University of Manchester School of Biological Sciences launches a blueprint for drastic laboratory plastic reduction

Maggy Fostier and **Ruth Grady** (University of Manchester)

The University of Manchester has pledged to eliminate 'avoidable' single-use plastic by 2022. To contribute, Dr Maggy Fostier and Dr Ruth Grady from the School of Biological Sciences (SBS) have launched a project to reduce the amount of plastic in their undergraduate laboratory classes. These classes involve thousands of students per year who require pipettes, weighing boats, stirrers, gloves and other plastic implements – which sometimes can have usage lifespans that are less than a minute.

They have defined the 'Plastic 6R' approach (refine, reduce, reuse, refill, replace, recycle(d)) and with a team of technical staff and Graduate Teaching Assistants (GTAs), they have applied it to three Year 1 practicals. They first reviewed each practical to audit their plastic usage and identify where savings could be made. The actions identified were then discussed with the technical team and GTAs for their workability (affordable/ logistically achievable / no compromise to health and safety/ without academic detriment) and some were trialled with year 1 volunteers before being validated or discarded. Drs Fostier & Grady then created, with 1st year students, a communication strategy (logos, Intended Learning Outcomes, and manual layout) to clarify and justify the 6R actions and get buy-in from staff and students.

Most of the actions implemented are simple and often revert back to how things were performed before disposable plastic became so rife. For example, in the light spectrophotometry practical, students are now reusing plastic cuvettes, glass Universal and Bijou bottles after rinsing them between uses or dilutions. In the microbiology classes, plastic loops are being replaced with wooden stirrers. Refining the way the material is laid out in large classes also helps, so buffers and solutions are now organized per bench rather than per pair, and the technical team systematically refills containers between repeated classes when possible.

The review of these three classes had led to serious plastic savings, with a reduction of 37 pieces of single-use plastic per student/year, i.e. more than 24,000 pieces/ year when scaled up for the 1st year group (650 students). The practicals reviewed started running in Oct 2019 and we are pleased to report that the students responded really well, as highlighted by a survey where 97% of the respondents (N = 397) were 'pleased that SBS is trying to reduce single use plastics in the practical classes'.

The hope is now to extend this methodology to all practicals and for this purpose the authors have developed a Standard Operating Procedure (SOP). The SOP will keep evolving as better procurement and waste management procedures are being explored. The authors also hope to test the 6R strategy with research labs with the help of GTAs.

For further information contact Maggy.Fostier@manchester.ac.uk or Ruth.Grady@manchester.ac.uk who are keen to share the process they have gone through.