Recommendations

1. Use futures thinking to cross, connect and contextualise 21st century skills

2. Incorporate future concepts and elements in science curricula

3. Incorporate futures thinking in science teacher education programs

4. Understand and address the personal, gendered, cultural, religious, socioeconomic and political dimensions of futures thinking and related beliefs

5. Foster the development of future-scaffolding skills

6. Elicit students' scientific and technological images of the future

7. Address ongoing and emerging trends in science and technology

8. Highlight the role of human agency in the development of science and technology and in sociotechnical change

9. Address and embrace complexity and uncertainty

10. Embrace emerging teaching using interdisciplinary projects

11. Practise different types of futures thinking

12. Deconstruct spacetime rituals in science classrooms

13. Guide the students to manage tensions and overcome polarisations

14. Use collective group work to open up to alternative futures

Get inspired, learn more, and expand your views!

The Framework to Futurise Science Education, which expands on the recommendations listed here, will be available on www.fedora-project.eu/ in November 2022

Read the Future-oriented Science Education Manifesto: www.fedora-project.eu/wp-content/uploads/2022/09/Manifesto_October_2022_18.pdf

Navigate www.fedora-project.eu/deliverables



FEDORA - Future-oriented Science EDucation to enhance Responsibility and engagement in the society of Acceleration and uncertainty - This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n° 872841 www.fedora-project.eu

FEDORA LEARNING BRIEF on futurising science education



Global sustainability crises and accelerating societal and technological developments demand science education to address not only the past and present but also the future.

We lay the groundwork for futureoriented science education that provides students with tools for deeply connecting with, and finding agency within their personal and global futures.

We have conducted five studies on young people's futures perceptions and one study on European curricula. The studies on perceptions focused on how students relate to "agency" (e.g. who influences scientific or technological change and how), polarisations and rituals creating "bubbles" of safety, imagination, hopes and fears and their own futures' thinking. In the curricular study, we focused on identifying explicit and implicit links to futurethinking skills in European science curricula for secondary schools.

Through these investigations, we identified nine key issues to be addressed by future-oriented science education. Furthermore, based on the findings of the studies, we propose a set of 14 recommendations to futurise science education. The recommendations aim to 1) address problematic issues and limitations in students' futures' thinking, 2) connect futures concepts with scientific and technological skills and knowledge, and 3) address related aspects of educational design and school culture.

Towards future-oriented science education

Issues

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research

findings





Future-oriented science education



Scientific literacy