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ChemTeach REPORT

MEETING WITH STAKEHOLDERS

Faculty of Natural Sciences and Mathematics, University of Banja Luka, Banja Luka, Bosnia and Herzegovina

Banja Luka, March 25, 2024

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Faculty of Natural Sciences and Mathematics, University of Banja Luka

Banja Luka, Bosnia and Herzegovina

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WP2: DEFINITION OF NEEDS

Activitiy: Educational course for B&H high school teachers in Banja Luka

Report prepared by: Gimnazija Banja Luka

Erasmus+ Project

Improvement the quality of chemistry teaching in VET in Bosnia and Herzegovina

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CONTENT

INTRODUCTION

The meeting with institutions and employers was held on 25 March as part of the Needs Assessment activities within the ChemTeach project. The objective of the meeting was to identify labour market needs, examine challenges faced by employers in hiring chemical technicians, and strengthen cooperation between secondary schools and institutions that employ graduates from chemistry-related programs.

The meeting included representatives of institutions that employ chemical technicians or cooperate with schools in the field of chemistry. Present institutions included:

- Public Health Institute of the Republic of Srpska
- Institute for Protection and Ecology of the Republic of Srpska
- Ministry of the Interior – Forensic Laboratory
- Veterinary Institute of the Republic of Srpska "Dr. Vaso Butozan"
- Indirect Taxation Authority
- Institute for Forensic Medicine of the Republic of Srpska
- "Vodovod" Banja Luka (Water Utility Company)
- Master Institute, Banja Luka
- Colorit d.o.o.
- Nora Plast, Banja Luka

Key results of the meeting

- **Shortage of qualified chemical technicians**

Institutions reported a significant shortage of chemical technicians and difficulties in finding candidates with adequate practical and operational laboratory skills. Graduates require additional training upon employment, indicating a gap between school preparation and labour market expectations.

- **Challenges in job classification and qualification standards**

Employers highlighted the absence of unified qualification requirements for chemical technician positions and inconsistent hiring criteria across institutions. There is a clear need to develop standardized occupation and qualification frameworks to improve transparency and ensure appropriate candidate selection.

- **Misalignment between school curricula and labour market needs**

Participants concluded that existing school curricula do not adequately reflect current industry requirements. Practical laboratory work is limited, learning outcomes are outdated or poorly defined, and students have insufficient exposure to modern equipment. Curriculum modernization and increased practice-oriented learning are essential.

- **Strengthening structured cooperation with employers**

Institutions expressed readiness to collaborate more closely with schools. This includes providing feedback on needed competencies, offering opportunities for visits or internships, and participating in the development of updated recommendations for chemistry education. Systematic cooperation is seen as key to improving student readiness for employment.

Key competencies identified as necessary

Based on the discussion, the following competency areas were identified as critical for chemical technicians and students:

- **Technical and laboratory competencies**

Institutions emphasized the need for strong foundational laboratory skills, including correct execution of basic chemical procedures, safe handling of equipment, application of standard operating procedures, and adherence to laboratory safety protocols. These competencies form the core of employability for chemical technicians.

- **Digital competencies**

Participants highlighted the importance of digital literacy in modern laboratory environments. Required skills include the use of digital tools for visualization, documentation, data processing, and the integration of open-access digital resources to support both learning and practical work.

- **Professional and communication competencies**

Effective teamwork, professional responsibility, and basic communication skills were recognized as essential for functioning in laboratory settings. Institutions stressed the importance of clear reporting, collaboration with colleagues, and maintaining professional standards.

- **Lifelong learning and adaptability**

Institutions emphasized that chemical technicians must be prepared for continuous professional development. This includes adaptability to new technologies, willingness to learn independently, and proactive upgrading of skills to keep pace with evolving laboratory practices and equipment.

CONCLUSION

The meeting with institutions clearly demonstrated the strong demand for qualified chemical technicians and emphasized the need to modernize chemistry education in schools. Institutions expressed readiness to collaborate with educational partners and to contribute to aligning curricula with real-world requirements.

Findings from this meeting will contribute directly to:

- further needs analysis (WP2),
- development of recommendations for curriculum modernization,
- creation of a competency-based framework for chemistry education,
- planning future teacher trainings and workshops within the ChemTeach project.

Figure 3. Meeting with Stakeholders