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DiSSI
Diversity in Science towards Social Inclusion

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PRE-SERVICE TEACHER EDUCATION IN THE CONTEX OF THE DiSSI FRAMEWORK

DiSSI-partners

- Ludwig Maximilian University of Munich (Germany)
- Ss. Cyril and Methodius University, Skopje (North Macedonia)
- University of Limerick (Ireland)
- University of Ljubljana (Slovenia)
- University of Strathclyde (United Kingdom)

Theoretical framework

The aim of the international Erasmus+ project *Diversity in Science towards Social Inclusion (DiSSI) – non-formal education in science for students' diversity* stems from the fact that inclusive teaching in science subjects usually focuses on only one dimension of diversity at a time.

The work of the Slovenian DiSSI group focused on gifted students in chemistry. The gifted show a high level of readiness, interest, good concentration skills and metacognitive maturity in learning new chemistry content. They use chemistry terms to describe chemical concepts and phenomena, and in this sense have an extensive natural vocabulary. Gifted chemistry students understand chemical concepts quickly, rapid, in-depth, and with high quality, and have no incompletions or misconceptions. Only they are able to recognize these misconceptions and point them out during a peer discussion [1]. When teaching chemistry content, it is crucial for gifted students to explore chemistry concepts in depth and over a longer period of time. Chemistry lessons should be designed with an inquiry-based teaching and learning approach that sparks interest and connects knowledge [2].

In this case, students are active researchers who investigate real problems and situations in the context of life situations [3]. It should be emphasised that inquiry-based learning is not just about solving a worksheet and writing down results, but rather a process in which students expand their knowledge with the help of the teacher. The key emphases of inquiry-based learning are: 1) finding the research problem; 2) defining research questions and hypotheses; 3) identifying dependent and non-dependent variables; 4) planning research and testing variables; 5) carrying out measurements and observations that we use to collect data relevant to research; 6) predicting results; 7) analysing data and obtaining results; 8) drawing conclusions; 9) reporting; and 10) evaluating [4].

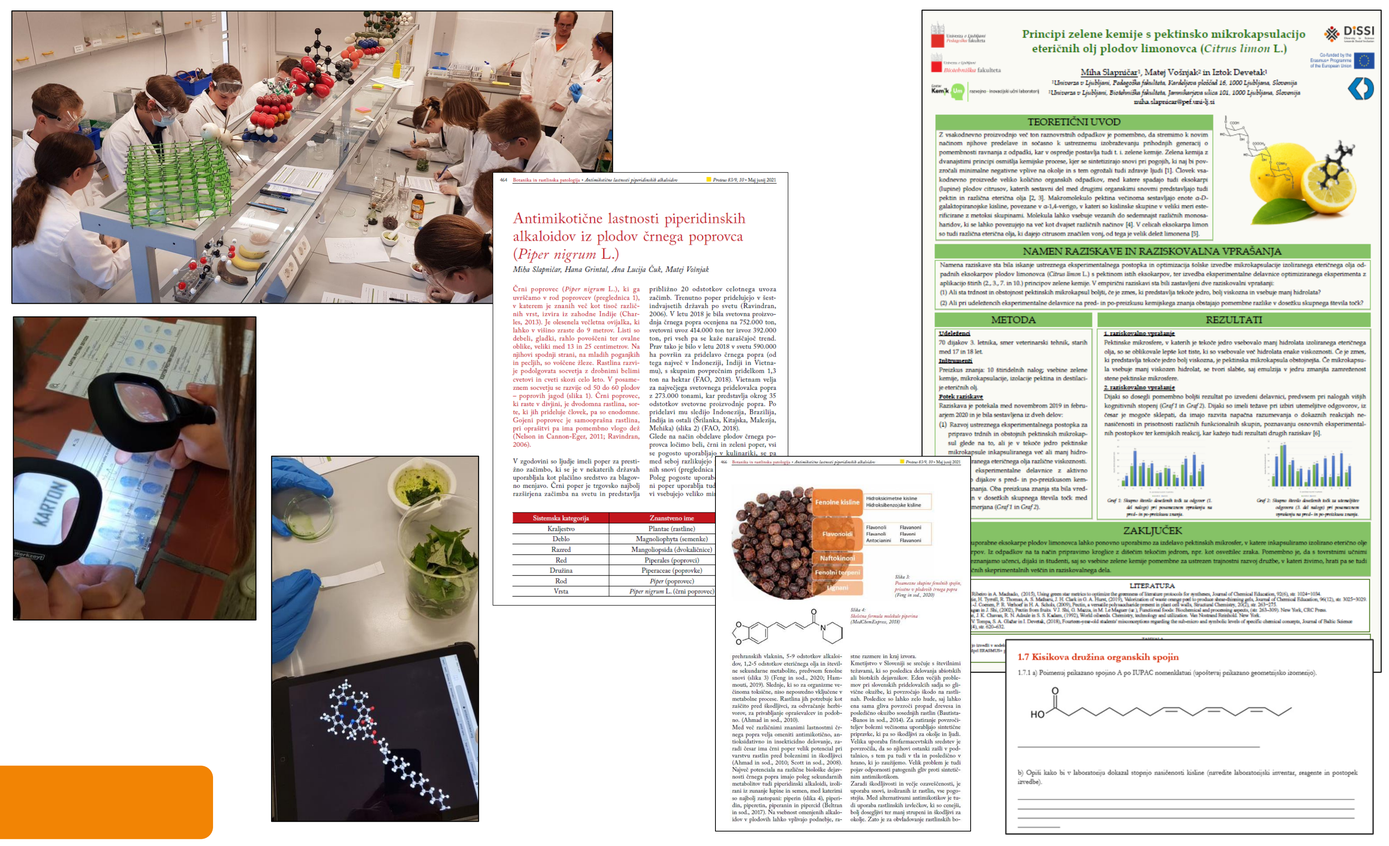
The aim

Present activities aimed at engaging gifted pre-service chemistry teachers as effectively as possible in activities related to the DiSSI project.

Activities

As part of the project we have prepared:

1) **Contextual chemistry problems.**
2) **Four DiSSI educational modules for gifted students:**
   a) Forensic science,
   b) Environmental chemistry - hydrosphere pollution,
   c) Green chemistry of the future,
   d) Medical active substances in pepper.
3) **Students research work** within the content of chemistry of natural compounds:
   a) Reuse of citrus peels in secondary school chemistry classes,
   b) Antioxidant capacity of piperine and other piperidine alkaloids in radical reactions in bovine liver cells.



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