WP 7 – Preparing for a future world: improving education and awareness at all societal levels

Terry V. Callaghan CMG, Sheffield University
Agata Goździk, Institute of Geophysics PAS
The main objectives are:

1) to develop and deliver educational resources at school and university level in response to needs identified by teachers across the world (PAS)

2) to increase awareness of the general public (including influential people) to Arctic environmental change and its global implications (BBC, USFD)

3) to establish a new generation of researchers capable of making high level assessments of environmental change in the Arctic and its global implications (AMAP).
Task 7.1

*Increased public awareness of Arctic environmental change and its global implications (Lead: USFD, sub-contract to BBC)*

Agreed MOU with BBC

- Final draft contract close to agreement
- First Earth platform expects 10 million viewers
- 4 short films
- We provide footage and help with story-line
Task 7.2

Networking and communication activities with teachers and schools
(Lead: IGF-PAS)

• Newsletters (PL+EN) for teachers (1600+) inviting to INTERACT webinar series

Next steps:
• face-to-face meetings with teachers workshops, conferences
• a short brochure and a promo-video on educational toolkits
Task 7.3

Promotion of polar issues by providing educational resources to schools.

(Lead: IGF-PAS)

At least 3 tool-kits will be developed:

• syllabus with introduction
• 5 basic concepts to remember
• mind map
• glossary
• materials for teachers, lesson plans
• worksheets for pupils
• online activities (crosswords, quizzes etc.)
• presentations, animations or recordings of experts’ lectures
• experiment scenarios
Task 7.3

Preparation of Polish version of toolkits:

1) Permafrost
2) Glaciers
Task 7.3

*Educational toolkit „Studying past environments”*

- syllabus with introduction with mind map and glossary
- materials for teachers, lesson plan
- worksheets for pupils
- answers for teachers
- online activities (crosswords, quizzes etc.)
- powerpoint presentation
- videos: Analysis and importance of peatlands & Secrets of dead plants
Producing Educational Resources

- For e-book and stand-alone
- Important in Covid year
- Primary education With Wicked Weather Watch
- Secondary and undergraduate education with Tomsk State University and tool-kits with IGF, PAS
- On-going

Simple experiment

6.3 What causes the sea level to rise?

You will need:
- A metal pot food dish or other metal dish/pan, with a flat rim if possible.
- Cold water.
- Ice cubes.
- Sharp marker pen, ball-point pen/pencil and paper.
- Something to heat the water – e.g. hot water bottle, a heat pack.

1(a) Does melting ice lead to sea level rise?

Take the metal dish and half fill it with water.

Put an ice cube in the water.

Using the magic marker pen, draw a line on the side of the pot dish to show the level of the water. This line represents the sea level.

Allow the ice cubes to melt completely, without heating the water!

Check the ‘sea level’ has got gone up?

1(b) Does melting ice on land lead to sea level rise?

Fill the same metal dish/pan half full.

Put the magic marker pen, mark the level of the ‘sea’.

Allow the ice cubes to melt fully and without heating the water!

Check the ‘sea level’ has got gone up?

No. If you can’t find a small dlh (with a flat rim), allow the ice cubes to melt through your fingers. It will have the same effect.

2(c) Does warming ocean level for rising sea levels?

Fill the metal dish with three-quarters full.

Heat it with heat water bottle (flask pack), if you’re using a pen you can heat it on a stove but you need to be accompanied by an adult.

What happens to the water?

The science behind the result

- What causes the sea level to rise?

Climate change causes the ice of the poles, increasing global and Air temperatures cause the sea level to go up for two reasons:
- Ice melt on top of the ice, such as glaciers and the Greenland Ice Sheet. This raises the air, the water ice melts and the faster it melts. The melted ice turns into freezing water and runs off the land into the sea, adding more water to the ocean.
- Water expands (gets bigger) as it gets warmer. When we cool down the ice, it cools, we don’t do that. So, when the water is heated, it expands, it gets bigger, causing the sea level to rise (go up).

Sea ice that melts does not cause the sea level to go up. This is because ice is just frozen water and it is really when it’s already in the water than the volume (amount) of water stays the same, and the sea level stays the same.

From our experiment we know that:

1(a) Heating ice on top of the ice (on the land) turned the water into sea level.
1(b) Heating ice on the land does not cause sea level rise. But the second part of the experiment, the water (heat water bottle) melted up.
2(c) Heating sea level warmed the water, and also the ice level melted up.

Why does this matter?

Over a small increase in sea levels could affect tens of millions of people across the globe living along the coasts, and the landscapes around them. Higher sea levels would flood some low-lying areas. Rising sea levels would also be a threat to coastal communities, as well as to people living on coastal areas and areas affected by climate change. For example, if the water rises, the coastal areas, the cities, and plants will be lost. Higher sea levels also mean that storm surges, the rise in ocean level during a storm – will be bigger and happen more often, reaching farther inland and causing more frequent flooding.

Sophisticated animation

by TSU
Task 7.4

Online lessons for secondary schools
(Lead: IGF-PAS)

• 60 online lessons for secondary schools (IGF-PAS + NIBIO)
• additional set of webinars by Transnational Access Users (all stations with TA)
• Planned for 2022-2024
## Task 7.4

### May 2021 Calendar

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<td>8a. WIND TURBINES: WHEN GOOD BECOMES BAD</td>
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**Notes:**
- 8a represents tasks with an American English title.
- 7a represents tasks with a Norwegian title.
- 1a represents tasks with a Polish title.

**Additional Information:**
- The calendar includes dates for various tasks related to climate, ecosystem, and sustainability in the Arctic region.
- Specific locations such as Greenland, Svalbard, and Siberia are highlighted with corresponding tasks.
- The calendar spans from the 26th of May to the 31st, indicating a month-long project or series of events.
Requirements from others and ways forward

- Continuing animation and video production from TSU and Usheffield
- Continuing resources from Wicked Weather Watch
- Acceptance of the toolkit „Studying past environments”
- Decision on the next topics (one for NIBIO and two for IGF) – based on the animations prepared by Terry and Univeristy of Tomsk
- Ready for collaboration with other partners willing to conduct webinars about research in their stations
- Ideas for new resources welcome, but capacity for production not guaranteed!