Fostering inclusivity and interdisciplinarity in Ocean Literacy: Lessons from the BiodivOcean Symposium

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The BiodivOcean Symposium, organised within the framework of the ERASMUS+ program, provided a platform to explore innovative ways of integrating ocean literacy into education through the VIRTUE methodology. Over a three-day program, the consortium led and supported workshops that emphasized inclusivity, interdisciplinarity, and active trainee engagement, using VIRTUE racks as a hands-on teaching tool.

Here are the key highlights from the workshops:

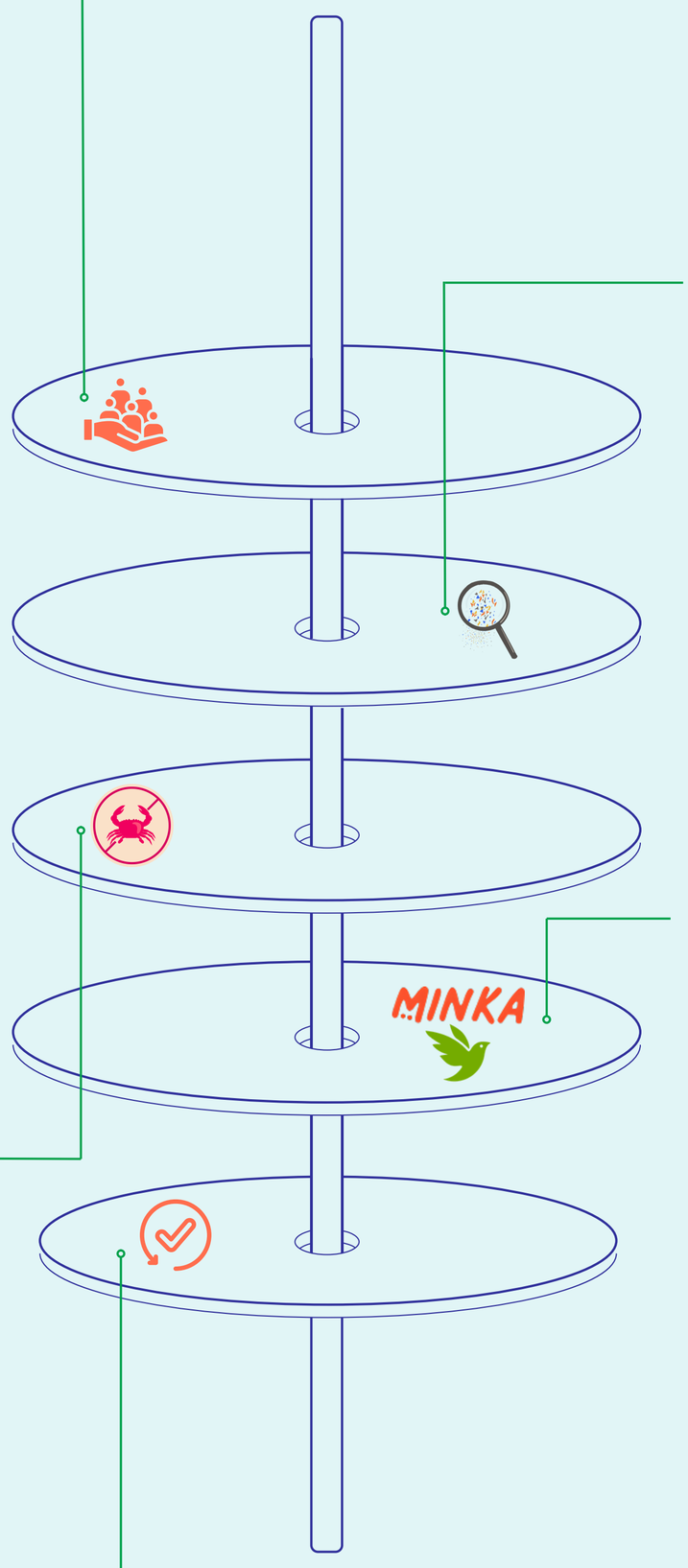
1. Inclusivity workshop - SUBMON

CHALLENGES

- **Socioeconomic inequality**: High attention is needed for students at risk of social exclusion and vulnerability.
- **Economic resources**:. Many schools lack suitable facilities for experimental activities
- **Links between educational agents**: Improved communication and planning between teachers and other educational actors enhances project effectiveness.
- **Capacity building**: Teachers benefit from proper, planned training with allocated time for professional development.
- **Student ratios**: High student-to-classroom ratios remain a challenge for hands-on learning.
- **Time constraints**: Scheduling specific times to develop the blue curriculum is essential to overcome timing constraints.

OPPORTUNITIES

- **Interdisciplinarity:** BiodivOcean can be implemented, with Technology, Physical Education, Biology, and Maths contributing to different aspects of the project. Activities could include those linked to sport, professional opportunities, and increased visibility of free, ready-to-use resources, as well as the promotion of interdisciplinary classroom teams with proper training and flexibility.
- **Networking**: Strengthening links between Marine Research Centers and schools can accelerate integration of ocean literacy.
- **Bureaucracy**: Administrative support, and potentially AI tools, can help reduce teacher workload, allowing more time for inclusive lesson planning.
- **People with disabilities:** BiodivOcean could serve as a window to the ocean, enabling participation for students with physical or intellectual disabilities; more field contact bridges the gap between classroom learning and real-world experiences.
- nd having a shared bank of resources among schools can improve access and participation.



2. Invasive species workshop - GMBL

- Invasive species can significantly harm ecosystems, highlighting the need for **monitoring and management**.
- Invasive species differ by **location**; VIRTUES can be used to identify and raise awareness of species in specific areas.
- **Citizen science** platforms such as **iNaturalist** and **MINKA** enable the collection of observations, providing insights into distribution, early alert, and helping to mitigate their spread.
- Surfaces like **VIRTUE** racks can serve as settlement points for invasive species, especially algae and mollusks such as barnacles.

3. Microplastics' workshop - Georgetown University and Seagrant Maryland

- Developed an **easy-to-follow method** to detect microplastics in VIRTUE disks.
- Lesson plans can be designed to help students apply the scientific method and understand scientific reasoning.
- Tackling plastic pollution is possible through **hands-on activities**, such as searching for microplastics in VIRTUE disks.
- Activities generate discussions about **daily habits** and their impact on the marine environment (e.g., fibers from washing/drying clothes, road paint).
- VIRTUE disks serve as tools for both **short-term and long-term school and college science projects**.
- VIRTUE disks provide a **practical method** to showcase and study ecosystems.

4. Lesson planning workshop & Citizen Science - SALT

- VIRTUE helps provide students with a **sense of belonging** to their local environment.
- Incorporating **emotions** in lessons can strengthen students' connection to the environment.
- Encourages a strong sense of **individual contribution**, for example, through personalized participation in citizen science platforms such as **iNaturalist** or **MINKA**.
- Demonstrates how working with students in a channel system leading to the ocean can foster a global understanding of marine ecosystems.
- VIRTUE racks enable **enhanced exploration** of underwater biodiversity.
- Encourages teachers to integrate technology and adopt **interdisciplinary approaches** across subjects such as technology, art, biology, and chemistry.

Final remarks about the BioSymposium:

- Closer to Science
- Inspiration for inclusivity
- More confidence with the method
- Motivation to use microscopes
- Inter-disciplinar approach
- Foster Creativity

For more info about the **BiodivOcean** project:

Overall, the experience fostered engagement, creativity, and a stronger connection between educators and scientific practice.

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