ERASMUS+ KA210-VET SMALL-SCALE PARTNERSHIPS
F.I.R.S.T. – FUTURE INNOVATIONS IN RESILIENT & SAFE TRAINING
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Educational Material Dedicated to the Field of Occupational Health and Safety

The sphere : Safety Signs

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1. INTRODUCTION

The operation of machinery and the handling of technical systems, materials, and auxiliary substances inherently involve certain risks. The implementation of safety measures and adherence to safety regulations protect the health of individuals, safeguard equipment and buildings, and preserve the environment. In the field of occupational safety and health, and consequently in reducing the risk of injuries, binding safety regulations exist for every sector. An integral part of these regulations are safety signs, the meaning and purpose of which must be understood by every worker.

Safety signs represent a crucial element in ensuring occupational health and safety. They are visual symbols that provide rapid, clear, and universally comprehensible information about hazards, prohibitions, mandatory actions, or essential instructions for safe movement and behaviour in the workplace. Their role is to prevent accidents, health damage, and property loss, and to ensure the smooth and safe operation of workplaces, such as automotive workshops.

This educational material is intended for students in the fields of automotive repair – mechanics, electricians, body repair specialists, painters, and autotronics. These professions encounter a high number of risk situations in their work - from handling heavy and elevated vehicles, working with electrical systems, to the use of flammable substances, chemicals, and welding or painting equipment. Therefore, it is essential for future professionals in the automotive repair sector to be able to correctly recognize, interpret, and apply safety signs in everyday practice.

Safety signage forms a fundamental pillar of the occupational safety and health system in automotive workshops. It enables quick spatial orientation, highlights risks, specifies mandatory protective equipment, and helps prevent accidents, workplace injuries, and fires. The proper use of safety signs is particularly important because many situations in automotive workshops pose an immediate threat to life - for example, working under a lifted vehicle, contact with high voltage during electric vehicle servicing, or handling flammable paints.

The purpose of this material is therefore to provide students with comprehensive theoretical foundations, teach them to transfer this knowledge into real working situations, and support their readiness for the safe performance of their profession. Practical examples are directly derived from the automotive workshop environment and demonstrate how different types of safety signs help mechanics, electricians, body repair specialists, painters, and autotronics work efficiently, professionally, and above all, safely.

2. LEARNING OUTCOMES

Knowledge and Understanding (TO KNOW)

After completing the activity, the student:

- *understands* the definition of safety signs and their fundamental function in reducing the risk of injuries and health damage,
- *is able to list* and distinguish the basic categories of safety signs (warning, prohibition, mandatory, emergency/information, and fire safety signs),
- *knows* the characteristic shapes and colours of individual groups of safety signs according to occupational safety standards,
- *is able to identify* the meaning of symbols used on safety signs,
- *is familiar with* the most commonly used safety signs in an automotive workshop,
- *can provide* specific examples of signs and their application in various real working situations,
- *understands* the basic rules for the correct placement and visibility of safety signage.

Understanding Relationships (TO UNDERSTAND)

After completing the activity, the student:

- *understands* the importance of safety signs for protecting health and preventing workplace injuries,
- *distinguishes* between commands, prohibitions, warnings, information, and safe conditions,
- *can explain* why specific signs are used in particular situations in an automotive workshop,
- *is able to interpret* the meaning of signs in different contexts,
- understands the relationship between improperly placed or ignored signs and the occurrence of accidents,
- *explains* differences in risks among professions and understands why different safety measures are required,
- *can assess* whether safety signage in a workplace is used effectively and clearly.

Application of Knowledge (TO APPLY)

After completing the activity, the student:

- *responds appropriately* to safety signs and follows the instructions derived from them,
- *can identify* potential risks in an automotive workshop and assign appropriate safety signs,
- *is able to design* suitable safety signage for specific work situations,
- *uses safety signs* as a part of proper occupational safety practices,
- *evaluates* whether additional signs are required in a given situation,
- *applies* learned principles in both model and real training situations,
- *actively* identifies unsafe behaviour or improperly marked workplaces and proposes corrective measures.

3. THEORETICAL BACKGROUND

3.1 Definition of Safety Signs

Safety signs are visual symbols that provide quick and clear information about hazards, prohibitions, instructions, or general information in order to prevent injuries, health damage, or property loss. They are used in schools, companies, workplaces, transport, and public buildings.

3.2 Causes of Accidents

Despite maximum effort and extensive safety measures, it is not possible to completely prevent accidents. However, their number can be significantly reduced through thorough investigation and evaluation of accident causes, followed by the implementation of appropriate corrective measures.

The causes of accidents are classified as follows:

Human failure resulting from lack of knowledge or inability to anticipate hazards, lack of concentration during activities, carelessness, and complacency. These causes can be minimized through comprehensive training, education in safe work practices, and the use of technical safety devices such as protective guards, safety switches, etc.

Technical failure, for example due to material fatigue or unforeseen overload. Injuries in such cases can be prevented through technical measures, such as reinforcing structural components whose failure could lead to an accident.

Force majeure – unforeseeable external influences, such as abnormal atmospheric conditions.

Safety Colours

Colour	Meaning and Purpose	Instructions and Information
Red	Prohibition sign	Dangerous behaviour
	Danger signal	Stop, shutdown, emergency stop devices, evacuation
	Fire protection equipment	Identification and location
Yellow or Yellow-Orange	Warning sign	Caution, warning, inspection
Blue	Mandatory sign	Specific behaviour or action, obligation to use personal protective equipment
Green	Emergency exits, escape routes, first aid signs	Doors, exits, passageways, equipment and facilities
	No danger	Return to normal condition

Main safety signs

3.3 Basic Categories of Safety Signs

WARNING SIGNS	
Purpose	**to warn of risks or hazards**
Shape	**triangle**
Colour	**yellow background, black symbol**

Examples:

WARNING: ELECTRICAL EQUIPMENT

WARNING: SLIPPERY FLOOR

WARNING: HAZARDOUS SUBSTANCES

WARNING: FIRE HAZARD

WARNING: EXPLOSION HAZARD

WARNING: DANGER

WARNING: PRESSURIZED GAS CYLINDERS

WARNING: STAIRS

WARNING: FORKLIFT TRUCK

PROHIBITION SIGNS	
Purpose	**to prohibit certain actions**
Shape	**circle**
Colour	**white background, red border, symbol crossed out**

Examples

NO ENTRY

NO SMOKING

NO OPEN FLAMES

DO NOT EXTINGUISH WITH WATER

NO ENTRY FOR FORKLIFTS

NO UNAUTHORIZED ENTRY

MANDATORY SIGNS	
Purpose	**To require specific behaviour**
Shape	**circle**
Colour	**Blue background, white symbol**

Examples

SAFETY HELMET MUST BE WORN

SAFETY GOOGLES MUST BE WORN

RESPIRATOR MUST BE WORN

PROTECTIVE GLOVES MUST BE WORN

SAFETY FOOTWEAR MUST BE WORN

OTHER INSTRUCTION

INFORMATION/ EMERGENCY SIGNS	
Purpose	**to indicate safe routes, emergency exits, or safety equipment**
Shape	**square/rectangle**
Colour	**green background, white symbol**

Examples

EMERGENCY EXIT

AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

FIRST AID

ASSEMBLY POINT

FIRE SAFETY SIGNS	
Purpose	**to indicate firefighting equipment**
Shape	**square/rectangle**
Colour	**red background, white symbol**

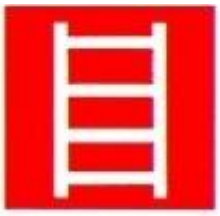
Examples

FIRE EXTINGUISHER

FIRE HYDRANT

FIRE HOSE

FIRE ALARM POINT



LADDER

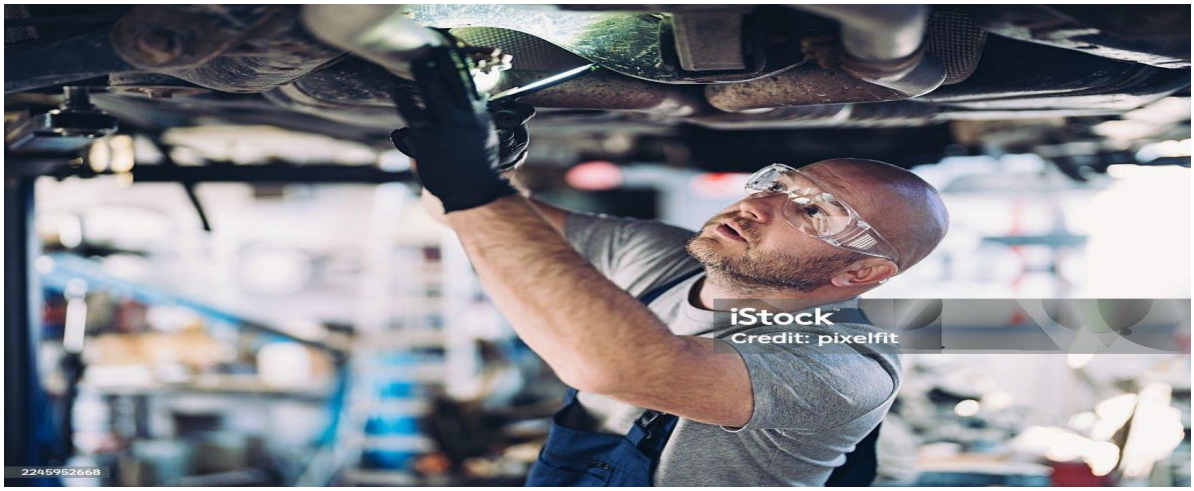
FIRE LIFT

3.3 Rules for the Proper Use of Safety Signs

- **The sign must be clearly visible - placed at eye level or above.**
- **It must be understandable without text - symbols are primary.**
- **It should be illuminated, especially emergency signs.**
- **It must remain unobstructed at all times.**
- **A unified visual style must be used (according to EN ISO 7010).**
- **All students and employees must be familiar with their meaning.**

4. PRACTICAL APLICATION

Specific Examples by Profession



AUTOMOTIVE MECHANIC

An automotive mechanic works with mechanical components of vehicles, lifting equipment, and tools that may pose a high risk of injury.

Typical risks:

- moving parts of the engine and transmission,
- elevated vehicles,
- rotating discs, pulleys, and belts,
- compressed air and pneumatic tools,
- falling loads,
- chemical substances (oils, brake fluid, coolant).

Relevant safety signs:

- WARNING -falling load hazard,
- WARNING - risk of hand injury,
- PROHIBITION - no entry into the work zone,
- MANDATORY - use safety footwear / helmet,
- MANDATORY - use protective gloves,
- PROHIBITION - lifting a vehicle without proper support.

Examples of situations:

- When working under a lifted vehicle, a clearly visible sign “Warning! Raised vehicle” must be displayed.
- During wheel removal, students must be alerted to a “Danger zone – rotating parts.” When using a pneumatic tool, a “Hearing protection required” sign is necessary.
- During oil replacement, the area must be marked “Hazardous substances – flammable.”
- During engine adjustment, a prohibition on loose clothing and jewelry must be indicated.

AUTOMOTIVE ELECTRICIAN

An automotive electrician diagnoses electronic systems and works with batteries and high-voltage equipment.

Typical risks:

- high voltage (400–800 V in electric vehicles),
- short circuits and sparking,
- corrosive electrolyte substances,
- fire hazards during battery handling, ň
- damaged cables and connectors.

Relevant safety signs:

- WARNING - high voltage,
- WARNING - hazardous chemicals,
- PROHIBITION - use of metal objects,
- MANDATORY- protective eyewear,
- MANDATORY- insulating gloves,
- Designated EV/HEV work zone marking.

Examples of situations:

- High-voltage systems must be marked with a lightning symbol and “Warning! High voltage.”
- Before working on electrical systems, the area must be marked “Disconnect battery.”
- Battery charging areas must display “Risk of explosive gases.”
- When handling starter batteries, “Warning! Corrosive substances” must be present.
- Hybrid vehicle diagnostics must take place in a restricted-access area.

BODY REPAIR SPECIALIST

A body repair specialist works with welding equipment, grinders, and cutting tools, which present high risks of injury, sparks, and fire.

Typical risks:

- flying sparks,
- sharp edges,
- hot surfaces,
- dust and metal particles,
- noise above 85 dB, ň
- fire hazards during welding.

Relevant safety signs:

- WARNING - flammable materials,
- PROHIBITION - no smoking / no open flame,
- MANDATORY - use protective face shield,
- MANDATORY - use respirator,
- MANDATORY - hearing protection,
- Fire equipment signage.

Examples of situations:

- During metal cutting: **“Warning! Flying particles.”**
- Welding areas must display **“No open flame.”**
- When using an angle grinder: **“Use eye and face protection.”**
- Flammable storage areas must display **“Flammable” and “No smoking.”**
- Handling body parts requires marking **“Risk of cuts.”**

BODY PARTS PAINTER

Painters work with solvents, sprays, coatings, and spray booths.

Typical risks:

- flammable vapours,
- chemical burns,
- inhalation hazards,
- insufficient ventilation,
- skin and eye contamination,
- explosion risks.

Relevant safety signs:

- WARNING - flammable substances,
- WARNING- toxic substances,
- MANDATORY - use respirator,
- MANDATORY - protective clothing,
- PROHIBITION - no open flame,
- Emergency exit signage.

Examples of situations:

- Spray booths must be marked **“Restricted access – chemical hazard zone.”**
- Solvents must be clearly labelled with **hazard pictograms**.
- Paint mixing areas require **“Mandatory – protective gloves.”**
- During drying, all spark sources must be prohibited.
- Spray work requires **“Respiratory protection required.”**

AUTOTRONICS

An autotronics works with diagnostics, control units, high-voltage systems, and advanced technologies such as ADAS.

Typical risks:

- high voltage in EV/HEV systems,
- electromagnetic fields,
- electronic system malfunctions,
- unintended vehicle movement,
- electrostatic discharge damage.

Relevant safety signs:

- WARNING - high voltage,
- MANDATORY -antistatic equipment,
- INFORMATION - emergency shutdown,
- PROHIBITION - unauthorized manipulation,
- EV workplace designation,
- EMERGENCY exit routes.

Examples of situations:

- EV diagnostics must be marked **“High-voltage work area.”**
- ADAS calibration zones must restrict entry.
- Programming requires **“Vehicle movement prohibited.”**
- Battery handling requires insulating gloves.
- Electronic workstations must be marked as antistatic zones.

5. CONNECTION WITH THE VIDEO AND GAME

To develop critical thinking and the ability to apply safety signs in real situations, the following tasks are recommended:

AUTOMOTIVE MECHANIC

- Identify three poorly marked or unmarked areas in the workshop and justify the risks.
- Analyse a lifted vehicle and mark safe and dangerous zones.
- List all safety measures for brake replacement.
- Select correct signage for compressor areas.

Case studies:

- Injury due to rotating parts → missing prohibition sign.
- Entry under unsecured vehicle → missing warning signage.
- Slip due to oil → missing hazard marking.

AUTOMOTIVE ELECTRICIAN

- Identify high-voltage risk zones in hybrid vehicles.
- Design correct charging area signage.
- Describe safe battery replacement procedures.

Case studies:

- Short circuit → ignored prohibition of metal tools.
- Battery fumes → missing warning signage.
- Eye injury → missing mandatory protective eyewear.

BODY REPAIR SPECIALIST

- Design signage for welding, cutting, grinding zones.
- Identify sharp-edge hazards.
- Determine required PPE signage.

Case studies:

- Fire caused by sparks → missing warnings.
- Eye injury → missing face protection.
- Welding near flammables → missing prohibitions.

BODY PARTS PAINTER

- Identify chemical hazard zones.
- Define safe spray booth procedures.
- Select correct GHS pictograms.

Case studies:

- Dizziness → missing respirator requirement.
- Static spark → missing warning signage.
- Slippery surface → missing hazard signs.

AUTOTRONICS

- Define safe ADAS calibration zones.
- Identify high-voltage marking locations.
- Select antistatic workstation requirements.

Case studies:

- Vehicle movement → missing safety marking.
- Entry into calibration zone → missing restriction signs.
- Electronic damage → missing antistatic requirement.

6. EXERCISES / REFLECTION TASKS

6.1 Presentation in Canva

The presentation created in Canva visually and clearly complements the topic of safety signs, offering students brief explanations, examples of symbols, and demonstrations of their use in real-life situations. It serves as an introductory tool before practical activities, as students consolidate their basic knowledge of sign categories, their colors, shapes, and meanings. The presentation is directly related to the content of the educational material—it builds on theoretical foundations and prepares students to apply their knowledge in an auto workshop environment. At the same time, it creates a smooth transition to practical tasks and the escape room activity, which require an understanding of safety signage.

link: https://canva.link/ulj6v4qsduev2ni

6.2 Video on Safety Signs

The video on safety signs provides a dynamic and easy-to-understand explanation of this topic, combining professional commentary with authentic student contributions. The content clearly presents the categories of safety signs, their shapes, colours, and meanings, while also showing specific situations from an auto workshop in which these signs are important. In the video, students

interpret individual signs and their practical use, which supports understanding of real workplace risks. The video directly builds on the theoretical part of the educational material and complements it with illustrative examples, thereby strengthening students' preparedness for safe work in an auto workshop. It was created in the environment of Auto Valas s.r.o., Košice, Slovakia, that is a 24/7 service and a showroom that sells and services a premium line of Lexus vehicles. The video focuses on mandatory, informational, warning, and prohibition signs that employees, students, and customers/ public may encounter in a real-world environment.

Video link:

https://drive.google.com/file/d/1BVwOwcA1O3eo9sETkoFtbWadd5u_rxie/view?usp=sharing

QR – Video – Safety signs

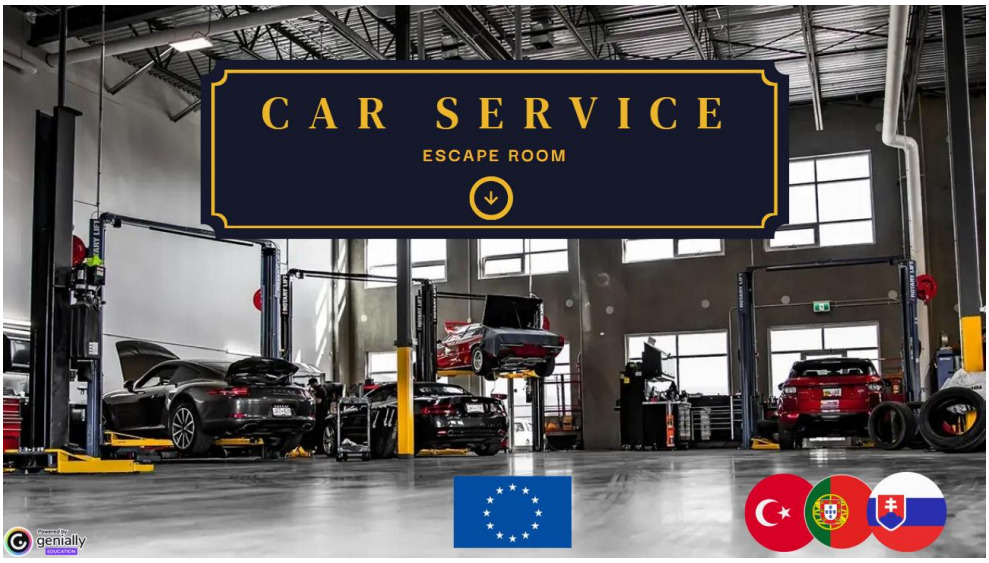
7. SELF – ASSESSMENT OR MINI EVALUATION

The Kahoot quiz ***Safety Signs - Bezpečnostné značky*** represents a dynamic way of assessing knowledge, in which students interactively practice recognizing safety signs, their meanings, and their use in real-life situations. Through quick questions with immediate feedback, they reinforce the knowledge gained from the presentation, video, and "escape room" activity. The quiz fosters a competitive atmosphere, engages students from all areas of the auto workshop, and helps identify areas where further learning is needed. It is a natural continuation of the educational process, as it playfully tests practical competencies related to occupational health and safety (OHS).

Quiz link: https://create.kahoot.it/share/safety-signs-bezpecnostne-znacky/a49a9e0c-67f9-4d4f-9513-2aa3fa099272

QR – test Kahoot - Safety signs

Car Service Escape Room-An Escape Room in Genially is an interactive digital game created using the Genially platform to simulate a real-life escape room experience. It is widely used for gamification in education and corporate training.



QR – Escape room Genially - Safety signs

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