NEW RIDER TRAINING SYSTEM IN NORWAY

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Abstract

Norway has implemented new driver and rider training system for all driving license categories from January 1, 2005. The new training model is largely based on research related theories on driver and rider training development. The GADGET matrix, (Hatakka, Keskinen, Gregersen & Glad, 1999; Hatakka, Keskinen, Gregersen, Glad & Hernetkoski, 2002) served as the basis for the development work. The model describes what the driver or rider must learn at four different hierarchic levels.

Our new category A curriculum is also based on this matrix as far as training content is concerned. This is specifically expressed by having the training organized into our general four-step curriculum model with emphasis on the following seven subjects:

1. Legislation and road traffic as a system
2. Maneuvering a vehicle.
3. Road traffic skills.
4. Economical and environmentally friendly riding.
5. Planning and preparation for riding.
6. Behavioral and judgmental tendencies.
7. Knowledge of one's own competence and of one's personal behavioral and judgmental tendencies.

The new motorcycle training program is characterized by its focusing on basic technical riding skills that have specifically been placed in the first part of the training. However, continuous emphasis has also been put on precise technical riding skills throughout the *entire* training process.

Any particular type of training that might lead to excessive confidence in one's own skills has deliberately been avoided. A four-lesson mandatory safety course in precise riding techniques has therefore been included. For this course we have developed four technical riding exercises that emphasize the rider's ability to understand that skills in braking and steering the motorcycle in a correct and precise manner are the basis of safety on the roads. The training methods have been developed to give the student experience rather than a conformist training in mastering all situations.

The student's technical riding skills then form the basis of the concluding traffic training in step four of our general curriculum model. Here behavioral and judgmental tendencies, self-knowledge as well as planning and preparation for riding form the central elements. A mandatory eight-hour category A course in safe road riding, where theory and practice are integrated, is included in this last step of the training.

It is essential that riding instructors in charge of teaching according to the new curriculum possess the necessary competence for attaining the intended reduction in motorcycle accidents. A mandatory supplementary training course for motorcycle related teaching has consequently been established. The content of this one-week course is primarily aimed at understanding the curriculum's intentions, precise riding techniques, the required training methods and other related topics. This course is offered by Nord-Trøndelag University College, Faculty of Driving Instructor Education.

INTRODUCTION

The Norwegian Public Roads Administration has been awarded the responsibility of managing and developing the training of motor vehicle operators through legislation and regulations. Generally, training takes place at driving schools and at some upper secondary schools; instruction may also be given by laymen. The Public Roads Administration has, on the other hand, been entrusted with the task of evaluating the candidates' competence relative to being granted a license in a given category. The organization is also in charge of developing a curriculum for all driving license categories.

Driver and rider training has been given wide coverage in the Norwegian National Transport Plan 2002 – 2011 (NTP). It covers individual categories separately as well as comprehensively dealing with the sector itself. The Plan's main message proposes strengthening training in all categories.

The NTP has proposed the following specific goals for the motorcycle training:

- A further development of the motorcycle training program with special emphasis on rider competence including precise riding techniques.
- Development of a special training program for motorcycle instructors and examiners
- Stimulate the development of an advanced training program for riders after they have received their license
- Further developments of the motorcycle test to quality assure the rider's overall competence.

From January 1, 2005 new curricula for 16 driving license categories, including subcategories, will be introduced as a follow-up to the National Transport Plan and the National Road Traffic Safety Action Plan. This will take the form of a revision of the regulations governing driver and rider training and driving tests etc.

The basis of the revisions is the study titled "Revised Driver Training System - A Proposal" prepared by the Directorate of Public Roads in 2002, (Glad, Isachsen, Lindheim, Lund, Sagevik & Aaneby, 2002). The study proposes a joint pedagogic platform and a training model intended to function as a basis for all driving license categories. It also contains proposed modifications to the content, structure and evaluation of the various categories. In addition, an abbreviated version of the study has been produced in English, (Norwegian Public Roads Administration, 2004/2005). This version forms the basis of this paper.

The main section of this paper describes the general foundation for the revisions of the regulations and curricula in 2005 covering all driving license categories. The final section of describes how the theoretical foundation has been specifically realized in the motorcycle rider training system.

1. ARGUMENTS FOR AN IMPROVED DRIVER AND RIDER TRAINING PROGRAM

1.1. Road Traffic Safety

The purpose of driver and rider training is to provide people with sufficient competence to drive and ride safely in both a considerately and efficient manner. Accidents and injuries are the significant negative effects of road use. Young and inexperienced drivers are particularly prone to accidents. The accident risk for novice drivers falls sharply during the first few months of driving (Sagberg, 2000), a reduction that can be explained from the experience gained during these first months. Candidates could, however, potentially gain this experience during their training, thereby commencing their rider career with a much lower accident risk. The challenge is to create such training that can be implemented within a realistic framework.

1.1.1. Young Drivers and Type Accidents

The type accidents novice drivers are involved in can tell us what problems they encounter, thus contributing to identifying training needs. Figure 1 shows the distribution of Norwegian novice drivers' involvement in accidents by principle types of personal injury. For automobile drivers the distribution is based on 18-19 year-olds. To obtain an adequate sample for motorcycle operators, the database has been extended to include the 16-24 age group. For heavy vehicle operators, the 18-24 age group is used. There may be individuals with several years' driving experience included in both the motorcycle and heavy vehicle operator groups. The term novice can therefore be misleading. The figure nevertheless indicates the types of accident young drivers are involved in, providing an indication of which problems driver training should aim at.

The figure shows that off-the-road accidents are the most prevalent type for not only young automobile drivers and young motorcyclists but also for young heavy vehicle drivers in Norway. They made up almost half of all automobile driver accidents, nearly the same for heavy vehicle drivers, and over a third of all motorcycle accidents.

Running off the road indicates that the driver or rider has been traveling at too high a speed relative to the road and driving conditions as well as to their own driving skills. It is therefore important to provide the learner driver/rider with a realistic understanding of their own skills and the necessity of adapting speed to these skills. Moreover, the training must convey an understanding of the fact that speed must be adapted to driving/riding conditions.

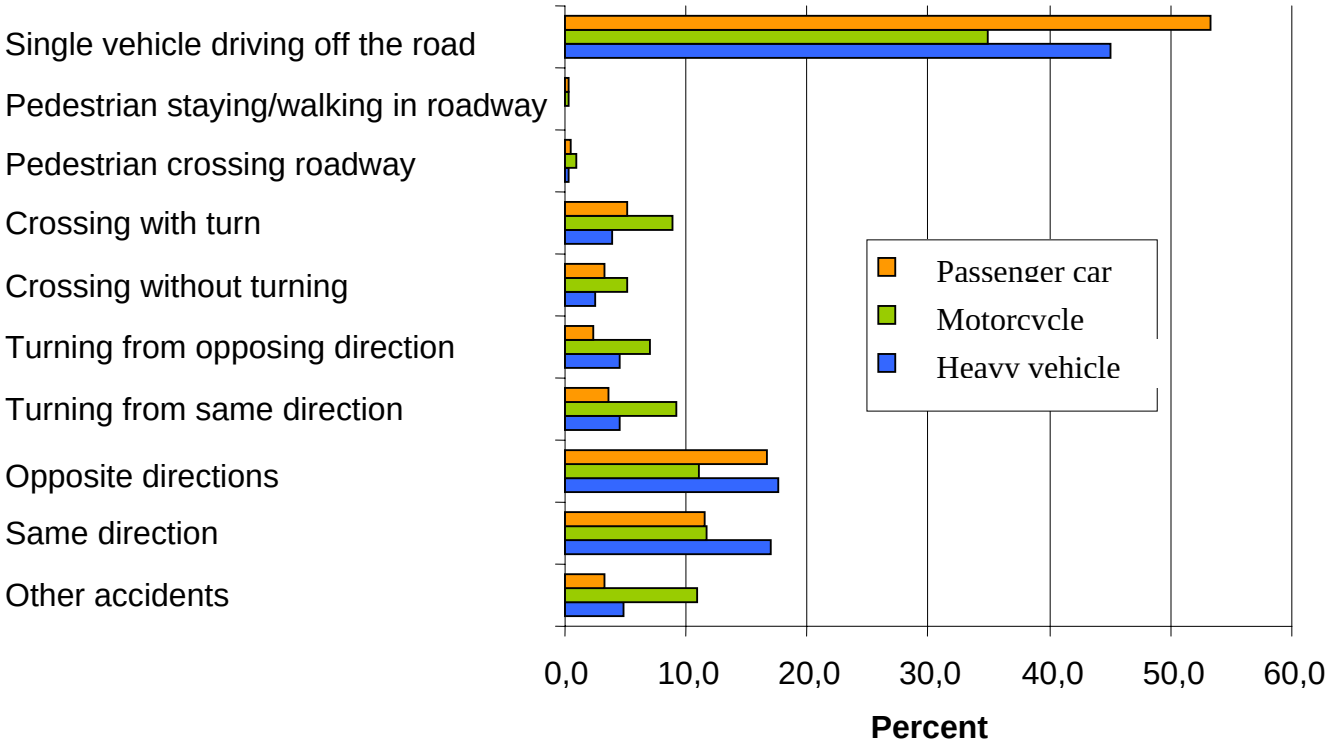

Figure 1: Percentage distribution of personal injuries suffered by drivers/riders of automobiles, motorcycles or heavy vehicles. Age 18-19 for passenger cars, 16-24 for motorcycles and 18-24 for heavy vehicles. (Glad et al, 2002)

Motorcyclists are in a unique position. Riding a motorcycle places great demands on technical riding skills. Inferior skills can lead to off-the-road incidents even in the absence of a reckless riding style. Motorcycle riders can therefore benefit from improving their technical riding skills in order to avoid running off the road at normal speeds.

1.2. Major Guidelines and Professional Development

The National Road Traffic Safety Action Plan 2002-2011 provides a number of leads to improved driver and rider training. These pertain both to driver and rider training content, mandatory training to ensure adequate competence within important subjects, stimulating additional lay instruction with improved quality, curricula development for all vehicle classes, and structural improvements to the driver and rider training system.

Although the action plan to some extent indicates suggested measures, this study of the new training programs has been obliged to identify current problem areas. Defining these has also lead to other measures.

1.2.1. Areas of Potential Improvement

In the driver and rider training development project, the Directorate of Public Roads has therefore been cooperating with sector partners and other major professional organizations involved in driver and rider training in order to identify problem areas within the current training system. A number of gatherings have been arranged for this purpose. Participants have, in particular, highlighted aspects of current training that the work on revising the curriculum should deal with:

- The training provides lower levels of competence with regard to risk assessment and evaluation, understanding traffic situations, and technical riding skills
- The students generally have had too little practice riding motorcycles
- The training has sometimes incorporated unfavorable progression
- Inadequate management of the training system

The work defined two areas in need of improvement, one relating to the *structure* of the system and the other to the *quality* of the training.

1.2.2. The System Structure

What has been considered as inappropriate in the previous driver and rider training system was the manner in which the various driving license categories were related to one another and the connection between them. Among other things, several of these categories share parts of the content. Anyone taking a driving test in several categories that share subjects and problem areas must in principle repeat the content. This is, for example, the case for several light vehicle and heavy vehicle license categories.

The curricula to be revised were developed at different times, and this can be seen in the various driving license categories having differently formulated objectives, different training methods and review procedures. There would therefore appear to be a need to review the plans to coordinate the pedagogical basis of the training for the various driving license categories.

In summary, the desired result of the review was to improve the following structural characteristics:

- The main system structure
- Minimize repetition of content between driving license classes (less content overlap)
- Improve pedagogical conformity between driving license classes

1.2.3. Training Quality

Before the revisions it was largely up to the students in most categories to accept responsibility for their own learning. Little of the training was mandatory[1], and lay instruction was encouraged, particularly in category B. The curricula provided direction relative to the training progression, although experience showed that far from all learner drivers possessed the competence they should have had when, for example, signing up for skidpan driving in category B. This was a problem as long as parts of the skidpan training had been designed with the assumption that the learner driver had reached a certain competence level. Possible reasons for this could either be that the written curricula had not adequately made clear which competence level should be attained and at which time, or that the students did not take responsibility for their own training seriously enough.

The work also demonstrated the necessity of reviewing the training content as defined in the formal curricula. Some subjects were missing, while others should have been reinforced or toned down. In particular, the need for a stronger focus on awareness and reflection has been emphasized with the intention of influencing the candidate's attitudes.

In summary, the Directorate of Public Roads wanted the curriculum revision to strengthen the quality of the driver and rider training by:

- Revising the content for each category
- More clearly defining the stages making up the training
- Ensuring goals attainment at each stage by milestones and stronger control
- Greater emphasis on awareness and reflection

1.3. Research and International Development

The work to develop a common basis for the new curricula has also been based on research and international development efforts. The objective of this work has been to base the new curricula as much as possible on research supported knowledge. In a previous study, an overview ("Overall evaluation of driver training") of international research into driver training, test driving, and training support measures was prepared, (Spurkeland, 1998).

During the study the overview process was supplemented by later research and development results in the field, not least by the signals emanating from international research projects under the auspices of the EU. The most recent developments in driver and rider training in several European countries have also been evaluated and considered.

[1] Does not apply to category A/A1. In category B 9, 5 mandatory lessons (from 1995), in heavy vehicle categories only skid pan course.

2. RELEVANT PSYCHOLOGICAL FACTORS FOR DRIVER AND RIDER TRAINING

2.1. Driving Tasks Arranged in Levels

Driving can be considered as a process where the operator continuously encounters tasks requiring solutions. The ability to master these tasks will depend on the knowledge and skills the person possesses and on the person's intellectual abilities. The objective of driver and rider training is to remove the difference between the knowledge and the skills required for driving safely, considerately and efficiently, and the knowledge and the skills the person possesses when commencing training. For the training to be appropriate, the knowledge and skills the driver needs must be recognized, (Glad et al, 2002).

Driving is a complex activity involving solutions to a wide spectrum of tasks. In their driving analysis McKnight & Adams (1970) arrived at 45 identifiable main tasks, each of which could be further divided into a total of 1700 sub-tasks. In order to produce an overview of this multiplicity, an attempt has been made to arrange the tasks in various ways. One frequent method has been to split driving tasks and driving behavior into three hierarchic levels, (Michon 1985; van der Molen & Bötticher, 1988):

- Strategic level: Tasks and behavior at the uppermost level are linked to, for example, planning and preparing for a journey, which route to take, and the chosen departure time.

- Maneuvering level or tactical level (hereafter called tactical level): At this intermediate level, the tasks and behavior are linked to situations connected to the driving itself, such as what speed to select, deciding to pass the vehicle in front or not.

- Control or operational level (hereafter called the maneuvering level): At this highest level, the tasks and behavior are connected to situations at a given moment, such as positioning the vehicle properly and reacting correctly to incidents requiring immediate corrective action.

When operating with tasks at different levels, decisions made at one level can affect tasks at lower levels. When a driver at the strategic level chooses a delayed departure, he/she might wind up running late. The consequences can be that the driver at the maneuvering level must select a higher speed and utilize smaller gaps to arrive in time. This will have an influence on the requirements for solving tasks at the control level. In turn this places greater demands on correct and prompt handling of the vehicle. What the driving actually turns out like can therefore depend on how tasks at other levels have been solved.

2.2. The GADGET-Model

2.2.1. Four Levels

In a larger European research project (GADGET[2]) on subjects such as driver training, a model was developed based on the hierarchic models previously described, (Hatakka et al 1999). In the GADGET matrix, later also referred to as the GDE[3] matrix (Peräaho, Keskinen & Hatakka, 2003) a fourth level was, however, added above the other three. This uppermost level became known as "Goals for life and skills for living" (hereafter the "highest level"). This level does not actually contain any driving tasks or deal with driving behavior, but is concerned with the more lasting driver characteristics such as personality, group identification, age and the like. This level has been included because these driver characteristics can influence how the driver solves the tasks and the driver behavior at lower levels. How a driver functions as a person can have an influence on how he/she solves tasks at the strategic level, such as how well trips have been planned. Poor planning can thus have an influence on tasks and behavior at lower levels.

2.2.2. What needs to be Learned?

A rider needs to acquire knowledge and skills at each of the four levels. At the superior level, this means knowledge of those personality traits that can influence decisions at lower levels. As far as the other levels are concerned, this implies knowledge and skills relevant to the ability to deal with the tasks at each level. The GDE matrix (see Figure 2) also emphasizes that the driver must know how incorrect and missing information and/or skills can lead to increased risk. At the highest level, a risk seeking personality can be unfavorable from a traffic safety viewpoint. At the strategic level driving while drunk can result in increased risk, while driving too fast is an unfortunate choice at the tactical level, and a lack of technical driving skills the same at the maneuvering level.

Insight into one's own tendencies and typical problem solving habits is regarded as an important aspect of the GDE matrix. A driver/rider who knows that he/she enjoys thrills and therefore is apt to take chances can attempt to modify such tendencies and choose less risky behavior. The same applies to drivers who know that they are lacking in knowledge and skills. Insight into their own shortcomings can contribute to making their driving more considerate and careful.

In summary, the GDE matrix operates at four hierarchic levels including the:

- Highest level
- Strategic level
- Tactical level
- Maneuvering level

[2] GADGET: Acronym for "**G**uarding **A**utomobile **D**rivers through **G**uidance, **E**ducation and **T**echnology".
[3] GDE: Acronym for "**G**oals for **D**river **E**ducation"

Each level requires:

- Knowledge about factors/conditions that influence how tasks are solved, and knowledge and skills of importance for solving tasks
- Knowledge about factors/conditions that can increase the risk
- Insight into one's own reaction pattern and mentality and into lack of own knowledge and skills

Hierarchical level of behavior (extent of generalization):	Central content of driver and rider education: Knowledge and skills the driver/rider has to master	Risk increasing factors the driver/rider must be aware of	Self-evaluation
Goals for life and skills for living (global)	Knowledge about / control over how general life goals and values, behavioral style, group norms etc. affect riding.	Knowledge about / control over risks connected with life goals and values, behavioral style, social pressure, substance abuse etc.	Awareness of personal tendencies re. impulse control, motives, lifestyle, values, etc. Developing self-evaluation skills.
Goals and context of riding (specific journey)	Knowledge and skills re. journey related considerations (effect of goals, environment choice, effects of social pressure, evaluation of necessity, etc.).	Knowledge and skills re. risks connected to journey goals, riding state, social pressure, purpose of riding, etc.).	Awareness of personal planning skills, typical riding goals, riding motives, etc. Developing self-evaluation skills.
Mastery of traffic situations (specific situation)	General knowledge and skills re. rules, speed adjustment, safety margins, signaling, etc.	Knowledge and skills re. inappropriate speed, narrow safety margins, disregard for rules, difficult riding conditions, vulnerable road-users, etc.	Awareness of personal skills, riding style, hazard perception, etc. from the viewpoint of strengths and weaknesses. Developing self-evaluation skills.
Vehicle maneuvering (specific task)	Basic knowledge and skills re. vehicle control, vehicle properties, friction, etc.	Knowledge and skills re. risks connected with vehicle control, vehicle properties, friction, etc.	Awareness of personal strengths and weaknesses re. Basic riding skills and vehicle control (especially in hazardous situations), etc. Developing self-evaluation skills.

Figure 2: Goals for Driver Education –framework. Source: Peräaho, Keskinen & Hatakka (2003)

2.2.3. Training based on the GDE Matrix versus Traditional Training

It has been claimed that rider training normally has been aimed solely at the two lower levels and that the creation of insight into any lack of self - knowledge and skills has not been emphasized either. The driving instructor might in some cases have touched on the higher levels, while some have possibly also mentioned the significance of self-knowledge. However, one must assume that rider training seldom has been based on a consciously planned training effort comprising all four levels and in addition has emphasized self-knowledge relative to factors associated with each of these levels.

A rider training program solely aimed at the two lower levels without raising self-knowledge related to learning and skills can easily become pure proficiency training. This may lead to excessive confidence in one's own skills and to the fact that the skills a rider believes he/she should possess are used to achieve goals entailing risky driving. An understanding of the effect of factors at the highest level together with self-knowledge regarding one's own weaknesses and strengths can be important in counteracting such tendencies. The GDE matrix aims at developing training that makes riders reflect before choosing a driving style or driving behavior.

3. A MODEL FOR RIDER TRAINING

In principle it is possible to form a picture of how rider training should be carried out from the psychological and pedagogical knowledge and experience that the different rider training participants possess. This chapter presents such a picture – a model for rider training. Such a model must in principle indicate:

- What needs to be learned, i .e. training subjects
- Training progression, i.e. in what sequence should subjects be introduced into the training?
- Which objectives are relevant for individual subjects, i.e. what level of competence should the students have within the various subjects?
- How training can be managed and controlled, i.e. how can one ensure that training incorporates the necessary progression and that the learner riders will attain their goals?

The new regulation / the new curricula are largely built up around this common model.

3.1. Training Subjects

The GDE matrix emphasizes that training should give the student *self-knowledge*. This will therefore be a subject in the training. The GDE matrix incorporates *laws and rules* as part of the interaction skills at the tactical level. Knowledge of laws and rules relating to negotiating traffic is so basic that, in order to provide an overview, it will be appropriate to address this as a separate subject. It would be natural to include in this subject area knowledge of traffic systems, a rider's responsibilities and the characteristics of the various types of users of the system.

A subject that has not been included in the GDE matrix is *economical and environmentally friendly* riding. This has been added to some earlier curricula and will probably become more and more important in the future. Economical and environmentally friendly riding will therefore be included as a separate subject throughout the new curricula.

This results in seven subjects for inclusion in the rider training:

- *Legislation and road traffic as a system*
- *Vehicle maneuvering*. The learner rider must learn to handle the vehicle safely and efficiently.
- *Road traffic skills*. The learner rider must learn to interact with other road users and master different traffic situations and conditions.
- *Economical and environmentally friendly riding.* The learner rider will learn about and become used to an economical and environmentally friendly manner of riding.
- *Planning and preparations for riding.* The learner rider will learn to prepare for riding and make sensible plans before and during riding
- *Behavioral and judgmental tendencies*. The learner rider will learn how personality, social influence, lifestyle and similar factors affect personal choices.
- *Self-knowledge* regarding one's own competence and personal behavioral and judgmental tendencies. The learner rider will be schooled in the realistic evaluation of their own competence so as to understand personal tendencies and how these tendencies affect reactions.

Previous rider training curricula incorporated a content and objective formulation somewhat in agreement with what is found in the GDE matrix. The learner rider must learn about laws, rules and the traffic system and possess technical riding skills and traffic skills.

Even self-knowledge, planning and preparing for riding, and behavioral and judgmental tendencies have been mentioned in the curricula, although rather sporadically. Simply stated, earlier training emphasized the four lower left boxes of the model (see Figure 2). These boxes "contain" the competence needed to negotiate traffic, i.e. to move along at a reasonable pace.

How this competence is used depends, however, on the rider's motives, attitudes and personality. Full competence at the highest level of the GDE matrix and in the requirements for self-knowledge aims at modifying the influence of unfavorable motives, attitudes and personality. From a safety viewpoint it is therefore important that these areas are emphasized in the rider training.

Consequently a need existed for certain modifications or additions to previous curricula:
- The subject *planning and preparations for riding* is now included in the new curricula. Sensible planning and preparation are important for drivers of all vehicle types in certain situations and is probably particularly important for professional heavy vehicle operators.
- The subjects *behavioral and judgmental tendencies* and *self-knowledge* now appear more clearly in the curricula and have been lent more weight in the training. Insight into one's own competence and personal tendencies can be an important tool in safer riding, in particular for young novice riders.

3.2. Training Progression

The training is conducted in four steps. The objectives of the training in Steps 1-3 describe what is necessary in order to benefit properly from the training in the next step. The intention is that the main items in each step continue into the following step. The riding skills decide at which step the individual learner is at any one time.

The term step is used to indicate that the various parts (steps) shall be taken in a certain sequence and that training at one step requires certain acquired competence from an earlier step.

The main objective for the training and the objectives for Steps 1-4 put together indicate the competence required for passing the driving test in categories A1 and A respectively.

The individual learners' background of experience must be considered when planning the progression of the training. The mandatory training is the minimum training that everybody has to undergo. Most learner riders will need more extensive training and riding practice.

Step 1- Basic course

The objectives in step 1 are mainly linked to the learners' understanding of risk and the road traffic system. The training consists of a course in basic road traffic knowledge. The course is common to all the light vehicle categories and is intended to help learners acquire a basic understanding of the implications of driving. It also includes first aid training and night driving.

The course comprises seventeen lessons and contains common material for all light vehicle driving license categories. The intention is to provide learner drivers with a basic understanding of road traffic as a system where the various participants cooperate to achieve a well functioning and safe traffic system. Subjects such as self-insight and tendencies with regard to actions and assessment are central subjects in this step. The course provides the basis for the further training in all driving license categories.

Step 2-Technical rider training

All subject matter in this step is common to the categories A1 and A.

Subject 2.1: Motorcycle riding, the environment, safety and training is a mandatory subject for the learner riders. The subject consists of three theory lessons to be completed before any practical training in this step commences.

In Step 2 the learner rider has to acquire knowledge of their motorcycle and motorcycle riding as well as learn to technically master his/her vehicle without having to pay attention to other road users. No specific number of lessons has been stipulated for this step, the learner's riding skills deciding the extent of the training.

Suggestions for riding exercises in a maneuvering area have been prepared for this step.

Step 3-Traffic training

The subject matter in Step 3 is common to the categories A1 and A, with the exception of the "Safety course in precise riding technique category A". This course is mandatory for category A only. It consists of theory lessons as well as riding practice. The course comprises a total of four lessons, and the focus is mainly on precise riding techniques when braking and steering a motorcycle.

The other objectives in Step 3 are linked to the learner rider's learning to ride in mixed traffic. The learner must also acquire knowledge of those provisions in the road traffic legislation regulating riding motorcycles. Except for the "Safety course in precise riding technique category A" no minimum number of lessons has been specified for this step, the learner's riding skills deciding the extent of the training.

Step 4- Final/conclusive training

Step 4, The course in "Safe Road Riding" is the concluding part of the training, and is in its entirety mandatory for learner riders in both categories A1 and A. The subject matter in this step differs somewhat for categories A1 and A. Consequently this step is divided into two separate parts, one for category A1 and the other for category A.

In category A1 the safety course comprises a total of four lessons, three of which must involve continuous riding practice. The theory section is divided into one part before and one part after the riding practice.

For category A, the safety course comprises a total of eight lessons, four theoretical and four practical. The practical part consists of 4 lessons of continuous riding. There are two theory lessons at the start of the course and two at its conclusion. The objectives in Step 4 for categories A1 and A are mainly linked to the learner's understanding of risk in relation to motorcycle riding.

The training progression is illustrated in Figure 3. The blue areas show when training takes place within a given subject and the distribution of that training over the training period. Consideration is given to having the training within a subject extended over a major part of the training, even if it has been specifically emphasized during a brief period. A learner rider can, for example, also receive quite intensive training in technical riding during a short period, yet continued training in; for example, traffic skills will also mean specific training in and improvement of technical riding skills. Knowledge of legislation and traffic as a system will similarly be deepened throughout the entire training period in spite of the fact that the subject is emphasized especially at the start of training.

Figure 3 attempts to show this by having the blue areas extend over the entire or major parts of the training period. The height of each of the blue areas indicates how training is distributed within each subject - the higher the area, the more comprehensive the training within the subject.

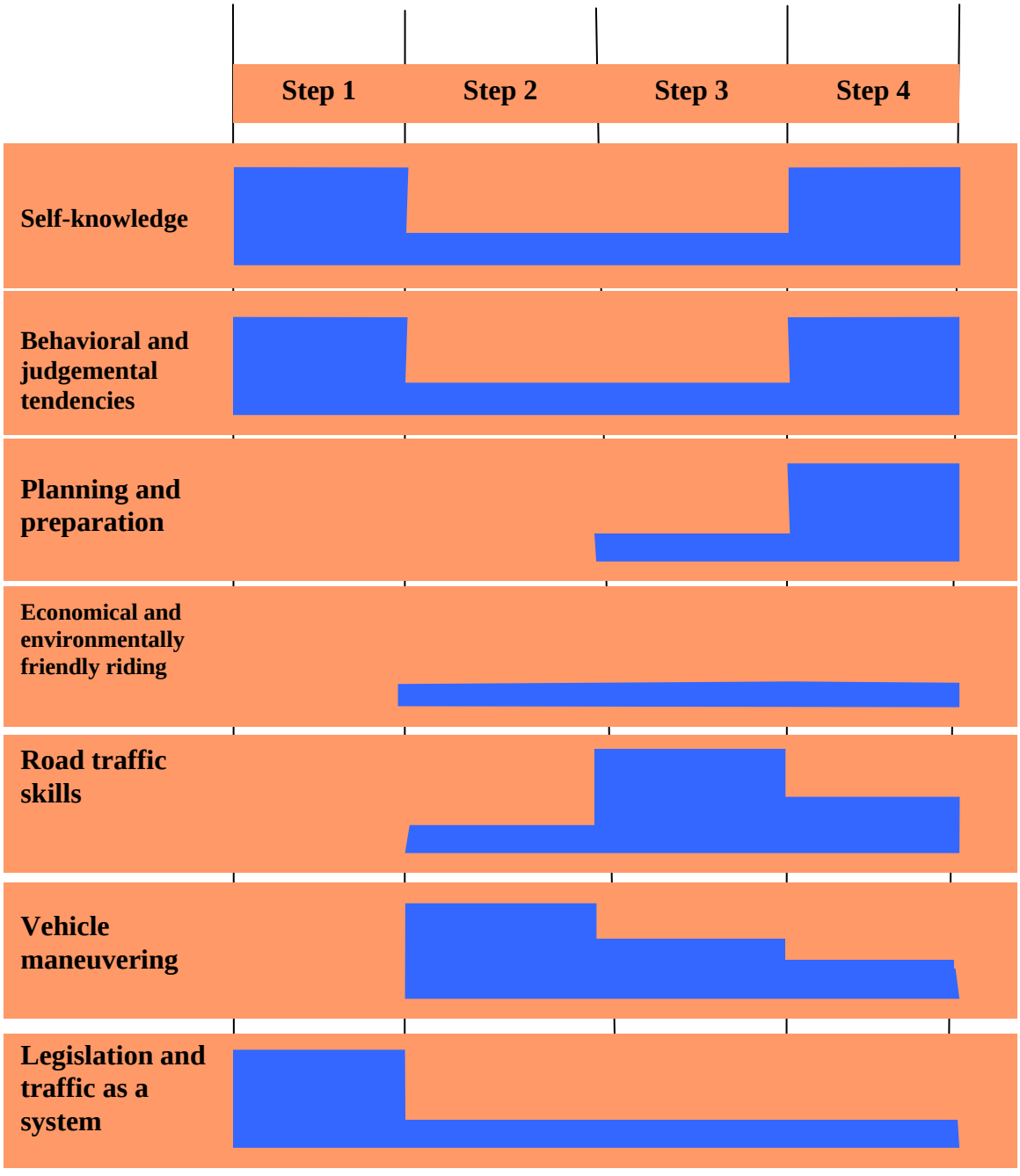

Figure 3: Relative scope of training within the various subjects and the division of the training into steps. (Glad et al, 2002)

3.3. Competence Objectives

In rider training, it is not enough to show what must be learned. It is also necessary to indicate how well the learner rider must know what has to be learned. This is achieved by formulating objectives that state which types of competence the learner rider must possess at the end of training. Such objectives are set by the regulations/curricula. The reference in this chapter is limited to a principal and principled view of the competence objectives.

The primary objectives show what the learner rider must know at the end of training, i.e. when the learner rider is ready for the driving test. Secondary objectives are linked to the training steps.

The regulations and curricula formulate objectives for learner rider competence for each main subject within a step. In Step 1, for example, there are defined objectives for light vehicle categories with reference to the learner rider's knowledge of legislation and traffic as a system, about the significance of their behavioral and judgmental tendencies, and about the importance of self-knowledge and economical and environmentally friendly riding. There will of course be a difference between the secondary objectives associated with the various steps and the primary objectives even though both types are associated with the same subject.

The purpose of learning about legislation and traffic as a system in Step 1 is to give the learner rider a basis for making it easier for them to understand and learn from situations encountered in traffic. The secondary objectives for Step 1 reflect what the nature of this basis. Later during training, the learner rider must further study this subject; this subject then becomes far more comprehensive than the secondary objective.

The same applies to Steps 2 and 3. The secondary objectives define the competence considered necessary for the learner rider to fully benefit from the training in subsequent steps. The sum of the secondary objectives from Step 1 to Step 4 will constitute the primary objectives for the category in question.

The steering system chosen for the training requires precisely formulating the objectives. Through evaluation and mandatory guidance lessons towards the end of the steps, an evaluation will be undertaken where the learner rider and the instructor together consider whether the objectives have been attained. To make this a valid and reliable evaluation, those undertaking the evaluation must know exactly what to look for. This requires quite a precise and detailed formulation of the objectives.

At some steps there will be mandatory training that can be taken at any time within the step, even at the very beginning. Attainment of objectives at previous steps will provide sufficient competence to take the mandatory training at the next step.

3.4. Steering the Training

A curriculum is, as previously mentioned, no guarantee of the training happening in accordance with plan. Learner riders and instructors can have motives and interests that result in some parts of the training being emphasized more than others. Many learner riders are concerned with getting their license as inexpensively as possible. They therefore take training with the sole aim of obtaining their license. In the competitive situation driving schools find themselves in, there will be a tendency for them to accommodate the students' wishes. Instructors and examiners also claim that the curriculum and the teaching do not always match each other, that training has been poorly managed and that the learner riders possessed inadequate knowledge and skills when entering the mandatory training towards the end of training. This underscores the need for better management of the training than previously so as to ensure both that the learner riders acquire the competence needed in the various subjects and that there is an appropriate progression during training.

A summative evaluation seems to be the most appropriate means of assessing student competence. Basing it on quite precise competence measurements is a precondition for employing such evaluation methods. This will for example be the case with regard to knowledge about laws, rules, technical riding skills, and traffic skills. It will be difficult to undertake an evaluation that provides valid and reliable results for other subjects such as self-knowledge, understanding the significance of goals for life and skills for living and preparing for riding. It is more appropriate to ensure competence in these subjects through mandatory training.

The rider training has been designed in steps where one step provides competence for the next step. This results in a sequential training program where one step must have been completed and the necessary competence achieved before the student moves on to the next step. The content of each step will then determine which control method should be used to ensure the required competence level.

Step 1. A significant part of the course deals with subjects where competence is difficult to verify through evaluation. Training at this step should therefore be mandatory.

Step 2. The main subject at this step is technical riding skill training. Competence within this subject is verified through evaluation.

Step 3. This step focuses on traffic training. As with technical riding skills, competence here can be verified both through evaluation and mandatory training.

Step 4. As with Step 1, this step contains subjects that do not readily lend themselves to evaluation by verification. A significant amount of mandatory training is therefore more appropriate.

In order that evaluation and mandatory training have the intended control effect, the possibility must exist in principle of levying sanctions against students who do not satisfy the competence requirements or do not complete the mandatory training. The normal sanction is not granting the student their driving license. This will also be the case in the training system that came into effect on January 1, 2005. In addition, mechanisms are needed to ensure that students take their training step by step. The most obvious solution is to tie this to the training goals at each step. In our system the learner rider must therefore complete a mandatory

evaluation and guidance lesson at the conclusion of Step 2. This lesson will comprise riding practice as well as a supervisory interview. On the basis of the learner rider's achievements both the learner rider and the instructor will jointly assess whether the learner possesses the necessary technical riding skills to be able to change the focus of their attention from the vehicle to cooperating with other road users.

The learner must also complete a mandatory evaluation and guidance lesson at the conclusion of Step 3. Given the learner's riding abilities the learner and the instructor will jointly assess whether the learner possesses adequate riding competence to properly ride a motorcycle on their own for a sustained period in a demanding road and traffic environment.

4. PRINCIPLE ELEMENTS OF THE CURRICULUM

The new curriculum for training motorcyclists is distinguished from previous curricula by its focus on increasing the rider's technical riding abilities. A good deal of emphasis has been placed on designing a set of specialist concepts related to riding motorcycles. In addition, the curriculum incorporates several definitions and explanations of concepts which is of importance for ensuring that all parties involved share a common standpoint and understanding of the background to the concept of competency in precise riding techniques. This concept holds a central position in this regard. The concept embodies principal elements such as counter steering, steering command, steering point, throttle control, anchoring points, riding position in a curve, and riding position while braking. Emphasizing abilities in riding techniques in Step 2 together with the mandatory Step 3 safety course in "Precise Riding Techniques" forms the basis for providing learners with the best possible qualifications for riding a motorcycle in a precise and safe manner.

As has been previously mentioned in this paper, steps have to be taken to avoid the training in riding techniques being run in such a way that results in an unrealistic picture of the rider's abilities. Biasing the emphasis too much in favor of riding techniques can result in riders developing an exaggerated belief in their own abilities and exhibiting this in, for example, higher speeds. It is consequently of the utmost importance - and in line with the uppermost levels of the GDE Matrix - that efforts are made to increase learners' self-knowledge and insight into their own judgmental tendencies. To achieve this, learners meet in groups to study theory, both before and after taking the mandatory safety courses in "Precise Riding Techniques" and "Safe Road Riding". Here they discuss the various aspects of how they can best use their abilities. The learners reflect over their own actions as well as their judgmental and behavioral tendencies both before and after the practical exercises. The starting point is, therefore, that the learners will not misuse their acquired abilities to increase the general risk levels in traffic. Consequently it is extremely important to highlight the fact that the exercises in riding techniques have been designed in such a way that experiencing these is to be given preferential emphasis instead of to mastering techniques.

Figure 4 shows the structural training model for motorcycle training in Norway.

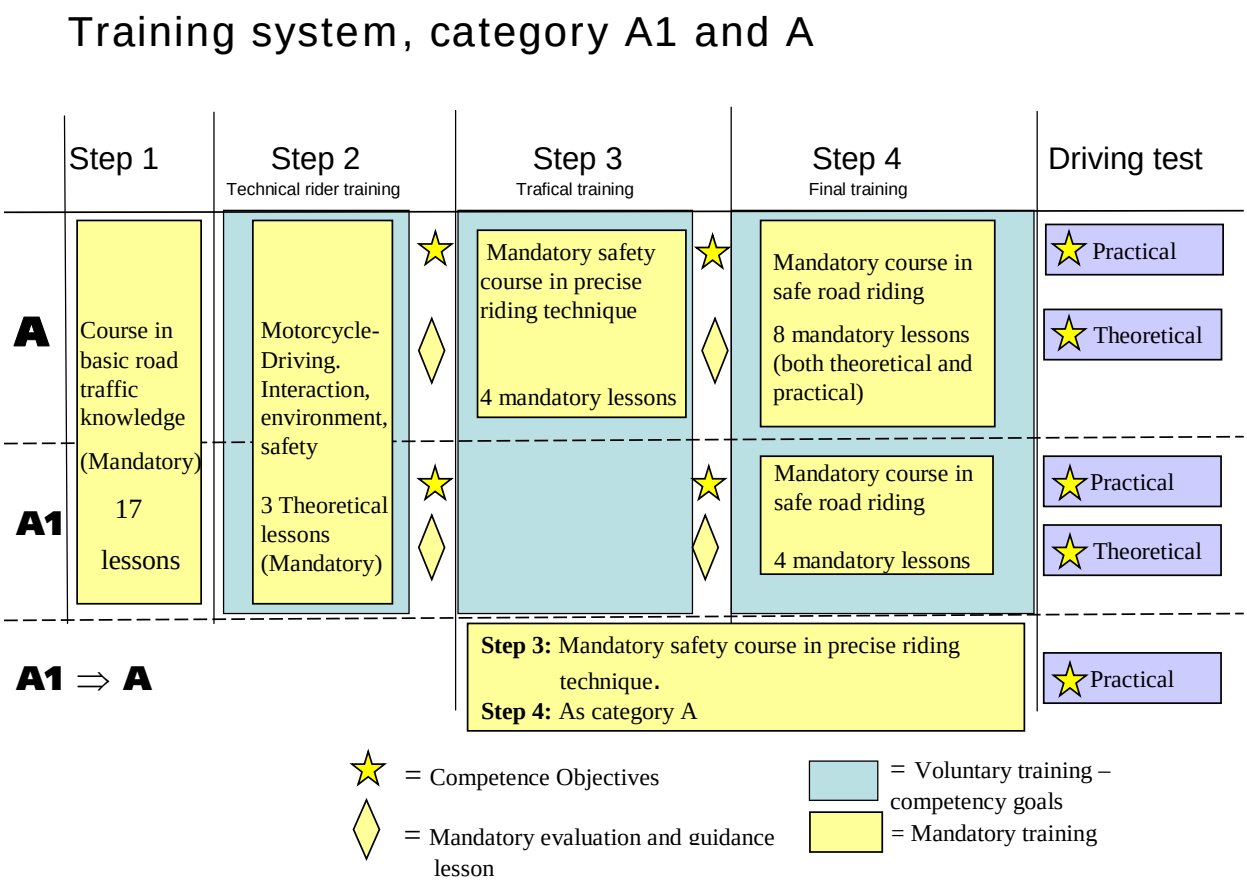

Figure 4: The motorcycle training system in Norway.

For further in-depth information on the content of the specific training, please refer to the curriculum for category A1/A.

5. INSTRUCTOR COMPETENCE

One of the preconditions for ensuring that the new training program will function as planned is that learners possess the right levels of competence. For some instructors the changeover from the old to the new curriculum will seem disproportionately large due to greater emphasis being placed on learners' abilities with regard to reflecting, self-knowledge and self-assessment. Additionally, new practice exercises have been introduced requiring an in-depth insight into the physical qualities of a motorcycle, for example how and why a motorcycle turns in corners. Instructors are also required to possess insight and training in how to help learners acquire self-knowledge. As a result it is not simply sufficient that a motorcycle instructor has a long history of experience. They must also raise their competency levels in order to be capable of meeting the new challenges.

Training courses for driving instructors in Norway have been extended from one to two years at university college level in connection with the introduction of the new training program for all license categories. These courses are held at Nord-Trøndelag University College, Faculty of Driving Instructor Education, and are intended to provide candidates with sufficient levels of competence to be able to give instruction in how to drive cars.

Consequently new instructors wishing also to become authorized motorcycle rider trainers must take specialist training lasting three weeks in addition to the basic training. This specialist course concentrates on how the trainer can best approach learners when it comes to encouraging greater self-knowledge and self-assessment techniques in students. Methodology and didactics are two central elements of this the compulsory motorcycle training course.

Everyone currently working as a motorcycle instructor must also take an additional course at Nord-Trøndelag University College which already has offered a one-week course during summer 2005. The course content is based on the cumulative experience each participant has acquired through giving motorcycle rider instruction. Specific attention was directed at how instructors would teach the new elements of the curriculum as well as introduce the concept of supervision into their teaching methods.

Furthermore, a series of seminars and workshops has been run on the initiative of the driving school industry itself with the purpose of improving instructors' ability to better put the new curriculum into use. Focus has been directed at a greater understanding of the methods the curriculum has made way for.

6. EVALUATING THE TRAINING MODEL

When such a sweeping revision of a driver training system has been planned and put into effect, it is equally important to ingather knowledge about the effects of the measures. The Institute of Transport Economics in Oslo has been assigned the task of undertaking an evaluation of the system's introduction, (Ulleberg, 2004).

An evaluation study commenced in 2004 and began by collecting pre-data from motorcycle riders who had been trained using the old curriculum. In 2005 data will collected from riders trained in accordance with the new curriculum.

The structure of this evaluation enquiry involves the collection of data via anonymously completed questionnaires on the Internet. The data complies with the following parameters:

- *Involvement in traffic accidents:* This covers involvement in traffic accidents or near accidents reported by those actually involved. In addition, the number of kilometers covered annually is recorded.
- *Technical skills and skills needed in traffic situations:* Has one become better at handling one's motorcycle and negotiating traffic? Measurements developed earlier are employed for personally completed questionnaires, (Sagberg & Bjørnskau, 2003; Trondsmoen, 2003). Data are also being collected on those who fail their driving test.
- *Planning and preparing for a journey:* This deals with the degree to which riders plan their route and when they choose to travel. In addition, it will also be relevant to record whether riders pay any attention to their consumption of alcohol or drugs prior to riding or whether they take a break when they notice they are feeling tired. Measurements developed earlier are employed for dealing with these particular parameters, (Nordbakke, 2003; Trondsmoen, 2003).

- *Personally choosing how to act, understanding the risks involved, self-knowledge and self-assessment tendencies:* These constitute the main topics of the curriculum for category A1 and A. Several well-proven measurement tools have been adopted to assess riders' own assessments of their abilities, actions, interactive skills, and of their own reported riding behavior, (Bjørnskau, 1994; Parker, Reason, Manstead & Stradling, 1995; Sagberg & Bjørnskau, 2003; Trondsmoen, 2003).
- *Measurements describing the driver/rider population:* One possible effect of the new category A1 / A curriculum could be a change in the driving license population, i.e. those training under the new curriculum may present a different composition of age, gender and personality than those who were trained under the old system. These relationships have been shown to have certain connections to accident risk so that it is important to check for such 'disturbing' factors in order to assess the effects of the new curriculum to the highest possible level, (Ulleberg, 2004).

The study will continue to 2009 when it will be presented in report form.

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