driving behaviour to the (generally limited) experience they have. Driving at speed, for instance, can be an especially dangerous process for people who want to appear perfect, but who have:

⁷⁵ Data from France, the United Kingdom, the Netherlands, Sweden and the United States show that fatalities involving car occupants in the 18-24 year old category are over-represented by a factor of 2.1 – 2.6 (compared to the proportion of drivers in this category). Source: OECD 2002

⁷⁶ The Advanced risk awareness database will include examples of methods to be used.

⁷⁷ Belgium, France, Germany, Netherlands and Spain

⁷⁸ Although not all novice drivers / riders are young, the majority will be.

- A lack of knowledge of the range of risks involved when driving,
- Insufficient critical analysis of their own limitations and weaknesses
- Little or no experience with difficult or critical road situations
- A lack of motivation to manage risk and to take action to avoid it (young people generally have a higher risk threshold than their elders).

Initial driver training in many countries does little to address these needs because it is essentially geared towards gaining a certificate, proving only basic manoeuvring skills and a minimum level of ability to be mobile in traffic.

c) The means and methods available to effectively respond to these needs

In response, training needs to include: information and discussion on different types of risk and on different driving techniques and their effects, methods to encourage self-evaluation and motivating techniques to encourage young people and other novices to take responsibility for their own safety and that of others.

Building on scientific research and the experiences of existing courses, there are a number of means and methods to address these needs. These are addressed below under “general principles” and “methodological criteria”.

b) Goals of 2nd phase training

Additional training for novice drivers/ riders should aim to:

- *Raise awareness of risks* at all 4 levels of driving behaviour (see GADGET matrix)
- Develop a *sense of self-awareness* amongst participants and the ability to recognise the strengths and weaknesses of oneself and those of other road users
- Discuss *the theme of mobility and what it means* for young and novice drivers
- Encourage *the group process, i.e.* discussing *driving behaviour* in a social context
- Build on / Refresh / Correct *basic manoeuvring skills and driving in traffic*
- Help to review and correct misunderstanding of *technical and vehicle dynamic facts*
- Develop *new and individual safe driving strategies for the future* (based on the risks identified at all 4 levels of driver behaviour), e.g. safe distances, relationship of driver to passenger, etc.

c) General principles

- a) 2nd phase training must be designed in conjunction with initial training in order to guarantee a coherent driver/rider training package
- b) 2nd phase training must address all 4 levels of driver behaviour
- c) Risk awareness training must predominate over (manoeuvring) skills training. Skills training for drivers should be kept to a bare minimum.
- d) In order to best reach the 4 levels of driver behaviour, to encourage self-evaluation and to vary methods and assess the participants, a combination of road, track and classroom-based training is recommended.
- e) It is important not to compromise on the content of the initial (first phase) training when introducing a 2nd phase programme.

- f) Training should focus on the particular risk factors identified amongst novice drivers / riders in the country in question (remembering, also, that male and female drivers may require different training needs⁷⁹).
- g) Course providers must be aware of the presence of high-risk groups (low/high skilled, poor risk awareness, poor cognitive ability, anti-social attitudes, etc) in 2nd phase training and should avoid exercises which may lead to misunderstanding of the goals.
- h) Exercises to regain control of a skidding car should be avoided altogether⁸⁰.
- i) If combined braking and swerving exercises for novice drivers and riders feature in the course, these exercises must be designed to highlight the risk and complexity of performing such manoeuvres and the need to maintain safety margins in the first place. Training to improve skills in this particular exercise should be avoided.
- j) The messages communicated during the course must be simple, clear and limited in number, due to the possibility of misunderstanding or poor retention on the part of the participants (particularly where the above categories are concerned). Complex issues, such as driving physics, may be important but must be kept to a bare minimum.
- k) Clarity and simplicity of course design is important to the extent that obligatory training requires a much higher number of trainers than in voluntary training where only a small percentage of the population takes part. Variations in the quality of (a far greater number of) obligatory trainers must be compensated for by clarity of course design and the simplicity of the message.
- l) Trainers must be aware and capable of providing the motivation necessary to stimulate passive, disinterested or difficult participants and must recognise the influence such individuals can have on the group process and how to deal with it.⁸¹
- m) Trainers must be able to identify high-risk drivers and give them special attention⁸²
- n) 2nd phase trainers should be regarded as the most highly skilled and experienced type of *post-licence* driver trainer and they should be compensated accordingly. Efforts should be made to portray this image, in order to attract the right trainers, etc. Trainers of obligatory 2nd phase courses require a range of skills above and beyond those of voluntary post-licence trainers (psychological insight into novice / young drivers, moderation skills, etc). They will also be trained and audited more regularly and effectively than in the voluntary sector, as well as gaining considerable experience over time due to the obligatory participation of novices.
- o) If the limited driving experience of novice drivers and riders limits the ability of the training “to teach by association”, consider the possibility of using other people’s experiences (including exhibitions of crashed cars, accident victims, etc)
- p) These recommendations specify a number of training sessions which cannot be handled or retained by participants in a single day. The programme should be spread over a longer time period to prolong this support phase after the basic driving test.
- q) Course providers must above all distinguish between underconfident and overconfident participants, providing individual attention where appropriate.
- r) In general, however, the presence of heterogeneous groups in training are useful to highlight and learn from the differences in perceptions, attitudes and abilities of different road users.
- s) 2nd phase training should be adapted to take into account new technological developments, such as ABS and sticky tyres (in the case of riders) and ESP (cars).

⁷⁹ Laapotti, S. & Keskinen, E. Differences in Fatal Loss-of -Control Accidents Between Young Male and Female Drivers, *Accident Analysis and Prevention* Vol. 30, No 4, pp. 435-442,1992

⁸⁰ see Annex 9.

⁸¹ The role of the trainer, which also applies to novice training, has been discussed under the recommendations for voluntary trainers (page 87). Certain additional requirements for novice trainers are made in the general principles section (above).

⁸² According to the following recommendations on course design, high-risk drivers should already have been pre-identified to a large extent, following the self-evaluation questionnaire and driving audit. Current experience suggests that around 5% of participants have already had a high number of accidents and/or have accumulated much more driving experience than the “average” novice. Countries should consider the possibility of dealing with them separately.

- t) The timing of 2nd phase training is important. Novices must be given the opportunity to accumulate some initial experience, without incurring the risk that training comes too late (recommended timeframe/ experience level for novice drivers: minimum 3 months or 5000 kms)⁸³. A maximum timeframe must also be set, in order to maintain the learning momentum and to avoid missing the initial high accident phase altogether
- u) Pass-or-fail? Participants should generally not be able to fail in 2nd phase training. If this were the case, some participants may be encouraged to adopt socially desirable behaviour and the purpose of the course would be severely undermined⁸⁴. However, procedures should be in place to handle extreme cases, such as absenteeism, insufficient participation in activities or anti-social, disruptive behaviour.
- v) In terms of the division of responsibilities amongst trainers, it is up to the country in question to decide on the respective roles of driving instructors, advanced course trainers (“moderators”) and (traffic) psychologists / social workers in novice training⁸⁵.
- w) The course, participants and trainers must be constantly evaluated to verify the design, delivery and learning effects of the training.
- x) A standardised course format across the country is particularly important for national-level evaluations, when assessing the effects of the 2nd phase training

d) Methodological criteria: 10 Golden Rules

- 1. A good course should be varied, highly interactive, self-analytical and held in a relaxed atmosphere.**
- 2. Group sizes (trainer: participant ratio) should be small enough to allow for individual attention and for intensive training, but large enough to facilitate stimulating group discussion (see page 97).**
- 3. Practical track exercises should be considered more of a starting point for the learning process than a complete process in itself. Each exercise should be followed with discussion (see page 92 +).**
- 4. Keep discussion, where possible, in a classroom in order to minimise distraction and maximise on focus (see page 84). Write participants’ comments on a whiteboard (or otherwise) so the “group results” can be seen and more easily retained.**
- 5. Creative track exercises can and should be used to raise awareness of level 3 and 4 issues (see page 81 and 89+).**
- 6. Check for undesirable side effects of the training and monitor the filter effect (see page 79)**
- 7. Check for course elements that may lead to overconfidence (see page 93 +)**
- 8. Use a range of locations and teaching methods (track training, discussions, case studies, problem-solving, self-evaluation questionnaires, video + discussion, on-road training and driver observation, etc) and limit individual sessions to maintain participants’ concentration (see Learning context, page 39+).**
- 9. A good ending is vital: a relaxed, (not rushed!) session where the experiences and views of the training can be shared, summarised and discussed (see page 41).**
- 10. AND REMEMBER: Even courses designed to focus on risk awareness can be perceived as skills based courses by participants. It is not the message which is delivered, but the message which is**

⁸³ The vast majority of riders will accumulate experience much more slowly than drivers. Riders may need a longer minimum period.

⁸⁴ The course, although obligatory, should rather be an open and relaxed forum of discussion and exchange of experience.

⁸⁵ Under the current recommendations, there are three main training components (the on-road training, the group [classroom] training and the track training), each requiring common and different skills on the part of the trainer. There is an important balance to be struck between reaching the highest quality of teaching and maintaining the best possible trainer-client relationship. Quality teaching may lead to role specialisation, but the trainer-client relationship may suffer due to lack of continuity throughout the training. If more than one trainer is used (which is likely), proper communication channels and procedures are vital to maintain continuity and the effectiveness of the course. It has been suggested that it is difficult to establish useful communication between different organisations, especially if the focus of each organisation varies.

received by the participants that counts. Constant participant feedback and course evaluation is necessary!

For an example of a possible course programme, please see the annex, page 218. Please note that this is an example only and should not deter course providers from creating their own programme, within the framework outlined in this section.

11. Evaluation methodologies: How to make a five star evaluation of the results of your advanced training.

E. Keskinen & C. Baughan

Introduction

It is clearly important for course providers, their customers and road safety authorities to know how successful driver training courses are. For example, were the customers satisfied? Did they learn what the course provider thought they should? Did their safety increase as the course provider, the customer and perhaps the authorities wanted? For many reasons, an evaluation is both important and worthwhile. But conducting a sound and reliable evaluation is not easy. The higher the goals in the evaluation, the more difficult is it to acquire the knowledge that can provide the answer to the question: ‘how successful was the training?’

This short paper provides some ideas that aim to help course providers evaluate the effectiveness of their courses. However, we would like to stress from the outset that in order to produce reliable results, and to save money by avoiding poorly designed studies, it is always advisable to consult a professional specialist.

N.B. Technical terms are explained in the glossary at the end of the paper.

a) Three possible targets of evaluation

There are three main targets of evaluation, differing in terms of both complexity and importance.

1. Evaluation of the course content and methods, based on customers’ opinions.
2. Evaluation of whether the learning goals of the course have been met immediately after the course, and whether any learning effects are maintained over the longer term. The ultimate goal of a safety course is increased safety of the driver after participating in the course, but the course itself also has learning goals that have to be met before any longer term safety effects can be expected.
3. Evaluation of the effects of the course on traffic safety and offences. This is ultimately the most important type of evaluation but, as will be seen, it is also the most difficult to carry out successfully. The need for large samples, to allow statistically reliable conclusions to be reached while controlling for ‘nuisance’ variables, will often mean that individual course providers are not in a position to undertake scientifically valid evaluations of the effects of their courses on accidents. Failure to recognise this fact can lead to money being wasted on evaluation studies that are not able to provide useful results, and to customers being misled by unjustifiable claims of effectiveness based on such studies. Nevertheless, where they can be undertaken successfully, evaluations of the effects of courses on accidents are extremely valuable, and it is recommended that opportunities for setting up well-designed studies be actively sought. One possibility here is for one evaluation study to cover similar courses from several course-providers, so increasing the available sample size.

Evaluation can be seen as one aspect of quality assurance. This is true for all three evaluation targets. It is important for potential customers to be able to find out:

1. how satisfied previous customers have been with the course (type 1.),
2. how much they have learned by attending the course (type 2.), and
3. how effective, and in what ways, the course has been concerning its safety goals (type 3.).

a) Type 1. Content and methods evaluation

Evaluation of customers' opinions, satisfaction etc. concerning the content, methods of teaching, arrangements during the course etc.

The aim of the evaluation: Feedback for the course providers to help them develop the course in order to improve customer satisfaction. Feedback for potential customers, showing how satisfied earlier customers were with the course.

Course providers need information about customers' attitudes towards the course, their expectations of the course, and the extent to which these expectations have been fulfilled. Such feedback enables the course provider to develop course content and arrangements, and to ensure that future customers are satisfied.

This type 1. evaluation is not too complicated. A single-group design (in which only course participants are evaluated after they have completed the training) can help answer the questions, 'did the customers like the course, and did they feel that they learned useful things?' The methods used in such evaluations are questionnaires and structured interviews. However, a single-group design cannot compare training effects with other courses or with general members of the public who have not participated in advanced driver/rider training.

It should be recognised that although type 1. evaluations are important, they are not sufficient to check whether the goals of the course (e.g. goals concerned with improving skills, knowledge and safety) have been met. For example, customers may be highly satisfied with a course that provides, say, an exciting day of training in high speed vehicle handling, even though such a course may worsen safety rather than improve it. Type 2. and 3. evaluations as described below are therefore highly desirable alternatives.

b) Type 2. Achievement of immediate learning goals

Evaluating the success of the course in terms of whether it has achieved its immediate learning goals. What have customers learned during the course, and how successful was the course in reaching the intended immediate learning goals? Also, what else (good or bad) was learned, apart from the intended, explicit course content?

The aim of the evaluation: Feedback for the course providers to help them develop teaching methods etc. to reach the goals and to avoid unwanted learning results. Feedback for the customers (e.g. companies) on how well the stated goals of the course are met.

This second possible type of evaluation is to investigate (a) what customers have learned in terms of (say) knowledge and skills related to the course's ultimate goals of safety and (b) how this compares with the course's stated learning goals. This evaluation should be conducted with at least two measurements – i.e. before and immediately after the course, and ideally a third measurement later to give an indication of how long-lasting any learning effects are.

To accurately measure training effects, the goals of the training must be expressed in a specific and explicit way. Describing the goals in such detail is also extremely important from the point of view of designing the training (as only when this has been done can the most effective methods for achieving the goals be identified). This means that the course provider also has to be aware of the learning mechanisms involved in the course.

The simplest way to measure any learning effects arising from the course is to measure the same variables both before and after the course. Measuring only afterwards does not take account of the customers' level of knowledge or skills before attending the course. It should be borne in mind, however, that using a single-group before-and-after design does not tell us, for instance, how good the course is compared to other courses with similar goals but different content.

Methods used in collecting data for type 2. evaluations include knowledge tests, skill tests and attitude questionnaires. Although developing this type of measurement tool may appear to be simple and largely a matter of common sense, there are in fact many pitfalls to be avoided if meaningful results are to be obtained. Input from professional specialists is strongly advisable.

c) Type 3. Evaluation of the effects of the course on traffic behaviour, safety (accidents) and offences

The aim of the evaluation: Feedback for the course provider, customers and authorities on whether the ultimate goals of the course have been achieved.

Improved safety is the ultimate goal of most, if not all courses. If these ultimate goals are not achieved then it is fair to ask what, if anything, has been achieved by the course. Measuring whether a course has achieved the goal of improved safety is the most challenging task in the whole evaluation process. Poorly designed evaluations can easily lead to meaningless and misleading results, and to unjustifiable claims being made about the effectiveness of courses. Despite these problems, it is clearly highly desirable to conduct type 3 evaluations where possible.

There are several factors that make type 3. evaluations so difficult:

- *Multicausality of accidents:* Many things - other than the safety course - will influence accident involvement. These factors are partly random by their nature.
- *Effects of intervening and interacting variables:* Factors other than the knowledge, skills or attitudes learned during the safety course are known to affect accidents. These include sex, age, exposure (amount and quality of driving mileage) and driving environment
- One method to deal with the effects of intervening variables is to ensure that comparisons are made between groups that are matched in terms of these variables. This means that if we believe that the results of training may be different for males and females, and we want to know only the effect of the training, we can compare, for example, results of males who have received the specific training compared to males who have received a different kind of training. Then we compare females to females. What is also very common is the following: we control the effect of exposure by making sure that all the comparison groups have driven approximately the same distance. If we don't control exposure, we do not know how much exposure has an influence compared to the training itself. In some circumstances, advanced statistical techniques may also be used to adjust the effect of training on safety so that differences between groups in other variables are taken into account.
- *Population selection effect:* Customers of voluntary safety courses are self-selecting individuals who may tend to be more safety-oriented than the general driving population. Consequently, volunteering individuals may demonstrate greater effects resulting from attending a course, or be safer drivers even before any training has been received.
- *Rarity of accidents:* Accidents are relatively rare events, which means that a very large number of participants is needed if statistically reliable results are to be obtained. Even then it is usually possible to study only those who had accidents compared to those who did not, but not to compare drivers with more or less accidents.
- *Trend effects:* If there is only one evaluation group (i.e. a sample of course participants), and the measurement is made before and after the course, then an observed before-after effect may come from sources other than the course itself. For example, a decreasing trend in accidents - in one area or across the country - may have started before the course. As a result there may be no way to separate the effect of the course from the more general trend. A more sophisticated type of evaluation is needed to solve this problem.
- *Unreliable data:* In order to get comparable data, the same parameters need to be applied to each group (the intervention and control groups) and at each time of measurement. (This is one of the reasons why general international comparative studies are often unreliable).
- *Regression towards the mean:* If the intervention group (i.e. a group of course participants) has been selected because it had an unusually high accident rate just before the intervention, then it is probable

that in the next evaluation the number of accidents will decrease even without training. Such effects can be a particular problem when companies that operate vehicle fleets evaluate driver training – they may have been motivated to send their drivers for training by a ‘chance’ peak in the company accident rate. The subsequent drop in accidents may then be incorrectly attributed to the training rather than to this statistical ‘regression towards the mean’. One way of dealing with this problem is to use historical data to estimate the underlying accident rate before the training intervention rather than rely on the rate immediately after the intervention.

What is needed to measure the safety effects of a certain course is a *comparison group* that is as similar as possible to the trained group, but which has not received training itself. A common problem with evaluation studies is that the groups differ in one, or even many, ways - e.g. age, sex, self-selection, exposure and driving environment. Type 3. evaluations of the ultimate effects of training courses on safety are often based on questionnaires (i.e. self-reported accidents) or on accident statistics. As pointed out earlier, a particular problem here is that in official statistics there is rarely enough background data to be able to properly check the similarity of the trained group and control group. An evaluation of training in a large company, in which drivers are randomly allocated to a training group and a control group, is one way of dealing with this problem – although opportunities are rare.

b) Evaluation Designs

When and how many times to measure, and how many groups to use

The remainder of this paper is specifically devoted to evaluation study designs and research methods. In this context, ‘*designs*’ concern the problem of how to control the variables in the study to enable sound conclusions to be made, whilst the ‘*methods*’ concern the problem of how to identify what information needs to be collected, and how to do this in a meaningful and reliable way.

The main problem is how to “isolate” and “measure” the effects of the course. Training effects can be properly isolated by using several comparison groups, at least one of which has not received the intervention. Effects can be measured at more than one point in time (e.g. before and after the course). There are many combinations of these two possibilities and the more effort that is put into ensuring a properly controlled design, the more meaningful the result is likely to be. Table 1 (page 146) describes some possible designs and evaluates their usefulness in terms of reliability and validity.

There are several possibilities for measurement times and for the number of groups used in the study. Simple designs have only one measurement and one group and advanced designs consist of several measurements for several groups.

a) Examples of typical simple research designs

One group designs

Measurement time: Only after the training
 Before and after
 Before, after and follow-up

Two or more groups (intervention group and one or more control groups)

Measurement time: Only after
 Before and after
 Before, after and follow-up

Measurements of different groups at different times can be compared in a scientific way only by using statistical methods. Use of such methods makes it possible to know if the results are reliable and real, or whether they just represent only random differences. These statistical techniques take into account the number of participants: a higher number of participants improves the ability of the evaluation to detect effects of training in a statistically reliable way. Often, evaluation studies are done with small numbers of

participants, which means that they are only capable of reliably detecting training effects if the effects are rather large.

i) One group designs

The most simple research design contains only one group, the intervention group. However, this design is very limited in its ability to isolate and measure the effects of training since the measured effects may in fact be attributable to something other than the training itself, e.g. a self-selection bias.

One group, - after-only design

Gives information concerning the present status of the group. It is possible to obtain important information for the development of the course on the basis of the course participants' satisfaction and other opinions. This design is able to give answers to the following questions:

How the persons feel now, what experiences they describe, how they experienced the course and its contents and methods, how satisfied they are; what are their intentions and beliefs about their future driving style and habits

One group - before and after

Makes it possible to measure change, by comparing measurement before training to the measurement after. This is a more useful design when evaluating the change in participants' knowledge, attitudes, self-concepts, self-evaluation of own skills and their own individual risks etc. Because there is no comparison group, it is impossible to know how much the change is based on the course and how much on the effects of the first measurement or some other factor. This design is able to give answers to the earlier questions and, in addition, to the following questions:

How is the participants' knowledge, skills and attitudes after the course compared to how they were before the course? To what extent were the expectations of the course realised?

One group - before, after and follow-up

A research design with three or more measurements makes it possible to evaluate how long-lasting the effects of the course are. This is important because evaluations given just after the course may overestimate the real (i.e. longer-lasting) effects. Even a one-month interval between the second and third measurement is much better than only one measurement after the course. Of course it is also desirable to measure the real long-lasting effects. This design is able to provide answers to the earlier questions and to the following:

Are the changes in participants' knowledge, skills and attitudes (after the course compared to before the course) only short-term or are they longer-lasting? Do participants still have the same opinions on the course compared to immediately before the course?

ii) Two or more groups and before-after and follow-up

For more advanced and reliable evaluations, two or more groups, including at least one intervention group and at least one control group, are needed. Use of a control group allows the effects of the training to be isolated from the effects of other sources, thus allowing a true statement of the effectiveness of a particular course. It is highly desirable that the intervention and control groups belong to the same population, and that the only difference between them is that one receives the training and the other does not. This is very difficult to achieve in practice since drivers who volunteer to attend courses are unlikely to be representative of the general driving population. It is sometimes possible to use advanced statistical methods to control for unwanted differences between intervention and control groups. If several intervention groups are used then there are more possibilities to make better evaluation studies.

This design is the best for evaluating the effects of training but it is also the most expensive and most difficult to achieve. When valid and reliable measures are used then this is the design that can best show whether the course has a positive effect on driver safety.

This design is able to give answers to the earlier questions and to the following:

Does the course have safety effects, does taking this particular course increase customers' safety later in their driving career? Does the course lead to a decrease in their traffic violations?

b) Reliability of different designs

Table 1 contains a description of different kinds of evaluations: how reliable are the results when using different kinds of designs and when measuring different course content?⁸⁶

Table 1: Reliability of different designs in evaluating the effects of training

(Course *learning* effects = (L) and long-term effects, especially *behavioural* = (B)). Symbols used in the evaluation: - not possible to use, * poor design, ** fair, *** good, **** very good, - ***** excellent design.

	Number and time of measurement		
	After	before- after	before- after- follow-up
Number of groups			
Intervention group			
knowledge, skills, attitudes, etc.(L)	(1L)-	(2L)**	(3L)***
safety (B)	(1B)-	(2B)*	(3B)**
Intervention group + comparison group			
knowledge, skills, attitudes, etc. (L)	(4L)***	(5L)****	6L)*****
safety (B)	(4B)**	(5B)***	6B)*****

Explanations of the research designs in Table 1.

Design (1L and 1B), no stars: Measuring only after training does not allow us to draw any conclusions concerning changes or the training effects. It is not possible to know how the situation was with the course participants before the training. N.B. One exception to this rule is measuring only after training, but at the same time questioning participants on the situation both before and after the training. Such a design would be allocated one star*.

Design (2L), **: This design gives us the possibility of evaluating changes which have occurred in the intervention group between the measurements. It can be used for evaluating the training effects on short-term learning and goals.

Design (2B), *: This design does not, however, tell us what has caused the change, when safety effects are evaluated. There may be other factors which explain the change other than the training itself. Effects may be only short-term effects.

Design (3L), *:** When a follow-up period is added to the earlier design, the reliability of results improves. It is possible to see how permanent the changes are. However, as in design (2), this design does not give reliable information concerning the causes of change.

Design (3B), **: If there is a change in behaviour between the before and after measurements, and it is still there in the follow-up, it is possible to be more certain that there was a change than without a follow-up measurement. But still other factors may be causing the change, apart from the actual training.

⁸⁶ Notice that this table does not contain Type 1. evaluation (content and methods evaluation) at all. Usually the only possible evaluation concerning contents and methods is "only after" and that is why it is not included in Table 1.

Design (4L), *:** The problem with using only “after measurement with intervention group and comparison group” is that there is no information concerning the situation before the training. This is a common design but the main difficulty lies in the selection of the comparative or control group. Subjects in the intervention group and the control group should come - as far as possible - from the same population, in terms of age, sex, attitudes, driving habits and exposure, driving experience, use of alcohol, etc. However, this is already a good design to measure learning effects.

Design (4B), **: Short term differences between intervention and control group can be measured, but not the changes.

Design (5L), **:** This design allows for measuring both changes in the two groups and the differences between groups.

Design (5B), *:** Short term changes before and after the training and short term differences between intervention and control group can be measured.

Design (6L), ***:** Compared to the design (5L) it is possible to learn about the long- term effects of training. This is the best way to measure the effects of training on knowledge, skills and attitudes.

Design (6B), ***:** Compared to the design (5B) it is possible to learn about the long- term effects of training. This is an excellent design but it is difficult to carry out because the time span is long and getting comparable groups - which differ only in that the intervention group has undergone training - needs a lot of creativity and energy.

c) Data collection Methods

How and what to measure

There are several ways of collecting information for evaluation purposes. One of the main differences concerns the objectivity of measurement. Knowledge and skill tests can be objective, as can observations, historical data and other existing records. Questionnaires and interviews are sometimes criticised because of their subjectivity; but they are the only way of collecting certain types of information concerning, for example a driver’s thoughts, intentions, feelings and attitudes. Drivers can also describe in a reliable way their driving style and driving habits. Also self-reports concerning accidents are reliable if the time span for reporting is not too long, and the accidents to be reported are clearly defined and described. Whilst one year is good, over two years people start to forget accidents and three years is perhaps the maximum desirable period if we are interested in the number of accidents. However, longer periods are possible, especially if we are willing to assume that the two groups being compared have the same ‘forgetting rate’ for accidents.

Observations can be reliable but they are expensive so it is usually possible to collect data on only a small number of participants and a small number of variables. Furthermore, it is impossible in most circumstances to get observational data on behaviour in accident situations. However, it may be possible to observe (for example) driving style before and after the intervention (“driving audits”). Whenever possible, driver-reported data should be collected alongside the observational data, in order to learn why the driver was behaving in a certain way.

Official accident records can be a fruitful source of information, but we have to be very careful when we use them to make comparisons. Sampling criteria may vary between registers and over time. Registers of fatal accidents cover only a small proportion of total accidents, but are usually reasonably complete as regards the fatal accidents themselves. Insurance companies’ databases provide more information on the much more numerous damage-only accidents, but they can be biased towards more expensive cars and towards guilty drivers etc. Identifying people from such registers may also be difficult, and may not be permitted under confidentiality or data protection regulations.

a) How to measure: Possible sources of information

- questionnaires
 - descriptions
 - evaluations, ratings
- interviews.
- knowledge tests
- skill tests
- observations
- existing records, historical data

There are several ways of collecting data for the evaluation of the effects of advanced training courses. It is always important to carefully plan what the specific goals of the measurement are and after that to decide how, in what way and what methods to use to collect the data which is needed to provide the answers. The content (what to measure) is closely connected to the method and that is why both of them are discussed here together. In this presentation the content has been divided into four major categories: skills, knowledge, attitudes and behaviour. Of course all these influences interact, but for measuring purposes it is possible to divide them in this partly artificial manner.

i) Self-completion questionnaires

Self-completion questionnaires are easy to use to collect information from large groups and on a regular basis. Usually, however, a lot of time is needed to construct a good questionnaire. A good questionnaire gives straight answers to straight and clear, often detailed questions and often on a concrete level. Questions containing more than one idea should be avoided. Also questions which can be interpreted in many ways are useless. It should also be remembered that participants usually answer if a question is asked and that is why there should also be questions concerning, for example, the importance of the theme of the question to the person. Answering can be based on multiple choice, scales or writing the answer in an open space. The questionnaire should not be too long, the aim has to be described well and also the anonymity of respondents and confidentiality issues should be addressed. It is possible to use questionnaires to collect different kinds of attitudinal or other subjective, data such as descriptions, evaluations, ratings, historical data etc. Also ready-made questionnaires are an option, but when the evaluation is focussing on course goals they may not be suitable.

ii) Interviews

There are several types of interview. Exploratory, or ‘depth’ interviews do not restrict the interviewer to reading predetermined questions. Rather, some general guidance in the form of themes to be covered is provided to the interviewer. This type of interview allows us to ‘hear the voice of the person’, and can provide great insight. However, it requires very highly trained interviewers, is time-consuming and expensive, and can therefore only cope with small numbers of participants. It is particularly useful as a way of helping to develop more structured questionnaires which can then be used by less highly trained interviewers or in a self-completion survey.

Care should be taken by the interviewer to avoid – often subconsciously - “feeding answers” to the interviewee.

iii) Knowledge tests

Knowledge tests can be used especially to measure the learning effects of the course. If they cover the whole range of knowledge which should be learned during the course, they can provide valuable information on how the aims have been fulfilled. But if exactly the same questions are asked before and after the course then answers to the second measurement can be affected by the first one, and may not therefore be attributable to the course itself. As with other questionnaires, the answers to the questions in knowledge tests can be open

or structured. Structured questions are easier to answer and faster to codify, but then it is not possible to see how the participants would answer in their own words, which is often informative in itself. Open questions are, however, often left unanswered. The mixture of open and structured questions is a common compromise. Answers can be based on written questions and problems, or the problems can be presented as pictures e.g. using a computer. Such measurement techniques are used in many countries e.g. in testing knowledge of traffic rules. In addition, these knowledge tests can also be time-limited, at which point they start to look like skill tests. The difference is reduced further if the questions are based on pictures which are taken from real traffic. Such knowledge tests do not, however, contain the motor component which is a key point in many skills. We would, however, emphasise that higher level decision skills can be measured as knowledge is measured, because what is important in them is not the motor component.

iv) Skills tests

Skill tests are often used, especially in evaluation studies on courses where vehicle manoeuvring skills are the focus of attention. Emergency braking skill is often evaluated before the course and then after the course. Testing other handling skills and the mastery of traffic situations is also easy and informative. Then it is possible to understand the change in skills. One problem is, however, the problem of transfer of those skills to normal traffic. If the same test is used before and after the course and the content of the course consists of training the skill which is measured, then it is quite normal that a person is better after the course. But the important question is how well the participant can use this new skill in real situations, in other words how he or she can apply this skill. There is also the question of how this new skill affects driver behaviour. This of course is as important in the area of knowledge as it is in the area of skills.

Arranging situations where real applied skills are measured is difficult and may be out of the scope of evaluations. But whenever skill tests are used, these questions should be borne in mind. These questions may affect the validity of the skill measurement. The reliability of measurement is equally as important. High reliability means that we can trust the results: the measurement is as free from errors as possible. To reduce errors in measurement we have to use standard methods to develop and apply the test. One way of increasing reliability is for the test to include repeated assessments of the same skill.

v) Observations

Observation can give a realistic picture of driver behaviour but it is also a demanding method of measuring; more demanding than is often thought. The difficulty lies in the question of reliability and validity of measurement. The basic idea in observation is to collect information concerning the driver's behaviour, and then to classify or evaluate it using a standard method. The reliability problem in observation comes about because it is difficult to measure what proportion of the evaluation result is based on real variance in behaviour and what proportion is based on random or other errors. In practice, the reliability problem can be solved if two evaluators come to the same results when they have observed the same behaviour.

The validity problem relates to the question of measured or observed elements of behaviour: are these elements relevant to our aims? If we want to measure the driver's ability to manage in traffic safely, how much weight can we put on the driver's manoeuvring skills, for instance?

The validity problem is solved by identifying clearly what needs to be measured. Of course the aims of the course are useful here. The reliability problem, which is common to skill measurement, can be solved by describing the behaviour, which will be the target of observation, in detail. Also, the criteria of success or failure should be described in a detailed way. The idea is to give the observer/evaluator each and every classification as ready made as possible. Then the differences between evaluators will be small and the reliability of measurement will be better. Reliability of measurement also means objectivity: the same behaviour of different people should be evaluated in the same way. The driver's age, sex or nationality can produce a bias in the measurement's objectiveness. The use of videos or other information-collecting devices help to increase the reliability of measurement. One additional problem with observation is the degree in which the person's self-consciousness (of being the target of observation) affects his or her behaviour. In some cases it is possible to use observation so that the target person is unaware of it and then their behaviour

is not distorted by the knowledge of being an observation target. Well-known examples of the use of observational methods are the driving test and evaluative driving with the instructor (driving audits).

vi) Existing records, historical data

Collecting information from registers or other databases is one way of creating possibilities to make evaluations of courses. If it is possible to identify from registers those who have participated in training and those who have not, it is at least possible to verify the difference in accidents. But if going to a course is voluntary, then we do not know the effects of the course since people who volunteer may tend to be safer (or less safe) than non-volunteers even without attending the course. However, if the course is obligatory, then we are in a better position to draw conclusions concerning its effects. If register data is used it is of utmost importance to know what the variables mean in the register, whether they mean exactly the same in different registers and at different times. For research purposes, detailed and disaggregated data is often needed to make new groups for comparisons. It is not enough simply to know the accident risk of young persons compared to middle-aged ones. We also have to know how young males behave compared to young females and often we also want to use more specific categories (for example, instead of age group 15-24 years we are interested in age group 18 years compared to 19 year olds). However, registers generally contain aggregated data which limits the comparisons that it is possible to make.

b) What to measure

The first thing that usually springs to mind when discussing the evaluation of safe driving courses is that we should measure accidents and perhaps offences. There are, however, several other important variables that are both valuable and easier to measure. These may be defined as “intermediate variables” that reflect the mechanism through which the course intends to improve safety. For example, a course provider may design a course to improve handling skills in the belief that better handling skills help drivers to avoid accidents. The evaluation would then assess whether the course has indeed met its goal of improving these skills. Similarly, changes to knowledge and attitudes may be intermediate goals of a course, and suitable targets for evaluation. One advantage of such intermediate evaluations of skills, knowledge or attitudes is that they provide feedback that can be used to improve the course content and teaching methods. Of course, to rely on such evaluations is to rely also on there actually being a causal link between the intermediate variables and the ultimate goal of improved safety. Sometimes this link may have been well established by research but in others it may simply be an untested, and possibly incorrect, assumption.

We have already described in some detail the possible targets of evaluation in section 2 a). Some additional comments are, however, still necessary. As we have seen, it is possible to measure at least the knowledge, skills, attitudes and general road safety by using different methods. The targets of evaluation can be described in a more detailed way in the following section, where larger concepts have been divided into their parts.

i) Skills

Concerning *skills* in evaluation studies, it is useful to measure skills on different levels of the driver hierarchy (see GADGET matrix), the change of skills, subjective evaluations of drivers’ own skills and also more objective evaluations (examiner, instructor) of skills.

ii) Knowledge

Measures of *knowledge* can include knowledge, change of knowledge, subjective evaluation of driver’s own knowledge and instructor’s objective evaluation of knowledge.

iii) Attitudes

Attitudes may consist of opinions, self-evaluations, thoughts, intentions, etc. The common feature to these attitude-like questions is that the respondent has to react to questions which either specify alternative responses or which have an evaluation 'rating' scale. When alternative possible responses are used, the respondent selects one or more statements from several possibilities - for example: Do you prefer a) driving b) motorcycling on your holiday? The other possibility is to use an evaluation scale to ask a slightly different question. In this case, a pair of questions: How much do you like driving on your holiday (1= not at all , 5= very much); and how much do you like motorcycling on your holiday? (1=not at all and 5=very much) could be appropriate. When evaluation scales are used it is possible to get more differentiated answers to questions. It is extremely important to plan carefully what to ask, because it is only possible to get answers to the questions asked. For instance, in the earlier example we cannot be certain that, even if the person would prefer motorcycling very much, he would actually do it in reality. Perhaps he does not even have a motorbike. If we would like to know if he is going to use a motorbike on his holiday, we should ask: How likely is it that you will ride a motorbike on your holiday?

Attitude-like questions are very useful when the course provider wants to measure what customers think of the

- content of the course,
- teaching methods,
- usefulness of the course,
- possible safety effects and
- intentions and possible changes in their driving style.

Ready-made scales for measuring driver behaviour are available and often even a short consultation with a professional in the area of measurement would help to avoid the biggest problems.

iv) Behaviour

Behaviour can be measured, as described earlier, by observation, by self-completion questionnaire or by interview. Cars can be instrumented to record aspects of behaviour such as accelerations, speed and steering inputs. In addition, accident and offence data can be collected, and conclusions reached based on these "results of behaviour". Measuring behaviour in one way or another is extremely important when evaluating advanced driver courses. If we do not measure driving skills and style it is difficult or impossible to draw firm conclusions about the actual effects of the course on safety or in fact any other aspect of driving that the course is intended to influence. All the measures of behaviour have their own strengths and weaknesses and there is not any one, single best approach. What should be tried in evaluation studies is to use many kinds of measurement to be able to draw reliable conclusions. There can be observational measuring during driver evaluations (or "audits"), or questions concerning the driver's driving habits and intentions, and also accidents. Afterwards, one can also use accident and offence registers.

One important distinction to make, when evaluating driving behaviour, is measurement of maximum performance as opposed to the measurement of style or typical behaviour. When low level manoeuvring skills are evaluated then it is usually intended to measure what the driver's performance is in a certain situation. But this is often not as important as how the driver usually behaves. A young male driver is able to control his speed during an examination. However, he may speed whenever driving in everyday life. Speeding is part of his driving style. Driving style is closely connected to the highest levels of the driving hierarchy and the measurement of driving style is more problematic than measuring driving skill. But if the aim of an advanced course is to improve some skills, then skills should be also measured.

d) Evaluation Checklist: Avoiding common mistakes

Check your errors, avoid your problems in advance

In the next section, there will be a short summary of the most common problems in different kinds of evaluation studies. Some of the problems are fatal to the success of the evaluation, some produce only harm. If the problem is fatal, it would be better not to carry out the evaluation at all: it is a waste of good time and money. The most usual and the most fatal is the self-selection bias: course customers are more safety-minded than the drivers in the control group. Type 2 evaluations also have to avoid the problems identified for Type 1. evaluations. Likewise, Type 3. evaluations have to avoid problems identified for Type 1. and Type 2.

Goal type 1. How satisfied have previous customers been with the course?

Problem type	Content of problem	Reason for problem	Solution
<i>Fatal</i>	no fatal problems	-	-
<i>Harmful</i>	unclear questions low rate of response lack of background info	low reliability low reliability, low validity no info on special customers	develop questions use incentives ask sex, age, educ.

Goal type 2. How much have they learned by attending the course?

Problem type	Content of problem	Reason for problem	Solution
<i>Fatal</i>	only after design	no possibility to compare	before-after design
<i>Harmful</i>	low number of measures measures do not focus on central aims	low reliability, low validity low validity	use more measures focus measures

Goal type 3. How effective, and in which ways, has the course been concerning its safety goals?

Problem type	Content of problem	Reason for problem	Solution
<i>Fatal</i>	no comparison group comparison group is not similar no info on intervening variables (sex, age, exposure, etc)	selection bias selection bias risk of wrong conclusions	use comparison gp match groups use info on intervening variables
<i>Harmful</i>	small sample no long term follow-up no info on intervening variables in traffic no info on trends	low reliability, low validity low reliability, low validity risk of wrong conclusions risk of wrong conclusions	use bigger sample use longer follow-up use info on intervening variables use trend info

e) Examples of evaluations

It is useful to measure several effects at the same time because training one thing can inadvertently have unwanted or desired effects on other things which are not the intended focus of training. Knowledge or skills training may have side effects on attitudes or behaviour, etc.

The following examples are hypothetical and simplified to show the core process of evaluation.

Ex.1 Evaluation of customer satisfaction

Name of the course: Obligatory second phase in driver training.

Object of evaluation: How satisfied have the participants been with different aspects of the second phase training in the driving school?

Design: one group - only after

Subjects: Course participants in a particular year from “quality driving schools”, participants from all quality schools.

Methods: Questionnaire with four point scale: Example: How satisfied have you been concerning the following things in the course?

Measured variables: Satisfaction with administration, instructors, teaching, theory, driving

Controlled variables: Age, sex, first phase in driving school or in private training

Possibility to generalise the findings: limited to the driving schools where the evaluated students attend.

Ex. 2 Evaluation of training effects on knowledge

Name of the course: Older drivers' safe driving knowledge course

Object of evaluation: Have the participants gained new knowledge relating to the goals of course?

Design: One group, before - after

Subject: Course participants in older drivers' safety course, participants of several courses

Methods: Questionnaire with multiple choice questions and applied problem-solving tasks. Example: How can you best increase your safety in traffic as a senior driver: a) By learning to handle the car in a more efficient way, b) By increasing your knowledge of traffic regulations, c) By planning your trips taking traffic density and the traffic environment into consideration.

Measured variables: Basic and applied knowledge, driving habits and style

Controlled variables: Age, sex, experience and exposure (total and at the moment), education

Possibility to generalise the findings: Only to voluntary older participants of these courses and only changes in knowledge but not in variables concerning driving.

Ex. 3 Evaluation of training effects on attitudes

Name of the course: Safe driving based on respect for traffic regulations.

Object of evaluation: Have the participants changed their attitudes and become more law-abiding, especially with regard to speeding and drinking and driving?

Design: One group, before – after, follow-up

Subject: Course participants in the course, which is part of a transport company safety training. All the participants from a certain company during several courses.

Methods: Questionnaire with multiple choice questions and self-reports and history data from company accident registers. Example 1: What is your greatest accident risk factor: a) Drinking and driving, b)

Speeding, c) Competing in traffic, d) Poor car handling skills. Example 2: Evaluate yourself as a driver: When driving I speed (a) always, b) almost always, c) sometimes, d) seldom, e) never).

Measured variables: Attitudes, driving habits and style, violations, accidents

Controlled variables: Age, sex, experience and exposure, type of job and vehicle

Possibility to generalise the findings: Change after this kind of course but not necessarily the specific effect of the course (control group is missing). If there had been other kinds of courses too (other groups) then it would have been possible to evaluate the effect of that specific course. Follow-up gives us the possibility to measure how long-lasting the change is.

Ex. 4 Evaluation of training effects on skills

Name of the course: Safe driving course on track and in traffic.

Object of evaluation: Do the participants learn the specific skills (driving on slippery roads and especially anticipatory driving) which they are expected to learn during the course?

Design: One group, before - after

Subject: 100 participants of a voluntary skid-training.

Methods: Behaviour observation, questionnaire with multiple choice questions and self-reports. Example 1: How well is the customer able to predict the braking distance on a slippery road surface (prediction and measurement). Example 2: How effectively is he/she able to avoid an unexpected object on the track. Example 3: What are your strongest and weakest points as a driver concerning safety? (questionnaire). Example 4: How capable is the driver in predicting other drivers behaviour and inform others of his or her own behaviour? (observation).

Measured variables: Skills on slippery road (in track) and skills in defensive driving (normal traffic)

Controlled variables: Sex, age, experience

Possibility to generalise the findings: Only to participants of the courses, only learning effects of the course but not the effects concerning safety.

Ex. 5 Evaluation of training effects on behaviour and safety

Name of the course: European Quality Label (EQL) safe driving course.

Object of evaluation: Are participants able to behave after the course in the expected (safe) way, do they apply the skills they have learned in normal traffic after the course and does the training make them safer drivers?

Design: Two groups (intervention group and control group), before-after- follow-up

Subject: *Intervention group*: Participants of voluntary European Quality Label (EQL) safe driving course, *Control group*: Drivers who have applied to the EQL safe driving course but are still waiting to get into training. Together there needs to be at least several hundred drivers.

Methods: Behaviour observation (in track and in traffic), questionnaire with multiple choice and open questions, self-reports. Example 1: Evaluation of driving in traffic taking safety into consideration. Safety margins, taking others into consideration, etc. Example 2: What are the biggest risk factors concerning your driving and how do you try to eliminate them?

Measured variables: Skills on slippery road (on track) and skills in defensive driving (normal traffic), accidents and violations

Controlled variables: Sex, age, experience (total and at the moment) and exposure

Possibility to generalise the findings: Using this evaluation design gives us the possibility to determine how effective this training is in helping participant to learn to drive safely. Follow-up provides the possibility to measure how long-lasting the effect is.

f) Glossary of terms

Aggregated data

Data from two or more evaluation studies combined for the purposes of analysis – usually to increase sample size and allow statistically robust conclusions to be drawn.

Before-and-after design

An evaluation in which data are collected for a group of course participants before and after attending the course.

Comparison group

A group of study participants that provides a basis against which other participants can be compared for the purposes of assessing the effect of the training course. The comparison group needs to be as similar as possible to the trained group, but does not receive training itself. Participants in a simple before and after study may show an improvement in (say) attitudes after receiving training. A control group, interviewed at the same times as the training group but not experiencing the training, might show a similar change in attitudes. This would indicate that the change in attitudes was not produced by the training itself.

The existence of a comparison (or “control”) group is a fundamental principle of scientific evaluations.

Controlled variables

Variables (e.g. age and experience of participants) that could potentially influence the outcome of an evaluation, but which the study takes special steps to deal with (i.e. control). This might be done by ensuring that all groups are similar in terms of the controlled variables, or by using statistical methods to correct the final result for differences between groups in the controlled variables.

Design

The design of an evaluation study covers the number and size of groups of participants, the conditions they experience, how they are selected, and what statistical methods are used in the analysis. A good design is one that allows ‘nuisance’ variables to be controlled and enables sound conclusions to be reached.

Disaggregated data

Data on individuals – as opposed to data that has been aggregated (which can provide only descriptions of groups of individuals).

Driving audit

An evaluation of driving skills and/or driving style – e.g. by an instructor on a public road.

Exposure

A measure of the degree to which an individual is exposed to the risk of having an accident. Distance driven is often used as an index of exposure.

Motor component

That component of a skill that is primarily to do with movement – e.g. manipulation of a car’s steering wheel.

Reliability

Ability to produce consistent results. A test is considered to be reliable if it would produce very similar results when repeated under identical circumstances.

Sampling criteria

The criteria that define which members of a population are eligible to be included in a study sample, and how they are to be selected.

Self-reported accidents

Accidents reported by the individual concerned. Usually, a self-reported accident study is one in which study participants are asked whether they have had accidents.

Self-selection bias

A bias in the results of a study caused by volunteers (to the study, or to a training course) being different in some important way from non-volunteers. For example, people volunteering for a training course may be untypically interested in becoming better drivers

Structured interviews

Interviews in which the interviewer reads from a predetermined list of questions and in which all or most of the responses are chosen from predetermined categories or rating scales.

Transfer of skills

The successful use of skills in a new situation. In the context of driver training, it is intended that skills learned during training will transfer to subsequent driving.

Unwanted learning results

It is possible that participants on a training course may learn in a way that was not intended. For example, a course intended to improve participants' ability to recover from skids may in fact teach them how to gain greater excitement from driving and encourage them to drive in a more risky way.

Validity

In general, the validity of a measuring instrument (such as a questionnaire) is the extent to which it measures what it purports to measure.

12. A European Quality Label for voluntary post-licence driver/rider courses?

In the absence of government regulation, would a voluntary quality label scheme meet the needs of consumers, course providers and policymakers alike? This was the question asked and explored, towards the end of the Advanced project, with course providers and the Advanced project team. The Advanced project was not commissioned to deliver a readily-prepared quality label, but rather to open a constructive debate on the:

- ◆ level of interest
- ◆ feasibility
- ◆ and possible structure & content

of a such a scheme. Whilst the European Commission has no formal position on whether a quality label would be workable or beneficial, its Transport Directorate considered this consultation phase as a potentially logical extension on the Advanced project recommendations. In other words, if course providers can agree in practice on basic principles for post-licence training, why not create a structure to encourage the introduction of such principles in practice?

a) Opening the discussion: Milan and Vienna

The Advanced work on a potential European Quality Label began with a preparatory meeting in Milan in April 2002. This meeting brought together driver training course providers from 6 European countries (and representing both on-road and track-based courses). The ideas and preliminary structures developed during this meeting were largely maintained and supported throughout the first (and only, so far) major consultation meeting with a larger group of course providers in Vienna (June 2002). 26 course providers from 14 European countries attended the event (11 of which run rider training courses).

b) Levels of support

Support, in theory, for a quality label was high, although there was some unease from Germany, due to fears that a European scheme may clash with the planned introduction of a DVR-led accreditation system for courses and trainers in late 2002. To avoid unnecessary and expensive duplication of efforts, a European label should therefore build on existing national systems.

The pros and cons of a quality label, as raised by the meeting participants, were as follows:

Arguments in favour of a quality label

- ◆ Benchmarking is important in this sector due to the almost complete lack of standards for post-licence driver and rider courses across the EU (especially in terms of the instructors)⁸⁷
- ◆ Many training organisations are too commercially-oriented at the moment (to the detriment of road safety aims).
- ◆ At the moment, most clients go to the courses with the best marketing. Good marketing does not necessarily mean good courses, however.
- ◆ Consumers have insufficient knowledge and information on the sector at this stage to be able to make an informed choice on which training to take.

⁸⁷ There are no laws regulating the post-licence driver / rider training sector in any of the European countries present, with the exception of Luxembourg and the UK.

- Pressure from European level is necessary to encourage quarrelling factions in national sectors to overcome their differences and accept the introduction of standards.
- (Certain) national governments are not interested enough in the subject

Arguments against a quality label

- An EQL would only complicate administration and would represent extra costs on top of forthcoming national certification (Germany).
- Current knowledge on training needs and measures for drivers and riders are insufficient to assess what “quality” is in reality.

Other important issues

- The EQL must set standards which at least match existing standards in the Member States (Germany)
- The EQL should build on existing national quality standards & structures (Germany)
- What would be the legal repercussions of disagreement between course provider and the granting authority?
- A quality label should involve minimal costs, time and paperwork
- Motorcycling clubs (who are the main providers of post-licence rider training) have often very limited resources. This should be taken into account when designing a label
- Problems of enforcement: who would be responsible for enforcing the application of the quality label requirements in practice?

However, even after more detailed discussion on the “Milan-option” for a quality label, support remained high, with the exception of 1 or 2 sticking points.

c) A revised framework for a quality label

The “Milan-option” presented to course providers covered the following themes:

1. the *basic principles* which should underpin a quality label
2. the *administrative structure* for granting and enforcing the label
3. what *content criteria* should be used to decide which courses are granted the label.
4. a possible *award scheme* to assess or “grade” each course.

The important question of financing was not actually addressed in any detail during the either meetings.

Following the ensuing discussions, the Vienna-option, as it now stands, looks like the following:

The Principles underlying a European Quality Label

The label should be:

1. voluntary
2. science-based
3. subject to renewal
4. independently assessed and monitored
5. with both European and national coordination & control
6. a progressive, graded system (to allow and encourage room for improvement with the label)*
7. course-specific (not company-specific)
8. able to provide independent consumer information

Firstly, the label should be voluntary. It is unrealistic to introduce an obligatory label at this stage. Course providers should be free to choose whether they wish to join the label scheme and should be free to leave at any stage.

Secondly, the label should be granted based on scientific grounds. The label should not be like an ISO label (which just standardises processes, not content) and it should not be a bureaucratic tool for the government to keep an eye on course providers. The main objective of the label should be to increase road safety by giving consumers a clearer idea of the quality of one course in comparison to others and to encourage the course providers to continue to improve the effectiveness of their training.

Next, courses which have the label should be required to reapply for the label every few years. Courses may change, trainers may come and go and so on. Quality can only be assured through a reapplication and testing process.

The fourth point stresses that the assessment and monitoring of the labelled courses should be independent. In other words, the authorities in charge of the label should not be involved in the design, evaluation or running of the course in question. This is a basic scientific principle.

Next, coordination of the whole label should be managed by some kind of office at European level, since it is a pan-European label. However, a national office should also be established for direct contact with the course providers. This office will have a better understanding of the local situation, language and culture.

There was some discussion on the proposed progressive nature of the label. By this is meant that once a course provider is granted the label for a particular course, he should be encouraged to continually improve the course. To give course providers encouragement to improve, there should be different grades or levels of label, according to the quality of the course. A star system, where a 1* course would meet basic requirements and a 5* star course would be amongst the best in Europe, was initially proposed but it was agreed to change the term "star" (due to fears that stars would equated more with facilities and luxury rather than on the quality of the course itself).

Despite major support that the system should be progressive, allowing for both basic and high-quality courses to be labelled, this principle clashes with the system developed in Germany by the DVR. Under the German system, courses and trainers would either be accredited or not. This is, somewhat misleadingly, named the 2-level system. If the European Quality Label was to allow for a greater range of standards (under the proposed progressive system), this may lead to the curious situation of a course in Germany being accredited at European level but not at national level. The Dutch course providers present also disagreed with the progressive principle. All other course providers were in favour.

Another principle of a quality label is that the label should be given to a particular course rather than to the company running the course. A course provider may offer many courses, ranging from rally driver training, to fleet (company) driver training and to novice driver training. Clearly, the primary objective of a rally driver training programme is not road safety, whereas road safety should be the aim of the novice driver

training. If the label were to be made available to the whole company, even the rally driver training course would have the label... which is clearly wrong.

There should also be an independent source of consumer information available, either at European or national level, where consumers can find out about post-licence driver /rider training, so they can assess their needs and assess the various courses available. This could be in the form of a website or leaflets, for instance. The Motorcycle Safety Foundation in the USA provides a neat example of the potential of a website, where trainers can also exchange tips and information⁸⁸.

The German Road Safety Council (DVR) submitted a list of additional principles, addressing both organisational and substantive issues, which it considers important. These include:

- Transparency: the course participant should be able to find accurate and relevant information, without getting confused
- The international organisation responsible for the overall management of the label must be neutral and internationally recognised
- The team responsible for rating each course should take into account the limits of a single day's training
- This team should have practical experience
- Courses must be evaluated regularly
- The training should not be mixed with elements that contradict the safety goals of the course

Possible Administrative structure

3 bodies were envisaged in the Milan option:

1. a coordinating body at European level
2. a team of "auditors" who assess each course wishing to be labelled
3. a national control authority responsible for contact with course providers and consumers and with enforcement of the label

The European coordinating body would be responsible for:

- Coordinating a pool (or group) of auditors responsible for assessing each course
- Formally approving courses so they can receive the label (in cooperation with the national authorities)
- Contact with national authorities on day-to-day matters
- Managing a central database with information on the courses in the label scheme
- Distribution of international research and study results (e.g. via a newsletter)
- Organising European roundtables designed to bring together course providers to discuss topical themes

The audit teams would be selected from the pool of auditors by the European coordinating body, and would be responsible for assessing each course that wishes to join the label. The audit teams would be limited to a maximum of 3-4 persons and could be composed of:

- A road safety researcher from an EU member state, other than the one in which the course is situated (who would be competent in the language of the country where the course is)
- A member of the national administration of the country where the course is situated
- An representative from the national authority in charge of monitoring the quality of the label
- A course provider from another course, preferably from another country (if language permits)

⁸⁸ <http://www.msf-usa.org/pages/instructorinfos.html>

The national control authority would be responsible for:

- granting the label (in cooperation with the European coordinating body).
- Enforcement of the requirements of the label
- administration, questions and complaints from both consumers and course providers

Content criteria

Following discussion on the content criteria, the reference list now looks like the following:

1. Programme goals

- a) improving traffic safety
- b) raising required skills and competences for safe driving
- c) dealing with these skills and competences while taking into account all levels of knowledge, attitudes and behaviour relevant to safe driving.

2. Course construction

- a) Participant and target group orientation
- b) Group sizes
- c) Clear goals, effective delivery and verification of goals reached
- d) Combination of sequences during training (didactic methodology, introduction-exercises-evaluation, etc)

3. Course content

- a) Taking into account the 4 levels of driver behaviour
- b) balancing skills training with risk awareness exercises
- c) on-road, track and classroom exercises
- d) relevance to real-life situations
- e) taking into account national realities when compiling course content
- f) avoiding overconfidence and counter-measures to overconfidence

4. Quality of trainers

- a) Coaching qualifications and skills
- b) Facilitating discussions (including in groups): mentoring / moderation
- c) Clarity and relevance of message
- d) Dealing with didactic material
- e) Training the trainer: initial training: teaching skills, differentiating between participants, assessing results and knowledge and use of a variety of teaching and learning methods
- f) Training the trainer: continuous training: training, audits/shadowing, exchanges and regularity of work

5. Other quality issues

- a) Systematic feedback from participants
- b) Essential documentation (course manual, training the trainer handbook, regular trainer information; consumer information)
- c) Regular, practical evaluation of training effects

6. Facilities / Equipment

- a) Tracks: safety area and track dimensions, surface, equipment (and relevance to training)
- b) Other equipment: didactic material, e.g. audiovisual equipment, classroom facilities, on-board diagnostics, radio and speed measurement equipment

There was disagreement in the new point 1, on the skills and competences required for safe driving. The German “Gefahren erkennen, Gefahren vermeiden, Gefahren bewältigen“ (Recognise, avoid and cope with

danger) was perceived by many of the participants to be too short-sighted. Anticipatory driving could be perceived as coming one stage before the first recognition of danger⁸⁹.

Award scheme (and withdrawal procedure)

The idea is that each content criterion is given a number of points. For some important criteria there would be a minimum number of points required. In other words, if a course does not meet these minimum requirements / points, it would not be able to receive the label at all. The points would be weighted in order to give more points to the more important content criteria.

Once the points for each criterion are added up, the total sum of points will determine what grading the course would receive.

Agreement was reached on the need for a procedure to withdraw the quality label from a course which fails to respect the minimum content criteria. Full withdrawal of the label should be postponed for a period within which the course could correct its shortcomings.

d) Outstanding issues

The following items remain open for potential future discussion:

- The use of a graded or a yes/no system
- The weighting of points given to each content criterion
- An elaborated audit team reference document and quality criteria for auditors (the proposed audits will be at least in part a subjective assessment method)
- A label-withdrawal procedure
- Possibilities for financing⁹⁰
- The legal status of a future quality label
- The exact procedures to follow with regard to communication between the coordinating body, control authority, course providers, consumers and the political establishment.
- The choice of national control authorities and European coordinating body (and available resources)

e) Conclusions

Based on the discussions held during the Advanced project, there would appear to be widespread support for the introduction of some form of European Quality label for voluntary, post-licence driver / rider courses in Europe. Furthermore, there was considerable support – although not unanimous – for a type of quality label based on the structures and concepts proposed in the preparatory meeting in Milan (the “Milan option”).

However, the devil is in the detail and it is likely that further consultation would reveal divergences of opinion. It is also clear that a future label would have to take into account the varying standards and resources available to course providers across the European Union and beyond. With the exception of

⁸⁹ This point was already covered in the Dresden meeting. In the draft recommendations paper, it reads: 1: Anticipate potential danger and avoid dangers altogether, especially by using large safety margins
2: Recognise dangers if they appear
3: Apply strategies to avoid becoming involved in dangers that have been recognised
4: If involved, have the skills to cope with the situation
5: If involved in a crash, be in a position to use safety equipment such as the airbag, safety belts, good seating posture, neck protection etc. in order to reduce injuries

⁹⁰ The Motorcycle Safety Foundation in the USA, which organises rider training across the country, gains financial support from 10 motorcycle manufacturers. This may be an angle worth pursuing.

Luxembourg and the UK, there are no standards in place to regulate (by law) the post-licence driver / rider training sector (in terms of course content and instructors). Standards range from non-existent to elaborate and are either set internally by driver / rider training companies or by road safety bodies (such as the DVR).

The German sector differs considerably from other countries in that the DVR has developed a quality scheme of their own which will be implemented shortly. If a European quality label were to come into force, its interface with the German driver / rider training sector and its own national scheme is a sensitive and crucial one.

In conclusion, the European Quality Label discussion is still in the early consultation phase. And such a label would not work without the support of a wide range of course providers. In principle, therefore, it is the ultimate responsibility of the course providers themselves to take action to monitor and raise standards, increase their market profile and distance themselves from low quality competitors through the introduction of international standards. However, it is understood that some sort of administrative support would be useful to see the process through to the establishment of an EQL. To this extent, it is up to the European Commission to decide whether to continue to provide such a framework once the Advanced project comes to an end.

13. The (online) Risk Awareness Database

M. Pannacci & N-P. Gregersen

The Risk Awareness Database was developed in reaction to the limited amount of quality risk awareness exercises used in post-licence training. The database, posted on the CIECA at www.cieca-drivinglicence.org, is seen as a first step on an international level towards encouraging more focus on risk awareness in these courses. The examples on the site have all been provided by course providers (or, in one case, by a road safety organisation which has compiled examples used by course providers). Course providers are free to consult the database and to consider using these examples, or adapted ones, for their own courses.

Designing good quality risk awareness exercises is an art, and few examples have been seen during the Advanced project. Of these few, some do not feature on the website. This is because many course providers are keen to prevent competitors from using these examples in their courses. (Most companies are, after all, private sector companies). This concern may also have led to course providers sending in more standard examples of risk awareness exercises, rather than their top examples which required a lot of time and effort to develop. Other reasons for the limited number of examples are: the time it takes to effectively fill out the questionnaire, and the lack of good risk awareness exercises to present.

The database does, however, bring together a series of examples of risk awareness examples at all levels of driver behaviour (see GADGET matrix). All examples are available in English, French, German and the original language in which the example was sent.

ANNEX 1: References & Activities

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Meetings:

- Meeting to discuss literature and course survey with course providers, June 11/12 2001, Brussels
- Information Day, October 22 2001, Brussels
- Restricted meeting of course providers, November 14/15 2001, Paris
- Draft recommendations meeting with course providers, January 28/29 2002, Dresden
- Restricted meeting of course providers: European Quality Label, April 17/18 2002, Milan
- European Quality Label meeting with course providers, June 10/11 2002, Teesdorf

Visits & Interviews:

- ADAC, April 25 2001, Bergisch Gladbach
- Centre de Formation pour Conducteurs, August 2 2001, Luxembourg
- KNMV, September 7 2001, Arnhem
- Finnish 2nd phase programme, September 21 2001, Helsinki
- Beroeps Opleidingen Verkeersveiligheid, October 16 2001, Lelystad
- Gentleman Driving School, October 23 2001, Brussels
- Swedish first phase track element (and consequence hall), November 8 2001, Stockholm
- Beltoise Evolution, November 13 2001, Paris
- ANPER Pacte-Auto Jeunes, December 15 2001, Lille
- Prof. Roger Murphy, Nottingham University, December 21 2001, The Hague
- System Driver Training, March 11 2002, Carlisle
- Driving Services, March 12 2002, Chester
- Honda MAC, March 13 2002, Colwyn Bay
- Driving Insight Gateway, March 14 2002, Bedford
- Drive and Survive, March 15 2002, Bedford
- British Motorcycling Federation's Blue Riband, March 16/17 2002, Leicester
- ProDrive, April 12 2002, Lelystad
- Quattroruote Guida Sicura, April 18 2002, Milan
- Test & Training, June 11, Teesdorf
- ADAC, July 5, Augsburg
- Cool Driving (RACB/GOCA), September 8, Brussels

Speeches:

Novice driver conference, BAST, Wolfsburg, October 22, 2001
AIT-FIA Driver Improvement Platform, Barcelona, February 28, 2002
2nd phase congress, Bern, May 13, 2002
ifz international motorcycling conference, Munich, September 16, 2002

ANNEX 2: Acknowledgements

Advanced and its project team would like to thank the following companies and organisations for their help and support throughout the project:

Company name	Country
New South Wales Motorcycle Council	Australia
IVV	Austria
EVA Energieverwertungsagentur	Austria
Fahrschule Easy Drivers St. Valentin	Austria
Fahrschule Hausherr	Austria
ÖAMTC	Austria
Polizei Wien	Austria
Magistrat der Stadt Wien	Austria
Sport und Spass	Austria
MAG Motorrad Aktions Gruppe Austria	Austria
ARBÖ	Austria
RED asbl	Belgium
Fortis Insurance	Belgium
ACEM	Belgium
EFA	Belgium
Fédération des Auto-Ecoles Agrées	Belgium
Ecole Peugeot de Maîtrise Automobile	Belgium
RACB	Belgium
Driving Know-How	Belgium
Touring Training Center Brugge	Belgium
MAG Belgium	Belgium
Centre de maîtrise du volant	Belgium
Jesco Racing School	Belgium
GOCA	Belgium
Promove	Belgium
Gentleman Driver School	Belgium
FEMA	Belgium
FIA	Belgium
Federale Politie, Divisie Verkeer	Belgium
Centrum voor Motorbeheersing	Belgium
Hrvatski Autoklub	Croatia
ÚAMK	Czech Republic
Traffic Academy of Bohemia	Czech Republic
Danish Motocyclist Council (DMC)	Denmark
MP 69, SMOK	Finland
Finnish Driving Schools Association	Finland
Euro Driver	Finland
Liikenneturva	Finland
Association de Formation des Motards AFDM 37	France
Association Landaise pour le perfectionnement des	France

Company name	Country
conducteurs débutants	
Beltoise Evolution	France
ANPER: Formation post-Permis	France
FFSA	France
SIFA Prévention	France
ANPER Association Nationale pour la Promotion de la Sécurité Routière (Pacte Auto Jeunes)	France
Centaure Rhône-Alpes	France
Ecole de Conduite Française	France
Automobile Club de l'Ile de France	France
Aquitaine Sécurité Routière	France
Bundesverband der Motorradfahrer	Germany
Institut für Fahrzeugsicherheit (GDV)	Germany
Academy-Thomas	Germany
Institut für Zweiradsicherheit eV	Germany
Bundesvereinigung der Fahrlehrerverbände	Germany
ADAC	Germany
Bruderhilfe eV	Germany
TÜV Akademie GmbH	Germany
Deutsche Verkehrswacht	Germany
DVR	Germany
DEKRA Akademie	Germany
ADAC Sicherheitszentrum Olpe	Germany
Prodrive GmbH	Germany
BMW Fahrer Training	Germany
Fahrschule Frenzel	Germany
ADAC Gau Südbayern	Germany
ACE Auto Club Europa	Germany
LGVF, Lehrgemeinschaft für vorbildliches Fahren e.V.	Germany
Bundesverband der Motorradfahrer	Germany
Institut für angewandte Verkehrspädagogik	Germany
RWTÜV Fahrzeug	Germany
Volos Motorcycle Club	Greece
Automobile and Touring Club of Greece	Greece
University of Thessaloniki	Greece
Greek Motorcyclist Federation (MOTOE)	Greece
Hong Kong School of Motoring	Hong Kong
Irish Rider Training Association	Ireland
Dept of Environment and Local Government	Ireland
Irish Rider Training Association	Ireland
Think Awareness- First Steps to Safer Monitoring	Ireland
Defensive Driver Training Ltd	Ireland
Risk & Safety Services Ltd	Ireland
Harrington Driver Training	Ireland
GuidaSicura Quattroruote	Italy

Company name	Country
Centro Internazionale Guida Sicura	Italy
Scuola Piloti Henri Morrogh	
Automobile Club d'Italia	Italy
	Latvia
Ltd "Vanags"	
Auto-Ecole Friden	
Centre de Formation pour Conducteurs	Luxembourg
Prodrive Training	Netherlands
	Netherlands
VVCR	Netherlands
VZN	
KNMV	Netherlands
Nederlands Instituut voor Verkeersveiligheid	Netherlands
Stichting MRO	Netherlands
Slotemakers antislipschool	Netherlands
CBR	Netherlands
NAI	Netherlands
FIM	Netherlands
Rozendom Beheer	Netherlands
Yamaha Motor Europe	Netherlands
	Netherlands
Traffic Test	Netherlands
Dutch Army	Netherlands
Milio Handelsmaatschappij BV	
Land Transport Safety Authority	New Zealand
Full Kontroll	
Norges Automobil Forbund (NAF)	Norway
Norwegian Road Safety Association (Trygg Trafikk)	Norway
Norwegian Public Roads Administration	Norway
DIA Poland	Poland
Automovel Club de Portugal	Portugal
C R & M	
Automovel Club de Portugal	
Saferoad	Portugal
	Portugal
Master-Pilot Driving Academy	Russia
Küzmic, D.O.O.	
Prometno Varnosti Center D.O.O.	Slovenia
Bears of Slovenia	
Direccion General de Trafico	Spain
Asociacion Provincial de Autoscueltas	
Escola RACC Renault	Spain
EULEN SA Centre de Formacion CAN PADRO	Spain
Escuela de Conduccion del RACE	
RACE	Spain

Company name	Country
Swedish Motorcyclists Central Organisation SVMC	Sweden
Gillinge Trafikövningsplats	
Lubricum AB	Sweden
Scantec AB	
Swedish National Road Administration	Sweden
Kör För Livet	
National Road Safety Office	Sweden
Office de la Circulation et de la Navigation	Switzerland
	Switzerland
FIM	Switzerland
Verkehrssicherheits-Zentrum Stockenthal	
ASSR Antischleuderschule Regensdorf	Switzerland
	Switzerland
Cornu Master School	Switzerland
Verkehrssicherheits-Zentrum Veltheim	
Marsh UK Ltd	United Kingdom
BMF Rider Training Scheme	
Universal Driver Training	United Kingdom
	United Kingdom
	United Kingdom
Driving Insight Gateway Ltd	United Kingdom
ROSPA	United Kingdom
Drive and Survive	United Kingdom
Driving Standards Agency	United Kingdom
Driving Services	United Kingdom
Mentor ADT Training Ltd	United Kingdom
Honda MAC	
Driving Development	United Kingdom
Huddersfield University (Consumer Research)	
Andercath Training Services	United Kingdom
	United Kingdom
System Driver Training	
FIM	United Kingdom
	United Kingdom
Fleet Driver Training Association	United Kingdom
Brake	United Kingdom
Team Oregon Motorcycle Safety Program	
Motorcycle Safety Foundation (MSF)	USA

ANNEX 3: Minutes of meetings

Meetings with course providers and other stakeholders:

- ❖ Brussels, June 11/12, 2001
- ❖ Paris, November 14/15, 2001
- ❖ Dresden, January 28/29, 2002
- ❖ Milan, April 18/19, 2002
- ❖ Vienna, June 10/11, 2002

Advanced project: Brussels workshop, June 11/12 2001 (DRIVERS)

List of participants

SURNAME	First name	Company name	
Acourt		Ecole de Conduite Française	
Aluma	Albert	Escola RACC Renault	
Bacon		Risk & Safety Services Ltd	
Carré		SIFA Prévention	France
Gaudioso		ANPER	France
Finsterer	Horst		Germany
Gerkens		DVR	Germany
	Daniel	Driving Know-how	
Jenkins		Driving Services	United Kingdom
Jones		Honda (UK)	United Kingdom
Kobes	H		Netherlands
Koch		Verkehrssicherheits-Zentrum Veltheim	Switzerland
Kotal		Traffic Academy of Bohemia	Czech Republic
Monnatte	Jean-Philippe	Beltoise Evolution	France
Müller		RWTÜV Fahrzeug	Germany
Ofoegbu	Caroline		Belgium
	Peter	Universal Driver Training	United Kingdom
Schaaphok		Beroeps Opleidingen Verkeersveiligheid	Netherlands
Stern		ADAC Gau Südbayern	Germany
Tscherning de Albuquerque		C R & M - Actividades Motorizadas	Portugal
Vanbroeckhoven	Willem	Autoveiligheid (CIECA)	Belgium
Wurz	Franz		Austria

1. Introduction to the Advanced project

The workshop began with an introduction to the Advanced workshop and a presentation of the goals of the project. In short, Advanced intends to develop guidelines for advanced driver courses (leading to a European Quality label) and recommendations for a future potential obligatory system of post-licence novice driver training. It also aims to encourage course providers to implement evaluation techniques so that more can be learned of the effects of their courses on participants.

2. Standpoint of the European Commission

- 1.7 million people in the EU are injured every year on the roads. Since 1970, 2 million people have been killed in road accidents. The European Commission has set an ambitious target to reduce accident fatalities by 50% within the next 10 years.
- Novice drivers rank disproportionately high in these statistics. Is there something wrong with the driving test? The Commission thinks this is probably not the case, but that more emphasis must now be given to the training given before and after the test.
- Until now the Commission's work has been in the field of driver licences. In 2003 the next amendments will enter into force in EU Member States. However, now there is a policy shift away from exams and more towards training before and after the licence.

- A number of EU-supported projects have been undertaken in the field of driver training. The GADGET project first elaborated a philosophy for driver training which was then elaborated by the DAN project, which examined the various schemes implemented around Europe (post-licence or probational schemes exist already in Luxembourg, Finland, Germany and Austria).
- Other ongoing projects include ANDREA (on driver improvement courses for recidivist drivers) and BASIC (new forms of initial driver training).
- ADVANCED is another of the projects doing research in this field. The project will place particular emphasis on novice drivers. Two important questions are: are we achieving a behavioural change with youngsters during post-licence driving courses? And to what extent do we need to keep training the vehicle handling skills of these drivers? To this extent, environmentally friendly driving, defensive driving and driver behaviour are of interest to the Commission.
- The Commission intends, in the medium term, to present recommendations to the EU Member States on post licence training in the EU, followed by a legislative proposal within about ten years to introduce obligatory post-licence training. The Commission must, of course, prove that such an initiative would not place an unnecessary burden on administration and the public.
- In the short-term, the Commission sees Advanced as an effective means of encouraging the exchange of information and expertise between course providers and to help develop guidelines for novice/advanced rider courses.

3. Literature study results

Georg Willmes-Lenz from BAST in Germany presented some initial findings of evaluations of advanced driving courses⁹¹.

1. Advanced driver training courses are often under pressure to perform by national governments (who may support certain courses in one way or another).
2. Such courses are one of a wide range of methods designed to improve road safety, as are advertising campaigns, licensing laws and other regulations, as well as self-regulated forms of learning, namely learning by driving. A comparison of these forms of intervention shows that advanced driver training is an educative approach, albeit with a very limited amount of time to contribute to the learning process and to reach certain goals. (Most other forms of educative measures last longer than a 1 day driving course). Novice driver training is an example of composite advanced courses, using classroom sessions, a driving audit and track-based training in a holistic learning package.
3. Various forms of evaluation exist when applied to advanced driver courses:
 - acceptance levels amongst participants: do they feel comfortable and satisfied with the training?
 - Are new competencies imparted by the training?
 - Does training contribute to reducing the level of traffic infringements?
 - Does training contribute to reductions in road accidents? This is particularly relevant to government and to the general public (because training courses may be able to apply for funding/obligatory status, etc). However, methodologically speaking, a link between accident reductions and advanced driver courses is extremely difficult to establish. Very large sample groups are needed because only a small share of people have road accidents, and actual behaviour is always influenced by many more factors than just training.
4. In terms of the evaluations which have been conducted in the past, here are some results:
 - A 1992 evaluation study in Switzerland showed that, although participants stated that they had applied what was learned in practical training, there were no differences to be found in the share and frequency of accidents afterwards, compared to a control group.
 - A German study into the transfer of competencies to participants (in terms of knowledge, attitude and behaviour) showed that the emergency braking of the participants as well as knowledge on safety items were substantially improved following the course. However, no change had occurred in terms of personal attitudes.
 - Another German study which looked at a pilot project concerning a two-phased driver education programme did not observe any positive effects from the training. No differences were noted in any of the evaluated areas of knowledge, skills and behaviour, and indeed some counter-productive measures were observed.
 - A Norwegian study in 1988 into an obligatory two-phased education programme noted counter-productive effects of the skid training element. A significantly higher share of accidents in icy and snowy conditions took place after training. An increased number of accidents occurred over the two year period following the course, involving above all male drivers. Night-time driver training, on the other hand, reduced the number of accidents in the dark.
 - Finland responded to the above study by changing their driving training programme and by introducing an emphasis on participative skills instead of vehicle handling.

In summary, mixed results have been noted over the last 10-15 years. Detrimental results have been observed in the case of skid training with novice drivers. Positive learning effects have been observed in terms of some practical, vehicle handling skills, such as braking. Positive results also exist with night training. Participants accept the rationale of advanced driver courses and like to take part in them.

⁹¹ Mr Willmes-Lenz was required to make the presentation at very short notice. Please therefore refer to the section 3 of the minutes of the rider workshop (attached) for supplementary information.

As far as current and future challenges are concerned, Mr Willmes-Lenz highlighted the following issues:

- A qualified didactical approach is needed to make sure competencies are transferred to participants.
- Establishing a link between advanced courses and accident reduction will remain difficult because of the abovementioned methodological and practical reasons which will remain unchanged in the future. Consequently, accident reduction will probably not be used as a central aspect and the main legitimating factor for advanced training.
- There is scientifically-based proof that people can gain from these courses as long as they are satisfied with them, they acquire new safety competencies and they are willing to transfer them into practice.
- Quality management can help render courses more successful, but will not compensate for fundamental shortcomings in the contents and methods.

4. Introduction to the hierarchical levels of driver behaviour

Esko Keskinen, from the University of Turku in Finland, presented a model depicting four levels of driver behaviour (see annex).

- The two lowest levels relate to the immediate driving task (Level One: vehicle manoeuvring, and Level Two: mastery of traffic situations). Level Three refers to the goals and context of driving and Level Four concerns the driver's goals and skills for living.
- These levels are interdependent. Furthermore, actions on the higher levels, especially Level Four, may impact significantly on the lower levels.
- Training should be developed to address issues at all four levels of driver behaviour. This training should focus on knowledge and skills (column one), but more importantly, the risk factors that play a role on the different levels (column two). The driver should also be able to evaluate himself/herself on all the different levels. Self-evaluation should also be an objective in driver training, therefore.
- Most current training, however, seems to concentrate too heavily on Level One (and to some extent on Level Two): too much training on lower levels of the model without corresponding training on the higher levels could increase the propensity for risk-taking amongst participants as a result of overconfidence and greater driving speeds. (Novice drivers, for instance, have developed the first two levels after a few months of driving but practically no differences have taken place during this time at higher levels).
- It is easier to create automatisms at the lower levels (for instance: emergency braking technique at Level One) than at the higher levels (which relate more to personal character and assumptions developed over many years). However, it is important to at least raise awareness of higher level risks and personal limitations, for instance, even if a one day training course is unable to bring about more substantial changes.
- Of particular importance are the risk-increasing factors at Level Three and Four to encourage, for instance, individuals to be aware of their own propensity for risk-taking. Self-evaluation is necessary at the top two levels to avoid overconfidence after courses and to recognise ones personal limits. In Finland, for example, the course starts with a self-evaluation questionnaire and a driving audit (with feedback). This immediate emphasis on self-evaluation and discussion aims to facilitate building higher levels skills BEFORE increasing skills at lower levels (such as vehicle handling).
- The message from the instructor to the student is important. This message is not only what the teacher teaches, but also what the student understands. A survey in Nordic countries revealed that participants often understood different goals than were originally intended. Many students understood that driver training on slippery surfaces is supposed to allow them to drive, after the course, as quick on slippery roads as dry ones. Others correctly understood, saying that it is important to evaluate conditions and to set speed appropriately to these conditions.

Discussion points related to the presentation of the driver behaviour model:

- Can exercises on the lowest level (vehicle handling skills) influence the highest level (understanding of risks, self-limitations, etc)? A course provider believed that this is possible provided that the course and the instructor are sending the right message. The counter argument, however, is as follows: many course providers present a certain task, increase the participant's handling skills in the initial phases and then show that the participant's skills are insufficient to cope with danger⁹² (when the participants are made to fail during the last attempt at the exercise, for instance). These two messages (improving handling skills, on the one hand, and learning about one's limitations and the need for defensive driving, on the other) may conflict.

Even if the participant has understood the message of defensive driving, he will still become more confident in his own ability to cope with danger ("practising a little more will allow me to deal with it"). In other words, progress in the initial exercise phases means that failure in the last exercise may not obtain the desired goal. By increasing the level of vehicle control training, this increases the confidence of the driver and may increase the likelihood of accidents, especially with young drivers. As a result, all levels of the driver behaviour model should be addressed directly.

- Many course providers agreed that there are various types of advanced driver courses, each responding to different needs and having different objectives.
- Others concluded that, whether training on level 3 or 4 of the driver behaviour model was desirable or not, it was difficult to make an impact on these levels in a one-day course.

How should courses attempt to address the higher levels of driver behaviour (self-evaluation, awareness of limitations, etc)?

- One course provider stated that it is crucial to sort out drivers at the beginning of the course to work out where, and to what extent, behavioural training is needed. He uses a driving audit for this purpose. If the participant is a confident driver, he will need a combination of training on both vehicle handling and behavioural aspects. If the driver is insecure, he will be given vehicle handling skills only.
- Cameras can be used in and around the car in order to produce a "mirror effect". The participant sees his own driving performance on camera and can evaluate himself more objectively. Simulators can have the same effect.
- An assessment report (with discussion and feedback) is another means of encouraging the participant to think for himself about his own strengths and weaknesses.
- Many course providers recognised the need for the participants to be motivated, especially as far as higher level training is concerned. This applies particularly to the motivation required to encourage participants to think for themselves about themselves.
- In obligatory courses, what is important is that the learning goals of the course are retained afterwards and applied in practice (i.e. using self-evaluation). Training vehicle handling skills with a view to affecting their behaviour (level one – level four) may not work because it depends on the intelligence of the individual (which obviously varies) and the communication skills of the instructor (who have to be particularly competent in this regard).
- Attitude may need less training in the case of voluntary courses. People are generally safety-conscious already. More vehicle handling skills may be needed in particular countries, for instance Germany, where cars are often driven at very high speeds.
- Small groups can avoid the pressure to perform in larger groups and can improve the relations with the instructor.

5. Overview of questionnaire survey results

⁹² One course provider said that ensuring failure is becoming increasingly difficult because of the technological advances made with modern cars.

- Nick Sanders from CIECA presented some initial findings based on the questionnaire responses from course providers on the content, methods, quality assurance and facilities applied in their courses.
- The presentation (see attached powerpoint file) highlighted in particular the differences between road and track-based courses and addressed the practical and theoretical aspects of a range of course programmes and the principles applied within them.
- It concluded by showing, albeit rather simplistically, that there are differences in the goals of road-based and those of track-based courses (which equate to goals at different levels of the driver behaviour model).

6. General discussion: comments from workshop participants

The general discussion session involved two main issues: what are the advantages/disadvantages of road-based and track-based courses and what is the optimal training programme for novice drivers?

Advantages of road-based courses:

- [An individual, intensive approach during a limited timeframe
- [The most effective way to improve hazard perception in traffic-based situations, safe distance driving and interpreting the road itself.
- [Better discipline can be obtained on the road. Ideally, two participants sit in the car with one instructor. One observes while the other drives, with permanent supervision, feedback and appraisal.
- [An effective, individual means of auditing a participant's driving ability before deciding on the next step of training (which could be theory, road-based or track-based training, for instance).

Advantages of track-based courses:

- [The only way to get participants to experience and learn braking distances properly
- [The best way to motivate people to take part in advanced driver training. The image of the road is like going back to school...
- [Dangerous situations can be simulated on a track and results can be immediately seen and experienced. Traffic situations, on the other hand, can be very unchallenging.
- [Participants must feel that they are learning quickly in an easily measurable way. Only track-based courses can do this.

The optimal driver training programme for novice drivers may include:

1. An audit before joining the course to separate high risk from low risk drivers, experienced from inexperienced drivers, etc. (Why should low risk drivers have to discover their personal limits if they will never test them in reality?).
2. Group discussion of personal experiences to motivate participants, raise awareness of dangerous situations and encourage them to self-evaluate.
3. Braking exercises on track (not discovering limits, just improving technique and discovering effect of speed on braking distances).
4. A summary of the objectives of the course at the end of the day, in order to clarify them for those who have misunderstood.
5. Reliable feedback from participants after the course to trace their accident history (for evaluation purposes).

Other comments included:

- Group discussion should be used extensively. Moreover, young people are sensitive to peer pressure, insecure and inclined to show-off, so time is needed before they settle down.
- Observation skills are the key factor for handling hazards on the road. This should be a major feature of the course.

- Both road and track-based training complement each other and can be used together. However, an entire day is needed for the track exercises, so the training should take place on different days. A gap in between these two days may be useful.

Advanced project: Brussels workshop, June 11/12 2001 (RIDERS)

List of participants

Surname	First name	Company name	Country
Acourt	Gérard		France
Aluma		Escola RACC Renault	Spain
Carré	Fernand	SIFA Prévention (Jean-Claude Pottier)	France
Cornu	Jacques	Cornu Master School	Switzerland
Damen	Achilles	FIM	Netherlands
Engberg	Bjorn	Swedish Motorcyclists Central Organisation SMC	Sweden
Finsterer	Horst	DVR-ZERT	Germany
Jones	Robbie	Honda (UK)	United Kingdom
Kobes	H		Netherlands
	Peter	Verkehrssicherheits-Zentrum Veltheim	Switzerland
Pour	Jiri	Traffic Academy of Bohemia	Czech Republic
Lindeman		KNMV	Netherlands
Müller	Dietmar	RWTÜV Fahrzeug	
Nowé	Hervé	Driving Know-how	Belgium
Renoy	Roger		Belgium
Skovlokke	Rolf	Danish Motoryclist Council (DMC)	Denmark
Stern	Wolfgang	ADAC Gau Südbayern	Germany
Tomlins	Bob	FEMA	Belgium
Vaessen	J.P.	CBR	Netherlands
Vanvinckenroye	Joris	Centrum voor Motorbeheersing	Belgium
	Alan	BMF Rider Training Scheme	United Kingdom
Wurz	Franz	ÖAMTC	Austria

1. Introduction to the Advanced project

The workshop began with an introduction to the Advanced workshop and a presentation of the goals of the project. In short, Advanced intends to develop guidelines for advanced rider courses (leading to a European Quality Label) and recommendations for a future potential obligatory system of post-licence novice rider training. It also aims to encourage course providers to implement evaluation techniques so that more can be learned of the effects of their courses on participants.

2. Standpoint of the European Commission

- 1.7 million people in the EU are injured every year on the roads. Since 1970, 2 million people have been killed in road accidents. Novice drivers rank disproportionately high in these statistics. The European Commission has set an ambitious target to reduce accident fatalities by 50% within the next 10 years.
- Until now the Commission's work has been in the field of the driving test. In 2003 the next amendments will enter into force (resulting in more varied manoeuvres for motorcyclists).
- There is a policy shift now from exams and more towards training before and after the licence.
- The GADGET project first elaborated a philosophy for driver training which was then practically applied first in the DAN project.

- Other ongoing projects include ANDREA (driver rehabilitation courses) and BASIC (new forms of initial driver training).
- Advanced is another of the projects doing research in this field. The Commission intends, in the medium term, to push through recommendations on post licence training in the EU, followed by a legislative proposal within about ten years to introduce obligatory post-licence training. Advanced is designed to encourage the exchange of information and expertise between course providers and to help develop guidelines for novice/ advanced rider courses.

3. Literature study results

Gregor Bartl, from the Austrian Road Safety Board (KfV), presented a critical overview of evaluation studies conducted on advanced driver and rider courses. He made the following points:

1. Evaluation studies are needed to prove that the effects of courses are positive, especially where government-supported courses are concerned.
2. Very few evaluation studies exist on the subject of advanced rider and driver courses. Most are studies of driver courses, not motorcyclist courses. Certain parallels can be made, for instance with regard to road situations. However, the driving dynamics are different and the psychological profile of the riders themselves must be looked at.
3. Motorcyclists' profiles: Why do people choose a motorbike rather than a car? A German study (Schulz et al, 1998) showed that motorcyclists who have a weak self-identity concept have more accidents. This shows that, in motorcycling, personality has an impact on driving style.
4. What is the impact of advanced rider and driver training in terms of enhancing road safety? Studies that have been looked at so far only answer this question partially:
 - Studies have often revealed that the impact of advanced courses is either nil or, in certain cases, even negative. In other words, participants of advanced courses may have more accidents than before (as proven by studies in the USA and Norway in the 1980s, in the case of skid training).
 - The problem may be linked to the way the message of road safety is communicated to participants. A new study from Sweden (Engstrom) showed that participants left the course with a completely different understanding of the course objectives than the course instructors. Participants believed the course was designed to improve vehicle handling skills. The instructors, on the other hand, knew that the course objectives were to improve (responsible) behaviour and to encourage defensive driving.
 - There is an important distinction to be made between obligatory and voluntary courses. A study by Siegrist and Ramseier (1992) in Switzerland showed that participants in voluntary driver courses already had half of the average accident rate in Switzerland BEFORE taking part in the course. In other words, participants in voluntary courses are often better drivers in road safety terms, and are more motivated for safety. The Swiss study showed that the course had no impact on the participants, when comparing their safety record before and after the course, using a control and test group.
 - Whereas voluntary participants may be fun and safety-minded, mandatory training (such as in Finland and Luxembourg) involves a wide range of people with different motivations.
 - In Austria, where one of the largest numbers of courses are given by the ÖAMTC, these courses have been evaluated by Kaufmann and Branstätter over a ten year period. Results showed that emergency braking is improved as a result of the courses.
 - Kiegeland in Germany also showed that the emergency braking (for cars) is much improved, particularly in terms of the technique (swift increase of braking pressure and maintenance of pressure). However, personal attitudes did not change. Furthermore, there was no real improvement seen in terms of navigating bends in the road and of keeping a safe distance from the vehicle(s) in front. (Maintaining safe distances is one of the most crucial factors in terms of accidents).
 - Evaluation results in Austria show that, after training, people were not afraid of coping with a skidding vehicle. Is this a desired effect or could this lead to overconfidence which may culminate in more risks being taken and an increased number of accidents as a result (better skilled drivers taking more risks).

- An Australian study on riders concluded that it is important to find a balance between technical skills, on the one hand, and self-evaluation of the riders' own attitudes (in terms of risk and self-limitations) on the other.
- The Road Expert programme in Austria is offered to young drivers and subsidised by transport ministry. The courses aim above all not to encourage excessive confidence of ones skills. It includes group discussions with traffic psychologists. Evaluation has shown that the programme has led to no increase in confidence of the participants' vehicle handling skills. It also appears that young riders are more sensitive to risk than car drivers of a control group.

Overall conclusions of Gregor Bartl:

- Training the whole driver is important: skills, safety aspects and behaviour.
- Courses should move away from pure driving skills to include behavioural training ("attitudes" are not covered in enough depth in many courses at the moment).
- The safety benefits in terms of accident reduction of advanced courses is unclear at the moment (especially as far as voluntary participants are concerned, because they are generally safety-conscious anyway).

Georg Willmes-Lenz, from BAST in Germany, then presented the results of two studies conducted in the early eighties on advanced motorcycle training:

- A 1983 study on ADAC training showed no change in attitudes towards risk, significantly higher assessment of ability, poor hazard perception and no significant training effects
- A 1980 study on MOST pre-licence training for licence applicants with pre-identified low vehicle handling skills showed that skills training could work successfully. These riders had significantly less accidents in the first and second year after obtaining the licence.

Comments from workshop participants related to the literature study presentations:

- Some concern was raised that some of the evaluations mentioned in the presentations dated back ten years or more. However, many are very recent and while they do not cover a wide range of courses, they are believed to be indicative of the state of courses in general.
- The methodological problems linked to evaluation studies were also discussed. A good evaluation design is necessary to obtain reliable results. Such a design includes before and after samples with a sufficient time gap, control and test groups, samples of a sufficient size to obtain clear results, etc. Even then, results may be unclear.
- Perhaps more studies exist than have been made known. Perhaps these studies showed no results, for one reason or another (for instance due to methodological problems or to the fact that individuals taking part in voluntary advanced courses are already safety-conscious and therefore will not necessarily improve their safety-consciousness any further).
- One participant asked whether any Japanese studies were available (where courses may include the use of simulators). While it is not easy to cover all studies in the course of the project, the project team will continue to look for more of them, in Japan, USA, etc.
- Finally, it was agreed that it is difficult to draw technical conclusions from these studies because so much depends on the individual instructors who implement the courses. A good instructor can still bring about positive effects in participants, even if the course programme itself is flawed. However, a good programme will have no impact on the participants if the instructor himself is poor.

4. Introduction to the hierarchical levels of driver behaviour

Esko Keskinen, from the University of Turku in Finland, presented a model depicting four levels of driver behaviour.

- The two lowest levels relate to the immediate driving task (Level One: vehicle manoeuvring, and Level Two: mastery of traffic situations). Level Three refers to the goals and context of driving and Level Four concerns the driver's goals and skills for living.
- These levels are interdependent. Furthermore, actions on the higher levels, especially Level Four, may impact significantly on the lower levels.
- Training should be developed to address issues at all four levels of driver behaviour. This training should focus on knowledge and skills (column one), but more importantly, the risk factors that play a role on the different levels (column two). The driver should also be able to evaluate himself/herself on all the different levels. Self-evaluation should also be an objective in driver training, therefore.
- Most current training, however, seems to concentrate too heavily on Level One (and to some extent on Level Two): too much training on lower levels of the model without corresponding training on the higher levels could increase the propensity for risk-taking amongst participants as a result of overconfidence and greater driving speeds. (Novice drivers, for instance, have developed the first two levels after a few months of driving but practically no differences have taken place during this time at higher levels).
- It is easier to create automatisms at the lower levels (for instance: emergency braking technique at Level One) than at the higher levels (which relate more to personal character and assumptions developed over many years). However, it is important to at least raise awareness of higher level risks and personal limitations, for instance, even if a one day training course is unable to bring about more substantial changes.
- Of particular importance are the risk-increasing factors at Level Three and Four to encourage, for instance, individuals to be aware of their own propensity for risk-taking. Self-evaluation is necessary at the top two levels to avoid overconfidence after courses and to recognise one's personal limits.
- The message from the instructor to the student is important. This message is not only what the teacher teaches, but what the student understands. A survey in Nordic countries revealed that participants often understood different goals than were originally intended. Many students understood that driver training on slippery surfaces is supposed to allow them to drive, after the course, as quick on slippery roads as dry ones. Others correctly understood, saying that it is important to evaluate conditions and to set speed appropriately to these conditions.

Comments from workshop participants related to the presentation of the driver behaviour model:

- Incredibly good handling skills do not make the rider safer. Someone with better Level Four skills can, however, compensate for below-average handling skills.
- Novice riders (obligatory) training and voluntary courses are completely different. Voluntary drivers may not need attitudinal skills training (Level Four) because they are already safety-conscious. (Many participants come to a voluntary course with pre-identified weaknesses which they would like to work on).
- These levels of driver behaviour overlap with one another. The consequences may be that the training of handling skills (Level One) needs to be used in order to encourage effects at other level. Much discussion was devoted to the method of teaching Level Four skills via Level One exercises (vehicle manoeuvring). For instance, emergency braking exercises highlight the effects on braking distance of small increases in speed. This is designed to make the participants more likely to adopt a defensive driving style (and to reduce speed). However, there is a risk that participants may conclude that the exercise is nothing more than improving handling skills. This may lead to overconfidence and a willingness to continue pushing limits. This depends on the participants' intelligence and also on the teaching method. If a "moderation" technique is used, whereby participants are required to learn for themselves, the risk of misunderstanding the overall goal is even greater. This means that the instructor should reiterate clearly the goals at the end of the session.
- The optimal learning approach has to be systematic, so the instructor's qualifications help to transfer knowledge to behaviour. Advanced training should not be turned into a talking shop.
- There is a limit to how much can be done in one day training (particularly on the attitudes of participants). Attitudes have been developed over time and are difficult to change. However, it is

possible to draw attention to some important attitudinal factors, to encourage feedback and group discussion and to mentally prepare for future experiences on the road.

- Mental training is vital. Participants can be trained to develop expectations and prepare mentally for accident scenarios. Examples should be varied to make people think about new situations, new decisions to be made. Participants may be encouraged to think of what their typical accident would be and then to prepare for it using a mental map.
- It is important to base ongoing training on the level and emphasis of pre-training. In some countries, more attitude training may be necessary to complement the high level of vehicle handling skills already developed, for instance.
- A distinction should be made between marketing and course content. Marketing strategies need to be developed to sell courses (where handling skills must be in the forefront). A more cautious approach can be made in terms of content afterwards, however (once they have a captive audience). Whether this works is disputed. It may be that the more attractive a course is, the more difficult it is to change those initial expectations of the participant during the course..
- Motorcyclists are a group with very high collective identity. Peer groups and peer pressure become very important. In a commercial environment, the pressure is on the course provider and participant to perform...money is exchanged, there is a need for direct skills improvement, need to feel (immediate) learning.
- Level Three training (journey planning, risks concerning trip, understanding one's personal skills/mood at the time) does not seem to feature heavily on advanced courses. Riders' level three planning may be limited to whether to ride or not and, if so, where the most beautiful route is. However, the precautionary approach to planning was stressed. Riders could plan by taking into account the speed they need to reach their destination, the heaviness of traffic, the best route to take to avoid traffic, pressure from riding with a group, etc.

5. Overview of questionnaire survey results

Nick Sanders from CIECA presented some initial findings based on the questionnaire responses from course providers on the content, methods, quality assurance and facilities applied in their courses.

- The presentation (see attached powerpoint presentation) highlighted in particular the differences between road and track-based courses and addressed the practical and theoretical aspects of a range of course programmes and the principles applied within them.
- It concluded by showing, albeit rather crudely, that there are differences in the goals of road-based and those of track-based courses (which equate to goals at different levels of the driver behaviour model).

6. FIM PRESENTATION: THE OPTIMAL RIDER ADVANCED TRAINING COURSE

Achilles Damen from FIM presented the findings of a FIM committee (made up of members of the federation) which have been developed over time. The committee found that:

- Courses often have no clear goals
- Safety does not equal skills
- Courses tend to focus too much on skills and not enough on attitudes
- Braking is vital, however (a lot of riders cannot brake properly)
- Technical support is needed (skill is not enough): braking systems, etc
- Risk recognition/detection and risk avoidance should be trained more, for instance in the classroom or in small groups on the road
- If hazard perception is not taught, then skills training should be stopped (otherwise the riders' improving handling skills are not matched with the necessary risk perception and foresight)
- There is a balance to be found between theory, track and on-road training

7. FEMA PRESENTATION: THE OPTIMAL RIDER ADVANCED TRAINING COURSE

Bob Tomlins from FEMA presented his model of the optimal rider training course. In his view, experienced rider courses should recognise:

1. Self-selecting participants
2. Evaluation of individual needs
3. Tailored to individual needs
4. Training on attitude and behaviour
5. Training on hazard awareness and avoidance

He quoted a study in the UK which concluded that “It is well known that casualty rates among formally trained riders are higher than among those who are untrained. // Typical rider training programmes are skills based.”

Comments from workshop participants on the above presentations:

- Studies show that more confident drivers have more accidents. In Austria, most of the accidents are single vehicle accidents. Therefore external obstacles do not appear to be the main problem. The biggest threat to the rider is the rider himself. Self-overestimation is the problem.
- There was disagreement as to whether single vehicle accidents were typical in other countries where collisions with cars, for instance, was the main reason. However, it was claimed that riders could even have avoided these accidents if training had given him the tools for perceiving and avoiding risks. Furthermore, single vehicle accidents remain largely unreported, thereby distorting the statistics.

8. GENERAL DISCUSSION: COMMENTS FROM WORKSHOP PARTICIPANTS

The general discussion session tackled two issues. Firstly, how do courses encourage risk awareness and hazard perception? Secondly, what are the essential elements of an advanced rider course?

In terms of risk awareness and hazard perception, the responses from the track-based course providers were as follows:

- This can be taught by discussing typical dangerous situations on the road in a class environment, using group discussion and feedback. It is important to allow participants to react. Participants are asked to visualise certain situations, using scenarios presented on overhead projectors, for instance. Hazard perception is difficult to do in the exercises. Above all with riders, we must teach them to remain cool and regulate their speed.
- An example from Austria to show hazard perceptions includes the use of two overheads: one is a photo of a traffic-based situation, the other is out in the countryside. Participants are asked which one situation is the most dangerous? Most rider accidents are single vehicle accidents in Austria, so the countryside is actually the most dangerous situation. The point is to show that, in terms of risks, the rider can be his own worst enemy.
- Simulators may be ideal for developing hazard perception.
- Track-training of hazard perception can be done using obstacles on the track which appear unexpectedly.
- It is difficult to do much theory in a one day course. There is not enough motivation or interest. We have to concentrate on bringing people’s vehicle handling skills up to standard.

The responses from the road-based course providers, on the question of risk awareness and hazard perception, were as follows:

- Classroom and traffic-based exercises on the road are the only way to teach hazard perception. Of course, dangerous scenarios do not always occur on the road, but participants can and should be taught to look out for potential danger (filtering traffic...seeing and not just looking).
- Improving risk perception in traffic may lead to the same results as improving Level One skills. The rider may become overconfident of his ability to perceive danger. There are two things which a rider can do after hazard perception training. He can either become safer at the speeds he is used to riding at OR he can ride faster and maintain the same level of risk as he had before.
- Risk management is the most important thing for a rider. Most riders do not recognise risk enough though. Once they are taught to recognise it in traffic situations, it is up to them how they apply it (how much risk is each individual prepared to take in every day traffic situations?).
- Awareness of the poor level of drivers on the road is very important. Need to think like a motorcyclist and not like a driver (most motorcyclists use both).
- Radios are used initially with less experienced riders, giving coaching, drawing attention to hazards in front of them. When riders become more experienced, no radio is used anymore and the riders are encouraged to take actions in their own hands. Individual responsibility for ones actions and ones well-being is vital.
- The differences in hazard perception between Track and Road-based courses is: track-based courses teach risks connected with vehicle manoeuvring whereas road-based risks are more connected with traffic situations. There are also risks at higher levels, though. These are not connected with the particular location. A perfect course would be a combination of all levels of risk.

Course providers were then asked what the essential elements of an advanced rider course are. Here are their comments:

- Braking is paramount. Risk awareness (on road and track) and avoiding risk should also be trained.
- Fundamental skills have to be part of the course. Initial training does not cover these enough.
- Courses programmes should be defined on the basis of risk. Statistics show us where the greatest areas of risk are in each country. The 5 main categories of accidents should be determined and actively incorporated into the course. Illustration in classroom and on road.
- The key is not so much what they are taught, but how they are taught it. Participants must be motivated in a lively learning environment. Important to keep communication simple and clear. Never use jargon or anything that can be misunderstood. Encourage self-evaluation to stimulate participants to continue learning after they have left the course.
- Observation: how to look and what to look for. Positioning: ability to get out/avoid a dangerous situation.
- Many riders remain “novices” because they ride very little. Need to take regular refresher courses. Other novice riders may also be older because they don’t start until they are over 30.
- Attention to individual. Assessment of weakness, addressing weaknesses, improving defensive skills and braking.
- A combination of road and track training could be a good combination for learning how to handle the bike and see risks when driving.
- Tackling overestimation of participant’s skills.
- Raising awareness of vulnerability.

Advanced project: Paris workshop, November 14/15 2001

The conclusions of the Paris workshop led to the development of a 30 page working document for the following meeting in Dresden. This working document later became the recommendations section of the Advanced final report (see page 118 onwards).

List of participants:

November 14 – drivers

Sakari Hopia	Euro Driver	Finland
Daniel Herregods	Driving Know-How	Belgium
Franz Wurz	ÖAMTC	Austria
Hans Löfgren	Gillinge Training Track	Sweden
Doug Jenkins	Driving Services	UK
Horst Finsterer	DVR	Germany
J-P Monnatte	Beltoise Evolution	France

Guest invitation: Jacques Quoirin (GOCA, Belgium)

November 15- riders

Frits Lindeman	KNMV	The Netherlands
Joris Vanvinckenroye	Motorbeheersing	Belgium
Alan Wright	British Motocyclist Federation	UK
Bard Morten Johansen	Norwegian Road Safety Association	Norway
Franz Wurz	ÖAMTC	Austria
Horst Finsterer	DVR	Germany
Sakari Hopia	Euro Driver	Finland

Advanced project: Dresden workshop, January 28/29 2002

1. Present at meeting:

a) Participants (35 total):

FAMILY NAME	First name		Country
WURZ	Franz	ÖAMTC - Test & Training	Austria
ZIEGER	Michael	MAG Austria	Austria
SMIRZ	Peter	IVV	
HERREGODS	Daniel		Belgium
DANAUX	Michel	RACB	Belgium
QUOIRIN	Jacques	GOCA	Belgium
HOPIA	Sakari		Finland
	Marita	Central Organisation for Traffic Safety	Finland
PIGNON	Olivier	FFSA	France
GAUDIOSO	Christian	ANPER	France
FICHEUX	Patrice	Centaure Rhône Alpes	France
RUHDORFER	Hubert	ADAC	Germany
	Wilhelm		Germany
	Kay		Germany
VON BRESSENSDORF		EFA	Germany
FINSTERER	Horst	DVR-ZERT	Germany
MOURIKIS	Panayotis	Automobile and Touring Club of Greece	Greece
BACON	Cathy	Risk & Safety Services	Ireland
DAJMA	Paola	Guida Sicura Quattroruote	Italy
KOBES		VVCR	Netherlands
LINDEMAN	Frits	KNMV	Netherlands
DAMEN	Achilles	FIM	Netherlands
ALBUQUERQUE		CR&M	Portugal
ALUMA	Albert	RACC Club	Spain
MONCLUS	Jesus	Royal Automobile Club of Spain	Spain
LÖFGREN	Hans	Gillingebanan	Sweden
HUG	Ernst	Schweiz. Verkehrssicherheitsrat	Switzerland
	Jacques	Cornu Master School	Switzerland
KOCH	Peter	Veltheim Driving Center	Switzerland
JENKINS	Doug	Driving Services	UK
	Bob	RoSPA	UK
WRIGHT	Alan	BMF	UK
ASHTON	Paul	System Driver Training	UK
JONES	Tom	Honda MAC	UK
PICKERING	Jeff	DSA	UK

b) Scientific committee

- Esko Keskinen, Turku University (FIN)

- J-P Fougère, CIECA (F)
- Marc Pannacci, CFC (LUX)
- Nils-Petter Gregersen, VTI (S)
- Heleen Groot, CIECA (NL)
- Nick Sanders, CIECA (NL)
- Frits Jansen, European Commission

2. Voluntary driver courses

- a) Length of courses
- b) Knowing - and differentiating between - participants
- c) Eco-driving
- d) Experiencing limits
- e) Skid control exercises
- f) Eye tests
- g) Age of trainer
- h) Demanding requirements for trainers
- i) Vehicle dynamics

a) Length of courses

There was some discussion as to whether a minimum length of course should be recommended for voluntary courses. However, no recommendations are being made in this area because it is not practical to set course lengths for the wide range of different programmes and different goals that exist. It is more the learning intensity of the course (e.g. the ratio of trainer to participants) than the length which determines quality, but this is difficult to quantify.

b) Knowing - and differentiating between – participants

It is important for the trainer to get to know the participants and to establish a good working relationship with them, but there is not enough time in a one-day course to know each individual intricately. In general, it is not practical to split participants into groups according to their personalities, learning styles, confidence or risk levels. On the contrary, participants can benefit from being exposed to different attitudes, problems and needs. The trainer should highlight these differences and should recognise that each participant is an individual.

c) Eco-driving

The Advanced project is aware of several Eco- (environmentally-friendly and economical) driving schemes and supports eco-driving techniques which aim to develop a fluent, anticipatory driving style. Such techniques largely coincide with a safe driving style (so eco-driving will not be considered separately during the project). Furthermore, they serve to reduce fuel consumption and wear-and-tear of the vehicle. As such, the financial benefits of eco-driving are an attractive means of motivating course participants to adopt this driving style.

d) Experiencing limits

Many driver courses stress the importance of experiencing physical limits, beyond which it is impossible to maintain control of the car. However, it is crucial to point out that, even if physical limits are not exceeded, it may not be possible to perform certain manoeuvres in sudden emergency situations in traffic (due to the element of surprise, lack of automatism, space limitations, weather and surface conditions, etc). In addition, it is important for participants to recognise their own personal limits, whether psychological or in terms of individual ability. In this respect, experiencing and recognising ones own personal limits is at least as significant as experiencing physical limits. The impact of speed on physical limits should not be referred to in absolute terms: everything is relative to the varying conditions and circumstances and participants must be encouraged to understand this. Trainers should be aware that certain participants may be tempted to seek physical limits and/or to take the physical limits too literally.

e) Exercises to experience skidding (rather than to control skids)

Exercises which only aim to regain control of a skidding vehicle should be avoided. It should be understood that to become proficient in skid control, road users would have to practice for many days over a long period of time before reaching a satisfactory level. 4 or 5 attempts during track training do therefore not suffice. Trainers who regularly practise skid control (or, for instance, with a rally driving background) may tend to overestimate the ability of every-day drivers to master such manoeuvres. They should realise that such drivers would be overloaded if required to perform these in real situations. In addition, the element of surprise in a real-life situation and the lack of room for manoeuvre on a normal road make it highly unlikely that the manoeuvre would succeed. Secondly, the particular danger of this exercise is that it can result in over-confidence in certain target groups, leading to a false impression of one's ability to cope with emergency situations and, in some cases, to higher accident levels than prior to training.

Skid exercises may start off with the goal of regaining control of the vehicle but the end result should be to show participants how difficult it is to perform this in reality, and why. It is important to show that skidding is a result of a mistake, whether in vehicle manoeuvring or in terms of behaviour, and that avoiding the mistake is better than getting into a critical situation. To point this out and prevent overconfidence amongst participants demands a lot of the trainer.

f) Eye tests

The question of eye tests was raised during the meeting. At least two of the course providers present systematically check the eyesight of their participants. It was claimed that many people drive without meeting the legal vision requirements. Although eyesight is important and it is useful for participants to understand that other drivers may have worse eyesight than their own, it was agreed that eye tests shouldn't be a quality criteria for voluntary courses. The subject will be discussed within the next scientific committee meeting.

g) Age of trainer

There was some discussion as to whether "young" people should be accepted as trainers. Young trainers have the advantage of being able to relate to young participants but maturity remains the crucial factor. Young trainers can be very skilled but lacking in teaching skills and wisdom. It was suggested that experience should be considered instead of age, but, here again, it is difficult to quantify experience (teaching experience, driving experience, life experience, etc).

h) Demanding recommendations for trainers

A comment was made that the trainer recommendations, as stipulated in the working document, are set at a very high level. It is important to understand that these are recommendations and not requirements. They should be considered as "ideal scenarios" and may be useful as a reference document with which to compare existing instructor training.

i) Vehicle dynamics

It was agreed that one of the Advanced project's recommendations would be to propose further research / a study to agree on basic principles of vehicle dynamics and ways of teaching them. It appears that there are still disagreements amongst trainers on these issues.

3. 2nd phase driver courses

- a) Braking and swerving exercises (combined)
- b) Cornering
- c) Hazard perception
- d) Interaction between initial and 2nd phase training

e) Pass or fail?

a) Braking and swerving exercises (combined)

There was a lively and thorough discussion on the subject of (combined) braking and swerving exercises for novice drivers. Participants arguing in favour of these exercises argued that:

- It is a useful exercise to highlight the importance of a proper sitting and steering position
- It is the only effective way of showing the danger of skidding
- Anticipation is only one part of the game. Avoidance manoeuvres should be taught as well in case of an unforeseen emergency.
- Older drivers (20+) and women can benefit from the training, according to experience in Finland

Participants arguing against combined braking and swerving exercises claim that:

- Novice drivers are overburdened with this type of manoeuvre. Even voluntary course participants cannot cope with this in training, let alone in reality
- It is not realistic for novice drivers to have time to look for an escape route during a critical situation
- The consequences of a poorly-performed braking and swerving manoeuvre in reality can be a lot worse (head-on collisions, lateral impact) than just braking (rear shunt)
- It can lead to a false sense of security and to novices becoming overconfident in their driving ability
- It undermines the basic safety messages of “safe distances” and “anticipation”. Novices should be taught what to do to avoid getting into a critical situation in the first place.

A consensus was emerging that if combined braking and swerving exercises for novice drivers and riders feature in the course, these exercises must be designed to highlight the risk and complexity of performing such manoeuvres and the need to maintain safety margins in the first place. Training to improve skills in this particular exercise should be avoided.

b) Cornering

Countries may have identified particular weaknesses that novice drivers have in relation to driving. Research in Germany, for instance, has concluded that German novice drivers have a problem with cornering and with braking. Germany has decided to focus on these two themes in its new voluntary 2nd phase course. The Advanced 2nd phase recommendations have not included cornering, but allow for the fact that different countries may wish to incorporate different themes into their courses, based on their own experience⁹³.

c) Hazard perception

It would appear that there is no scientific proof to claim that hazard perception training is beneficial for young drivers. In fact, evidence suggests that the additional mental capacity needed for “scanning” may undermine a novice’s ability in performing other essential driving tasks.

d) Interaction between initial and 2nd phase training

It is important not to compromise on the content of the initial (first phase) training when introducing a 2nd phase programme.

e) Pass or fail?

Participants should generally not be able to fail in 2nd phase training. If this were the case, some participants may be encouraged to adopt socially desirable behaviour and the purpose of the course would be severely

⁹³ Section 3 e) Training should focus on the particular risk factors identified amongst novice drivers / riders in the country in question

undermined. The course, although obligatory, should be an open and relaxed forum of discussion and exchange of experience. However, procedures should be in place to handle extreme cases, such as absenteeism, complete lack of participation in activities or anti-social, disruptive behaviour.

4. Voluntary rider courses

- a) Braking and swerving exercises (combined)
- b) Mental training (clarification)
- c) Fun

a) Braking and swerving exercises (combined)

It was pointed out that braking and swerving is more a risk awareness exercise than a skills exercise. It is a very difficult manoeuvre to perform in practice in a sudden situation. The exercise can also help riders get used to banking the motorcycle.

b) Mental training

Clarification was given on the subject of mental training. As a lot of situations in traffic cannot be trained in real life (such as a collision), riders can be trained to develop expectations and to mentally process the steps before and during emergency situations, in order to be able to react more quickly if the situation arises. The alternative is an instinctive reaction (i.e. panic).

c) Fun

Riders will generally not enrol in voluntary courses unless there is an element of fun in the course. The “fun factor” can also succeed in attracting the high-risk individuals (for instance, inexperienced high performance bike riders) who would not otherwise attend. However, the question is to what extent you need to sacrifice a little bit of the road safety goals of the course so you can introduce some fun elements. Course providers need to strike a delicate balance between fun and the core training, due to the risk of losing the safety message.

5. 2nd phase rider courses

- a) Braking and swerving exercises (combined)
- b) Training riders and drivers together
- c) Timeframe for novice riders
- d) Interaction between initial and 2nd phase training
- e) Pass or fail?
- f) Protective clothing

a) Braking and swerving exercises (combined)

As mentioned above, braking and swerving is a difficult manoeuvre to perform. If these exercises feature in a 2nd phase training course, the primary goal should be to highlight this difficulty and the risks involved.

b) Training riders and drivers together

There was a discussion on the advantages and disadvantages of training novice riders and drivers together⁹⁴. Its main purpose would be to increase awareness and communication between different road users. It was stressed, however, that bike riders would need to identify with a bike trainer, so two trainers (or alternatively a combined driver/rider trainer) would need to be present in theory, discussions and practice. The problem remains, however, that riders will always be a minority in the group, so they would probably not receive the attention they need, nor would the information be tailored enough to their needs.

⁹⁴ Switzerland is considering the possibility of doing this in its forthcoming 2nd phase programme.

c) Timeframe for novice riders

The minimum timeframe for novice riders to participate in 2nd phase training should reflect the extra time it takes to accumulate some initial riding experience. This is likely to be longer than for novice drivers.

d) Interaction between initial and 2nd phase training (See 2nd phase driver section)

e) Pass or fail? (See 2nd phase driver section)

f) Protective clothing

Participants should be expected to wear adequate protective clothing during obligatory training, whether first or second phase.

6. Evaluation methods

Due to lack of time, the presentation from Esko Keskinen on “methods to evaluate your course” could not be presented. His paper will be made available to the meeting participants by email.

7. Risk awareness database

Plans to build a risk awareness database, compiling examples of risk awareness exercises (at all 4 levels of the driver behaviour model), were presented. Examples were given (one from each level) by 4 participants at the meeting. A small questionnaire will be sent out to course providers in March with a request to send in one or two examples of risk awareness training they use (theory, discussion or practice).

8. Next steps

A questionnaire will be sent out to course providers at the beginning of March, requesting examples of risk awareness exercises.

Consultation on a possible European Quality Label will begin March / April, culminating in a workshop in June (10/11).

A draft final report for the Advanced project will be made available for consultation at the beginning of July.

Advanced project: Milan meeting, April 18/19 2002

1. Participants

Scientific committee:

Heleen Groot, CIECA
Nick Sanders, CIECA
Esko Keskinen, Turku University
Mika Hatakka, Turku University
Nils-Petter Gregersen, VTI
Georg Willmes-Lenz, BAST
Jean-Pierre Fougère, CIECA
Frits Jansen, European Commission
Gregor Bartl, KfV
Marc Pannacci, CFC

Course providers:

Paola Dajma, Quattroruote
Franz Wurz, Test & Training
Horst Finsterer, DVR
Albert Aluma, RACC
Doug Jenkins, Driving Services
Thomas Lundgren, Gillingebanan

2. Meeting objective

The aim of the meeting was to discuss the feasibility and interest in a future European Quality Label for post-licence driver training. This meeting was designed to lay the foundations for a full workshop on the subject on June 10/11 in Teesdorf, Austria.

3. Meeting content

Each participant presented his or her vision of a future European Quality Label. Participants suggested the requirements the label should contain, its administrative structure and assessed the level of interest in a quality label in their respective countries.

4. Course visit

Quattroruote invited us to a demonstration of the philosophy and some of the exercises of its Guida Sicura fleet training course at Vairano.

5. Meeting results and remaining questions

The meeting results were particularly successful in that the participants were able to agree on basic principles for the structure of a potential quality label.

All countries seemed in principle to support the idea of a quality label, although some were more positive than others. Most EU countries were discussed as the scientific committee members and others had knowledge of the situation in countries not formally represented at the meeting.

4 aspects of the quality label were discussed:

- the *principles* on which a quality label should be based
- the *content* of a quality label
- its *administrative structure & award scheme*
- financing

5.1 Principles

The following 10 principles were agreed upon:

1. The label is *voluntary*, i.e. course providers should have the choice whether to join or not.
2. The label is *scientific-based* (as opposed to administrative or politically-based).⁹⁵
3. The label is subject to regular *renewal*
4. The label is overseen by *independent national and European control authorities*
5. Granting of the label is decided by an audit team composed of *both European & national experts/representatives*.
6. The label is *progressive*, i.e. label holders should be encouraged to continually grow and improve their course within the framework of the label (“upgrading” within star**** system)
7. The label is *course-specific*, therefore it is not allocated to the course provider as a whole.
8. Stars**** are given to each course on the basis of an audit. Points must be obtained for each content requirement of the label (e.g. Trainer qualifications). To obtain the label, a *minimum n° of points* is needed for each content requirement.
9. The label is supported with *independent consumer information* in each country where the label is in force.
10. Authorities in the countries where the label is in force should consider *preferential treatment for labelled courses*, in order to provide a motivation for providers to join the label and to grow within it.

5.2 Content

The content of a European Quality Label should be mostly based on the areas addressed in the Advanced draft recommendations. Additional quality requirements include, where relevant, facilities such as tracks, in-car and in-house equipment.

Course construction

Target group orientation

Group sizes

Clear goals, effective delivery and verification of goals reached

Combination of sequences during training (didactic methodology, introduction-exercises-evaluation, etc)

Course content

4 levels of driver behaviour

balancing skills training with risk awareness exercises

on-road, track and classroom exercises

relevance to real-life situations

avoiding overconfidence and counter-measures to overconfidence

Quality of trainers

Coaching skills

Participant-trainer relations

⁹⁵ The label should draw on scientific knowledge and expertise in the field of driver/rider training, and in particular the principles developed within the Advanced project.

Clarity and relevance of message

Training the trainer: initial training: teaching skills, differentiating between participants, assessing results and use of teaching methods

Training the trainer: continuous training: training, audits/shadowing, exchanges and regularity of work

Other quality issues

Systematic feedback from participants

Essential documentation (course manual, training the trainer handbook; consumer information)

Value for money

Facilities / Equipment

Tracks: safety aspects, dimensions, surface, equipment (and relevance to training)

Other equipment: on-board diagnostics, audiovisual equipment, classroom facilities

5.3 Administrative structure

The administrative structure of the label would be both national and European. At European level, a control (and coordination) authority would be responsible for setting the most important standards for the scheme, facilitating information exchange and distribution throughout the countries involved in the quality label. They would also manage a team of international “auditors” who would be jointly responsible (with national representatives) for auditing the courses applying to join the label.

At national level, a national control authority would be in charge of the day-to-day monitoring of the scheme and for providing national representatives of the audit team.

Audit team

An audit team, composed of national and European representatives, would be responsible for assessing each course that wishes to join the label. This team should be independent, as far as is possible, and should probably include:

- A road safety researcher from another EU country, to be chosen from a pool of selected auditors
- A member of the administration from the country in question
- An (independent) representative of a road safety organisation from the country in question

Any non-national member of the audit team would, of course, need to be proficient in the language of the country where the course is being audited.

National Control Authority

The control authority would be a national body responsible for the day-to-day monitoring of the quality label, receipt of complaints and provision of consumer information. (In practice, consumer information could be provided through a website).

European Control Authority

Coordination of activities between countries (management of a central database, distribution of research information, events organisation, etc) could be assured by a European level body.

5.4 Award scheme

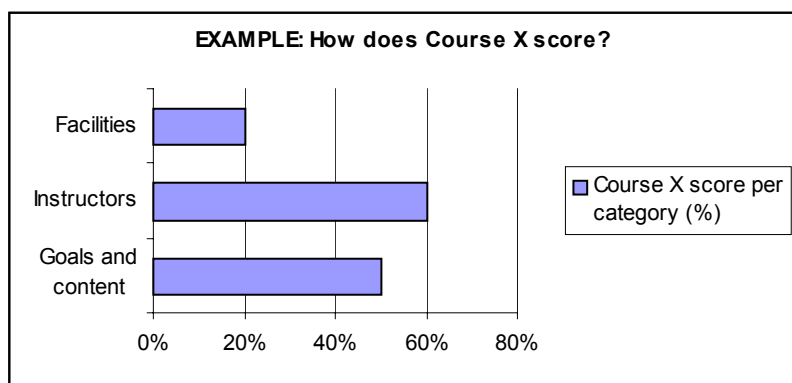
Under the current proposal, each of the areas mentioned under Contents would be allocated a certain number of points. For instance, section 3, the “quality of trainers”, would be allocated a maximum of 50 points to be distributed in some way between each five sub-section. According to principle n° 8, the course requesting the label must be awarded a certain minimum n° of points for quality of trainers (for instance, 25/50). Failing this, they cannot be granted the label. Once the complete audit has been finished by the audit team (see principle n° 5), the total number of points will be calculated and a star-grading will be given to that particular

course. For example, a one-star course* would be the lowest grade within the quality label framework, whereas a five-star course***** would be the highest. The assumption is that people looking for training may not be looking for ***** courses. As with hotels, people choose quality according to their means and requirements. A stars* system would meet these conditions.

The content requirements can be divided into easily manageable sections and audited under a grid system such as the following:

	Goals and contents What do we do?	Methods and Facilities How do we do it?	Evaluation and feedback How successful are we?
WHAT IS IT?	must be safety-oriented what are the learning goals? do the goals and the clients match? ETC	Pedagogical methods Quality of instructors Facilities: equipment, track ETC	Quality assurance Evaluation of effects
How is it documented?		Course handbook, trainer manuals ETC	
Minimum points required	120/200		

Furthermore, in order to inform consumers of the specific strengths and weaknesses of each labelled course, consumers should be able to obtain a more specific analysis of the results, such as:



5.5 Financing

The important question of financing was not addressed in detail. Possible sources include course providers, national public funding and EU funding.

6. Next steps

The ideas developed during the Milan meeting will be developed, and presented and discussed at a meeting with 25 course providers (both rider and driver) and other interested parties in Teesdorf, Austria on June 10/11 (Test & Training).

Advanced project: Vienna meeting, June 10/11 2002

The minutes of this meeting are incorporated into the section on 12. A European Quality Label for voluntary post-licence driver/rider courses? , page 157 .

List of participants:

SURNAME	FIRST NAME	COMPANY / ORGANISATION	COUNTRY
Workshop participants:			
Wurz	Franz	Test & Training	Austria
Zieger	Michael	Sport und Spass	Austria
Vanvinckenroye	Joris	Centrum voor Motorbeheersing	Belgium
Quoirin	Jacques	GOCA	Belgium
Herregods	Daniel	DKH	Belgium
Acourt	Gerard	ECF	France
Saarinen	Jarno	MP 69	Finland
Weich	Götz	ADAC Zentrale	Germany
Finsterer	Horst	DVR	Germany
Bacon	Catherine	Risk & Safety Services Ltd	Ireland
Warner	Patricia	Irish Rider Training Association	Ireland
Dajma	Paola	Guida Sicura Quattroruote	Italy
Scala	Alfredo	Automobile Club d'Italia Vallelunga	Italy
Kobes	H	VVCR	Netherlands
Lindeman	Frits	KNMV	Netherlands
Tscherning de Albuquerque	Bernardo	C R & M	Portugal
Vidal Pinheiro	Pedro	ACP	Portugal
Aluma	Albert	RACC	Spain
Castellanos	Jorge	RACE	Spain
Ohman	Erik	SMC	Sweden

Löfgren	Hans	Gillingebanan	Sweden
Cornu	Jacques		Switzerland
	Adam	Drive and Survive	United Kingdom
Wright	Alan	BMF Rider Training Scheme	United Kingdom
Jenkins	Doug	Driving Services	United Kingdom
Pickering	Jeff	DSA	United Kingdom

Project team:			
Bartl	Gregor	KfV	Austria
Jansen	Frits	European Commission	Belgium
Keskinen	Esko	Turku University	Finland
Hatakka	Mika	Turku University	Finland
Fougère	Jean-Pierre	Ministry of Transport	France
Willmes-Lenz	Georg	BAST	Germany
Pannacci	Marc	CFC	Luxembourg
Sanders	Nick	CIECA	Netherlands
Groot	Heleen	CIECA	Netherlands

ANNEX 4: programme content of voluntary driver courses

Session name/type	Description of exercise	Goal of exercise
DRIVING AUDIT	Reference drive measuring consumption, speed, average speed, brake intensity, handling actions, etc	Evaluating pre-training ability of participants
REACTION TEST		
	Each client drives several times around the track on which obstacles have been placed. Test to see reactions of clients, then of other clients and then of the trainer	Show real dangers of driving in terms of driver error caused by lack of anticipation, concentration and false information assimilation
SLALOM		
<i>Sitting, steering and looking (awareness)</i>	Participants are taught how to sit safely and how to hold the steering wheel. Proper use of mirrors is also included, along with a visual check of the angles and blind spots around the car. The proper eye technique is also taught.	Awareness of safety benefits of use of seat belt, proper steering position (for release of airbag), proper positioning of legs, body and arms (to avoid unnecessary injuries in the event of a collision), ability to see most angles due to mirrors and body position. Awareness of blind spot
<i>Sitting, steering and looking (skills)</i>	Participants are taught how to sit properly, how to hold the steering wheel and how to steer the most efficiently. The proper eye technique is also taught.	Warming up the cars and drivers. Repetition of what should have been learned before to improve confidence. Improved control of car through more efficient steering, relaxed posture, correct use of eyes (looking where you want to go)
<i>Sitting, steering and looking (assessment)</i>	Idem	Instructor sees the driving level and the attitudes of the participants, the state of the cars and the tyres.
BRAKING		
<i>Theory model 1 (Skills)</i>	Braking techniques (with/without ABS), car control and how to brake properly (including on different surfaces). Vision skills.	Improved braking techniques and knowledge concerning technical aspects of vehicle. Improved ability to cope with extreme situations.
<i>Theory model 2 (Awareness)</i>	Reaction times, braking distances (on different surfaces with/without ABS), limits of ABS, residual velocity at various speeds	To increase awareness of risks associated with braking and emergency situations: insufficient safety margins, difficulty of controlling a car in extreme circumstances. Should lead to more anticipative behaviour and better speed regulation.

Session name/type	Description of exercise	Goal of exercise
<i>Practice model 1 (Skills)</i>	Braking at different speeds, on different surfaces with / without ABS. Level of difficulty is progressively raised until each participant has mastered the exercise	Improvement and automatization of braking techniques. Improvement of associated skills (e.g. visual selection skills). Bringing car to a standstill in shortest possible distance. Improved control of vehicle. Recognition of one's own abilities. Coping with dangerous situations. Experience of differences between ABS and non-ABS cars. Experience with braking on different surface frictions.
<i>Practice model 2 (Awareness)</i>	Braking at different speeds, on different surfaces with / without ABS (with/without clutch). Level of difficulty and speed is progressively raised until each participant has failed the exercise.	Awareness of reaction times, braking distances and risks associated with excessive speed, road surface type and conditions; car technology (e.g. ABS). Awareness of difficulty of judging braking distances. Recognition of one's own limits. Effects of braking on different surface frictions.
<i>Practice model 3 (Assessment)</i>	Driving audit around track at beginning of course. Brake intensity is measured by an on-board computer.	Braking audit: checking braking skills
BRAKING & AVOIDANCE		
<i>Theory model 1 (Skills)</i>	Audiovisual tools to show how to brake and swerve correctly with/without ABS.	
<i>Theory model 2 (Awareness)</i>	Presenting typical scenarios of overreaction (panic reactions) and dangers and complexities of avoidance manoeuvres	
<i>Practical model 1 (skills)</i>	Braking and swerving around an object (with/without ABS) and regaining lane. Use of visual skills to successfully avoid object. Gradual increase in speed as exercise progresses.	To maintain control of the car (without oversteering), successfully avoid an object on the road (e.g. a human being, a vehicle, etc) and bring the car back into lane/ to a standstill. To teach how to release the brake/pump the brake when braking and steering in non-ABS vehicles.
<i>Practical model 2 (Awareness)</i>	Braking and swerving around an object (with/without ABS) and regaining lane. Exercise should end in failure.	To realise how difficult it is to react quickly and effectively in extreme situations, especially under stress. To show how easy it is to overreact (oversteer) in panic situations. To show how errors in avoidance manoeuvre can cause high impact collisions. To understand that non-ABS vehicles will not steer in emergency situations (due to blocked wheels). To show dangers of braking and avoidance manoeuvre in non-ABS car when clutch is not engaged.

Session name/type	Description of exercise	Goal of exercise
CORNERING		
<i>Theory model 1 (Information)</i>	Introduction to centrifugal/centripetal forces (Kamm's circle), under and oversteering	Increase knowledge of physical laws (with a view to improving driving skills on bends)
<i>Theory model 2 (Awareness)</i>	Description/discussion of danger scenarios on bends, such as loss of grip of front/rear tyres, slippery road surfaces and excessive speed.	Risk awareness when navigating bends in a car
<i>Practical model 1 (Skills A)</i>	Practising correct approach, speed, trajectory and visual techniques to use on and around bends	More skilful and smoother driving around bends
<i>Practical model (Skills B)</i>	Exercises resulting in loss of control of vehicle due to excessive speed, over or understeering. Practice to regain control of skidding vehicle.	Experience and master a skidding vehicle on a bend. Feel the influence of speed on centrifugal force and curve radius.
<i>Practical model 2 (Awareness)</i>	Exercises, particularly on slippery surfaces, resulting in loss of control of vehicle on bends due to excessive speed, deliberate over/understeering	Increase speed until failure to show dangers of slipperiness, excessive speed and improper steering/eye movements. Feel how easy it is to lose control of vehicle. Feel the influence of speed on centrifugal force and curve radius.
SKIDDING		
<i>Theory model 1 (Information)</i>	Presentation of physical laws on friction, kinetic energy and Kamm's circle.	
<i>Theory model 2 (Awareness)</i>	Analysis of potentially dangerous skid situations and/or case studies of skid accidents. Discussion of personal skid experiences.	Mental training to recognise danger and to analyse one's own driving style and experience in this light.
<i>Practical model 1 (Skills)</i>	Experience a skid, recognise how to regain control (at low speeds), and to know when to emergency brake (if car cannot be stabilised in time, particularly at higher speeds)	To gain the necessary handling skills to regain control of a skidding car through repetition (developing automatisms). Recognise when skid is uncontrollable and carry out emergency braking.
<i>Practical model 2 (Awareness)</i>	Experience a skid and how easy it is to make the situation worse by overreacting or reacting wrongly.	Recognise the dangers of skidding and that it is best to avoid the possibility altogether (bends, road surface conditions, excessive speed, etc).
ASSESSING SAFE DISTANCES	Participant follows another car on the track (behind and in parallel lane) and tries to assess safe distance. Experience distance factor when car in front brakes suddenly.	Know how to evaluate safe distances.

Session name/type	Description of exercise	Goal of exercise
ACCIDENT SIMULATION		
Collision simulator	Crash sledge used to simulate crash at 7kmh.	Importance of wearing a seat belt, insight into the frailty of man.
Inverted car	Participants can experience the rolling effect of a crashed car in a simulator	Importance of wearing a seat belt, insight into the frailty of man.
CLASSROOM (track and road)		
Knowledge and skills-based theory		
<i>Accident/road statistics</i>	Explanation of statistics reflecting the most common accidents, categories of people, etc.	Knowledge building: awareness of who, where and how accidents occur. Scale of the problem and cost both in human and financial terms.
<i>Safe driving tips</i>	Advice on how to drive well, including	Participants will have a theoretical understanding of specific safe driving techniques prior to practice.
<i>Safe driving "model"</i>	Presentation of company model for systematic approaches to safe driving. For example: " observation, anticipation, planning and restraint." OR SAFE (S=see and be seen, A= always a way out, F=far and wide view, E= ever aware) OR quality circle of driving (concentration, observation, anticipation, position, speed and gear)	Participants will have a theoretical understanding of safe driving systems prior to practice.
<i>Basic laws of driving physics</i>	Introduction to physical forces when driving in relation to speed, trajectory and road surface conditions (braking, cornering, aquaplaning, swerving, etc)	Understand limits of vehicle according to laws of physics
<i>Information on roadworthiness of vehicle and basic technical features</i>	Idem	Increase practical knowledge of key technical components of car. Understand importance of servicing vehicle regularly.
<i>Information on passive and active safety aspects of modern vehicles</i>	The evolution of car technology is discussed and the on-board safety systems are analysed.	

Session name/type	Description of exercise	Goal of exercise
<i>Correct sitting position, adjustment of mirrors and headrests, steering and observation skills</i>	Showing slides, video or sitting in a car/seat to learn correct position in car	Convince participants of ideal and safe driving position
<i>Test of knowledge of highway code</i>	Knowledge test	To expose and discuss misconceptions and ignorance of major road rules
<i>"Business" approach</i>	Presentation of environmental issues, statistics, dealing with road traffic accidents and cost control	To promote understanding of legal requirements of driver and vehicle: raise drivers' awareness of responsibilities

ANNEX 5: Programme content of voluntary rider courses

Session type	Description	Goal
<u>TRACK-BASED</u>		
Warm-up	Physical warm up exercises for 10 minutes	prepare physically for exercises
Technical Check	Go through safety check procedure	create habit of checking bike before riding. Raise awareness of passive and active safety features.
Physical Check	Eyesight test	awareness of any visual defects/weaknesses
Initial ride		
<i>Warm-up ride</i>	participants ride on track with/without instructor	Getting to know the track, rules during exercises. Building confidence (overcoming insecurities) and creating right atmosphere for exercises ahead.
<i>Demanding ride</i>	Participants practise basic control of motorcycle (steering, accelerator, clutch, brake, eye movements) in difficult conditions. These conditions could involve riding a sensitive (trail) bike or riding on difficult terrain (bumpy, sandy, stony) and grooves	fatigue in connection with controlling the bike. Understanding effect of different surfaces. Developing a positive attitude towards problem solving. Practising vehicle control. Overcoming inhibitions.
<i>Audit ride</i>	participants ride around track with instructor(s) looking on.	Evaluation of participants' riding level which instructor can bear in mind for the following exercises
Balance and Handling		
(balance, steering, posture, Blicktechnik with controlled use of clutch, gas and brake)		
<i>Slalom</i>	Symmetric/asymmetric slalom, wide/narrow, countersteering, at various speeds, with varying difficulty with different tyres and surfaces.	Improvement of skills (balance, Blicktechnik, controls, posture)
<i>Riding in circles</i>	practise riding styles on left and right bends (pushing, leaning, lying, hanging). Practise seating position, Blicktechnik and steering with self control. Riding on different surfaces, different tyres, reading the road. Riding in high gears (low revs).	observe and feel the advantages of riding styles. Discover difference between left and right bends. Experience significant lean of bike. Improve Blicktechnik and fluent riding capability. Understand dangers and roles of different surfaces and tyres.
<i>Tight turns</i>	explanation and practice of driving at low speeds and use of rear brake, Blicktechnik, posture and planning.	keeping the chain taught at all times. Speed regulated through rear brake. Change of direction through leaning. Smooth, quick, tight turning capability using Blicktechnik, controls and balance).

Session type	Description	Goal
<i>Motorbike Gymnastics</i>	riding in unusual positions on bikes (standing, sitting, no hands) in slalom, circle, following instructor (difficult exercises may be practised at a standstill).	building participant's confidence in the stability of the vehicle in all situations. Experiencing that the bike can be controlled with proper use of gas and the right Blicktechnik.
<i>riding over a seesaw/curb exercise</i>	riding over seesaw and curb exercise involving a slalom must be mastered by participant.	optimal use of gas, brake and clutch and ability to keep balance at low speeds. Understanding what is and isn't possible when handling bike.
<i>Stabilisation</i>	slow riding in a straight line, slow riding around a bend	balance techniques while riding slowly. Improve perception of ones abilities
	Participants learn how to maintain control on a steep slope	Slope test is used to teach better coordination skills and to gain insight into the various controls which can be used.
<i>Tight circles</i>	riding in tight circles, grasping string on a pole and placing it elsewhere).	developing observation, planning and the right technique
Braking		
<i>low speed braking</i>	rear braking technique practice. Begins with demonstration from instructor, then the participant practises in a straight line at low speed.	keeping balance at low speeds by using rear brake, keeping chain taut and controlling speed.
<i>braking (skills)</i>	Explanation of braking mechanism, the right braking technique and demonstrations. Practice correct braking technique at progressively higher speeds until the manoeuvre is mastered. Braking to a standstill.	developing automatisms, improving braking technique.
<i>braking (awareness)</i>	Exercises only with back brake at various speeds, then front brake in the same way. Then both. Difference in braking distance is shown between one speed and another (e.g. 50 and 60 kmh and reaction times can also be shown. Braking with and without ABS to a standstill.	The participant can learn how to brake better but is also aware of the risks and impossibilities. Learning how difficult proper braking is and the effect of speed on braking distance.
<i>emergency braking</i>	progressively faster braking up to 60-70 kph to a standstill. Tense arms to avoid body falling forward, maintain far sighted focus point.	manoeuvres in order to ensure proper actions in traffic. Experience stress of braking. Keeping the wheels from blocking.
<i>panic braking</i>	drive at low speed and practise slamming on the brakes on the front and back wheel respectively so that the brakes lock up. Maintain relaxed posture and look far ahead. Release the brake immediately after lock-up, and drive on without putting your foot down.	experience locking of brakes, know what it feels like and when to release them.
<i>braking on a dirty surface</i>	participant rides on a surface which is partly covered by sand. The training is set up in such a way that the participant should hit the sand while braking. He has to plan his braking manoeuvre so he can use the remaining clean parts of the road.	This exercise is not about braking performance but about making a conscious decision before and during the braking. Participants learn how to read the surface in order to plan in advance. Panic reactions should be prevented by training this.
Session type	Description	Goal

Session type	Description	Goal
<i>high speed braking</i>	bringing bike to a standstill from speeds of up to 120kmh.	Participant experiences mental strain of braking at high speeds and learns how to concentrate and brake during deceleration, without cramping up.
<i>braking and swerving</i>	Beginning at a slow speed, riders brake, release speed, engage clutch and swerve around an obstacle, and realign back in the correct lane. Progressive build up of speed. Demonstrated first by instructor	Participants learn to separate braking and steering manoeuvres (with non-ABS vehicles). Riders can swerve and avoid instead of just braking. Correct body positioning and Blicktechnik. Learn about limits of individual and bike. Understanding that obstacle avoidance can be difficult even at low speeds. Understanding of increasing danger with such a manoeuvre as speed increases.
<i>braking on a bend</i>		participant becomes aware of the relationship between maximum grip, speed, width of bend and ability to brake. Ability to progressively build up braking.
Swerving (evasive action without braking)		
<i>Swerving manoeuvre</i>	Often practised before braking and swerving exercises. Swerving, without braking, at various speeds (e.g. 50 and 70 kmh). Possibility to swerve left or right around an obstacle. Swerve and realign back in correct lane	practise Blicktechnik and steering in order to be able to take quick evasive action. Understanding of speed factor in such sudden manoeuvres.
<i>Swerving on a bend</i>	swerving on a circular track	learn how to swerve on a bend using previously learned techniques. Prepare alternative action: going off the road (see below).
<i>Riding around a bend</i>	The approach phase of the bend is emphasised: recognising the bend, assessing it and being ready in time. Participants practise this and the combination of Blicktechnik, posture and trajectory.	More confidence in riding bends. participant realises the relation between speed and leaning on bends. Realises limits. Knows the right Blicktechnik, posture and trajectory.
<i>Riding off the road</i>	Participant is taught how to go off the road, beginning at low speed and up to 80 kmh.	offering an escape route to riders. Safe exit from the road with proper Blicktechnik, posture and vehicle handling.
<i>Negative camber</i>	Practising on negative camber on the road (in part of closed-off track).	Participant experiences that it is still possible to control vehicle in these conditions, provided that the correct Blicktechnik, posture and vehicle handling skills are employed.
Riding over obstacles	The instructor asks participants about their experiences when suddenly coming across an obstacle in the road. He shows that the bike's stability does not have to be affected when riding over the obstacle. He demonstrates this over a beam and a tyre. Then the participants try it.	Driving over obstacles is possible, so potentially dangerous swerving can be avoided.
Special parcours		

Session type	Description	Goal
<i>Practice ride</i>	practice riding on track	previously learned handling skills / risk management strategies can be applied according to individual riders' ability and circumstances. Controlled steering, right gear, posture, Blicktechnik, different styles of riding, leaning, changing weight..fluid, clean and smooth riding.
<i>Riding under time pressure</i>	Getting the participant to experience the mental pressure of time when riding around a parcours as quick as possible (parcours mostly familiar to the riders already). Experiencing how easy it is to make mistakes. Instructor explains this relationship (time pressure and mistakes) and points out the consequences of such behaviour in traffic	awareness that time pressure can lead to mistakes.
Riding audit	initial ride on the open road	assessment of the abilities of each rider (strengths, weaknesses, experiences). Instructor can see which areas need improving.
Demonstration ride by instructor	participants ride behind instructor who gives a demonstration of the various skills encompassing a competent and safe driving approach	
Practical training	participants practice implementation of the techniques learned and seen previously in the day in various road environments. These techniques include observation skills, correct road positioning, speed selection, keeping safe distances, overtaking and risk perception.	participants should learn how to filter important information, respect the two second rule and create a safety zone, be aware of correct positioning at all times (see and be seen), adopt a long overtaking approach and become better at identifying potential hazards.
"CLASSROOM" (Theory/discussions)		
Motivation		
	Introductions (instructors and participants), explanation of course activities (goals)	inform participants of what is going to happen and create a relaxed, though serious atmosphere amongst participants and instructor
	Discussion of expectations of participants	better estimation of the participants and risk factors by the instructor
	Discussion of participants' experiences	encourage participants to talk. Use experiences to highlight risks.
Knowledge/Skills		
	Theory of riding physics (centrifugal force, countersteering, rotating forces)	awareness of physical limits when motorcycling. Preparation for practical exercises.
	Handling skills (steering, bend techniques [traction management], braking techniques)	

Session type	Description	Goal
	Discussion about Protective/visible clothing	learning what to wear and why to wear it, in order to protect oneself and to increase conspicuity on the road.
	speeds and technical controls)	learning a simple system which can be implemented and used continually to analyse riding situations.
	Presentation on first aid	knowledge of what to do and how to act in an accident situation.
	Importance of technical checks	learning the importance of systematic vehicle checks before setting off.
	Information on new motorbike regulations, new technology, vehicle-specific information	keeping up to date with news in the motorcycling world
Risk/Hazard perception		
	Reaction times and braking distances	awareness of human factor in braking and of relationship between speed and braking distance
	Discussion: Is motorcycling dangerous?	make participants aware of the conditions that affect driving style. Encourage more conscientious decision-making.
	Analysis of accident situations involving motorcyclists, hazards...	risk awareness, understand strategies which lower risk.
	Defensive riding strategy (predicting other road users behaviour).	awareness of classic risk areas and that the rider's fortune depends on his own decisions and actions.
	Discussion on observation skills in traffic, road positioning, position and speed, overtaking..	recognition of risks in traffic related to observation, positioning and speed. Knowledge of how to address these areas.
	Discussion on effects of impairment of judgement (alcohol, drugs, fatigue, lack of concentration).	awareness of factors increasing risk. Awareness of personal choice.
	Mental training (exercises to address certain (particularly emergency) scenarios	to train automatism mentally in order to be able to react quickly in an emergency situation.
Self-evaluation		
	Personal motivations for motorcycling / choice of motorcycle	awareness of motorcycling's dangers and pleasures. Critical analysis of personal reasons for driving and habits, lifestyles and problems
	Discussion on peer pressure	awareness of peer pressure as a risk factor in determining choice of bike, actions on and off the road.
	Discussions on how the characteristics of the bike and rider can affect riding style and safety.	insight into psychological reasons for riding, choice of bike, how the choice of bike reflects character, how these two influences can interact negatively or positively on safety of rider.

ANNEX 6: Coaching in the context of advanced driver / rider training

1. What is coaching⁹⁶ ?

Coaching is all about stimulating the coachee (the person receiving the coaching) to acquire the facts, not from the coach, but from within himself. The coach activates the coachee in many ways, by making him think and to describe his feelings, attitudes, beliefs, etc, in relation to a given task or problem, in this case driving. This process increases the “awareness” of the participant – namely, the gathering and perception of the relevant information and the ability to determine what is relevant. It will also help the trainee to realise his strengths and weaknesses in a clearer way. Awareness also includes self-awareness, in particular recognising when and how emotions distort one’s own perceptions. (Both awareness and self-awareness are, of course, particularly relevant to driving).

Using coaching techniques which center on the coachee, the participant is given the option to make choices, instead of being told what to do. If the participant(s) make the choices, they are “involved” and are thus more likely to accept responsibility for their actions and to be motivated to maintain their commitments after the training.

A basic assumption is that people will only seek to engage in those activities that help them to meet their needs. *If their needs are not being met by the solutions that arise, there is no motivation to change their behaviour*, driving style, or whatever. The coach needs to be constantly asking himself how to deliver his message so the trainee feels there is a personal benefit to implementing what has been learned during the training.

2. The application of coaching techniques in advanced driver / rider training

Coaching techniques are particularly useful in driver training for a number of reasons, in addition to the above. Firstly, the average driver training course lasts no more than 1 day. During such a short time period, it is very difficult for coaches/instructors to get to know the character and attitudes of individual participants, especially in a track-based courses with several individuals. The emphasis should therefore be on stimulating the participants to think for themselves and to find their own solutions, rather than for the trainer to attempt to analyse each person and prescribe them his own “solution”.

Coaching techniques are useful for helping the coachee to “learn how to learn”. In other words, because the teaching environment is centred on the coachee, coaching encourages the coachee to develop a self-analytical approach. If maintained, this self-analytical approach will allow the individual to continue learning after the formal training (back in the traffic), thereby compensating for the short duration of the training itself.

Secondly, it is a well-established fact in the training world, that we do not remember well what we have only been told. Experience is the key to recalling things in a far more effective way. “Experience” in this sense does not just mean sitting behind a steering wheel, it means experiencing from within. For example, participant-centred discussions - relating to emotions and experiences of the past, potential scenarios – are also a form of experiencing⁹⁷.

Thirdly, coaching techniques of this kind were originally developed in the sporting world, where a combination of mind and body (psychological and physiological) determines the quality of the “performance”. Driving involves many physiological factors, in addition to the obvious psychological ones, which can be addressed in order to help the participant towards their own solutions for better, more comfortable, less stressful and less emotionally exhausting driving.

⁹⁶ Coaching may also be described as : counseling, facilitating (= moderation), empowering, mentoring, supporting, guiding, psychotherapy or tutoring.

⁹⁷ Demonstrations, i.e. being shown, is also a form of experiencing, although it is a less intensive means of learning than direct experience.

Fourthly, there appears to be a tendency amongst trainers to prescribe a particular style of driving (which they have learned or been trained on, for instance) which may not meet the needs of the participant. Solutions are imposed by the trainer based on what the trainer has seen of the driving style of the participant. However, what the participant shows when driving is often a symptom of a problem, not the cause of it. (Real, lasting change must reach the causal level, which resides inside the participant). Prescribing a solution on the basis of a symptom is a short-term panacea which does not meet the needs of the participant. With coaching, the coach follows the coachee's train of thought, rather than asserting his own, thereby gaining the coachee's confidence. This form of assistance is much more likely to lead to the cause of the problem, instead of the symptom which is what is seen at first.

3. Some basic principles of coaching

- Building (self-)awareness, responsibility and self-belief is the goal of a coach
- A good coach rarely prescribes or provides solutions – solutions should be participant-driven
- The coachee must be compelled to use his brain and get involved. This stimulates awareness which enables him to evaluate his own driving and become more self-reliant.
- A good coach avoids blame or negative criticism – this provokes defensiveness. Defensiveness undermines the learning experience because the participant needs to be aware and open to learn
- Coaching must be a spontaneous process. The principle is that questions should follow the interest and the train of thought of the coachee, not of the coach (who may be tempted to pre-prepare questions).
- The coach must remain objective and detached and, above all, interested in the coachee and his / her development.

4. Questioning

The process of questioning stimulates the coachee to think, to increase his awareness and the choices which are open to him empower him as a result. Questions should be open questions, not closed questions which require little or no thought and which provide no useful feedback for the coach to work with. Open questions require descriptive answers which, in turn, promotes awareness. The most effective questions for raising awareness and responsibility begin with words which seek to quantify or gather facts: words like WHAT, WHEN, WHO, HOW MUCH, HOW MANY. WHY is discouraged since it often implies criticism and evokes defensiveness.

Questions should begin broadly and focus increasingly on detail. This demands for more detail and maintains the focus and the interest of the coachee. If the coach leads the direction of the questions he will undermine the responsibility of the coachee. Furthermore, leading questions will be quickly recognised by the coachee and the value of the session will be reduced. Understandably, in driver training there are a certain number of objectives to be reached and the coach needs to revert to them occasionally. But it is better for the coach to tell the coachee(s) that he has a suggestion, rather than attempt to manipulate him in that direction.

The coachee's tone of voice and body language can also be scrutinised by the coach, thereby helping the coach to understand and facilitate more effectively.

Helpful questions may include:

- "What else?" used at the end of most answers will evoke more thought and options. Plain silence, while allowing a coach to think, often evokes more too.
- What would the consequences be of that for you or for others?
- What is the hardest, most challenging part of this for you?
- What advice would you give a friend in your situation?
- What would you gain/ lose by doing that?
- If someone did that to you, what/how would you feel?

5. Sequence of questioning

There are various stages in the process of questioning which may be useful to bear in mind. They can be described as:

1. Checking REALITY (how does the participant drive, feel and think?)
2. Defining GOALS (what does the participant want to get out of the training?)
3. Creating OPTIONS for future action (what possible solutions can the participant think of, for improving his driving to suit his needs better?)
4. WILL – a commitment to take steps to change (what is to be done, when and how motivated is the participant to do it?)

When checking REALITY (or assessing the coachee), the coach should not just limit himself to the driving style he sees. A reality check can and should involve intervention on lots of different levels, such as appealing to the senses and tapping the emotions of the participant. Physiological stress is common in driving, such as tension in the shoulders or neck. Questioning from the coach to stimulate the body awareness of the participant often leads to automatic self-correction. Emotion and sense-related questioning can include:

- What do you feel when someone cuts you up?
- What unsettles you when you are driving?
- Where in your body do you experience tension?
- Can you give me a rating of 1-10 for your level of confidence in your driving at junctions / on slippery roads, etc?

Assessing attitudes is also important, again by questioning the participant. Self-awareness of attitudes is vital. Each of us brings with us long-standing beliefs and opinions that will impact on our perceptions and our relationships with others. This phase of questioning corresponds to level 4 of the driver behaviour model.

In the reality phase, it is important to seek only facts. Without all the facts, a proper analysis cannot be made.

In terms of defining GOALS, questions such as the following may be asked by the coach:

- What would you like to get out of this session?
- What would be the most helpful thing for you to take out of this session?

Goals must be specific, measurable and realistic. By getting the participant to define his own needs, the coach can also work out what motivates him. As a result, the coach can tailor the safety message in the language most suited to the participant.

NOTE! Many coaches favour a questioning sequence beginning with Goals and then proceeding to Reality, instead of the other way around. One reason for this sequence is that starting with Goals (“what do I want from my driving?”) is a far more engaging start, rather than the trainee getting stuck within Reality at the outset (“how things are..”).

When creating OPTIONS, the purpose of this phase is not to find the right solution but to create and list as many alternative courses of action as possible. It is from this broad base of creative possibilities that specific action steps will be taken. It is all about getting the participant to weigh up the pros and cons of possible solutions and to mentally map them in a hierarchy. There is no point in agreeing on action to improve one’s driving style unless the action is realistic – in other words its benefits outweigh the burden of implementing the changes.

WHAT WILL YOU DO is the final stage in order to define how the process of improvement will take place? What are you going to do? When are you going to do it? Will this be enough? What obstacles will you meet on the way? Who needs to know and what support do you need? How are you going to get that support? What other considerations do you have? How realistic is it for you to carry out the actions you have agreed on? How can you make it more realistic? These are all step-by-step approaches to making the changes more likely to materialise.

Only by repetition will a change become a habit...the trick is convincing participants to convince themselves of the benefits of such improvements

6. Feedback and Assessment

As has been established elsewhere in this report, feedback from ourselves and from others is vital for learning and improvement. In both informal and formal assessments, the coachee should be an integral part of the assessment process. The coach should prompt the coachee to visualise and recall various events during the training and to analyse his own performance, motives and interests. Trainer-to-trainee questions may include:

- What did you find useful today?
- What do you remember best?
- What do you think you did well?
- What did you think you could improve on?
- How do you feel now?
- How would you rate your strengths (and weaknesses) on a 1-10 scale (instead of being assessed by the trainer, the trainer is again encouraging the trainee to assess himself...this is the only way to become self-aware).

Such feedback, especially after exercises, may be more effective inside (in a class environment) rather than outside. A change of scenery removes the individual from the immediate experience and provides the necessary calm and structure to analyse the experience. In the case of track-based courses, this may be all the more important due to potential distractions on the side of the track: sun, cold, noise from other groups, etc.

One interesting technique to use at the feedback stage is to ask the coachee to write down the key points he found useful during the day, as an aide mémoire..

Praise is important but must be genuine and proportional. Sometimes people being praised may surrender the will to self-assess to the person giving the praise.

In order to make the coachee the feeling he is being invested in, the temptation should be avoided to leave quickly and abruptly at the end of the formal training. It is, in fact, in the informal surroundings following training that the learning experience can continue, in somewhat more relaxing circumstances.

7. The qualities of an ideal coach

There are a few recognised qualities of the ideal coach which are important to bear in mind:

- Patient
- Detached
- Supportive
- Interested
- Good listener
- Perceptive
- Aware
- Self-aware

- Attentive
- Retentive (good memory)

8. Challenges

In the context of the above, there are a number of challenges to be considered for coaching in the driver training context:

1. Good coaching is a skill, that requires a depth of understanding and plenty of practice if it is to deliver its true potential
2. Inadequately trained coaches may go through the motions of coaching, or use the behaviours associated with coaching, such as questioning, but fail to achieve the intended results because they have not fully understood the psychological principles on which coaching is based
3. It may be harder to give up instructing than it is to learn to coach. Perhaps the hardest thing for a coach to learn is to listen and shut up.
4. The pitfalls of knowledge: it is very hard for experts to withhold their expertise sufficiently to coach well (trainers in the field of driver training are generally experts..) However, it is by no means impossible for an expert to be a good coach. Examples of coaching have been seen on paper in the context of the Advanced project. Half the difficulty is training and auditing the coaches/trainers/instructors themselves to apply these techniques, once the pedagogical experts have created them.
5. For a trainer unused to such techniques, it can be difficult to « let go », to leave the set programme and process (which he is used to) and to listen, guide, summarise and question instead of being the provider of facts and figures.
6. In real coaching the coach is expected to be genuinely interested in their participant(s) and their development. If instructors in advanced courses consistently meet new participants with the same old problems (which often appears to be the case), they may find it difficult to maintain this “genuine interest” over time. It is up to the training company to find ways to motivate their instructors.
7. Women have consistently shown more natural ability to adopt a coaching philosophy than men. It is more in line with their style and temperament. However, driver training remains a male-dominated environment.
8. Current generations are brought up in a world of change and are likely to be more flexible to change as a result. However, the current stock of driver trainers are still, to a large extent, from generations past who may find it difficult to adapt to change, for example in the form of new teaching methods.
9. Coaching is a management culture in itself. It would make sense for driver training companies to implement such a culture into their company set-up before the driver trainers themselves go out to use these techniques with their clients.

Conclusion:

In conclusion, the above coaching techniques appear to be particularly suited for application in the driver / rider training world. Coaching can be used for motivating participants, planning, problem-solving, assessments, personal development and group work. To a certain extent, the introduction of coaching methods amongst trainers (who are not familiar with them) represents a paradigm shift, in that its principles seem to conflict with the “tell” culture teaching methods which they have learned and copied from the past. However, in the same way as environmental driving is to conventional driving, these techniques can be learned.

The introduction of quality coaching would take driver training to a higher level, in that it recognises the need to stimulate the sense of responsibility and awareness of the trainee, and to build upon the trainee’s motivations (needs), and that imposing a driving style or structure on an individual is, to a large extent,

trying to flog a dead horse. Despite the challenges for many trainers and training companies, it is a recipe for success in terms of delivering quality services, provided it is mastered and audited properly.

For more information on coaching, please refer to page 85.

ANNEX 7: 2nd phase training: example of course programme

In order to exemplify how a course could address issues at all 4 levels of driver behaviour, the following tables illustrate what could be addressed in 2nd phase training, bearing in mind the principles and methodological criteria addressed in the main body of this report. Clearly, there are a number of other issues that could be addressed, especially if research has revealed a requirement for training in a particular area.

Here follows an example for 2nd phase training for drivers, according to each behavioural level.

Level of driver behaviour model	Suggested content	Risk awareness (R) / Skills training (S)
<i>4: goals for life and skills for living</i>	Understanding the effects of one's own habits and motives in relation to safe driving	R
<i>3: journey related factors</i>	Moods (tired, preoccupied) and their effect on driving ability	R
	Peer pressure (friends as passengers)	R
	Context of driving (disco-effect, work-related, etc)	R
<i>2: mastery of traffic situations</i>	Hazard perception: identification of, and action to avoid, risk in traffic	R
	Road Positioning: breadth and depth, speed regulation, safe distances	R
<i>1: manoeuvring skills and vehicle control</i>	Braking technique	S
	Braking distances (in relation to speed, surface, load, reaction times)	R
	Experience of loss of control of vehicle ⁹⁸ ([over]steering, trajectory, speed and road surface..)	
	Sitting position (seat belt, head rest, airbags, etc)	R

⁹⁸ Participants should not experience skids/loss of control of the vehicle more than 3 or 4 times during the training because participants may start considering it as fun

Here follows some possible course elements for 2nd phase training for riders (motorcyclists), according to behavioural level, again bearing in mind the principles and methodological criteria outlined in the main body of this report.

Level of driver behaviour model	Essential content	Risk awareness (R) / Skills training (S)
<i>4: goals for life and skills for living</i>	Understanding the effects of one's own habits and motives in relation to safe riding	R
<i>3: journey related factors</i>	Moods (tired, preoccupied) and their effect on riding ability	R
	Peer pressure (while riding in groups)	R
	Context of riding (traffic density, conditions for riding, reasons for riding)	R
<i>2: mastery of traffic situations</i>	Hazard perception: identification of, and action to avoid, risk in traffic	R
	Road Positioning: using the width of the road, safe distances and perspective, speed regulation	R
	Mental training on how to act in emergency situations	R
	Braking and swerving around obstacles (<i>level 1 skills and level 2 risk awareness</i>)	R/S
<i>1: manoeuvring skills and vehicle control</i>	Eye technique: looking in the direction you want to go	S
	Balance exercises: posture, understanding of influence of body movements on steering and ability to control bike at low speeds	S
	Braking techniques (& sitting position)	S/R
	Braking distances (in relation to speed, surface, load, reaction times)	R

High basic skills are required for novice riders and this should be reflected in the rider training, although sufficient risk awareness training should always be a counterbalance. Combined braking and swerving exercises for motorcyclists are recommended to show the difficulties of performing this manoeuvre in practice and to encourage riders to anticipate more rather than to get into a critical situation.

On-road training is especially important for training communication with other road users (positioning, interaction in traffic, etc) and hazard perception. As previously mentioned, highly developed skills are needed for on-road rider trainers who should be able to monitor, analyse and communicate with candidates in real-traffic situations. The introduction of obligatory on-road training for novice riders would therefore imply a need for high numbers of properly qualified on-road trainers. A maximum of 3 participants per trainer is recommended for the on-road sessions.

Typical accident scenarios (for example, at junctions) should be presented and discussed so that riders are mentally prepared for potentially dangerous situations.

A brief review of basic training may be useful, especially in areas which are known “weakspots”.

Participants should be expected to wear adequate protective clothing during obligatory training, whether first or second phase⁹⁹.

⁹⁹ For the driving test, this is written in EU Directive 2000/56, Annex 2, Article 3.1.1.

ANNEX 8: The GADGET matrix and explanation

Hierarchical	Essential contents (examples)	Knowledge and skills	factors	
Goals for life and (general)	Knowledge about/control over how life goals and personal tendencies affect driving behaviour fe situation - group norms - motives - self-control, other characteristics - personal values etc.	Risky tendencies - acceptance of risks - self-enhancement through driving - high level of sensation seeking - complying to social pressure - use of alcohol and drugs - values, attitudes towards society etc.	Self evaluation/awareness of - personal skills for impulse control - risky tendencies - safety-negative motives - personal risky motives etc.	
Goals and of driving	Knowledge and skills concerning - effects of trip goals on driving - planning and choosing routes - evaluation of requested driving time - effects of social pressure in car - evaluation of the necessity of trip etc.	Risks connected with - driver's condition (mood, BAC etc.) - purpose of driving - driving environment (urban/rural) - social context and company - extra motives (competing etc.) etc.	Self evaluation/awareness of - personal planning skills - typical goals of driving - typical risky driving motives etc.	
Mastery of traffic situations	Knowledge and skills concerning - traffic rules - observation/selection of signals - anticipation of course of situations - speed adjustment - communication - driving path - driving order - distance to others/safety margins etc.	Risks caused by - wrong expectations - risk-increasing driving style (e.g. aggression.) - unsuitable speed adjustment - vulnerable road-users - not obeying rules/unpredictable behaviour. - information overload - difficult conditions (darkness etc.) - insufficient automatism / skills etc.	Self-evaluation/awareness of - strong and weak points of basic traffic skills - personal driving style - personal safety margins - strong and weak points of skills for hazard situations - realistic self-evaluation etc.	
Vehicle manoeuvring	Knowledge and skills concerning - control of direction and position - tyre grip and friction - vehicle properties - physical phenomena etc.	Risks connected with - insufficient automatism / skills - unsuitable speed adjustment - difficult conditions (low friction etc.) etc.	Self-evaluation/awareness of - strong and weak points of basic manoeuvring skills - strong and weak points of skills for hazard situations - realistic self-evaluation	

EU GADGET project (Hatakka, Keskinen, Gregersen & Glad 1999).

The GADGET-matrix is based on the assumption that the driving task may be described as an hierarchy. The idea of the hierarchical approach is that abilities and preconditions in a higher level influence the demand and preconditions on a lower level. The four levels are:

- Goals for life and skills for living
- Goals and context of driving
- Mastering traffic situations
- Vehicle manoeuvring

The highest level refers to personal motives and tendencies in a broader perspective. This level is based on knowledge that lifestyles, social background, gender, age and other individual preconditions have an influence on attitudes, driving behaviour and accident involvement.

On the next level, the focus is on the goals behind driving and the context in which driving is performed. The focus is on why, where, when and with whom driving is carried out. Examples on more detailed aspects are the choice between car or bus, day-time or night-time driving, rush-hours or not, decisions to drive under the influence of alcohol, fatigue or stress etc.; all in relation to the purpose of the trip.

The next level is about mastering driving in traffic situations. A driver must be able to adjust his/her driving in accordance with the constant changes in traffic, for example in junctions, when overtaking or when encountering unprotected road users. To be able to identify potential hazards in traffic is also on this level. Driver education and training traditionally focuses on this level.

The bottom level is focusing on the vehicle, its construction and how it is manoeuvred. To know how to start, shift gears and stop the car well enough to be able to use the car in traffic belongs to this level as well as more complex evasive manoeuvres, reducing skids on low friction and understanding the laws of nature (driving physics). The functioning and benefits of injury preventive systems such as seat belts and airbags also belong here.

A safe driver is, however, not only skilled but also aware of risks and of his own abilities. In order to cover these different dimensions the hierarchy was expanded in the EU-project GADGET to a matrix (as in Annex 1) which in addition to the four levels includes the following three dimensions:

- Knowledge and skills.
- Risk increasing factors.
- Self-assessment.

The content of the first column describes the knowledge and skills that a driver needs for driving under normal circumstances, namely, on the lower hierarchical levels how to manoeuvre the car, how to drive in traffic and what rules must be followed. On the higher levels the column relates to how trips should be planned and how personal preconditions may influence behaviour and safety.

In the second column about risk increasing factors the focus is on awareness of aspects of traffic and life that can be associated with higher risk. On the basic level it may be worn-out tyres, poor brakes, lack of routine in performing basic manoeuvring, etc. Higher in the hierarchy the column refers to risky driving in darkness, on low friction roads, among unprotected road users, excessive speeding, mental overload, etc. It also relates to dangerous motives and risk increasing aspects of lifestyle and personality.

The third column is about how the driver is assessing his/her own situation on the four levels. It emphasises measurement of one's own skills on the basic levels and awareness of one's own personal preconditions and tendencies as well as abilities in decision-making about trips and in life in general on the upper levels.

The cells in the matrix thus define frames for definition of detailed competencies that are needed in order to be a safe driver. The matrix may be used for defining educational goals and educational content in driver education and training. The suggestion from the constructors of the matrix is that driver training strives at

covering as much as possible of the whole matrix, not only the lower leftmost cells that traditionally are covered.

For further information on the GADGET matrix, please refer to the following research article:

Hatakka et al, From Control of the Vehicle to Personal Self-Control: broadening the perspectives to driver education, Transportation Research Part F (2002) 201-215, Elsevier Science Ltd

ANNEX 9: Conflicting goals of skid training

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Abstract - Efforts to make novice drivers drive more safely on slippery roads by means of special courses have mainly failed. The aim of this study was to compare the views of instructors and students on the goals of skid training courses. The importance given to anticipating vs. manoeuvring skills was analysed. After completing a skid training course, students in four Nordic countries (Denmark, Finland, Norway and Sweden) assessed manoeuvring skills to be equally important to anticipating skills in the courses. However, instructors assessed anticipating skills to be more important than manoeuvring skills. The differences between the assessments of instructors and students were the same in all four countries. Manoeuvring exercises are widely used in the courses although the main purpose of these courses is to develop anticipating skills. The exercises may give students the impression that manoeuvring skills are more important than anticipating skills. Manoeuvring exercises also increase their self-confidence and may lead to underestimation of the risks involved, resulting in eg. their driving at higher speed. However, skills in managing difficult situations may not develop enough to compensate for the effects of this increase in confidence. It is important to get students to learn anticipating skills even though such skills are difficult to teach. The effects on traffic safety of teaching manoeuvring vs. anticipating strategies are discussed.

Keywords - Driver training, Skid training, Skills, Traffic safety, Self-confidence

Introduction

Skid training is a part of the driving school curricula in four Nordic countries (Denmark, Finland, Norway and Sweden). As defined in the Danish and Swedish curricula, the goal of the skid training is to teach student **to perform certain operations in slippery road conditions**. The Finnish and Norwegian curricula explicitly state that the goal is to **increase students anticipatory driving skills**. In a psychological sense, the basic goal of the skid training is not to promote the use of manoeuvring skills in ordinary driving but to teach anticipating skills in order to prevent risky driving. The special manoeuvring skills taught in the courses are meant to be used only in an emergency situation. However, the effects of skid training have so far been disappointing: the expected safety effects of the training have not yet been verified and there are reports of the opposite. When Norway adopted skid training as a part of driver training, the number of accidents on slippery roads increased among young (18-24 years) men (Glad 1988). In Finland, the results of skid training were partly similar. In a Finnish study (Keskinen, Hatakka, Katila and Laapotti 1992), 30 616 novice drivers answered a questionnaire about the accidents they had been involved in during the first 6 - 18 months of their driving career. A reduction in the proportion of accidents on slippery roads was found for drivers over 21 years, but like in Norway both male and female younger drivers (18-20 years), had a larger proportion of their accidents in slippery road conditions after the introduction of the skid course.

A hypothesis has already been put forward (Glad 1988; Moe 1984) that the increase in slippery road accidents in Norway was due to an increase in drivers' confidence in their own skills in driving in slippery road conditions. Because of their increased confidence, drivers do not avoid difficult driving

*This study was supported by the Nordic project for developing driver training (MEFUN II).

conditions or they can even take on more demanding driving tasks by driving at a higher speed. To test this hypothesis among Finnish novice drivers, another questionnaire study of drivers' confidence and fears was carried out as a part of the major follow-up study of the effects of the new driving school curriculum (n=1319). The results showed that skid training courses had increased drivers' confidence in their own abilities to drive in slippery road conditions (Keskinen et al. 1992). Gregersen (1996) has reported similar results of young drivers' increased confidence or "overestimation of their own skill" as a result of skill training in slippery road conditions.

Driver training has traditionally been one of the most important means of improving driving skill. It has been taken for granted that skill training is an effective way to improve safety (Gregersen 1996), and the training has usually focused on manoeuvring exercises. Although being basically sensible, the idea of teaching manoeuvring skills has, however, been challenged. New ideas about the nature of driving suggest that motives, anticipation, self-confidence and other factors might be even more important in safe driving than the skills themselves (Ranney 1994). How do we teach novice drivers the importance of anticipation compared to manoeuvring, and how can we improve their manoeuvring skills without increasing their self-confidence too much? These are the key questions.

The aim of this study was to compare the views of both instructors and students on the goals of skid training courses. In particular the importance given to anticipating and manoeuvring skills was studied.

Method and sample

Questionnaires were mailed out to randomly selected driving schools in each of the four countries (Denmark, Finland, Norway and Sweden) and they were administered to the instructors responsible for the actual training as well as to students who had just completed their skid training course. It was not possible to calculate the exact response rates. The proportion of schools which returned the questionnaires was 7/21 in Denmark, 8/21 in Norway and 5/21 in Sweden. The Finnish data was also collected from 21 driving schools but these answers were supplemented by collecting data from students also on-the-spot at the end of their skid training courses and from instructors during their own instructor training. The instructors and students who answered the questionnaire in Denmark, Norway and Sweden and partly in Finland were from the same driving schools. The countries were not compared with each other because of the differences in sample size (Table 1).

Table 1. The study samples

COUNTRY	STUDENTS (N)	INSTRUCTORS (N)
Denmark	28	10
Finland	260	64
Norway	64	19
Sweden	30	15
IN ALL	382	108

In each country, about half of the subjects were women (52% - 57%). The mean age was 21 years (Finland, Norway) and 22 years (Denmark, Sweden). The instructors were mostly men (90 %). The mean age of the instructors was 40 years in Finland , 42 in Norway, 45 in Denmark and 51 in Sweden.

The questions covered driving skills in slippery road conditions. The form of the questions was: "Which of the following skills were considered to be important **to master in slippery road conditions, according to the teaching** in the course?" The subjects were given a list covering different anticipating and manoeuvring skills from which to pick out firstly the skills they found most important, secondly the important skills and finally the least important skills. The subjects were encouraged to make use of the whole three-level scale as effectively as possible. Both students and instructors received identical questionnaires, and they were completed anonymously.

Factor analysis produced two factors (Harris-Kaiser, non orthogonal rotation method) from which two summary variables were elaborated with the use of correlation analysis. The inner consistency of the variables was maximized. The summary variables were named: 1) **anticipating skills** (7 items) and 2) **manoeuvring skills** (8 items) and their reliability was .64 and .74 respectively for instructors and .62 and .62 respectively for students (Cronbach's alpha). Six items were left out after reliability testing.

The **anticipating skills** needed in slippery conditions were:

- to recognize traffic situations that may easily lead to an accident
- to avoid dangerous situations
- to understand the meaning of tyre grip
- to detect the changes in tyre grip
- to adjust the driving speed to the road conditions
- to adjust the driving speed so that sufficient braking distance is maintained to prevent an accident
- to avoid making mistakes on a slippery road that may lead to loss of control of the car

The **manoeuvring skills** needed in slippery conditions were:

- to correct a sideways skid
- to avoid accelerating or braking in a curve
- to use the clutch and steer in the correct way in a sideways skid
- to correct a sideways skid caused by driving too fast
- to use slippery condition driving skills in real traffic situations
- to steer clear of an obstacle when the braking distance is too short for stopping
- to maintain tyre grip with the correct driving technique in different situations and at different speed
- to know what to do on a slippery road when an accident has already happened

Results: What aspects of the skid training course do instructors and students consider to be important?

The assessments were compared only within each country and the students and the instructors were not treated as whole groups in the analysis in order to avoid giving more weight to countries with larger samples. This also helped to overcome the interpretation difficulties posed by differences in the driving school curricula and traffic cultures in the four countries.

T-test for means was used to compare the assessments (summary variables). All reported differences were statistically significant on a level of at least $p < .05$. The differences in the assessments of instructors and students were tested by subtracting the mean of manoeuvring skills from that of anticipating skills.

The instructors, but not the students (except in Finland), in all four countries rated anticipating skills as significantly more important than manoeuvring skills. The differences are consistent despite the small samples. The relative weight given to anticipating and manoeuvring skills was significantly different in instructor and student groups within the countries (except in Denmark) (Table 2).

Table 2. Differences in assessments of anticipating and manoeuvring skills within and between instructor and student groups, and their significance (larger value means more important skill; min=0, max=20, range: 4.3-20.0)

Country	Assessments of importance A=anticipating skills M=manoeuvring skills						Difference in relative weight between instructor and student groups (A - M)		
	Instr.			Stud.			Instr.	Stud.	Sign.
	A	M	Sign.	A	M	Sign.			
Denmark	18.0	15.8	*	15.6	15.0	NS	2.2	0.6	NS
Finland	17.9	12.0	***	15.3	14.3	***	5.9	1.0	***
Norway	17.0	14.6	***	15.2	15.3	NS	2.4	-0.1	**
Sweden	18.1	11.8	***	15.3	15.1	NS	6.3	0.2	***

Significance: NS=non significant

*= $p < .05$

**= $p < .01$

***= $p < .001$

The students (except in Finland) considered manoeuvring skills and anticipating skills equally important. The Finnish students assessed anticipating skills as relatively more important than manoeuvring skills. However, the relative importance that the Finnish students gave to anticipating skills compared to manoeuvring skills, was significantly less than that given by the Finnish instructors. In general, the instructors differentiated more between anticipating and manoeuvring skills than students.

Discussion

The instructors rated anticipating skills as more important than manoeuvring skills. However, the students (except in Finland) did not make the same kind of difference in importance between anticipating and

manoeuvring skills. Instructors also gave relatively more weight than students to anticipating skills compared to manoeuvring skills (except in Denmark). The results showed that students on skid training courses fail to grasp the idea of the courses, i.e. that safe driving in slippery road conditions is based on being able to avoid a skid rather than being able to correct a skid. This seems to be a part of a wider problem connected with driver training. In order to understand the results and their implications for driver training in general, the content of skid training and the reasons for its negative effects will be discussed next. Finally, possible solutions to the problems will be presented. The discussion is based on the results of the present as well as other studies.

The content of skid training

The current training methods on skid training tracks in all the countries under discussion here concentrate on exercises where manoeuvring skills seem to be a vital component. The exercises are made up of:

- demonstrations of how speed, road surface and braking methods affect braking distance
- braking when the traction is different between left and right wheels
- braking exercises on a dry and on a slippery surface with different braking methods
- evasive manoeuvres on a slippery surface
- correct driving in a slippery curve
- correcting a sideways skid

There are differences between the countries, e.g. in the time spent on each exercise or the kind of devices used. There is even variation between different training tracks within a country. However, the above-mentioned exercises are the most typical and common to all the countries.

Explanations for the negative effects of skid training

The goal of skid training should be to teach students **to use an anticipatory strategy in their driving and to assess their own driving skills in a realistic way**. A driver who anticipates risks in traffic can try to avoid them beforehand, e.g. by not driving if it is not absolutely necessary or by driving at a lower speed. An anticipating driver is a bit suspicious of how a situation will develop and is able to look ahead in a longer perspective than a driver whose anticipating skills are inadequate.

Drivers should also be able to assess their own skills realistically. Overestimation of or very high confidence in one's own skills can easily lead to situations where the limits of the actual skills are exceeded. One example of this is the loss-of-control accidents of young male drivers. These accidents occur quite often on a dry road surface but at a high speed and when driving while intoxicated. Female drivers' loss-of-control accidents occur mostly in bad road conditions, e.g. on a slippery road (Laapotti 1994).

Why then do skid training lead students to assess manoeuvring skills so important and increase their confidence in their own skills to an extent beyond their actual skills as e.g. Gregersen (1996) has pointed out? One reason for this increase in confidence can be found in the **nature of the exercises**. Usually they are repeated until students are able to do them correctly and the driving conditions are kept constant. This makes

for an easy learning task: the student is learning routines in a constant situation. The acquired skills can, however, be too limited to be used with success in real traffic where the conditions vary.

It is a common **belief that good driving skills are for the major part composed of manoeuvring skills** (Gregersen 1996). Manoeuvring skills can also be used to satisfy other than safety motives. Both of these aspects are typical of young drivers, especially young males (Jessor 1986; Keskinen 1994; Twisk 1994). Assessing one's manoeuvring skills as well developed and using these skills in traffic can help young persons in identifying themselves with people who they respect also for other characteristics eg. rally drivers or movie heroes.

One possible cause for misunderstanding the goals is **the feedback** given to the students by the instructors. As most of the exercises focus on manoeuvring, there is a great temptation to give feedback only about that. For example, evasive manoeuvres on a slippery surface or correct driving in a slippery curve are easily interpreted as means for learning better manoeuvring skills. The original goal of these exercises of showing the potential of an anticipating way of driving, ie. that lower driving speed makes it possible for the driver to manage a difficult situation is forgotten, the exercises encourage instructors to give more feedback on manoeuvring techniques in a situation rather than on the students' abilities to anticipate the situation. One example of the limitations of the exercises is the brake-avoidance manoeuvre where the driver should try to avoid colliding with an obstacle on the road. The driver has to steer away from the obstacle in the direction (left or right) signalled to him or her with a lamp, flag or hand mark. The learning in this kind of procedure is quite restricted. The exercise is meant to simulate a real brake-avoidance situation, but the only thing the driver learns is to choose the right evasive direction. However, actual traffic situations do seldom occur unexpectedly. In almost all traffic situations the driver is able to anticipate how the situation is going to progress. The brake-avoidance exercise is rather limited because it only favours learning fast reactions. Such exercises, which have their origin in the tradition of behaviourism, can not promote learning of anticipating skills.

Learning manoeuvring skills is rewarding in itself. Manoeuvring skills give the young driver a feeling that he or she is capable of controlling the car and thereby get satisfaction from successful operations. The more difficult the operations are the greater the satisfaction. Rewarding use of manoeuvring skills probably leads to a generalization of manoeuvring operations from exercises of emergency situations to ordinary driving on slippery roads. As a result the driver takes on more demanding driving tasks, e.g. driving at a higher speed or accepting more using sideways skidding.

As a result of training or driving experience, drivers' confidence in their skills increases more rapidly than their actual skills (Gregersen 1996; Renge 1995). An experiment conducted by Gregersen showed that "skill"-trained drivers tend to evaluate their skills as better than "insight"- trained drivers already after half an hour's practise.

Positive feedback (easy tasks and repetition), together with the rewarding nature of learning, can **increase self-confidence** even though the actual skills to manage in real situations have not developed to the same degree (Gregersen 1995). This increased confidence in one's own skills as the result of skid training has both been hypothesized (Glad 1988) and documented (Gregersen 1995; Keskinen et al. 1992).

How to make skid training more effective

For years, the question has been, and still is: How to increase the skills without increasing the confidence in these skills and without promoting the use of them for satisfying extra motives like competitive needs or sensation-seeking (see e.g. Näätänen and Summala 1974).

There are some solutions which at the moment seem promising. Some of these concern skid training and some driver evaluation.

The nature of skid training must be changed so that the manoeuvring component is not over-emphasized. One solution could be to use more demonstrations. Trials combined with the evaluation of these trials could also be increased. The starting point could be the students' own everyday experiences and the evaluation of these in order to promote safe behaviour in traffic. Repeated exercises should be omitted and they should be planned in such a way that it is possible to succeed only by anticipating and, e.g. driving at a low speed. This means adding variation to the exercises and making the learning tasks more difficult. Exercises where fast reactions are emphasized should be avoided.

The most difficult task is to reduce the negative effects resulting from the **common belief that driving skill is synonymous with manoeuvring skill**. One way to do this is to make instructors more aware of this belief and to get them to more profoundly adopt the idea of anticipation as the important goal of the training. It is also necessary to develop their ability to give **appropriate feedback** on the exercises. This feedback should concentrate on the higher level skills or anticipating skills more than on manoeuvring skills. Exercises which concentrate on anticipating skills help the instructors in their task.

Learning must be rewarding also in skid training, but the rewards should come primarily from learning anticipating skills and not just manoeuvring skills. The instructors are of course in a key position, as discussed earlier, but the exercises are also important. These must be planned in such a way that it is not possible to learn routines in order to manage a situation.

One solution to the problem of **excessive self-confidence** is to increase self-evaluation combined with the evaluation of the instructor. Self-evaluation has been systematically added in the Finnish driving school education and it promises well. Students have reported that they have learned to better analyse their own driving skills than earlier (Laapotti, Keskinen, Hatakka and Katila 1995). The main idea in self-evaluation is actually the same as what is now offered to reckless drivers in Austria (Panosch 1995) and in France (Billard 1995).

There seems to be solutions to the problems of skid training but these are not so easily implemented.

Acknowledgements - This study and the writing of the article were financially supported by the Nordic Committee for Traffic Safety Research. The comments of Liisa Hakamies-Blomqvist and one anonymous referee are gratefully acknowledged.

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