

## SCIENCE WEEK 2025

# Hugging Polar Bears: Sparking Empathy for the Arctic Through Virtual Reality

## INTRODUCTION

Science communication can go beyond traditional lectures by offering hands-on learning that links facts, emotions, and decision-making in impactful ways. During last year's Utrecht Science Week, families and children of all ages gathered for a virtual reality (VR) journey through Arctic landscapes and ecosystems. Immersed in vivid scenes of icy terrain and wildlife, participants experienced the fragile beauty of this remote region secondhand.

By combining immersive exploration with personal reflection, the session encouraged participants to engage more deeply, feel emotionally connected, and think about real actions they could take for the Arctic conservation. This report showcases how virtual reality can be used in environmental education and behavioural science, showing how immersive learning can move audiences from awareness to meaningful action. It also demonstrates how science communication can go beyond traditional lectures by offering hands-on learning that links facts, emotions, and decision-making in impactful ways.

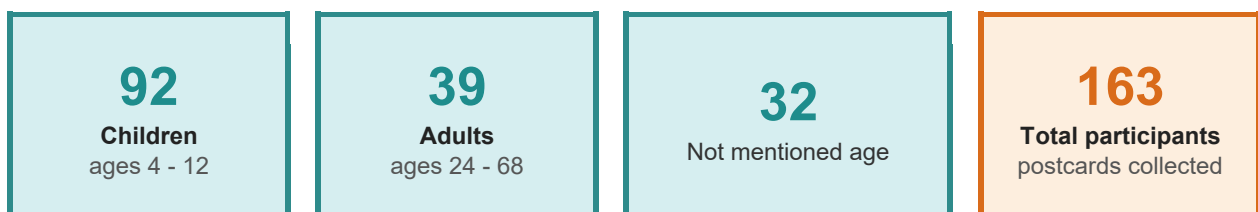
## THE EXPERIENCE

### A Journey to the Arctic

Following the immersive experience, attendees were invited to take part in a short reflective survey, structured around three open-ended questions:

- A) Right now, I feel...
- B) I hope that...
- C) This is what I want to do to help care for the Arctic...

Here's what 163 postcards revealed about how immersive experience can move people to care, and re-think of our planet.



## EVALUATION AND INSIGHTS

### HOW DID PEOPLE FEEL?

#### Happiness, excitement, and a quiet undercurrent of worry

The first question: 'Right now, I feel...' produced 142 usable responses. The results reveal a predominantly positive emotional landscape, but one with important nuances depending on age.

Emotional category	Responses	Example words
Positive	115	happy, good, excited, enthusiastic, inspired, proud, amazed
Negative	22	sad, worried, concerned, shocked, bad, guilty, uncomfortable
Mixed / Neutral	5	inspired and worried, full of mixed emotions, happy and sad
<b>TOTAL</b>	<b>142</b>	<b>18 responses excluded · 3 missing</b>

**"I feel inspired and worried": the two emotions that best capture what great environmental communication should achieve.**

#### Children vs. Adults: Two very different journeys

The most striking finding from Question A is the contrast between age groups. Children (ages 4-12) responded with near, universal positivity: happiness, excitement, a sense of wonder. For them, the Arctic was an adventure.

Adults (ages 24-68) showed a more divided picture. Alongside positive emotions, a clear cluster of negative feelings appeared: sadness, worry, concern, and most notably, guilt. The word 'guilty' appears only in the adult responses, and it carries particular weight: it is the only emotion in the entire dataset that implies felt personal responsibility for Arctic degradation.



The word cloud reflects participants' emotional responses to the VR Arctic experience.

**"Guilty": the only word in the dataset that implies personal responsibility. It appeared only among adults.**

Mixed responses such as 'inspired and worried' or 'full of mixed emotions, a bit sad' appeared almost exclusively in the adult group. Far from being a failure of the experience, these represent its deepest success: adults holding the beauty and the threat of the Arctic at the same time.

The contrast between children's near-universal positivity and adults' more divided emotional response reflects a contextual difference in how the two groups process the same experience. Children receive the VR as an exciting journey; adults receive it as an urgent reminder. Both responses are valid and both are valuable, but they suggest the experience is doing fundamentally different work for different audiences. For children, it builds emotional connection and wonder. For adults, it activates conscience and concern.

## WHAT DID PEOPLE HOPE FOR?

### Ice, polar bears, and a second trip through the headset

Question B: 'I hope that...' generated 145 categorised responses across six themes. The results paint a revealing picture of what participants walked away caring about most.

Theme	Total	Children	Adults	Age Unknown
Desire to visit the Arctic	13	10	3	0
Desire to re-visit the VR	22	19	0	3
Polar bear well-being	20	19	1	0
Arctic conditions (ice, cold)	40	18	13	9

Environmental hopes	25	13	4	8
Broader hope / human agency	25	0	16	9

### Children: empathy before agency

Younger participants dominated two themes: the desire to re-visit the VR experience and concern for polar bear well-being. Both reflect an immediate, personal emotional response, the experience was meaningful, the animal mattered. Their hopes were largely passive in nature, expressing desired outcomes rather than personal commitments, which is developmentally consistent for this age group.

Children at this stage naturally express care through emotional connection before translating it into a sense of personal responsibility. The VR experience succeeded in building that emotional foundation, which is a valuable and necessary first step.

### Adults: From awareness to agency

Adult participants are the only group where active human agency appears as a dominant pattern, concentrated in the Broader hope/inspiration theme. Responses such as *'we as humanity must make the switch'* or *'together we can reverse the climate'* acknowledge that humans are the cause and the solution.

Yet even among adults, passive responses account for nearly half of all answers, and true first-person commitment, *'I will do something specific'*, remains rare, suggesting that even among more reflective participants, the shift from awareness to personal commitment is gradual rather than immediate.

**"The ice not melting, the North Pole staying, the polar bear living on": participants left with a genuine connection to a real place and its inhabitants.**

## WHAT DID PEOPLE PROMISE TO DO?

### From Hugging Polar Bears to Voting Green

The third question: 'This is what I want to do to help care for the Arctic', produced the richest and most varied responses. Analysed thematically, they reveal how differently children and adults translate environmental emotion into intended action.

### Children (Ages 4-12): Imagination as a form of Care

Children's responses fell into five main clusters: sustainable living, animal protection, knowledge and learning, care for nature, and uniquely, imagination.

The sustainable living theme showed remarkable specificity: 'keep the heating on for less time', 'use the car less for the polar bears', 'take shorter warm showers'. Children were connecting individual habits directly to Arctic outcomes, often with the polar bear as the explicit motivation.

Animal protection responses were the most emotionally charged. Children wanted to hug polar bears, feed them fish, and personally ensure they had enough to eat. The polar bear became a character they felt responsible for a direct product of the VR experience's power to create felt personal connection.

**"Shoot the sun." "Make more ice at the North Pole." "Remove heat with a heat machine.": Not failures of understanding, but creativity applied to a problem children genuinely care about.**

The most distinctive feature of the children's dataset is its imaginative dimension. Fantasy solutions such as 'shoot the sun' or 'make more ice with a heat machine' are not signs of misunderstanding they are creative problem, solving in action. These responses reveal both environmental awareness and the cognitive freedom children bring to real problems.

Even responses like 'I can't do anything, but I'll try to pay more attention' reflect sophisticated emotional intelligence, children honestly grappling with the gap between concern and capacity.

### **Adults (Ages 24-68): Practical, Systemic, Outward, Looking**

Adults showed a more structured, behaviour, specific response pattern. Their commitments covered four major areas: sustainable living (transport, consumption, waste), personal environmental care, political engagement, and encouraging others.

Political engagement was a theme unique to adults. Responses such as 'vote GreenLeft', 'be a member of Greenpeace', and 'donate to WWF' reflect an understanding that climate change is a systemic problem requiring systemic solutions, not just lifestyle adjustments.

Several adults expressed a desire to influence others: inspiring, encouraging, passing the message along, teaching their children. This outward orientation distinguishes adults from children, who focused almost exclusively on their own actions or wishes. Adults see themselves not just as individuals, but as citizens and advocates.

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## **WHAT THIS TELLS US**

### **Active ingredients of VR Science Communication**

Our findings demonstrate how immersive learning can move audiences from awareness toward care and intention using a "feel, reflect, act" approach. VR can be tailored to different cognitive and emotional levels:

For Children	For Adults
<ul style="list-style-type: none"> <li>Builds emotional connection and wonder</li> <li>Makes abstract issues concrete</li> <li>Sparks imagination and creative thinking</li> <li>Lays the emotional foundation for future agency</li> </ul>	<ul style="list-style-type: none"> <li>Activates conscience and a sense of urgency</li> <li>Translates emotion into specific behaviours</li> <li>Encourages civic and political engagement</li> <li>Inspires outward responsibility to others and future generations</li> </ul>

### How VR Works for Children:

- **Boosting emotions & empathy:** Amplifies emotional engagement by creating a sense of physical presence. Immersive visuals trigger empathetic concern for animals.
- **Connection to nature:** Overcomes psychological distance, making a far-away place a lived experience.
- **Encouraging Imagination:** Triggers an early form of systems thinking ("imaginative care") where children explore creative ways to "fix" what they emotionally experienced.

### How VR Works for Adults:

- **Creating emotional Impact:** Makes vulnerability feel more immediate and personal, creating an emotional tension (concern mixed with cautious optimism) that motivates proactive behavior.
- **Climate responsibility:** Fosters an understanding of intergenerational responsibility and the need to influence community norms.
- **Political engagement & trust in science:** Encourages participants to see themselves as citizens and advocates, supporting evidence-based solutions.

## MEASURING THE FUTURE OF IMPACT

This analysis report provides a detailed look at the self-reported responses immediately after the VR experience. The VR session successfully turned abstract environmental ideas into experiences that combined feelings, creativity, and practical actions for children, while inspiring structural, civic, and social commitments from adults.

Future research phases will test whether an immersive Antarctic VR expedition can motivate pro-environmental action and create 'Antarctic ambassadors,' functioning as a sustainable alternative to physical travel that entirely avoids greenhouse gas emissions.

### **About This Report**

Data collected at Utrecht Science Week, 5 October 2025. N = 163 total postcards; 92 children (ages 4-12), 39 adults (ages 24-68), 32 with no stated age. Analysis combined quantitative frequency counting and qualitative thematic coding. All participant responses are self-reported and reflect intentions immediately after the VR experience.