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BioSustainED

TRAINING PROGRAMME FOR TEACHERS IN-SERVICE

**HOLISTIC APPROACH FOR BIODIVERSITY TEACHING**

in general secondary education schools in Latvia  
and gymnasium in Lithuania (grades 10-12)

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BioSustainED: Teacher Capacity Building in Biodiversity

Project No 2023-2-LV01-KA210-SCH-000170510







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Erasmus+ Small-scale Partnerships project “BioSustainED: Teacher Capacity Building in Biodiversity”  
Project No 2023-2-LV01-KA210-SCH-000170510

partnership:

- Natural Research and Environmental Education Centre (Latvia)
- Miško Briedžio mokykla, MB (Lithuania)

Project activity: Development of the teacher training programme and training material

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## TRAINING PROGRAMME FOR TEACHERS IN-SERVICE

### Programme Developers

Training programme for teachers in-service was developed within the Erasmus+ Small-scale Partnerships project “BioSustainED: Teacher Capacity Building in Biodiversity” Project No 2023-2-LV01-KA210-SCH-000170510

### Title of the programme

**HOLISTIC APPROACH FOR BIODIVERSITY TEACHING IN GENERAL SECONDARY EDUCATION SCHOOLS IN LATVIA AND GYMNASIUM IN LITHUANIA (GRADES 10-12)**

### Programme annotation (relevance, rationale, priority)

It has been more than 30 years since UNESCO first pointed to the need to include environmental education in the school curricula, perceiving it as a significant tool to counter the current environmental crisis. Biodiversity is a leading concept for environmental education. Nonetheless, various experts in the field continue to agree on a negative evaluation of environmental education implementation worldwide. This can be explained in different ways:

- integration difficulties, since the curricular organisation is usually a collection of different subjects with limited connections, thus hindering any cross-curricular area;
- poor articulation between social and natural sciences, which determines that learning about the environment is primarily the concern of geography or biology;
- or lack of professional development, which accounts for teachers’ difficulties in selecting the best strategies and activities (Palmer [1998](#); Giordan [2001](#); Parlo and Butler [2007](#); Walsche [2008](#); Lima et al. [2010](#); Vasconcelos [2010](#)).

Teaching biodiversity requires not only academic content, knowledge of educational principles and methods, but also a clear ecocentric approach. As the education of students can and should be carried out not only in classrooms and museums, but also in the natural environment. The teachers of different subjects at school need to assess the educational environment and react quickly to changing circumstances. Nowadays, it is essential that teachers take a holistic approach to the students, encourage communication and cooperation between students, and not focus solely on academic achievements.

Controversial topics such as biodiversity conservation and agriculture, deforestation and the promotion of the economy or the expansion of arable land, keeping animals in zoos or hunting are touched upon in both the teacher training programme and in the teaching of the grades 10-12 students. Therefore, the educational method used, both in the programme and with the students, is discussion and reflection, not only on the competences acquired, but also on the inspection of own attitudes and actions.

To strengthen interdisciplinary connections and reduce fragmentation, the programme is designed for secondary education teachers in biology, geography, mathematics, language, and natural sciences, as well as those who lead students' scientific research and implement projects in schools.

The training programme consists of the following parts: theoretical discussion about the concept of biodiversity; instruction principles, settings, methods and tools of biodiversity education; preparation and discussion of lesson plans on biodiversity in mathematics, biology, geography, native and foreign languages and literature classes; experiential activities like role-play on the topic of biodiversity.

## Objective of the programme

To form and develop the professional competence of teachers in teaching biodiversity in different school subjects e.g., biology, geography, mathematics, native and foreign language lessons, scientific research projects in the grade 10-12 classes in Latvia and Lithuania.

## Programme outcomes

1. To introduce teachers to the concept of biodiversity, educational principles, methods, activities and assessment methods in biology, geography, mathematics, language lessons and scientific research projects in high school classes.
2. To develop teachers' competences to design biology, geography, mathematics, native and foreign language and literature lessons as well as to integrate lesson plans, scientific-social projects on biodiversity topics and to implement them in secondary education lessons.
3. To reinforce teachers and pupils to develop their understanding of the importance of biodiversity, and to develop teachers' competences in the responsible use of the living and non-living natural environment for educational activities.

## Programme content, duration, teaching methods (methods used)

No	Topic	Lectures	Practical activities	Self-study	Total	Methods of teaching
1.	<b>Experimental activities in the natural environment for participants' introduction</b> (e.g., Zooplankton counting, examination of the salted herring on presence of parasites)		3		3	Activities in a natural environment Discussion
2.	<b>Understanding biodiversity</b> (e.g., development of the Google Doodle and creating comics)	3	1		4	Interactive lecture Assignments Reflections Discussion
3.	<b>Anthropocentric, biocentric and ecocentric approaches. Reflection on own attitudes</b> (e.g., holistic pathway and promoting positive thinking in society by breaking false stereotypes about life beings)	1	2	1	4	Interactive lecture Activities Discussion Reflection
4.	<b>Biodiversity teaching: subjects, themes,</b>	1	2		3	Interactive lecture. Activities. Discussion

No	Topic	Lectures	Practical activities	Self-study	Total	Methods of teaching
	<b>principles, tools, methods, assessment</b> (e.g., creating a soundtracks of situation)					
5.	<b>Lesson topic: Agriculture and resource exploitation</b> Biology Geography Mathematics Language and Literature (e.g., sustainable fashion - using old clothes and fabrics in fashion shows)	1	1	1	3	Discussion Activities Reflection
6.	<b>Lesson topic: Climate change</b> Biology Geography Mathematics Language and Literature (e.g., listening to and identifying bird songs, collecting branches of various trees and making a bird clock)	1	1	1	3	Discussion Activities Reflection
7.	<b>Lesson topic: wildlife trade and hunting</b> Biology Geography Mathematics Language and Literature (e.g. making animal footprint from plaster)	1	1	1	3	Discussion Activities Reflection
8.	<b>A research social project relevant in a student environment</b> (e.g., fungal hackathon – solving climate challenges)	0,5	1	1	2,5	Discussion Activities Reflection
9.	<b>Developing and testing a lesson plan on biodiversity: objective, competences to be developed, activities, tools, assessment</b> (e.g., World Cafe method)			8	8	Self-assigned task
10.	<b>Presentation of the lesson plans. Feedback</b>		6		6	Tasks are presented in the

No	Topic	Lectures	Practical activities	Self-study	Total	Methods of teaching
						group of participants, e.g. World Café
11.	<b>Interactive assignment: The court of the case of the problem situation of the selected topic</b>	0,5	2	2	4,5	Interactive lecture Assignment Discussion
12.	<b>Assessment of acquired competences</b>		1		1	Reflections, e.g. online tools such as slido.com
	<b>Total</b>	<b>9</b>	<b>21</b>	<b>15</b>	<b>45</b>	

**Competencies that will be improved, teaching methods, methods of assessment of the improved competences**

The programme will provide knowledge and understanding, skills and attitudes	Competences	Learning model (teaching methods and techniques)	Assessment of the competencies acquired
<b>General competencies</b>	Competences for professional education activities: <ul style="list-style-type: none"> <li>• Competence in identifying the differences and capabilities of learners;</li> <li>• competence in planning, implementing and improving the educational environment;</li> <li>• competence in the design and implementation of the educational process</li> <li>• competence of communication</li> <li>• competence in creativity</li> </ul>	Leading activities Interactive lectures Presentation sheets Group discussions	Formative assessment Oral questionnaire Lesson plan developed
<b>Knowledge and understanding</b> (theoretical part)	Will learn about the importance of environmental education, the principles and methods of environmental education, and opportunities offered by their neighbourhood.	Interactive lectures Presentation sheets Group discussions	Oral questionnaire Lesson plan developed
<b>Skills</b> (practical part)	Be able to apply biodiversity themes in biology, mathematics, language and geography lessons for secondary school students.	Activities in a natural environment The	Feedback on the lessons plan Reflection

The programme will provide knowledge and understanding, skills and attitudes	Competences	Learning model (teaching methods and techniques)	Assessment of the competencies acquired
	<p>Be able to formulate ideas and guide students in social sciences projects.</p> <p>Be able to develop a lesson plan and project on biodiversity, individually and in collaboration with other subject teachers.</p> <p>Be able to implement interactive activities on biodiversity (case court).</p>	development of a lesson plan, presentation	
<b>Attitudes</b> (values, ethical-professional attitudes)	<p>Reinforcing the importance of ethical and responsible behaviour in educational activities in the natural environment.</p> <p>Reinforcement of the importance of biodiversity conservation.</p> <p>Reinforcing the importance of cooperation between teachers of different subjects and the whole school community in environmental education.</p> <p>Developing an ecocentric approach.</p>	Activities Small groups and general group discussion	Reflection

### Teaching materials and technical tools

#### Teaching material (title, form (presentation, publication, video, scope, etc.))

Topic	Teaching material	Scope
<b>Understanding biodiversity</b>	<p>Practical teaching guide: methodological guidelines for biodiversity teaching at school</p> <p>People observe and report about species:  <a href="https://www.inaturalist.org/">https://www.inaturalist.org/</a>  <a href="https://dabasdati.lv/lv">https://dabasdati.lv/lv</a>  <a href="https://latvianature.daba.gov.lv/invazivo-sugu-parvaldnieks/">https://latvianature.daba.gov.lv/invazivo-sugu-parvaldnieks/</a></p>	E-guide Slides Website links
<b>Anthropocentric, biocentric and ecocentric approaches. Reflection on own attitudes</b>	<p>Practical teaching guide: methodological guidelines for biodiversity teaching at school</p> <p>Almeida A, Vasconcelos C, 2013. Teachers' perspectives on the human-nature relationship: implications for environmental education. Research in Science Education. 43: 299–316</p>	E-guide Slides Questionnaire sheets

Topic	Teaching material	Scope
	Questionnaire to assess attitude towards biodiversity	
<b>Teaching about biodiversity: subjects, themes, principles, tools, methods, assessment</b>	Practical teaching guide: methodological guidelines for biodiversity teaching at school Educational portal in Latvia: <a href="https://www.uzdevumi.lv/p/biologija-skola2030">https://www.uzdevumi.lv/p/biologija-skola2030</a>	E-guide Website links
<b>Lesson topic: Agriculture and resource exploitation</b> Biology Geography Mathematics Language and Literature	Practical teaching guide: methodological guidelines for biodiversity teaching at school  Biodiversity toolkit   Educator's Resource Guide. WWF <a href="https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity">https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity</a>  Waste management: <a href="https://www.getlini.lv/">https://www.getlini.lv/</a>	E-guide Website links
<b>Lesson topic: Climate change</b> Biology Geography Mathematics Language and Literature	Practical teaching guide: methodological guidelines for biodiversity teaching at school  Biodiversity toolkit   Educator's Resource Guide. WWF <a href="https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity">https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity</a>	E-guide Website links
<b>Lesson topic: Wildlife trade and hunting</b> Biology Geography Mathematics Language and Literature	Practical teaching guide: methodological guidelines for biodiversity teaching at school  Biodiversity toolkit   Educator's Resource Guide. WWF <a href="https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity">https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity</a>	E-guide
<b>A research social project relevant in a student environment</b>	Practical teaching guide: methodological guidelines for biodiversity teaching at school  <a href="https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity">Green Tips   Pages   WWF (worldwildlife.org)</a>  <a href="https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity">https://www.worldwildlife.org/teaching-resources/toolkits/teaching-tools-about-biodiversity</a>  <a href="https://www.wwf.org.uk/sites/default/files/2020-09/LPR20_Full_report.pdf">https://www.wwf.org.uk/sites/default/files/2020-09/LPR20_Full_report.pdf</a>	E-guide Slides Website links

### Technical tools

The programme is performed in a natural environment and in a working groups setting with a computer, internet access and projector. For some practical exercises special equipment might be required to ensure hand-on learning.



## References and other resources used for the development of the programme

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## Qualification requirements for lecturers

Lecturers implementing the programme shall have:

- a university degree in education, science, biology, mathematics, geography, language, literature or psychology;
- experience in developing and/or implementing in-service competence development or qualification programmes.

## Requirements for participants

Teachers of General Secondary Education school in Latvia or Gymnasium in Lithuania (grade 10-12) of natural sciences (e.g., mathematics, biology, geography, chemistry) languages, literature and of another subjects who are willing to integrate biodiversity topic into their subject.

***“Teachers nurture minds just as biodiversity nurtures life – both remind us that every species, every question, and every curiosity have a purpose in the grand design of our world.”***

*(ChatGPT)*