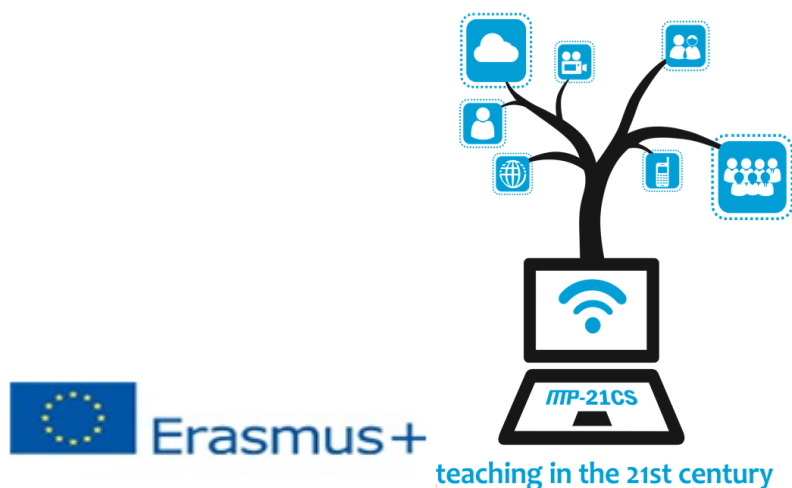




Erasmus+ KA229 Integrating technology in the teaching process,
path towards building 21st century skills

LTTA3 Report

3rd - 7th February 2020 Istanbul, Turkey

Before participating in the mobility, the teachers from the 3 partner schools wrote together the content of the learning unit “Assessing the quality of environmental factors based on physicochemical indicators”. Within each partner, workshops and demonstration lessons were held through which the participating students and teachers became familiar with the tools and applications to be used.

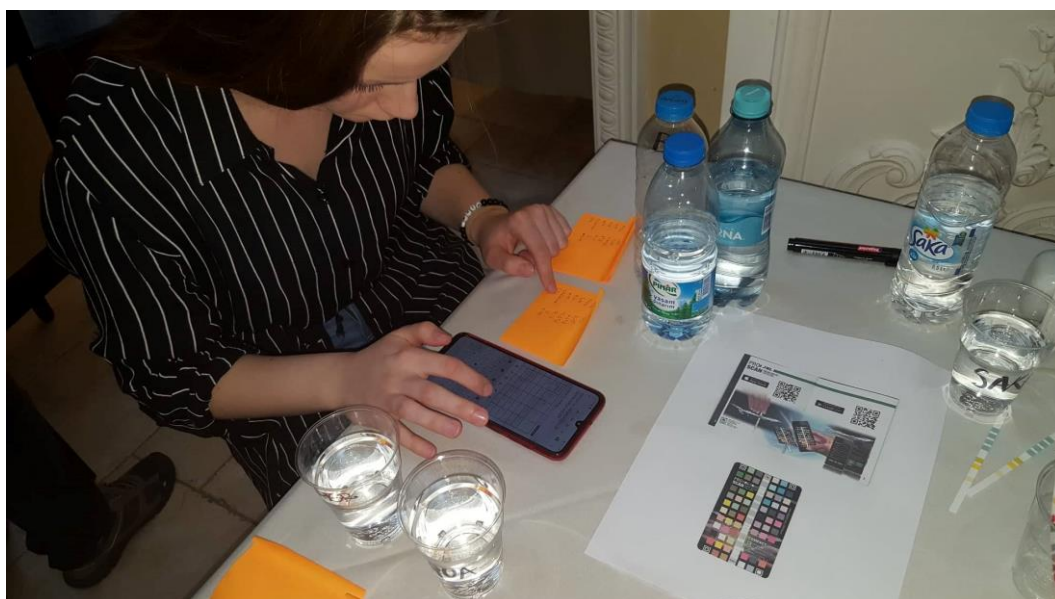


In the host country, the teaching activities took place in the laboratories of the partner high school Sultangazi Ataturk Mesleki ve Teknik Anadolu Lisesi, but also in the field, with activities of collecting samples for analysis.

The teaching hours, 6 per day, were provided by teachers specialized in the field of Natural Resources and Chemistry: Uscatescu Ramona – Colegiul Tehnic General Gheorghe Magheru Targu-jiu and Renata Capuder - Gimnazija in Srednja Sola Rudolfa Maistra Kamnik.

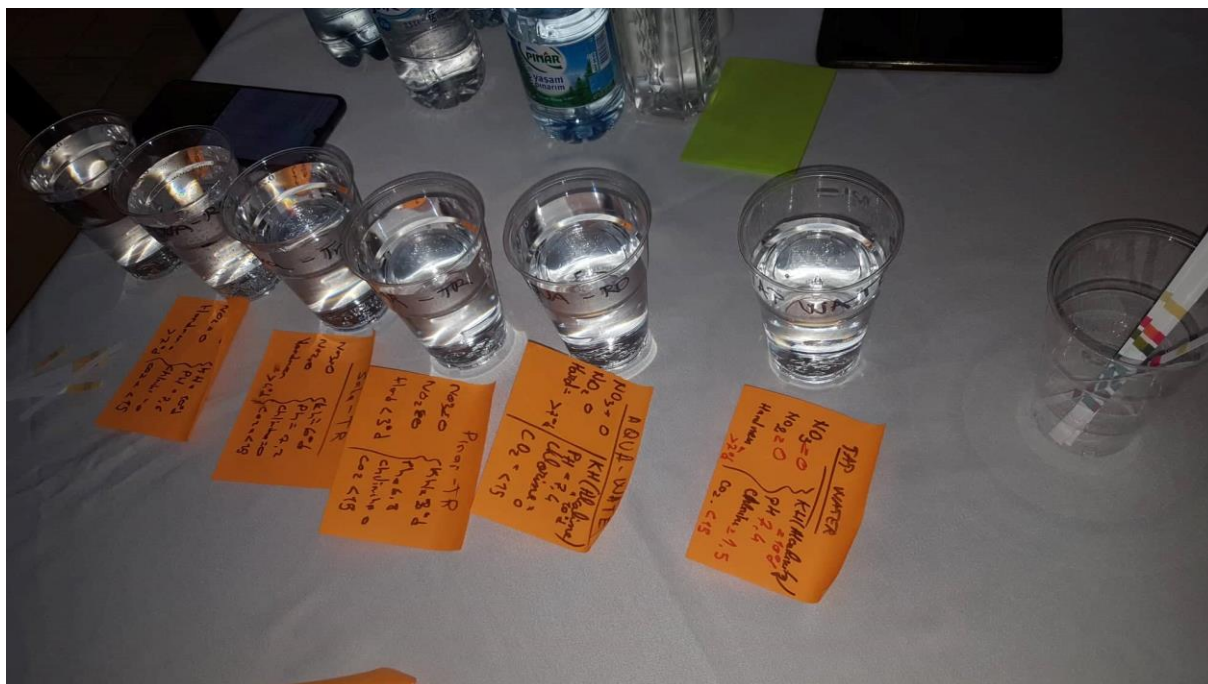
The program of activities for the 5 days was as follows:

Day 1 - Welcome ceremony by the Turkish partner's directors and officials. Multimedia presentations of the project, objectives and current stage, multimedia presentation of the host school and its results, facilities, presentation of the work program, methods, tools and applications that will be used. Initial evaluation using the Kahoot application (test of 20 questions: 10 ICT questions and 10 water analysis questions) Laboratory activity: Calorimetric analysis of bottled drinking water in consumption in Romania and Turkey (Dorna, Aqua Carpatica, Saka and Pinar) using methods M-Learning, JBL PRO SCAN app, pH analysis using various methods, interpretation of results.



Day 2 - Laboratory activity: Electrolytic analysis of bottled drinking water by pH analysis using PH meter, conductivity analysis using conductimeter. Debate with teachers from the host school on the topic - Modern methods of using ICT in laboratory activities.

Day 3 - Collecting samples of sea water, drinking water and water for industrial use, registration, labeling and storage (tap water from the school and hotel and water from the Bosphorus). Laboratory activity: Volumetric analysis (Determination of Ca^{2+} , $\text{Ca}^{2+} + \text{Mg}^{2+}$). Analysis and interpretation of results.

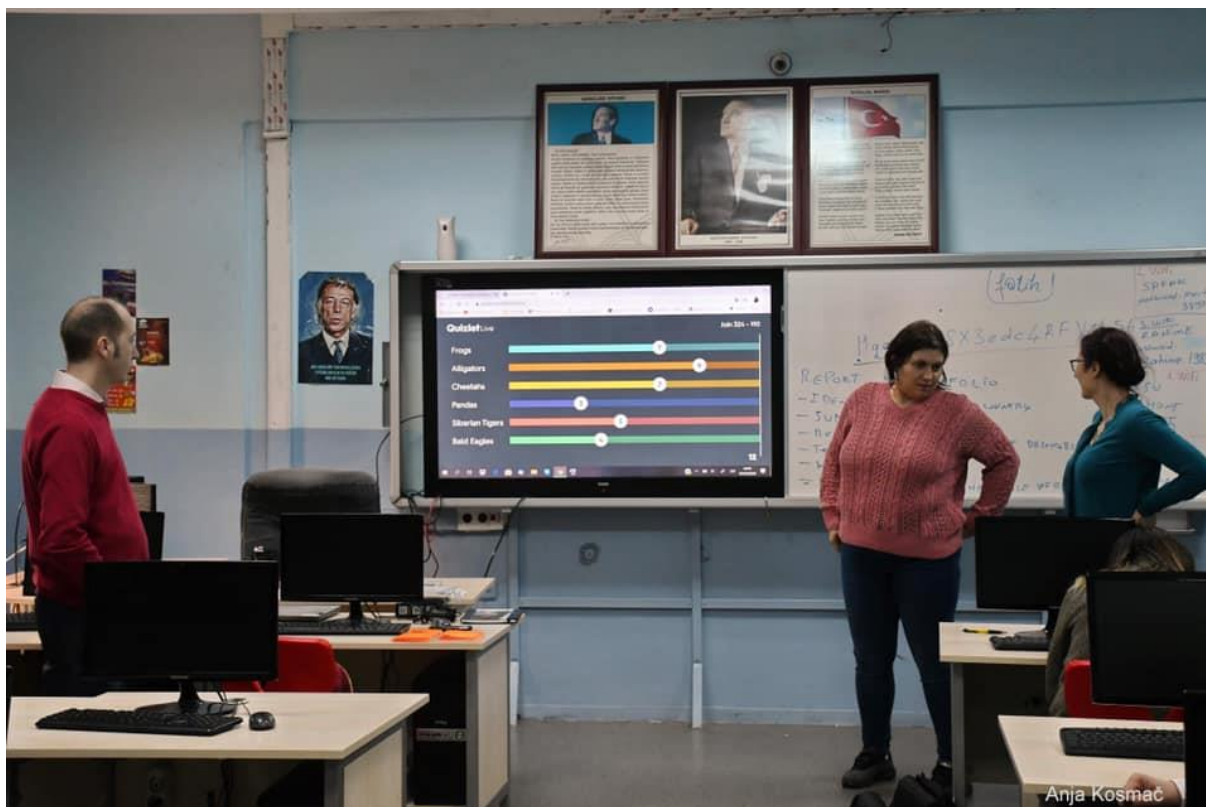


Day 4 - Laboratory activity: Volumetric analysis - determination of total hardness and temporary hardness and hardness. Analysis and interpretation of results.

Day 5 - Laboratory activity: Volumetric analysis - determination of permanent hardness. Analysis and interpretation of results The evaluation of students was performed through practical tests using mobile digital tools - JBL PRO SCAN app and Quizlet, but also by presenting the activity portfolio.



Anja Kosmač



At the end of the activities, a satisfaction questionnaire was completed by all participants, the conclusions of the meeting were drawn and discussions were held for the preparation of the next meeting in Lisbon - Portugal. Also, in a festive setting, the participation certificates were handed over for all participants by the principal of the host school.

The learning unit “Assessing the quality of environmental factors based on physicochemical indicators” was designed to ensure the acquisition of the 21st century skills such as: communication, collaboration, negotiation skills, critical thinking, problem solving, digital skills, lifelong learning. The participants also acquired key competencies in the field of their basic training - Water Quality Management and Control, but also in terms of responsibility for the importance of environmental factors and the conservation of natural resources.

The fact that the teaching was provided by teachers from schools with European VET experience, but also through the approached subject, based on which the students performed: calorimetric analyses to measure pH, total alkalinity, total hardness, NO_3 , NO_2 , CO_2 , Cl_2 , electrometric analyses and volumetric analyses of drinking water for determining hardness, determining Ca^{2+} , determining $\text{Ca}^{2+} + \text{Mg}^{2+}$ also allowed the participants to acquire skills in order to ensure a faster transfer to the labor market.

The use throughout the activities of technology, mobile devices and applications such as Quizlet, Kahoot, Prezi, Google App, Padlet has contributed to the improvement of digital skills.



The fact that the students worked in mixed teams and were guided in the cultural activities by the students from the host school favored the intercultural exchange and contributed to the formation of humanistic values based on tolerance, but also to the improvement of English communication skills.

The work program had also a cultural part, held in the afternoon and consisting in visits to the main historical and cultural sights in Istanbul such as: the Blue Mosque, Ayasofya, Topkapi Palace.



By participating in activities, workshops, debates, participating teachers had the opportunity to observe modern teaching methods based on active participatory methods, which integrate ICT, co-teaching and innovative initial, formative and summative assessment technique.

