FEDORA

Deliverable 2.4

Multimedia report - Intensive Creative workshop II on Futurisation

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FEDORA - Future-oriented Science EDucation to enhance Responsibility and engagement in the society of Acceleration and uncertainty
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Quality assurance

To ensure the quality and correctness of this deliverable, we implied an internal review and validation process. The deliverable was drafted by the work package leader (formicablu). All partners contributed to and reviewed the overall draft. Finally, the semi-final version was submitted to the project coordinator for a final review and validation.

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This deliverable contains original, unpublished work except where clearly indicated otherwise. It builds upon the experience of the team and related work published on this topic.
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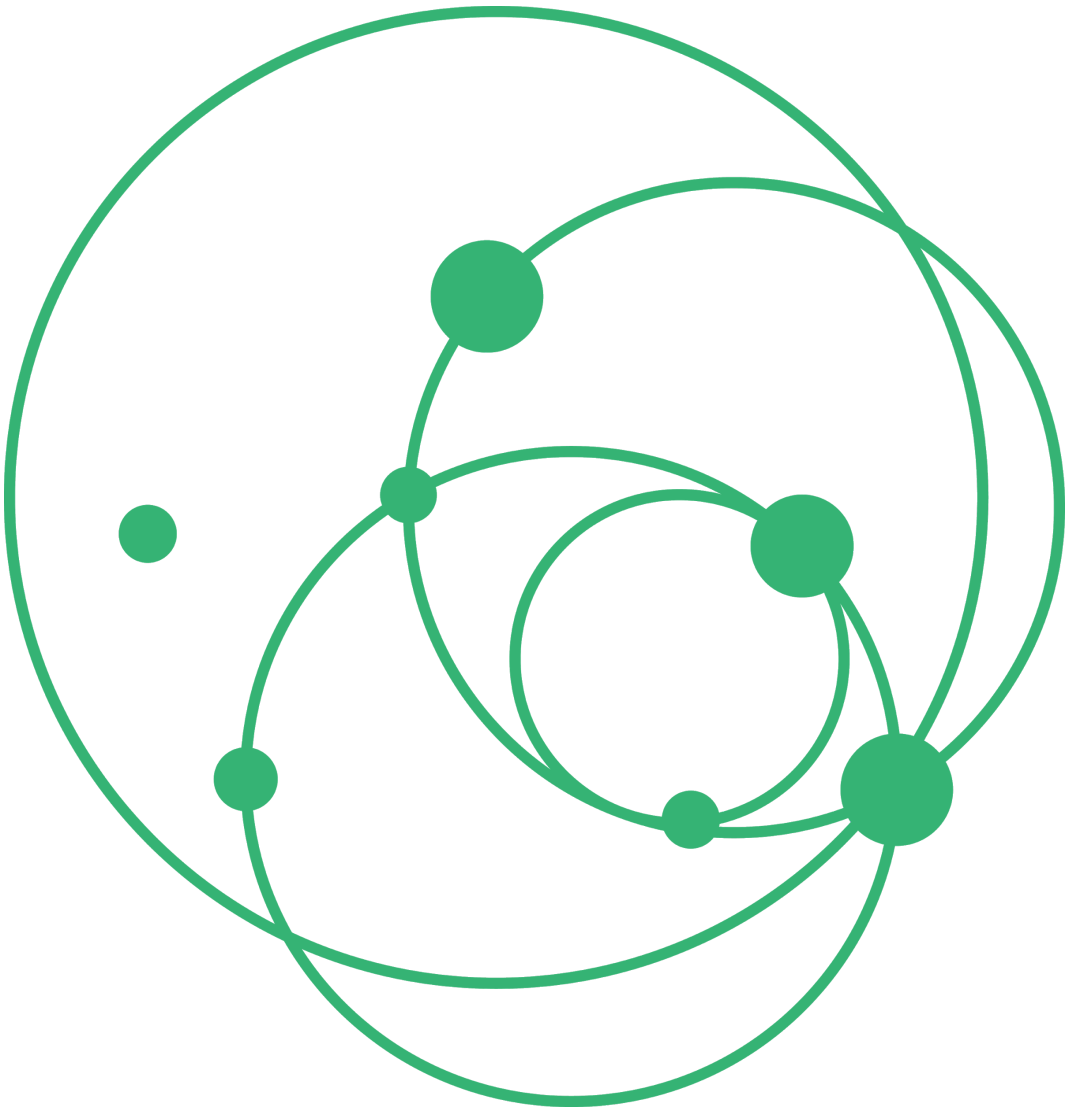

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1. Summary

Deliverable 2.4 “Multimedia report of Intensive Creative Workshop II on Futurisation” explains the way the second FEDORA Creative Workshop was designed, organised and performed. It will refer in some parts to Deliverable 2.3, due to their close connection. New languages and formats were part of the frame given to participants, enriched by the results from the First Creative Workshop and by presenting case studies coming from the benchmarking phase.

The workshop took place in Bologna, Italy, on the 21st and 22nd of April 2022, and gathered 9 experts from 4 European countries and 9 different knowledge and artistic fields. After 8 hours of intense work, the experts developed three prototypes that reflect the ethos of the FEDORA project and that could well be tested and tried in educational environments.

This document is the fourth deliverable of Work Package 2, “Exploring new languages, narratives and arts in science education - Analysis of Blindspot 2”, led by formicablu.

2. Introduction

FEDORA’s challenges are those of investigating, through research and co-creation, three blind spots in formal and informal science education. Firstly, science education is currently organised in vertical and hyper specialised disciplines that are inadequate to give young people the epistemic arguments needed to deal with the complexity of contemporary societal challenges. A second mismatch or blind spot has to do with formalised and exclusive school languages. There is a recognised need for new languages and formats to enhance imagination and the capacity to talk about those contemporary challenges and find ways to describe them, define them, and face them with creative solutions. Finally, a third challenge is envisaged in the distance between the atemporal or past-oriented teaching tradition and the need to support the present and next generations with the ability to construct a vision of their future that will lead to being active citizens in the present.

FEDORA’s WP2 works on blind spot 2, exploring and co-creating ideas and strategies to adopt new languages and formats in science education. This work is not solely inspired by the realm of science but by breeding scientific knowledge with literary, artistic, narrative, and visual approaches.

The most proficient way to discuss, define and collect insights, inspirations and ideas on how

to foster these new creative approaches in science education involves creators, artists, experts from different disciplines and fields in a co-creation session inspired by the design-derived methodologies. Due to the COVID19 situation and the difficulties in travelling, the II creative workshop had to be organised at a local level, involving only people from one place, Bologna. However, a nice variety of professionals participated in the 3-hrs workshop, and the discussions and co-creation sessions held many valuable insights. The contents and ideas yielded by the workshop are collected and discussed in D2.2 - First draft of recommendations on “new languages” for the design of materials. This D2.3 describes the workshop’s process, steps, and organisation in text, gif animation, and video clips shared through the project website and on social media.

3. Specific objectives and tasks

FEDORA WP2 addresses the following objectives:

- analyse new languages and forms of knowledge transmission that will be useful to enhance imagination and the capacity to talk about the contemporary challenges, to equip teachers, teacher trainers and their students with linguistic, argumentative and imaginative thinking skills needed to face current challenges;
- to experiment with innovative communication approaches to futurise science education, giving the youth a chance to perceive, imagine and ultimately envisage and thus shape the future.

More specifically, these objectives can be better defined as:

- detect, sample and analyse examples of contamination and cross the intersection of narratives about science and on science that use different epistemic approaches as well as a variety of languages, storytelling formats, registers and tools from the arts, music, photography, cinema and TV shows, graphic and written novels, fantasy and science fiction, design, theatre and so on;
- promote a common understanding of these alternatives, innovative, artistic and non-traditional languages and narratives within the consortium;
- foster and organise workshops to promote a lively and productive interchange among a range of professionals who inhabit these artistic and communicative territories;
- draft a series of raw prototypes to be used in innovative informal and formal science communication contests, such as the educational ones

One of the key tasks of WP2 is the organisation of two creative workshops involving an array of very diverse experts, creators, professionals and trainers and students to co-create leads for the development of recommendations for education professionals and policymakers. Furthermore, WP2 will lead to the prototyping of ideas to be exploited in the educational environment to foster inter and transdisciplinarity. These ideas should help young people to develop argumentative and epistemic arguments to deal with the complexity and acceleration characterising the present times. They will also empower them to develop strategies and take action on their future, either as individuals or as members of a community

4. The organisation of the workshop

The organisation of the II FEDORA Creative Workshop was possible as originally planned: a 2-half-days event to be held in Bologna, with the participation of experts, creative professionals and mentors from different countries and disciplines.

The leading team contacted and invited 10 European experts, which agreed to meet in formicablu studio. Each of the invitees received the following letter of invitation:

II CREATIVE WORKSHOP

A creative gathering to prototype new languages and formats for teaching and communicating science today to secondary students, in formal and non-formal spaces.

Date: Thursday 21 April, Friday 22nd April 2022

Time: 2.30 pm CET on Thursday, closing at 1:30 pm CET on Friday

Place: formicablu headquarters, via Nazario Sauro 2, Bologna, Italy

Dear -NAME OF THE INVITEE-

On behalf of Olivia Levrini, Project Coordinator from the University of Bologna, Elisabetta Tola, formicablu founder and workshop organiser, and the FEDORA Consortium, we would like to warmly thank you for accepting our invitation to the

2nd FEDORA Creative Workshop, which will take place next week.

During the two half-days, we will dialogue, play, reflect and prototype new ways of including notions of the future into non-formal science education and science communication. With the support of design thinking and agile methodologies, we will explore and prototype possibilities that can later be brought to educational settings.

It will be a gathering of people from different backgrounds, and this is the main richness of this encounter. Artists, philosophers, scientists, researchers, communicators, poets and journalists from different disciplinary fields will participate in a prototyping process to develop proposals that can regenerate the ecosystem of science education. The workshop will focus on the futurization of science education. It will use design thinking and agile methodologies to quickly produce prototypes of suggested modules, tools and approaches to bring back the dimension of the future in science education.

We will build upon the results of the 1st Creative Workshop, which are documented here. You can also read other related documents produced by our partners here. Our outcomes should support the development of creative thinking and the ability to look into the future. These skills are now essential for students who have to move and orient themselves in the complexity of the present.

This workshop is part of a pathway within the project dedicated to the identification of new formats and languages, and it's the second of a series of meetings to be held nationally and internationally to gather stimuli and suggestions that will serve to produce recommendations to be provided at a European level.

We cannot continue to move in the complexity of the present, following the "maps" we´ve used so far. We must use the power of our imagination and exercise it to approach the way we think about our systems, territories and ways of doing things in a different way. Imagination is the driving force that will lead us towards identifying new paths and methods to renew the approach to science teaching in schools and other learning contexts, intensifying those approaches that will lead to a collaborative, imaginative and curious way of doing and thinking.

The FEDORA project will produce concrete proposals to provide teachers with indications and suggestions for enriching teaching by working on three major themes:

1) Address the complexity of the present by moving from the vertical and compartmentalised approach of the disciplines to the inter-multi and transdisciplinary vision that make research and science open and collaborative spaces

2) Identify new languages and formats to enhance the imagination and cultivate the ability to face contemporary challenges

3) Support young people in building a vision of the future through actions to be carried out in the present.

FEDORA owes its name to one of Italo Calvino's "invisible cities" to recall the role of imagination in the creation of new worlds. We look forward to welcoming you to Bologna, and once again, thanks so much for being part of this!

formicablu Team

5. The place - why, where and when

The workshop was held on the afternoon of Thursday, April 21st from 13:00 till 18:00, with a social dinner at 20:00 and Friday, April 22nd, from 9:30 till 13:30 pm.

Invitees flew in from England, Scotland, Latvia, and Lithuania, or came by train from different northern Italian cities.

It took place at formicablu studio, in the city centre of Bologna. The studio has a meeting room and several offices that were suitable for having the participants working in the best environment for a creative and focused mission.

6. Agenda of the workshop

II CREATIVE WORKSHOP

A creative gathering to prototype new languages and formats for teaching and communicating science today to secondary students, in formal and non-formal spaces.

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Day 1

2:30-2:40	**Welcoming words and who's in the room?**
2:40-2:50	**Introduction to FEDORA**
2:50 - 3.00	**Why are we here?**
3:00-3:05	**Story reading** From the Telephone tales, Gianni Rodari: The country with a UN in
3:05-3:20	**Showcasing inspirational material** -Manifesti -Poetry in space: https://www.uptothecosmos.com/ -Bordersessions: the festival
3:20-3:25	Conceptual Posters
3:25-3:35	Break
3:35–3:40	Video Kerstin Lepore: Natural History Museum
3:40 - 4:25	Phase 1 - Entering the creative zone Using design thinking they will start producing a prototype through practical steps: - Problem Letter arrived - Define in depth your persona How might we convert the problem in an opportunity by: - Choosing the dimension of the problem you want to deal with

	- Choose the skills you want to enable
4:25 -4:35	Pause
4:35-5:15	Phase 2 - Ideation Brainstorming about each kind of prototype the want to produce
5:15 - 5:25	Break
5:25-6:00	Cluster and select ideas
6:00-6:30	Presentation of ideas, discussion and end of day 1
20:00	Social dinner we will meet in front of the office

Day 2

9:30-9:45	**Welcoming words and presentation of the morning programme** Groups will reconsider their choice
9:45 - 10:30	Work in Groups - Phase 1: IMPLEMENTATION Describe step by step the prototype, the mechanic of your idea
10:30 - 10:45	Coffee break
10:45 - 11:30	Sharing and open clinic session
11:30 - 11:40	Coffee break
11.40 - 12:30	Finalise your prototype
12:30 - 13.30	Final sharing and discussion

7. The people - who, what and why

We looked for a wide range of diverse skills, creative experiences and expertise from the arts and the research world with a focus on school education.

Martha	Fabbri	Degree in Physics /Master in Science Communication, Executive MBA / Scientific education publishing expert (formerly Head of Science and Maths branch at Mondadori Education) / Currently head of Centre of Studies at Altroconsumo. https://www.linkedin.com/in/marthafabbri/
Egle	Butkeviciene	Full professor in Sociology. https://www.linkedin.com/in/eglebutkeviciene/
Sam	Illingworth	Associate Professor - Science Communication, Poetry, Games, Pedagogy, Interdisciplinary Studies. https://www.samillingworth.com/
Jelle	de Schrijver	Assistant professor - didactics of philosophy and history. Studies: biology & philosophy. Research focus: science education, dialogue, museum education, philosophy with children, nature of science. https://www.linkedin.com/in/jelledeschrijver/
Damian	Hebron	Dialogue Manager at Wellcome Connecting Science; Experienced leader, facilitator and co-ordinator with extensive expertise in health, arts, community engagement, innovation, and communications.
Baiba	Pruse	Research Fellow, ethnobotany, citizen science, ethnobiology, participatory work. More info: https://www.linkedin.com/in/baiba-pruse-0546b066/
Erica	Villa	Ex-Head of Communication and Public Engagement e Head of Programming of Science Gallery Venice, today she is a curator of projects and art-science exhibitions and coordinates the Erasmus+ project at Ca' Foscari for residential experiences for arts and science for young professionals and students ScArt.
Carlo	Maver	Musician, bandoneon player, organiser of cultural events in Italy and in many other countries, such as Argentina, Ethiopia, Turkey, Afghanistan and more. He is also the curator of the special music and Environmental Festival on the Apennines since 2009.

Federica	Arenare	PhD student in philosophy of science, curator of the Open The Box project focused on data literacy for secondary schools, with dozens of workshops already done with teachers and students in different Italian cities; digital educator and inclusive content editor.
Alice	Corona	Expert in Communication and Information Sciences, Data journalist; creator of stories with data and with visualisations; data literacy trainer; founder of BatJo project on data physicalization.

The formicablu team, which led the activities and facilitated the entire journey, was composed of Elisabetta Tola, Francesca Conti and Andrea Troncoso. Jelle de Schriver was coming from Belgium. Unfortunately, he tested positive for COVID-19 and wasn't able to travel.

8. Development of the workshop: introduction to some concepts and the problems to be solved via prototype creation

The workshop started by briefly presenting the project and the main aim of WP2, which is focused on using innovative languages in science education. After this introduction, several examples and cases - discovered during the benchmarking phase- were presented and the creative phase of the session was opened by reading an inspiring story, written by Gianni Rodari. All participants were divided into three groups and each of them received a problem to be solved, based on the current situations that young students face. Each group was also given two sheets with a summary of "The Future thinking skills" and "Stimulating engagement and critical thinking around the future and the role of science in it: the characteristics of a good activity or prototype".

- **Future thinking skills**

➔ Take intellectual risks;

➔ Accept lack of closure;

➔ Embrace ambiguity;

➔ Be out of your comfort zone;

➔ Recognize otherness as a source of knowledge and competencies;

➔ Accept that all the required knowledge and competencies cannot be held individual;

➔ Accept that the process of interaction is slower than usual;

➔ Manage a particular kind of tension that we call "equilibrium between sense-making skill (systems, critical, analytical thinking) and strange-making skills (creative, imaginative anticipative thinking)."

- **Stimulating engagement and critical thinking around the future and the role of science in it.**

What makes a good activity prototype or material?

- ☐ A good activity provides clear instructions and expectations.
- ☐ A good activity builds on the student's own experience and knowledge (Constructivism Piaget, Vigotsky, Dewe, Montessori)
- ☐ A good activity relates clearly to a future-related topic and/or a scientific topic
- ☐ A good activity will encourage learners to engage with the scientific question/research/method/product/service
- ☐ A good activity relates clearly to the overall theme or lesson goal
- ☐ A good activity gives your students time to think
- ☐ A good activity is one that is open-ended enough to allow for divergent outcomes.
- ☐ A good activity is one that causes surprises, that relates to the unknown

The goal of educators should be to facilitate a culture of thinking in which students feel empowered to develop original ideas and come to their own conclusions.
(Adapted from MOMA's Art education programme)

- The problems

Problem 01

My name is Mattia, I am 15 years old.

My life is full of friends and people I interact with at school, doing sports, walking around town, and at the comic shop. I have tons of friends online and offline. I cannot even conceive my life without my devices.

I use my phone to do everything: to read my manga, chat with my friends, watch videos, see the homework I have to do, agree on where and when I have to meet people, to discuss with others the things I do. I spend hours on my phone and at my computer every day, some of them

playing video games with other people from all over the world.

Now, the cost of energy is going up and my parents and teachers keep telling us we have to be aware of our energy consumption. We are also told that we have to curb our energy needs since we have to curb carbon emissions. And that we should be very careful to save energy and not depend on our devices so much.

But in my mind, the future is an even more hyperconnected one.

So, how are we going to keep growing and being connected without destroying the planet?

Problem 02

My name is Sara, I am 17 years old.

I have taken part in the Fridays for future movement from the beginning. And yet, I am growing more and more anxious about our real ability to deal with the climate crisis.

I wake up during the night thinking that my hometown could easily be destroyed by a wildfire or by a hurricane. The scientific reports tell us we have no time left and judging from the news there are already many places where life has become difficult because of the heat, drought or flooding. I see that the governments are doing too little to stop the emissions and find solutions.

The Covid-19 pandemic has even worsened the situation since for two years everyone was dealing with the virus and left climate change on the side.

How are we going to solve this problem? Is there going to be a future for me and my friends?

Problem 03

My name is Shambrin, I am 18.

I come from South Africa and I have been living in Italy since when I was 10.

In the country I come from people have been dying of Aids and malaria and many other diseases that do not yet have a treatment or a vaccine. These diseases are rarely killing someone in Italy or in Europe.

The Covid pandemic has shown us that when there is an emergency scientists can find a solution very quickly if they work together. We got a Covid vaccine in less than 1 year!

So, why is it that diseases affecting millions of people in African countries, or in Asia or even South America still do not have any answer? These are also the countries facing the worst environmental consequences of climate change or of deforestation.

How can we look forward to a world where science cares only for the rich people?

9. The creative prototyping job

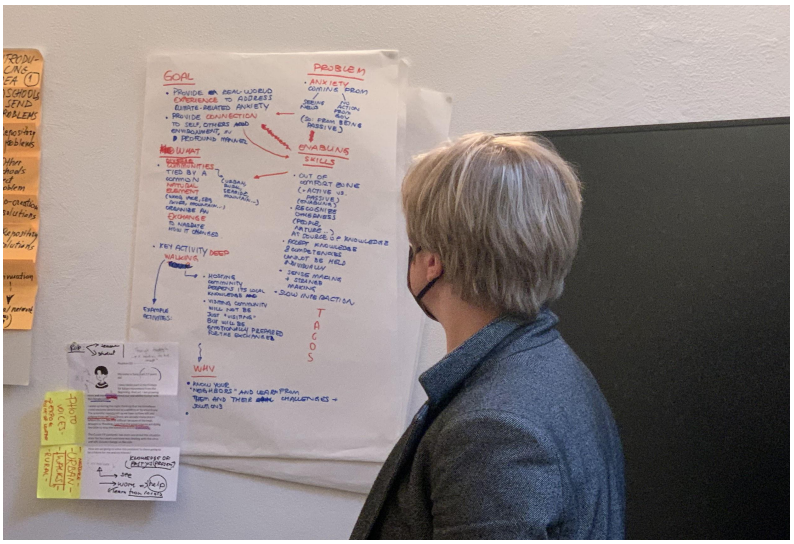
Each group worked in different phases, which considered a time for ideation, divergent and convergent thinking, intermediate round tables, refinement of the ideas, and shaping and prototyping of the final products, be it a methodology, a game, or an activity, etc…

It was intended to be a "mixing" exercise, where all the different skills of our invitees (poets, musicians, scientists, art mediators, and engagement experts) came together and intertwine in the prototyping process. Interdisciplinarity was stressed during the first workshop and futurisation during this second one.

After the two-half-days, each of the groups developed the following prototypes:

- Group 1 developed a prototype called "Data visualisation for social justice"

- Group 2 developed a prototype called "Deep Walking"



- Group 3 developed a prototype called “Students for Civic Science”

This deliverable is accompanied by three videos that show the journey of this second creative gathering. They can be seen on formicablu’s YouTube channel and in the following links:

Video 1: Setting the scene

Video 2: The creative job

Video 3: Shaping and sharing the prototypes

A detailed description of each prototype and their possible application as a testing phase in educational contexts will be presented in Deliverable D2.5 due in October 2022.