GREEN SCENT
SMART CITIZEN EDUCATION FOR A GREEN FUTURE

TOWARDS TRANSFORMATIVE AND EMANCIPATORY PEDAGOGIES

POLICY PAPER 2024

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036480

Towards transformative and emancipatory pedagogies

Teachers require support to effectively address environmental challenges and empower students through action-oriented pedagogical approaches. Pedagogical tools must be diverse and adaptable to suit various educational contexts, considering e.g., regional disparities, available resources, and student demographics.

The key objective of education for environmental citizenship is to inspire sustainable actions by increasing environmental awareness, altering behaviours and creating a sense of agency. For this to happen, educational programmes and applied teaching methods should cultivate sustainability competencies among learners. In addition to providing substantive knowledge on environmental issues, specific teaching methodologies that enhance the skills and capacities for transformative actions, forward-looking perspectives, collaborative decision-making and problem-solving are needed.
Shifting from 'package-based' approaches with teachers delivering information to competence-oriented education puts focus on learners acquiring the abilities for social action and pro-environmental behaviour. GreenSCENT project's findings suggest that sustainability competences can be developed through transformative and emancipatory pedagogies which both aim to promote environmental awareness and ensure that learners with diverse backgrounds and acting in different contexts have the capacity to participate in creating a sustainable future.

According to previous studies on learning for sustainability (Gough 2005; Leicht et al., 2018), methods that foster sustainability competencies should be learner-centred and action-oriented. These methods may include:

- **Collaborative real-world projects:** Engaging in service-learning projects and campaigns on different sustainability topics.

- **Vision-building exercises:** Conducting future workshops, scenario analyses, utopian/dystopian storytelling, science-fiction thinking to explore sustainable futures.
- **Complex systems analysis:** Carrying out community-based research projects, case studies, modelling, and systems games to understand environmental dynamics.

Examples of action-oriented methods:

GreenSCENT piloted several action-oriented citizen-science based pedagogical tools, for example: Air quality monitoring with GreenAir@School activity, monitoring of microplastics, and citizen journalism

More information can be found here: https://www.green-scent.eu/

Identified obstacles for educators to adopt action-oriented and transformative environmental pedagogies

Sustainability education presents unique challenges due to its complexity. Teachers' ability to facilitate activities on this topic vary greatly depending on their skills and resources available to them. A critical issue is the limited availability of adaptable pedagogical tools, such as citizen science methods, for different age groups. This, coupled with insufficient time to create collaboration networks for citizen science activities (see the teacher's experience in the infobox below) and lack of technical and financial support, hampers the prospects for equitable sustainability learning throughout Europe.

Example: Teacher's experiences of facilitating children's air quality monitoring activities

First, we discussed in the classroom of how dosimeters could be installed on private property (with the owner's approval) or public property (with the Mayor's Office approval). We wrote an email to the Water Quality Agency, and we received a positive answer right away allowing us to install dosimeters on their units. We also wrote an email to the Mayor's Office to be allowed to install dosimeters on public light posts, but we never received an answer. Weeks later, we called the Mayor's Office and talked to the representative in the specific department- he knew about the email and invited us to stop by and collect a written approval. When the school representative stopped by, he was not handed one and they did not seem pleased that we chose main streets for the location of dosimeters and encouraged us to choose parks and the river valley. We explained to the Mayor's Office that we wanted to measure the air quality of the streets kids use to go to school. We are still awaiting a response from the Mayor's Office regarding this issue.

However, we received an email from the Ministry of Environment containing a letter that acknowledged our request, our involvement in GreenSCENT and our local intentions, and they gave us a written consent to install dosimeters on any of their units (which we had already received from the local Water Quality Agency).

I am quite convinced that with this letter we could have received the Mayor's Office approval as well but at that time the dosimeters were already installed on private properties.

The students were proud that we had received a letter from such an important national institution.

According to GreenSCENT findings, teachers identify the following obstacles for adopting competence – and action-oriented pedagogies:

- **Resource Constraints:** Teachers often struggle to implement action-orientated projects that connect students to the outside world due to lack of resources and support.

- **Community Engagement:** Methods involving community participation, such as student-led local environmental monitoring projects, require significant time and investment to establish collaborative networks with local government and non- governmental organisations.

- **Technical Support:** There is a lack of technical support for teachers in adopting digital pedagogical tools for citizen science. The schools may have the necessary technical devices and software, but without dedicated time to prepare the citizen science activities teachers are unable to adopt the methods.

- **Research Collaboration:** The networks for collaboration with research organisations that could support citizen-science activities are underdeveloped.

- **Tools and Methods of Engagement:** Digital tools for collecting and analysing, monitoring data or exchanging knowledge between students and schools are not user-friendly. Sustainability issues addressed by current pedagogical tools may not resonate with students' experience or be age-appropriate, affecting their motivation.

Recommendations for policy measures to support action-oriented, emancipatory and transformative pedagogies

To facilitate action-oriented sustainability education, fostering effective collaboration between schools and the broader community is essential. Furthermore, aligning pedagogical insights from citizen science approaches with scientific goals requires systematic collaboration between schools and universities. We propose the following measures:

- **Support for Environmental Education Ecosystems:** Provide funding and support for establishing environmental education ecosystems that link schools with universities and research organisations. This will encourage project-based collaboration, provide schools with access to novel research tools and equipment, increase universities' understanding of teachers' pedagogical needs, and expand the adoption of citizen-science methods in environmental education, even in areas without regional research facilities.
- **Funding for Educational Blueprints:** Allocate resources to develop a hands-on blueprint for a community-oriented whole school approach to sustainability education. This blueprint should offer guidelines for building educational programmes which allocate time for action-oriented sustainability education and connect learning with relevant community issues. Incorporating sustainability topics into the curriculum through hands – and minds – on activities will support teachers in organising learning activities and give students opportunities to engage in tangible sustainability actions.
- **Knowledge Exchange Programme:** Establish a funding programme to facilitate the exchange of best practices for action-oriented sustainability education between schools. This will promote peer learning among teachers and across different European regions.

References

Gough, A. (2005). Sustainable Schools: Renovating Educational Processes, Applied Environmental Education and Communication, 4. https://doi.org/10.1080/15330150500302205

Leicht, A. and Won, J.B. (eds). 2018. Issues and trends in education for sustainable development. UNESCO Publishing.

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