Linking indigenous knowledge to climate change using digital tracking

Robert Collins and **Jane Essex** tell how student teachers learn about climate change by launching their own miniature wooden boats

Through the 'Float Your Boat' project, an initiative of the International Buoy Program based in Seattle, USA (see *Useful links*), students on the Primary Education programme at the University of Strathclyde's Institute of Education crafted small, handmade wooden boats – stamped with their name and unique identifying number – which were deployed onto an ice floe alongside a buoy equipped with a global positioning satellite link.

The boats' locations can be tracked as they follow the buoy on the ocean currents into warmer waters, where the ice floes subsequently melt and the boats eventually land on distant shores.

The students participated in this project as part of a specialist class module on inclusion and diversity in science, engineering, technology and mathematics (STEM), exploring how inclusion and diversity in STEM can reshape perceptions of science and its global impact. The Float Your Boat project mirrors traditional and indigenous knowledge – often excluded from formal science – which offers vital insights into environmental change.

Meaningful real-world science

Initial teacher education students' participation in Float Your Boat exemplifies how connecting local STEM learning with global challenges might be approached. The authentic hands-on flavour of the project not only enabled future primary science educators to experience a sense of genuine ownership and participation in meaningful international global science enquiry, but also served to inspire their pupils with authentic, real-world science. The remote monitoring of their boats led to a sense of belonging to a much smaller world, one where issues of climate change can be made tangible and visible – and personal – even if they are 'happening' thousands of miles away. The effect on students and their pupils of becoming researchers and observers of their own piece of climate science enquiry was simultaneously engaging and enthusing to witness.

Figure 1 Students making their model boats from recycled wood

▲ **Figure 2** Strathclyde teacher education students with their finished model boats

The project also served to further enhance the students' experience in embracing authentic values linked to equality, diversity and inclusion. Indigenous communities in the Arctic have long monitored climate shifts through detailed observation. Their knowledge, based on inductive reasoning and pattern recognition, has helped track phenomena such as melting ice and declining animal populations.

Although traditionally overlooked by professional scientists during the colonial period, this way of understanding is now recognised as invaluable for studying climate change. Modern scientists now recognise that the knowledge of indigenous people offers an important way of monitoring events in detail, with the benefit of the observer being very familiar with the location, having long links to it through their families and communities, and caring deeply about it.

The Float Your Boat project provided Strathclyde ITE students with a tangible, personal connection to the Arctic, of the sort that indigenous people have. The students embraced the project, choosing to craft the boats from locally sourced recycled wood using Strathclyde's technology workshop, supported by technology tutor Martyn Hendry, rather than ordering pre-made versions from the Project.

After shaping and sanding the vessels, the boats were decorated and unique identifiers added, engraved with the help of laser cutters (Figures 1 and 2). The boats were then sent to Seattle, in preparation for release into the Arctic Ocean. To minimise harm to the environment, the boats were made from wood so that any that are not recovered will undergo biodegradation and be rendered harmless.

The Float Your Boat project has a history of success, with boats travelling from Iceland to Shetland and beyond, revealing critical data about sea currents. The project has made climate change and learning for sustainability far more personal and tangible for students and pupils. The Strathclyde students now eagerly await updates on their boats' journeys, which could provide further insight into the evolving Arctic ecosystem.

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USEFUL LINKS

International Buoy Programme:
www.ncei.noaa.gov/products/international-arctic-buoy-program

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