

CITIZEN SCIENCE APPROACH FOR IMPROVEMENT OF SOIL HEALTH THROUGH SCHOOL COMPOSTING

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Aim of the Study

Soil quality is declining globally and requires urgent improvement through practical, widely accessible solutions. Within this science project, the aim of the study was to integrate citizen science by involving students directly in the research process as a powerful way to engage schools, using composting as a hands-on method to connect education, sustainability, and community action.

In short term, the project **aims** to:

1. reduce organic waste sent to landfills,
2. lower greenhouse gas emissions, and
3. improve soil health,
4. promote science, environmental awareness, and community engagement.

In the long term, the project seeks to influence policy makers to integrate circular economy practices city-wide and adapt school curricula to strengthen environmental education and science literacy.

Methodology

The project involves three elementary schools in Novi Sad, and at least 45 student citizen scientists, who will maintain and monitor composting process at their school composters.

It was decided that the following research methodology would be implemented to achieve the study objectives. Composting parameters, including temperature, pH, moisture, and EC, will be monitored using sensors, and the data will be recorded under the guidance of project team members and university mentors (two mentors per school).

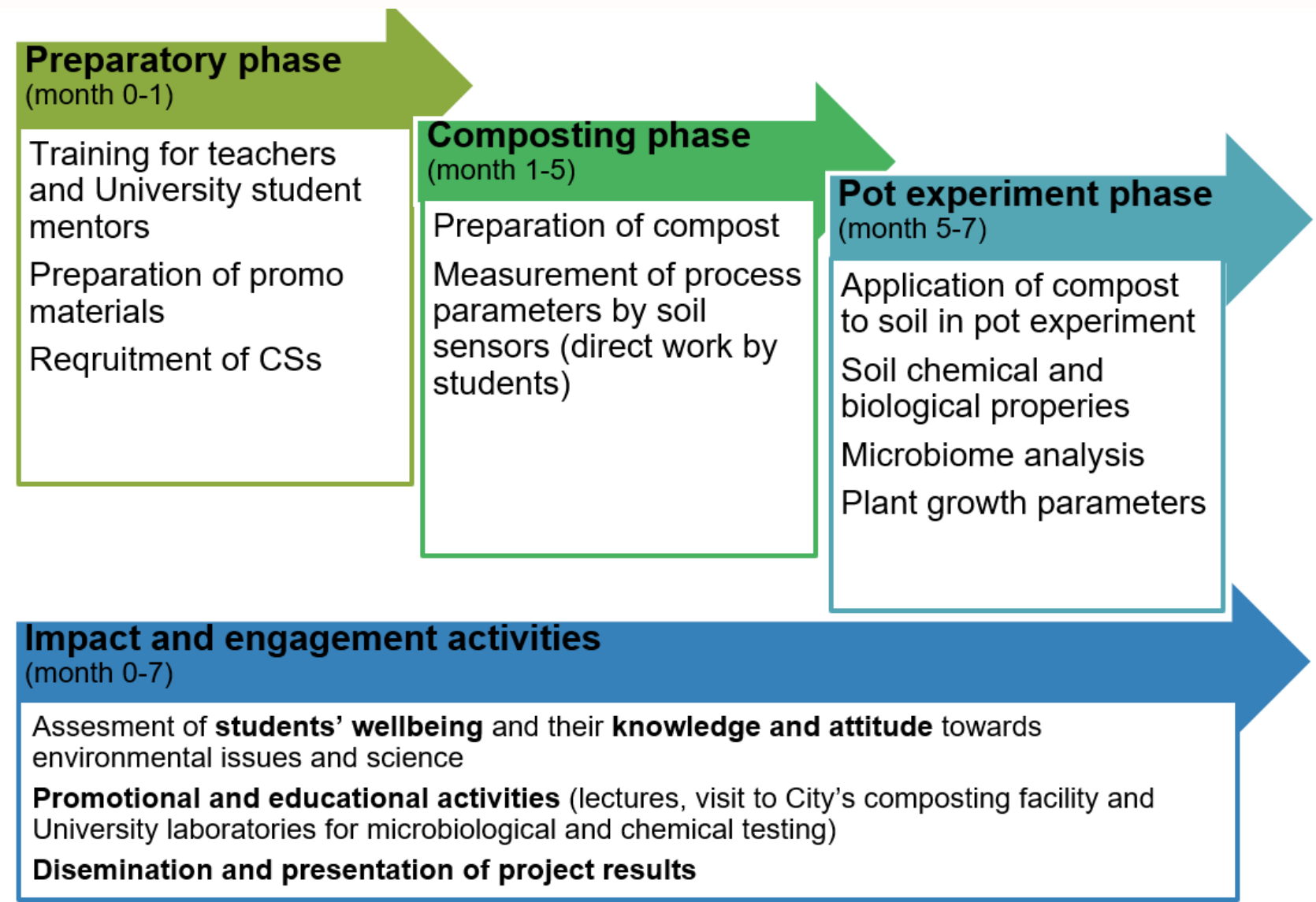


Figure 1 Project methodology and activities outline.

Subsequently, pot experiments will be conducted to assess the effects of compost addition on soil health and plant growth parameters. Physico-chemical and biological properties of compost and soil will be measured, including bacterial and fungal community analysis using 16S rRNA and ITS sequencing. The social aspect of the study will be assessed regarding the impact of project participation on students' overall health and wellbeing, as well as on their knowledge and attitudes towards science and environmental issues, through questionnaires completed before and after participation.

Results

Project is expected to beneficially impact key stakeholders: students, university students, teachers, scientific community and policy makers. Planed outputs of the project encompass publicly available databases on biological and chemical parameters measured during composting process, as well as soil parameters during pot experiments. Long-term outputs will be aimed at the policy makers to recommend and implement similar or same circular economy practices city wide in more schools and institutions city wide.



Figure 2 Photographies documenting and promoting main project activities for the purpose of social network promotion

Conclusion

To summarize, this citizen science approach connects education, sustainability, and policy, demonstrating how small-scale local actions can drive broader societal and environmental change.

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