

Challenges and Good Practices in Inland Navigation Education



School of Shipping, Shipbuilding and Hydroengineering (SBBH)
Belgrade, Serbia

*Joint Workshop of the Danube Commission and EDINNA:
Education and professional training in inland navigation
28 January 2026
Danube Commission, Budapest*



- Founded in 1946 in Belgrade, originally named Nautical school by the Ministry of Transport of the Federal People's Republic of Yugoslavia
- Established as a school of federal importance
- In 1987, it was renamed the School of Shipping, Shipbuilding, and Hydroengineering





PRESENT DAY

Certified by Ministry of Education of the Republic of Serbia

Fields of education:

- ✓ Nautical – maritime and river transport
- ✓ Marine engineering
- ✓ Shipbuilding
- ✓ Water Resources Engineering

Current educational profiles (4-year programs)

- *Nautical technician/river department - 4 years*
- *Civil Engineering Technician – Hydroengineering-4 years*





PRESENT DAY

- 43 employees/ 32 teachers
- 200 students
- Two boats and one sailboat in school possession
- School has been certified with quality standard ISO 9001:2015 by Bureau Veritas



- Cooperation with similar institutions in the region and Europe



PRESENT DAY

Instruction takes place in classrooms, on training vessels, and at shipping companies.





PRESENT DAY

International rowing competitions between schools from Italy, Slovenia, Croatia and Montenegro





PROJECT



Cooperation Network for logistics and nautical education focusing on Inland Waterway Transport in the Danube corridor supported innovative solutions from South East Europe, Transnational Cooperation Programme (2009-2012)



Harmonized Inland Navigation Transport through education and information technology (2012-2014)



Danube SKILLS- Increased institutional capacity in Danube navigation by boosting joint transnational competences and skills in education and public development services (2017-2019)



Practical Training on simulators for Maritime Study of Serbia-Erasmus+ programme-KA1- Vocational education and training (2017-2018)



VET Reform Programme
YPE-Youth employment promotion-
Programme Sustainable Growth and
Employment in Serbia



Solidarity Tour - Europe for Citizens (2019)



Directive (EU) 2017/2397

**Project
Danube skills**

**COMMISSION DELEGATED DIRECTIVE (EU)
2020/12 supplementing Directive (EU)
2017/2397 of the European Parliament and of the
Council**

**Changes to the curriculum for the
educational profile of nautical technician**



CURRICULUM REFORM AND ALIGNMENT WITH EU STANDARDS

- Transition from a traditional knowledge-based model to **competence-based education**, fully aligned with **Directive (EU) 2017/2397**
- Establishment of a **multidisciplinary working group** (teachers, practical training instructors, certified inland navigation boatmaster, and educational advisor)
- Comprehensive review of the existing curriculum and development of a **new competence-based curriculum**
- Strong emphasis on **practical training, learning outcomes, and operational competences**
- Duration of curriculum development process: **8 months**



IMPLEMENTATION, ASSESSMENT, AND ACCREDITATION

- Significant increase in the share of practical training:
 - ✓ 23% of total teaching hours in Year 2
 - ✓ 30% of total teaching hours in Years 3 and 4
- Introduction of a **competence-based final examination** focused on practical skills and achieved competencies
- Pilot implementation of the final examination: **May 2024**
- Accreditation milestones:
 - ✓ Curriculum accredited: **August 2021**
 - ✓ Full implementation: **September 2021**
 - ✓ Final examination accredited: **April 2025**
 - ✓ Full implementation: **June 2025**



THE SCHOOL-LEAVING EXAMINATION

The methodology for developing the syllabus for the school-leaving exam was developed in consultation with social partners:

- the Union of Employers, the Chamber of Commerce of Serbia,
- relevant business associations,
- based on comprehensive research into various international concepts of the final exam, and taking into account existing experiences in this area in the Republic of Serbia.



THE SCHOOL-LEAVING EXAMINATION

Upon completion of four years of education, the school-leaving examination evaluates whether students have attained the knowledge, skills, attitudes, and competencies prescribed by the qualification standard for the relevant occupation(s)

The school-leaving examination consists of three independent examinations:

1 an examination in the Serbian language and literature, i.e., the language and literature in which the student was educated (hereinafter referred to as: mother tongue);

2 an examination to test professional and theoretical knowledge;

3 a practical part of the school-leaving examination



2. EXAM FOR TESTING PROFESSIONAL-THEORETICAL KNOWLEDGE

Purpose:

Assessment of professional knowledge and learning outcomes required by the qualification standard.

Subjects Tested:

- Ship Theory
- River Navigation
- Navigation Regulations
- Transport Technology
- Fundamentals of Traffic and Transport

Test Structure:

- Maximum of **50 tasks**
- Covers **all levels of knowledge**
- Focuses on content **fundamental and essential** for the profession and continuing education

Evaluation:

- Reviewed by a **three-member committee** of professional subject teachers



3. PRACTICAL PART OF THE SCHOOL-LEAVING EXAMINATION

Objective:

- To verify professional competencies prescribed by the Qualification Standard.

Exam Structure:

- Student completes **two complex tasks**, assessing all prescribed competencies.
- Tasks are performed through **practical work**.
- Task lists, attachments, and assessment tools are prepared by the **Center** in cooperation with associates.

Evaluation:

- Conducted by an **examination committee** of at least three members:
 - Two vocational subject teachers (one as chair)
 - Employer representative proposed by the Employers' Union of Serbia

Organization:

- Tasks performed in **school workshops, offices, or relevant companies**.
- The committee monitors **student performance** during task execution.
- Students draw their task **immediately before the exam**; no replacements allowed.



The first generation of students with the educational profile of nautical technician - river department completed their education by taking the graduation exam in the 2024/25 school year.





KEY CHALLENGES IN EDUCATION

1. Practical Training

- A limited number of companies accept students
- Insufficient high-quality practical placements, especially for female students
- Affects students' job readiness

PROPOSED SOLUTIONS TO KEY CHALLENGES

- Increase partnerships with more shipping companies and local operators
- Develop mentorship programs to support female students and encourage diversity
- Use simulation and practical exercises when real placements are limited

2. Curriculum

- Updated program (since 2021) aligned with EU Directive
- Challenge: full implementation in practice

- Gradual implementation support: workshops, teacher training, and feedback loops of shipping companies
- Regular curriculum updates based on EU standards and river transport needs



KEY CHALLENGES IN EDUCATION

- Aging workforce (majority 50+)
- Few young professionals interested in teaching
- Limited hands-on experience with river shipping

PROPOSED SOLUTIONS TO KEY CHALLENGES

3. Staff Challenges

- Recruit and incentivize younger professionals to join teaching (scholarships, career pathways)
- Train current staff in new technologies and modern teaching methods
- Encourage shipping company collaboration so professionals can teach part-time without leaving their jobs

4. Student Motivation

- Low motivation among some students
- Causes:
 - ✓ Limited exposure to real work environments
 - ✓ Lack of sector contact
 - ✓ Unclear career progression paths

- Sector exposure programs: field visits, guest lectures
- Career guidance sessions highlighting clear progression paths
- Engaging teaching methods: project-based learning, competitions, and real-world problem solving



PROMOTION THE PROFESSION AND THE SCHOOL

Promotion Activities:

- Education fairs
- Job fairs
- Open school days
- Boat fair
- Visits primary schools
- Promotion on social networks





Continuous improvement of education, supported by all relevant stakeholders, is essential to produce competent, safe, and employable professionals.

Thank you for your attention!

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