GreenSCENT project and Sustainable Interaction Design: exploring inclusive sustainability education

Gian Andrea Giacobone & Alessandro Pollini
International Telematic University Uninettuno

Digital Life, Tech Consumption & Sustainability

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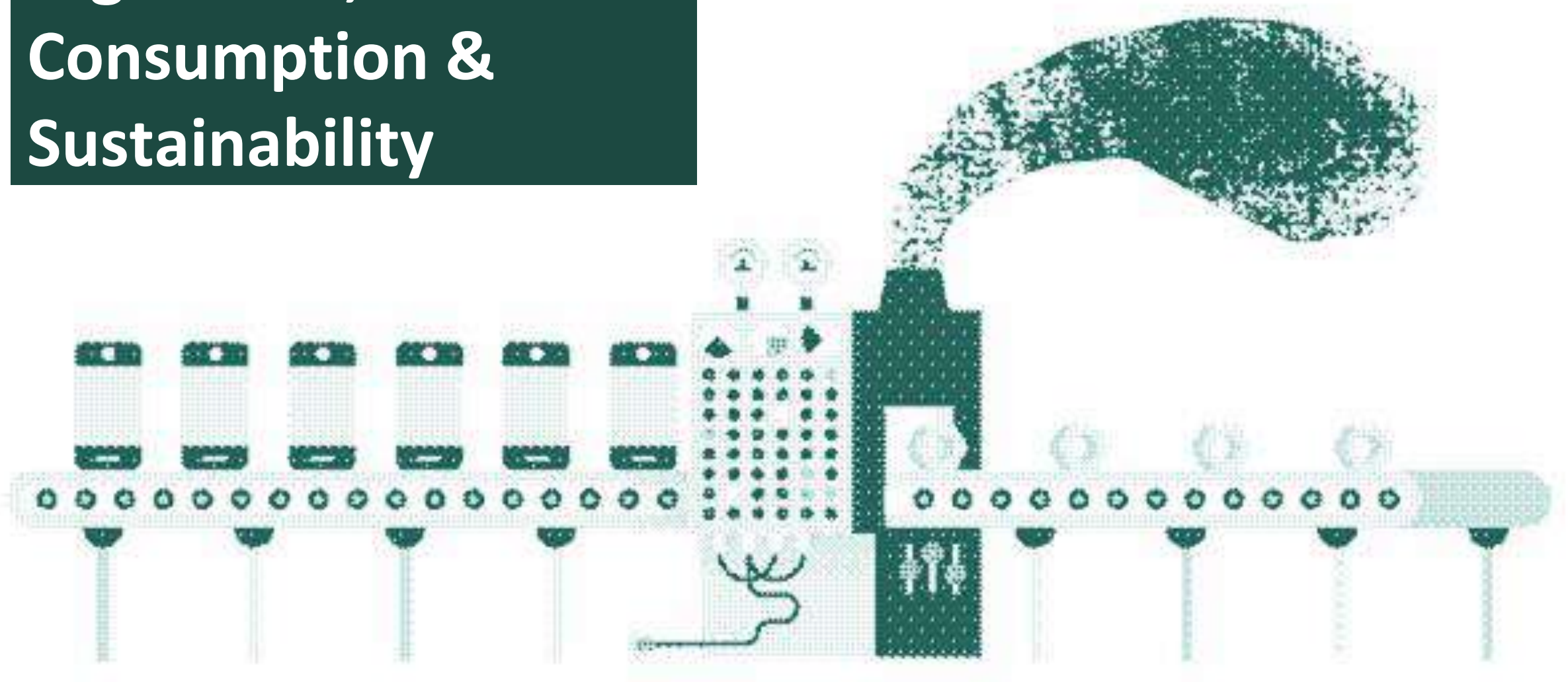
In the current transition towards a world increasingly **dependent on technology**, the solutions identified do not take into account the environmental and the social impacts generated. Some phenomena exacerbated its widespread use in the high digital density scenarios we are living in: **we are increasing our digital hunger** and the demand for increasingly satisfying and interactive experiences has come at a cost.

Monteiro, 2019

GREEN SCENT
SMART CITIZEN EDUCATION FOR A GREEN FUTURE

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GDA
Green Digital Accessibility

The Current Scenario

Digital Pollution

Information overload, media pollution and data waste: every action on the internet, **generates a small amount of CO2** due to the energy needed to power devices and networks.

Low Awareness

Mass bystanders effect: most are aware of the climate and ecological crisis but few are available/interested to change behaviour.

Digital divide

Marginalized people are excluded from accessing information and detached from sustainability culture, social processes and transformation towards the green transition.

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Education for Sustainable Futures

Integrated and holistic approach to sustainability education

Problem solving, critical and system thinking, ethical action competence.

Accessible and inclusive technology-enhanced learning experiences

Studying complex societal, cognitive and interactional aspects. Participatory, critical and experimental design research.

Fostering social and individual change

Knowledge skills attitudes for the interpretation of the world as made up of *complex human - technology - environment assemblages.*

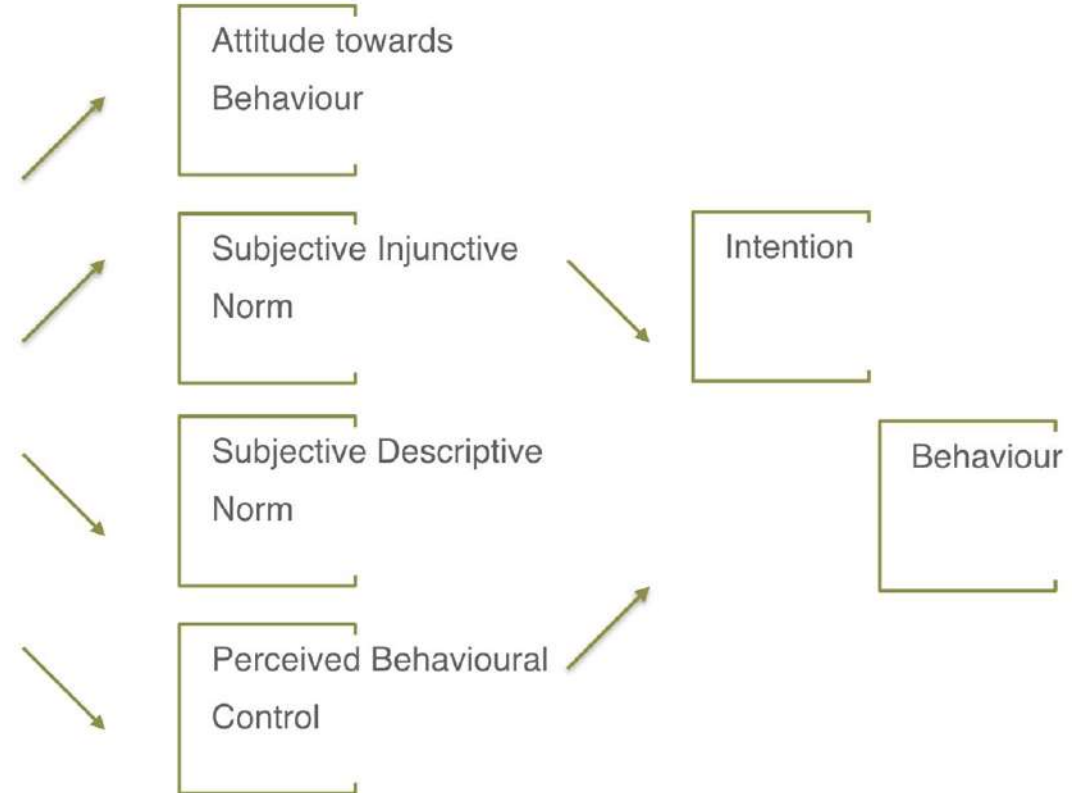# Education for Sustainable Futures

Designing interventions
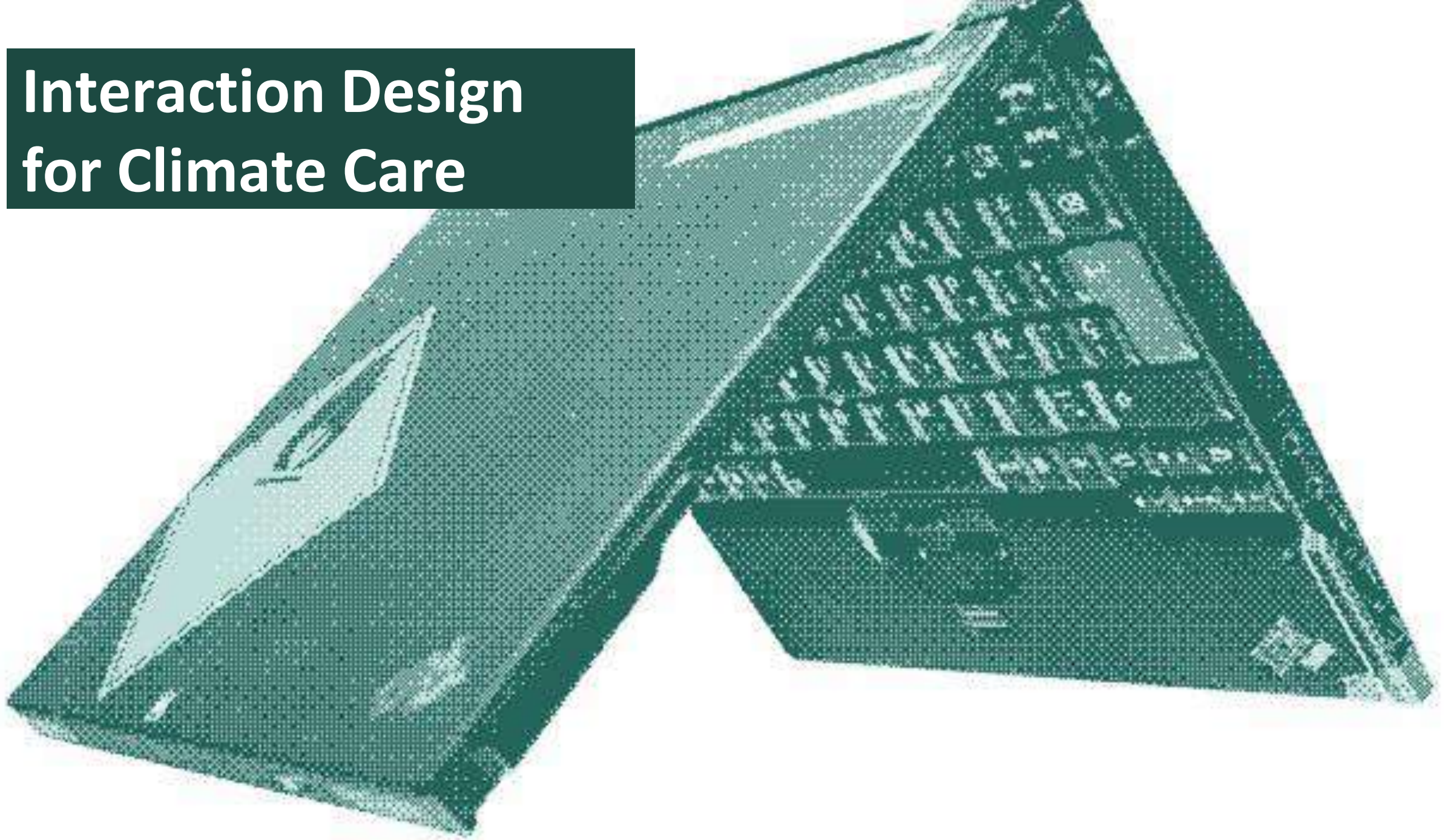Knowledge
Pro-environmental behaviour
competence
Training and education
Culture

Background information
Individual factors
value, gender,..
Age, experience…
Knowledge..
Contextual factors
Accessibility, inclusion
Education

Attitude towards Behaviour

Subjective Injunctive Norm

Subjective Descriptive Norm

Perceived Behavioural Control

Intention

Behaviour

Interaction Design
for Climate Care

Interaction Design & Sustainability

Anthropocentric view

Traditional binaries such as culture/nature and human/non-human.
Engineering "needs and requirements" follow from cognitive models of "users.

Sustainable view

Considering the entanglements between human and non-human worlds.d
Designing interaction concerning for human conditions, particular or global.

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It is important to view interaction design as broader than our direct interfaces with machinery and regard it as a **cultural phenomenon**. What we face in pursuit of material progress can only be unmade if our goals globally **turn to regeneration and care**. We need to design the interactions to carry that change forward.

Ann Light, 2022

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Sustainable Interaction Design

Sustainability through Design explores how to support sustainable lifestyles and decision-making through the design of technology.
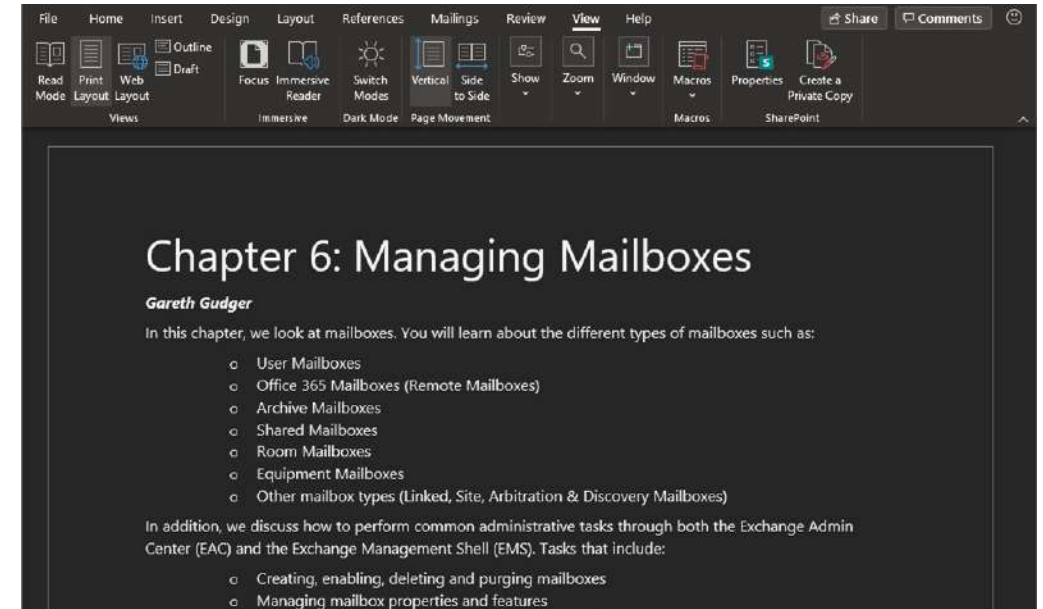
Sustainability in Design investigates how sustainability can be used as a critical lens to reduce the negative impact of interactive technologies themselves.
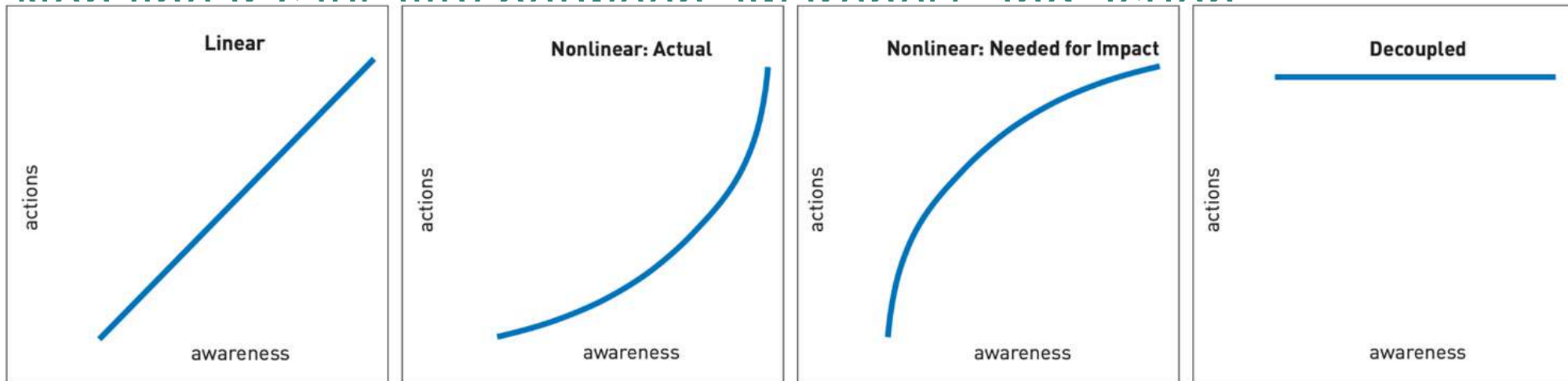
Sustainable Interaction Design

2007 interactive technologies for promoting sustainable behaviours

2011 experimental design-driven and human-centred discipline for motivating behavioural change

2022 **intersectional and multidisciplinary perspective** where design pedagogy, experiential and reflective technology-enhanced learning, cognitive science, ethical decision making and empathy, inclusive design and accessibility merge as interwoven strands of a coherent path towards sustainable and smart futures.

Limitation of Awareness

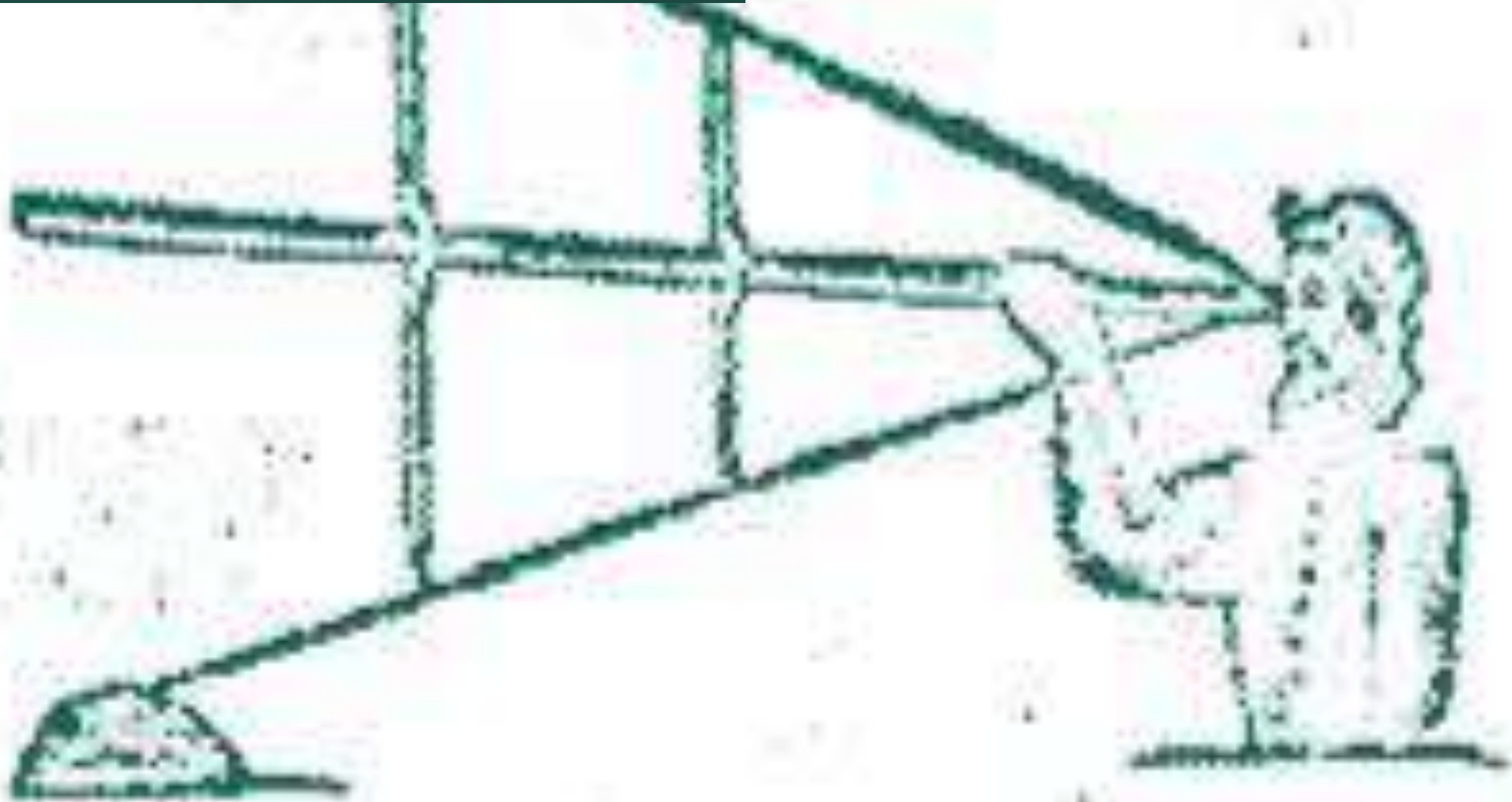Non linear causality between awareness and action

Linear

actions

awareness

Ideal

Nonlinear: Actual

actions

awareness

Actual

Nonlinear: Needed for Impact

actions

awareness

Behavioral change

Decoupled

actions

awareness

Design automation

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Experimental Design Research

Experimental Design Research

User Panels

School communities

Network of institutions

Local Level

Qualitative & Quantitative

National Level

Quantitative

EU Level

Quantitative

User Panels

Methodology

Direct Interviews

Focus Groups

Co-Design Sessions

Workshops

Greece

Serbia

Design intervention

-Encourage young people to become involved

-Develop effective educational approaches and materials

Design challenge based learning

Co-Design sessions

1. **Future Sustainability Education**
   1. Educational Challenges**:** Problem Setting - Problem Solving

1. **Exploring Educational Frameworks: Interactive Documentary**
   1. Exploring educational challenges by collecting evidences
   2. Defining the contents and the narrative
   3. Prototyping the contents

Educational Challenges

Some common issues

- Sustainability not in the official educational curriculum
- Teachers have not time for teaching sustainability
- There is a lack of tools, equipment and technology to measure the effect of climate change
- Limited evidence-based learning experiences
- Discontinuity of the student's behaviour at school and at home (conservatism)
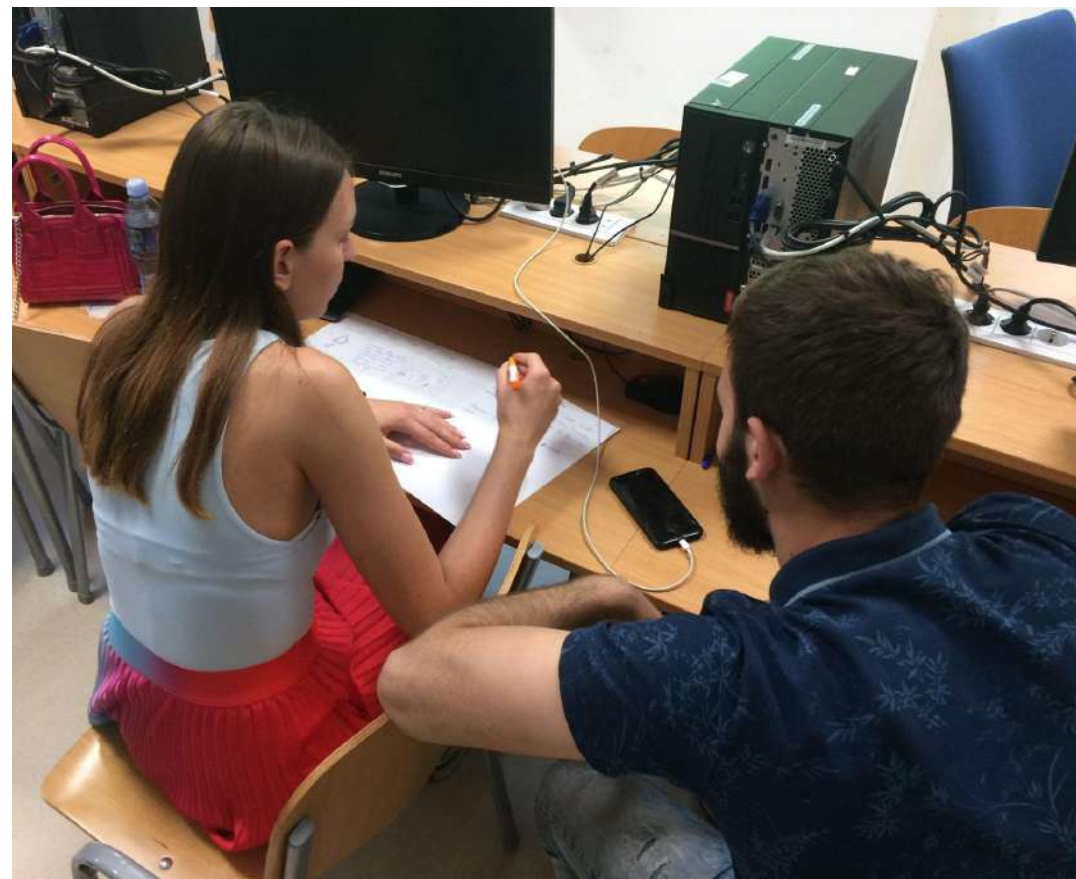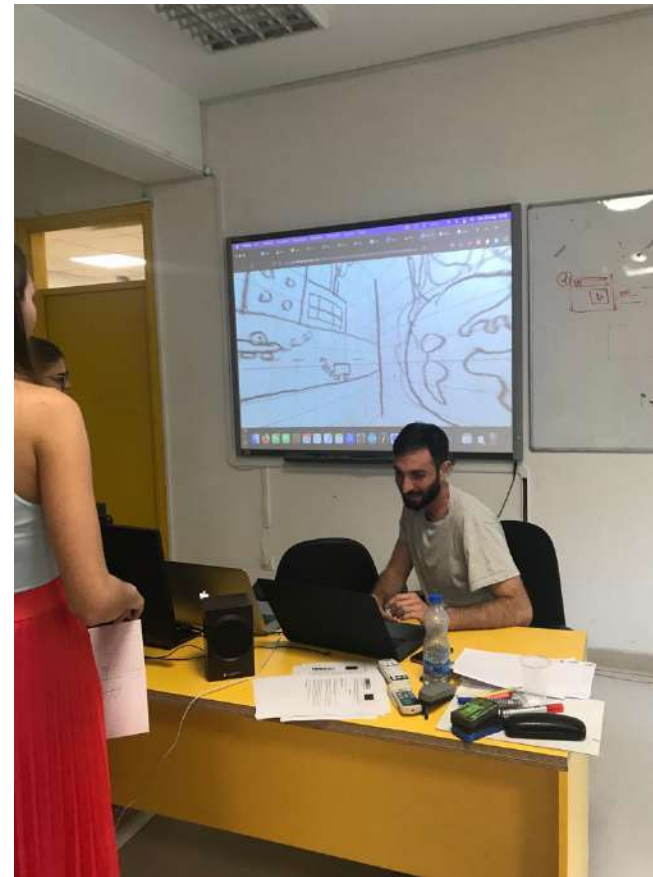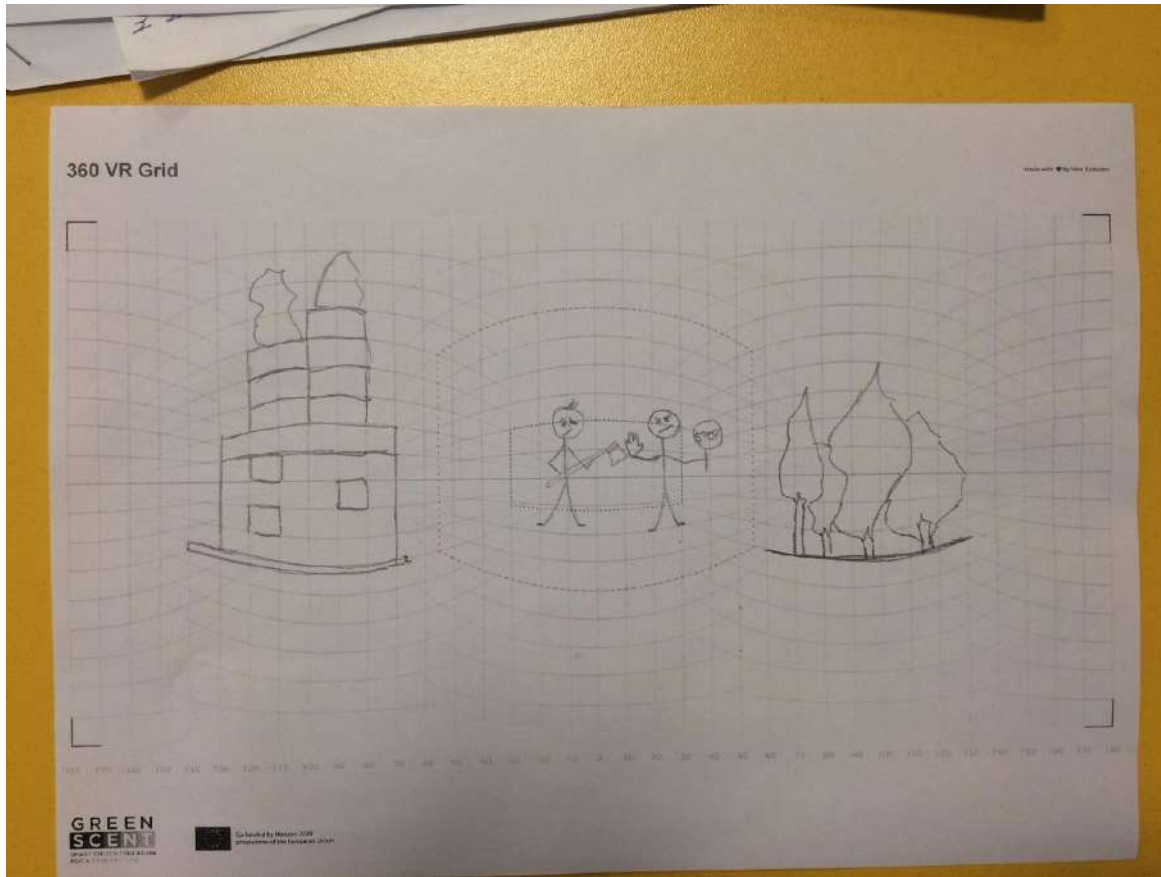
Educational Challenges - Greece

Educational Challenges - Greece
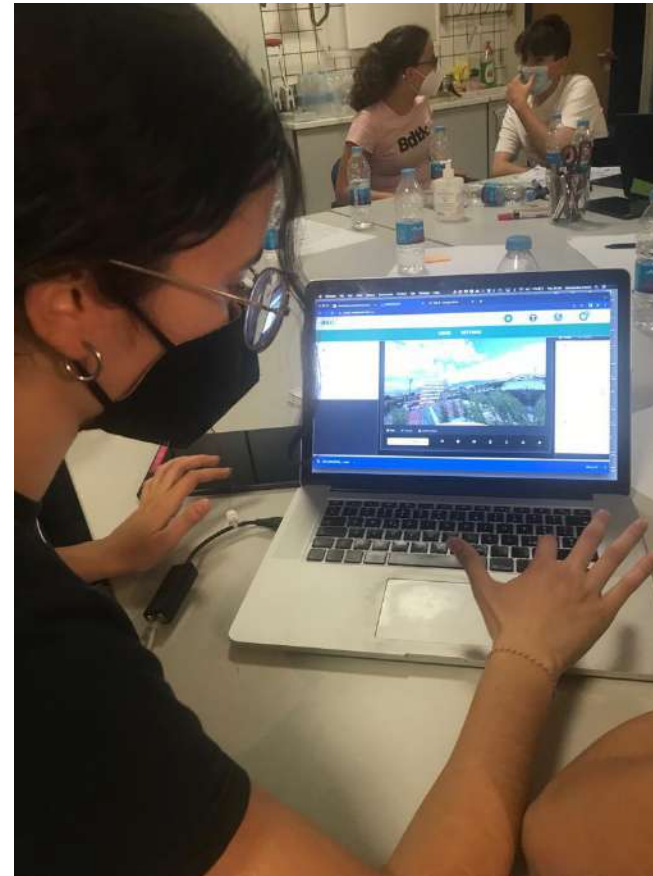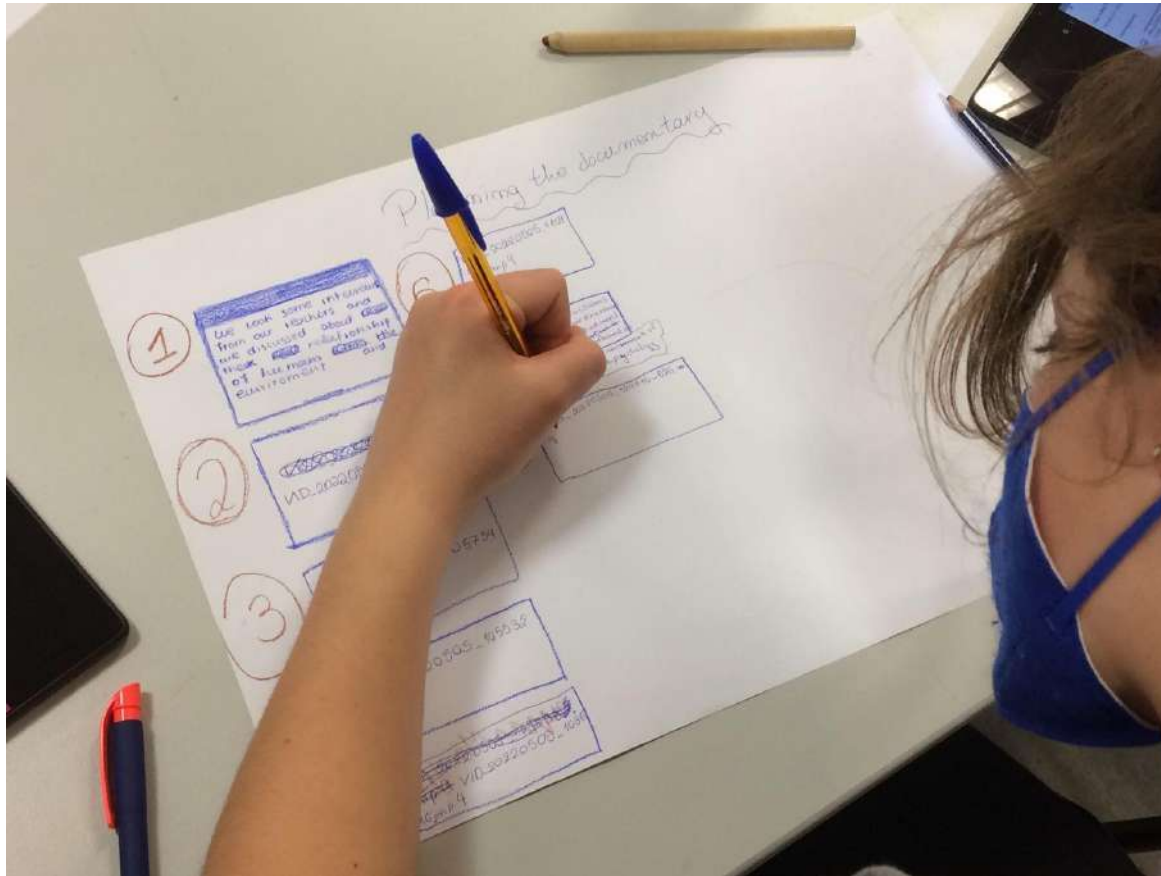
Educational Challenges - Serbia

Educational Challenges - Serbia

Results and Discussion

Focusing on teachers

- Competence enhancement
- Easy to learn
- Easy to use

User Engagement

- Learning-by-doing
- Long-lasting education
- Gamification

Results and Discussion

Empathy

- Personal health perception
- Personal direct experiences
- Sense of belonging

Make visible the invisible

- Anticipation of actions
- Comparison
- Clear explanation
- First-person experiences

Results and Discussion

Scalability & universability

- Online augmented experiences
- In-local basic digital experiences
- Material experiences (paper-based solutions)

Make visible the invisible

- Pan & zoom 2d images
- Panoramic navigation (spherical)
- Walk through (3D navigation on the 3 axes)

The end. Thank you for your attention!

International Telematic University Uninettuno

Gian Andrea Giacobone
gianandrea.giacobone@uninettunouniversity.net

Alessandro Pollini
alessandro.pollini@uninettunouniversity.net