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Design of Microplastics Citizen Science Kit

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Microplastics are an ever-increasing problem. Every river that was tested in a recent study found the presence of microplastics, with 80% of all plastic in the ocean coming from upstream. Despite this, there is little understanding into the abundance of plastic, its characteristics and the full impact that it is having on marine, freshwater ecosystems and wider ecological systems.

Current fresh water monitoring does not consider the fluid dynamics of rivers, is difficult to use and is inaccessible to the wider public. My project will focus on creating a product that allows for the large-scale data collection of microplastic through citizen science. Allowing groups of people to analyse their local natural environment for the presence and abundance of microplastics within the water. This method of data collection could provide information on a scale that is not possible with traditional methods and would allow for the comparison between freshwater systems. This comparison is fundamental to begin to fill the knowledge gaps around the understanding of microplastics.

Inaccessibility of monitoring to the public is not just through tools but also through the current communication of data with research rarely breaking into the public domain. Citizen science offers not just an improvement in understanding but also offers an opportunity for engagement with the public body. Increasing awareness of the impact of habits round plastic through the sharing of monitoring data can generate the much-needed change on both an individual and policy level to address the problem from the source. This method of change through public opinion can be seen to have an effect on freshwater systems through microbeads ban, plastic bags, plastic straws and industrial pollution regulation.

Through the creation of this product a multidisciplinary approach that blends engineering and design practices is implemented. The wholistic approach to creation is something that is fundamental in the success of tools and therefore the success of the research that is implemented through them. A tool such as this whose function is within the public engagement of its use - increased awareness, as well as the outcome of its use - microplastics data, is required to have an

engaging user experience as well as data integrity implemented through engineering design.

This project offers an opportunity to show the importance of the design process within research tools to aid the research process and the positive impact that can come from it.