

Raising awareness of the importance of engineering protections against floods with “Flood-o-poly” v.2

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This study presents the results of a survey focusing on the use of a new fit for purpose designed city in a sand-box model, namely “Flood-o-poly” version 2, which is building on the success of the previous model. “Flood-o-poly” has been successfully presented to thousands of students of all ages in the School of Engineering Open days (University of Glasgow), Widening Participation, Glasgow Science Festival, Glasgow Science Museum and Engineering Hydraulics classes and Design projects, over the last four years. The new design involves a new and extended 3D scaled model that accurately replicates the topography of a city along with its rivers, towards demonstrating the impacts of flooding (induced artificially in the scaled physical model via the use of small water pumps). “Flood-o-poly” is a highly visual and well popularized engineering outreach project (developed from the applicant at the University of Glasgow), which has already been extensively used to showcase the detrimental impacts of flooding, for both the natural ecosystems and the built infrastructure alike (see <https://twitter.com/WaterEngLab/status/758270564561784832> on Twitter and <https://youtu.be/H5oThT6QaTc> on YouTube). This involves a highly interactive session where the students simulate the scenarios of “urbanization” (by placing more buildings on the flood-planes) and “climate change” where more extreme flow rates have to be routed through the river.

The project demonstrates how this design can benefit the cohorts of the 3rd and 4th year Civil Engineering undergraduate students, the students attending the School’s Open days, Widening Participation Days, Glasgow Science Festival and Glasgow Science Museum events. “Flood-o-poly” focuses on personalizing the student experience with regard to flood impacts and promotes the need for resilient and sustainable flood protection designs. Further, using novel presentation and student-centered technologies, the students are given a truly unique experience and appreciate engineering principles and design approaches, as well as appreciate contemporary and optimal (under certain realistic constraints) flood protections that can be used to protect “Flood-o-poly” from extreme hydrologic events.