

# DETERMINANTS OF TRAFFIC EDUCATION IN EDUCATIONAL TECHNOLOGIES IN SECONDARY TECHNICAL SCHOOLS (SOŠ) AND SECONDARY VOCATIONAL SCHOOLS (SOU)

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**Abstract:** *The level of traffic education in secondary schools, being the integral part of strategic approach to prevention of road accidents, injuries and deaths of the road users and all subsequent health, social, economic and other damages and deprivation, is still far from the desirable level.*

*For the traffic education sector contained in the curriculum of secondary schools of the monitored type we are speaking about the logical design of the content and objectives of the traffic education linked with the obligatory lessons, about qualified and competent teachers able to manage this way defined concept and knowing rational, emotional and material technologies of their presentation perfectly and about the system of continuous evaluation of the purpose, effect and innovations.*

**Keywords:** *traffic education in secondary technical schools and vocational schools, content, objectives, technological resources*

The level of traffic education in secondary schools, being the integral part of strategic approach to prevention of road accidents, injuries and deaths of the road users and all subsequent health, social, economic and other damages and deprivation, is still far from the desirable level. There are many reasons for this situation. One of the main reasons can be seen in a varied spectrum of the secondary technical schools and secondary vocational schools in the Czech Republic, because character and orientation of individual establishments limits or determines possible content and objectives of the traffic education, should it become the integral part of their specific curriculum. Let us present a brief recapitulation: by their professional orientation we can break the schools into the trade-oriented group, service-oriented group, economy-oriented group and, last but not least, schools of different technical orientation and some other schools which cannot be included into any of the groups above unambiguously.

From this rough (schematic) classification it follows clearly that organic linking of the traffic education in the secondary schools with miscellaneous profile of their curriculum is a very difficult task. Therefore no universal traffic education programme, implicable easily or linkable with the profile or applied subjects for miscellaneous secondary technical and vocational schools is available. And at this moment we are very close to one of the greatest system paradoxes, because we face the educational vacuum in this respect in the schools where the traffic education should continue the foundations built by the preceding school grades and where the schools should comply with the general wishes of the students to obtain the driving licence by deepening and extending the knowledge and reached traffic skills.

By the Act No. 561/2004 Sb. on General Educational Programmes individual schools have been given the chance to modify their programmes and curricula by their own and/or regionally profiled needs. This way even the schools without any natural necessity (following from their orientation) to realize their own school of motoring and/or the traffic education in a wider scope have been granted to the possibility to realize any specific-oriented education for coexistence of the human being with the traffic.

From the words above it follows that the role and efficiency of traffic education teaching in the secondary technical and vocational schools brings the problems connected in particular with identification and determination of the relevant topics, forms and methods adequate for the addressee. A number of sources of theoretical character shows that systematic traffic education is a linked chain of more algorithmic phases:

- phase of theoretical instructions how to understand individual traffic elements, information and more complex situations as well,
- phase of education of the skills to respond adequately intellectually to the traffic situations,
- phase of practical training of the correct behaviour and skills in real traffic situations (Stojan, 2007)

Traffic education can be realized in the secondary technical schools by its implementing into individual general subjects (in particular mathematics, physics and others) as well as into specialized subjects by their orientation. Character of many secondary technical schools enables to apply this subject as the compulsory-optional subject or at least as the pure optional subject. We are speaking mainly about the technical schools with the subjects focused on transport, traffic and repairs of vehicles.

For the traffic education sector contained in the curriculum of secondary schools of the monitored type we are speaking about the logical design of the content and objectives of the traffic education linked with the obligatory lessons, about qualified and competent teachers able to manage this way defined concept and knowing rational, emotional and material technologies of their presentation perfectly and about the system of continuous evaluation of the purpose, effect and innovations. Everything can be resolved!

Core of the subject scope should and could comprise in particular the topics continuing the elementary knowledge gathered in the primary school; in the adolescent age with relevantly developed psychic and motor quality they are devoted to cultivation of personality features, character, human relations, incl. knowledge and acquisition of educational tools. Another wide sector of useful traffic educational development of the personality can comprise the topics concerning attitudes to the environment, respect to the norms

and valid legislation, to healthy lifestyle, prevention of accidents and injuries. Training of the skills necessary for simple first aid interventions, etc. would be useful generally. The topics, devoted e.g. to the issue of traffic sustainability, logistics, development of transport equipment and vehicles, navigation, robotics in vehicles and electronic systems in general, can appear among more explicitly profiled spheres of topics for certain transport and traffic-oriented schools. Offer of the topics concerning sociological aspects of positive and negative traffic impacts, traffic and transport psychology, styles of traffic safe behaviour or principles of forensic engineering is also worth mentioning.

There are many possibilities, but only a few practical realization, Why?

The survey research, carried out in cooperation with the students of the combined bachelor's programme "Teacher Education – Vocational Training and Practice" at the Faculty of Education of Masaryk University in the period 2007–2008, i.e. with those working in the secondary schools for a long time as teachers of vocational training and practice (former masters), should assist to answer this question. The realized research was based on elaboration of the following written semester assignment – Create the project of possibilities of implementation of the traffic education into the system of educational or out-of-school work in your school.

Let us show in the evaluation below what opinions the respondents are inclined to believe:

In total 103 semester assignments were subject to analysis, of which 20% of assignments were elaborated by the students, graduates of the technical colleges and 80% of assignments works – by the students, graduates of trade- and service-oriented secondary schools.

## **Attitudes of the students to incorporation of the traffic education into the programme**

The highest share of respondents (86.5 %) considers introduction of the compulsory- optional or optional subject focused on this issue the most suitable approach. The minor part considers implementation of this issue into other subjects most advisable, namely into the general subjects (13.5 %). The following general subjects are considered the most suitable for implementation of the traffic education: civics, mathematics, Czech language, foreign language, physical training and informatics. Surprisingly only 2% of students propose physics as a suitable subject. 1% of students proposes psychology, economy and ecology as suitable subjects.

**Abstract:** It is evident that the prevailing majority of respondents considers introduction of a separate subject focused on the traffic education issue the most suitable approach, which fact is heartwarming. It is also evident that those respondents who prefer implementation of the traffic education into other subjects, propose mainly languages, civics and psychology and also mathematics as suitable subjects. A surprisingly low percentage of students proposes physics as a suitable subject. Physics is proposed by respondents of technical orientation, which fact is logical.

## **Attitudes of the students to determination of traffic education objectives in secondary technical schools**

The evident effort to formulate objectives of the traffic education in secondary technical and vocational schools follows from the handed over assignments of the survey research respondents. It is heartwarming that the formulations are really based on the new documents – the General Educational Programmes for Specialized Education. Specific traffic education objectives of the students pervade in the following:

- To understand role of the traffic as the system determined by the law.
- To form moral consciousness and actions, when walking and in the role of the cyclist.
- To teach the youth to behave safely in the traffic environment and to reduce the number of accidents materially.
- To consider moral and legal liability of behaviour and actions of each road user.
- To master the technique of walking, driving bicycle and small motorcycle.
- To manage maintenance of the bicycle and small motorcycle practically.
- To master/control tactics of walking and driving in the road traffic.
- To acquire knowledge of technical conditions of road traffic.
- To acquire knowledge of actions in case of a road accident, to provide first aid and to call emergency in case of a road accident.
- To understand importance and role of the traffic police.
- To understand the road traffic as the controlled system with legal regulations and mandatory provisions and to apply them correctly.
- To apply principles of effective and safe behaviour and actions purposefully, to contribute to traffic safety actively.
- To know dangerous consequences of drinking spirits, (mis)using certain drugs and habit forming substances. To know negative impacts of the traffic on the environment and to know methods of its protection.
- To know general principles of road accident prevention.
- To learn safe controlling of the small motorcycle.
- To bear liability for motor vehicle driving/riding.

**Abstract:** From the defined traffic education outputs (objectives) presented by individual respondents it follows that they cover a wider spectrum and are not focused on a certain sector only. The objectives are formulated relatively complexly and include the theory, practice as well as wider aspects of the said field.

## **Attitudes of the students to formulation of traffic education content in secondary technical schools**

Specific content of the subject Traffic Education is proposed by 13% of students. They show a specific thematic plan for subject teaching. Other students present examples of utilization of the general objectives and content of other subjects for the needs of traffic education (87 %). From the assignments, proposing a specific curriculum of

the subject, it follows clearly that content of the traffic education is focused on the following main topics:

- Introduction into the subject (familiarization with objectives and scope of the subject, motivation)
- History of automotive industry
- Structural parts and assemblies of the vehicle (motor, fuel system, transmission, axles, brake system, wiring, alternative automotive drives)
- Regulation for road movement
- First aid in case of road accidents
- Traffic and transport psychology
- Environment and traffic
- Utilization of ICT in the traffic sector (maps, routes, etc.) – navigation
- Registration of drives (runs) – driver’s report book filling-in, etc
- Fire protection
- Training on simulator in the driving school
- Tests for obtaining the driving licence
- Driving lessons
- Car maintenance
- Conclusion

The students show the following subjects as the most suitable ones for incorporation of traffic education elements into other subjects: mathematics, physics, Czech language, foreign language, civics, information technologies, introduction into social sciences, physical training, specialized subjects (electronics, repair work) as well as economy, environment (ecology) and psychology.

The following topics are shown as suitable in the Czech language:

- Spoken forms (description, story, telephone call, oral application)
- Written forms (description, story, report, letter; e.g. description of the accident, story how the road accident took place, report of the road accident in newspapers, report created for the needs of the police or another authority)
- Dictations and language analyses (possibility to utilize the texts focused on the traffic issue)
- Professional description (e.g. description of a car)
- Description of a working procedure (e.g. replacement of a damaged bicycle tyre)
- Stylistic essay (topic of the essay can be traffic issue oriented)
- Basic forms of the journalist style (news, commentary, report, column, sketch) (visit of the driving school or excursion into another traffic/transport oriented authority could be organized and the students would write report, column or sketch from the visit)
- Process of communication (mastering theoretical and practical skills connected with verbal and non-verbal communication; principles of spoken speech – open, private, assertiveness, literary and non-literary speech)
- Control essay (report, column, paper)

- Dictations and language analyses (possibility of incorporation of the texts devoted to traffic, transport and traffic education).

- Administrative style and its forms (official letter, application, form, report) (e.g. lessons devoted to the chosen traffic education topic – application for issue of the driving licence, accident report for the insurance company, etc.).

In foreign language the following topics are proposed for incorporation of traffic education elements:

- Grammar (traffic education oriented language tutorials).

- Vocabulary (car and its assemblies, car models, car driver on the road, car accident, car maintenance, car service, defects, petrol station, local transport, vehicle types, stop, going by tram, bus, purchase of tickets, bicycle and its parts/assemblies, road network, air traffic – orientation at the airport).

- Life and customs (basic information about the transport/traffic system in a certain country, pointing out possible differences (e.g. Great Britain – driving on the left, differing max. permitted speed in our country and abroad, rescue system telephone numbers).

- Conversation themes: Meeting people (greetings, how to establish a contact, how to start and end a talk/chat, introduction). Time off (leisure time activities – cycling, motorcycling, skating). Let's go away (travelling by car, plane, train). Work, rest and play (leisure time activities – cycling, roller-skating). You need a holiday (travelling, kinds of vehicles, city public transport, settlement of car accident or defect of the vehicle, solution of other problematic situations connected with driving or going by vehicles). Different cultures (life and customs, different transport and traffic habits in our country and abroad). The tourist trade (tourism, travelling, transport, airport, train station, city public transport). Writing (writing the accident report, form filling-in in foreign language). Technology (modern vehicles, description of a vehicle in a foreign language, description of a defect, failure.). Travelling abroad (travelling, transport, playing roles – solution of different situations).

To train the communication skills, individual activities can be extended as follows:

Writing – Writing the accident report; filling-in the form in a foreign language.

Reading – Understanding the traffic oriented text; work with text; newspapers articles and columns devoted to traffic.

Speaking – Discussion on a certain topic; express your statement to the claims; playing roles – solution of arisen situation, e.g. defect of your vehicle, what will you do; you has an accident – resolve the situation with the other driver.

Listening – for instance dialogue of a driver with a policeman during a standard road check.

The following topics are shown as suitable for incorporation of the traffic education elements into the civics:

- Man in the society and human community (assertiveness when driving, considerateness to pedestrians and other road users).

- Protection of population – Integrated rescue system.

- Social communication (family, human relations).
- Civil society.
- Man and law.
- Criminal law (criminal liability, punishments, Rules of Criminal Procedure).
- Private law, civil law (duty do give testimony, administrative liability).
- Civil law proceedings.
- Protection of population (first aid).
- Civil defence (crisis states and emergencies) (behaviour during accidents, moral and legal

and legal

duty to provide first aid in case of an accident, when and how to call the rescue service).

- First aid.
- Bodies of the integrated rescue system, signals and calling.

The following topics are shown as suitable for incorporation of the traffic education elements into physical training:

- Cycling focused on the following topics: the High-way Code (pedestrian, cyclist, motorcyclist). Traffic signs and their importance (pedestrian, cyclist, motorcyclist). Use of bicycle on the way to school – mandatory equipment, lighting, maintenance, personal protective aids. First aid (maybe only partially with respect to the subject Introduction to Ecology). Impact of alcohol and drugs on driving (nervous system, musculature, blood circulation).

- Motor games and development of senses.
- Hearing games.

Mathematics can be utilized, as claimed by the students, for traffic education objectives in the following sectors:

- Solution of logic problems.
- Traffic oriented arithmetical problems.
- Experiments with visibility, stopping distance.
- Statistics, probability.
- Creation of time schedules.

Physics opens large opportunities for incorporation of traffic education. The students offer the following suitable topics:

- Kinematics (kinds of movement of the vehicles, bicycles, roller skaters, clarification of the reason of necessary inclination during the turns when cycling, motorcycling, skating).

- Dynamics (influence of the hill on cycling, impact of road surface on cycling - cycling on the road, on a path, on the field).

- Electric current (environment-friendly feature of electric motors, practical utilization of electric motors).

- Light and radiation (importance of bicycle lights, reflectors, reflex stripes on the clothes, dazzling by oncoming vehicles).

- Change of substance states (water freezing, creation of slippery ice, bridge freezing).

The students also indicate possibility of incorporation of the traffic education elements into the subject Information and Communication Technologies. They offer the following topics:

- Essentials of web work (familiarization of students with internet browsers, familiarization with websites devoted to traffic prevention).
- Table calculators – Excel (calculation of road accident statistics/accident rate).

**Abstract:** It is evident that the respondents have paid a great attention to identification of a suitable content and scope of teaching. 13% of respondents propose specific scope for a separate subject, 87% show specific fields in individual subjects utilizable for traffic education needs. The highest number of fields and topics were presented for the Czech language and foreign language (English). When classifying the subjects by the number of topics, we would continue by civics, mathematics, physics, physical training and informatics.

## **Attitudes of the students to choice of the methods and forms of teaching for traffic education lessons**

Overview of the methods and forms of teaching proposed by the respondents for traffic education needs is shown below:

- Classical methods of teaching: verbal, illustrative-demonstrative, practical skills.
- Mass (frontal) form of work.
- Group form of work (groups, teams), circle training (tutorials on stations).
- Separate, individual form of partners work (cooperation of students in two-member teams).
- Teaching by practical life situations.
- Activity teaching – solution of practical tasks and assignments.
- Socially communicative aspects of teaching – discussion, dialogue.
- Lectures of specialists from among the following authorities and bodies: Police, Czech Red Cross, Rescue Service, doctors.
- Active methods at school (dramatization, simulation, group work, instructive and educational games).
- Campaigns with engaged teachers.
- Media for youth.
- Talks, discussions, excursions.
- Actions organized by the school with assistance of the pupils who have passed the traffic education course; the pupils can present their work there.
- Organization of actions on the traffic playground (competitions, drives, cycling through the traffic playground, cycling skills, awards for the winners).
- Organization of Traffic Olympics (knowledge competition focused on traffic education for school pupils, awards for the winners).
- Traffic topic oriented projects.
- Establishment of a classroom for the pupils from out of the town who arrive long before start of the lessons (instructional films and spots devoted to transport/traffic



could be shown here and the pupils who have passed the traffic education course could present their work and transfer the acquired information).

**Abstract:** Analysis of term assignments of the students supports that they recommend a wide range of methods of teaching and organizational forms for the needs of traffic education. A high degree of agreement can be found here. In conformity with postulates of the new educational programmes they stress importance of pupils' activity and mobilising methods of teaching. It is also evident that besides the theoretical lessons in the classroom the prefer in particular practical training on the traffic playground and elsewhere. They also pay a great attention to attraction of other authorities and bodies to the process of teaching (rescue service, police, medical staff and other authorities).

## **DETERMINANTY DOPRAVNÍ VÝCHOVY V DIDAKTICKÝCH TECHNOLOGIÍCH NA SOŠ A SOU**

**Abstrakt:** Úroveň dopravní výchovy na středních školách jako součást strategického přístupu k prevenci dopravních nehod, zranění a usmrcení účastníků silničního provozu a všech následných zdravotních, sociálních, ekonomických a dalších škod a strádání nedosahuje dosud ani zdaleka žádoucí úrovně.

Pro oblast dopravní výchovy obsažené v kurikulu sledovaných typů středních škol jde o logickou konstrukci obsahu a cílů dopravní výchovy skloubených s obligatorním učivem, disponování kvalifikovanými a kompetentními pedagogy, kteří si s takto vymezeným pojetím vědí rady, kteří ovládají racionální, emotivní i materiální technologie jejich prezentace, a o systém její soustavné evaluace účelu, efektu a inovace.

**Klíčová slova:** Dopravní výchova na středních odborných školách a učilištích, obsah, cíle, technologické prostředky