Improving access to FORest GENetic resources Information and services for end-Users

Deliverable D7.3

Integrating forest genetic resources into the public education curriculum

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1 Summary

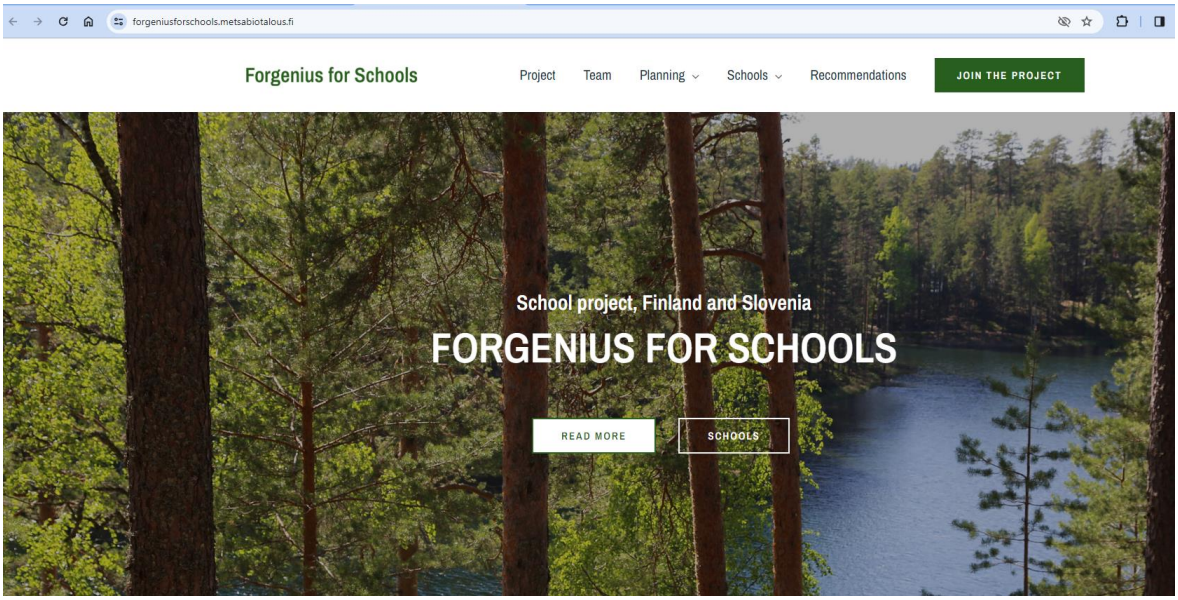
In Task 7.3 an international connected learning pilot was created using selected local and global phenomena related to the FORGENIUS project, such as biodiversity loss. The phenomena connect countries representing different climatic zones and entail work with open data. A workshop was organized to introduce the connected learning method to FORGENIUS experts and to formulate the candidate learning phenomena to be linked to FORGENIUS project. This was done in collaboration with pedagogical experts in pedagogics and out-door education in Finland and Slovenia. A learning pilot was carried out between Finnish and Slovenian schools and then modelled and delivered for open use and European upscaling.

2 Introduction

To facilitate policymakers' allocation of essential resources toward biodiversity conservation, it is essential to garner widespread public support for its necessity and benefits. This need is particularly crucial for the conservation of genetic resources, which lack visibility and immediate tangible rewards. Raising public awareness about the significance of biodiversity conservation and elucidating the danger of its loss poses a formidable challenge, especially within adult populations. Within this Task, we embarked on a study to assess the feasibility of engaging primary school pupils in understanding and embracing these critical messages.

The task aimed to develop co-operation between schools and research in the context of the FORGENIUS project. As a method we designed an international connected learning pilot for schools. In connected learning we used selected local and global phenomena related to the project such as biodiversity loss. The phenomena connect countries representing different climatic zones and entail work with open data. A workshop was organized to introduce the connected learning method to FORGENIUS experts (GIS, LUKE, INRAE, EFI, BFW) and to formulate the candidate learning phenomena for schools. One school teacher was invited to the first workshop to ensure a close link to school education. Pedagogical supervising, planning and organizing the workshop and learning projects were partly subcontracted. The learning project was carried out between Finnish and Slovenian primary schools (already contacted by Luke and GIS) during one school year. School teachers together with their classes choose the shared learning challenge from the list of suggested candidate phenomena. Researchers from FORGENIUS project visited and answered the questions of pupils and teachers during the pilot. Class excursions to local natural locations/ study sites (Luke, GIS) that represent the chosen phenomenon were part of the learning process. The pilot was intensively monitored and documented. Finally, we modelled the pilot for open use and European upscaling.

3 Results



1. **Successful Introduction of Connected Learning Method**: The workshop held in December 2021 effectively introduced the connected learning method to experts from FORGENIUS project partners (GIS, Luke, INRAE, EFI, BFW) and pedagogical experts. This laid the foundation for the implementation of the pilot in primary schools.
2. **Formulation of Learning Project Candidates**: The collaboration between FORGENIUS experts and pedagogical experts led to the formulation of several learning project candidates aligned with the FORGENIUS project's goals and focused on biodiversity conservation.
3. **Implementation of Teaching Pilot**: Luke and GIS initiated the teaching pilot between Savonlinnan Heikinpohja School in Finland and Spodnja Šiška School in Slovenia in January 2022. The operational cooperation between the schools and pupils was organized by a contracted education expert.
4. **Engagement of School Communities**: The pilot engaged school teachers and their classes in choosing shared learning challenges related to biodiversity conservation. Researchers from FORGENIUS project visited the schools to answer questions from both pupils and teachers, fostering deeper engagement and understanding.
5. **Practical Learning Experiences**: Class excursions to local natural locations and study sites representing chosen phenomena provided hands-on learning experiences for students, enhancing their understanding of biodiversity conservation issues.
6. **Intensive Monitoring and Documentation**: The pilot was intensively monitored and documented, allowing for comprehensive evaluation of its effectiveness and impact on students' awareness and understanding of biodiversity conservation.
7. **Dissemination and Upscaling**: Based on feedback and documentation, the theoretical background, process, and results of the pilot were made available for European upscaling. The pilot's dissemination model is outlined on the FORGENIUS for Schools website (https://forgeniusforschools.metsabiotalous.fi), providing resources for educators across Europe to implement similar initiatives.

Overall, the connected learning pilot demonstrated the feasibility and effectiveness of engaging primary school pupils in understanding and embracing critical messages related to biodiversity conservation, laying the groundwork for broader implementation and scaling across Europe.

4 Conclusions

Despite the challenges posed by the COVID-19 pandemic, the implementation of Task 7.3 and its associated school pilot demonstrated the effectiveness of the applied method in engaging primary school pupils in understanding and embracing critical messages related to biodiversity conservation. Feedback from teachers and researchers involved in the pilot indicates a positive response to the methodology employed.

The phenomena explored within the FORGENIUS project context was biodiversity, spanning from genetic to landscape levels. This comprehensive approach allowed starting the discussions with kids on the importance of conservation efforts across various scales. Specifically, the examination of the effects of climate change and windstorms on biodiversity, as well as the role of spruce sub-species as indicators of local biodiversity, provided valuable insights into the complex dynamics of ecosystem health and resilience.

The enthusiasm and interest shown by both Finnish and Slovenian pupils and teachers in continuing cooperation beyond the initial task underscore the success of the pilot in fostering meaningful engagement and learning experiences. This highlights the potential for sustained collaboration between schools and research initiatives, contributing to ongoing efforts in biodiversity conservation.

As heritage from FORGENIUS, we leave the possibility to expand the reach of the FORGENIUS for Schools network. By linking new schools to the existing platform https://forgeniusforschools.metsabiotalous.fi/. We can further amplify the impact of our efforts and facilitate knowledge sharing and collaboration on a broader scale. This expanded network will not only benefit participating schools but also contribute to the advancement of biodiversity conservation education and research globally.

In conclusion, while the COVID-19 pandemic presented challenges, the success of the school pilot and the continued interest from schools demonstrate the effectiveness and relevance of the FORGENIUS project in promoting biodiversity conservation awareness and education. By building on this momentum and expanding our network of participating schools, we can continue to inspire future generations to become stewards of biodiversity and champions for environmental sustainability.

5 Partners involved in the work

6-Luke (Task leader): Luke sub-contracted the needed pedagogical expert to task and organized the kick-off workshop to introduce the connected learning method to FORGENIUS experts (GIS, Luke, INRAE, EFI, BFW) and to formulate the candidate learning phenomena to be linked to FORGENIUS project in collaboration with pedagogical experts in December 2021. In spring 2022 Luke co-worked with Savonlinna Heikinpohja School in schoolpilot.
In autumn 2022 Luke collected feedback form the learning pilot, analysed the pilot process and planned the way for distributing the results. As a result Luke constructed the web pages and domain https://forgeniusforschools.metsabiotalous.fi
which was released at the beginning of 2023. The web pages were utilised by teachers and Luke when communicating the results. There was a plan to make another co-project with schools in autumn 2023 but this had to be postponed due to sick leave of the responsible teacher in Finland. However, there is a clear interest in the respective school to continue the constructed cooperation and to share the model with other schools (outside the project and its resources). Luke continued finetuning and maintaining the open learning environment https://360panorama.fi/360Luke
for the schools the real time measurements (tree growth data, temperature etc.) that were utilised in the 2021 pilot.

11-BFW: BFW took part in the relevant sessions of the Kick-Off-Meeting and prepared for the work.

5-GIS: LUKE and GIS had several virtual meetings to discuss connected learning and how school children and teachers from Finland and Slovenia could be involved in the task. After reaching out to several schools, two elementary schools in Slovenia confirmed their participation. The elementary school Spodnja Šiška (children 10 – 11 years old and two teachers) confirmed their partnership in connected learning and elementary school Majde Vrhovnik confirmed their interest in attending a workshop. Several meetings were held with teachers only, to discuss the best way to involve the children. Žan Rode, assistant at the Biotechnical faculty, UL, joined two meetings to introduce an app i-Naturalist, that has later been used in practice by the children. GIS further contributed with a lecture on biodiversity in general and in Slovenia and introduced Slovenian teachers to the international team. Three workshops were organised for school children following the connected yearly learning plan (two visits to an urban forest and a nature day at Cerkniško jezero). The mobilised resources included staff time and other costs (rent of a bus for one of the trips, entry to the park and small gifts for the children).
Researchers and teachers from Finland and Slovenia have met online several times to discuss their methods for teaching about biodiversity. After comparing methods and results between the schools, the teachers concluded to organize an on-site meeting in Finland to learn from each other and discuss the promotion of knowledge about all levels of biodiversity, strengthen social interactions between children across national borders and discuss the theory of connected learning presented by Saara Nissinen, PhD student, teacher.
More detailed reports on the interactions and the work of the schools can be found on the FORGENIUS for Schools' website: https://forgeniusforschools.metsabiotalous.fi .