



**Team leader
and problem
solver**



**Researcher
and critical
thinker**



**Innovator and
communicator**



**Resource
investigator and
builder**

PROBLEM STATEMENT

Synthetic microfibers are being shed from clothing and textiles during washing and entering aquatic ecosystems at an alarming rate.

Understanding Microfibre Pollution

- **What are microfibres?**
Microfibres are tiny plastic fibres that get released from clothing and textiles. These fibres pollute our waterways.
- **Where do they come from?**
Microthreads mainly come from synthetic materials such as polyester, nylon, and acrylic. Washing these fabrics releases microfibres into waterways and oceans.
- **Why is this a problem?**
Microfibres pollute aquatic ecosystems, harm wildlife, and can carry harmful chemicals into the environment.

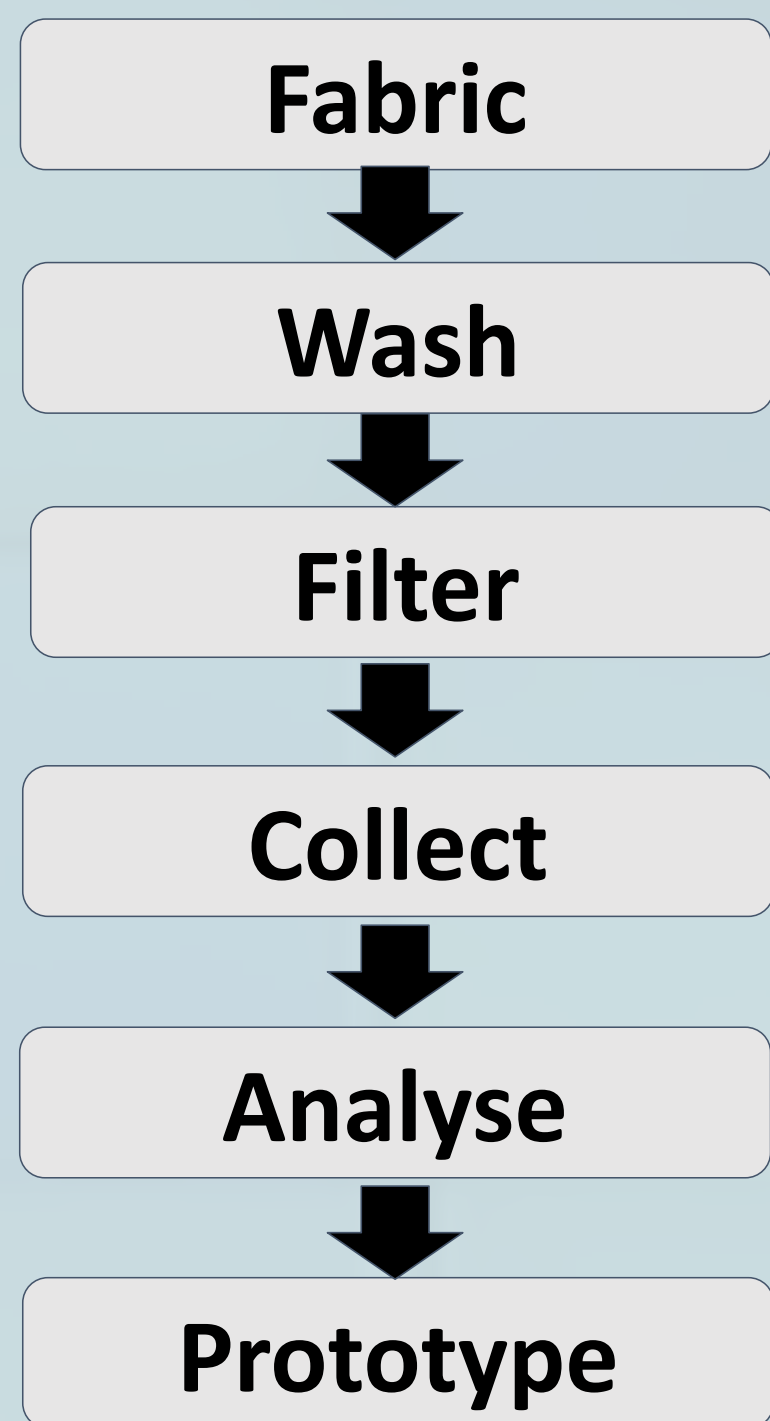
Key Facts

- **35%** of ocean microplastics come from washing fabrics!
- Approximately **18 million** fibres are released per wash!
- **0.2 - 0.5 million tonnes** of microplastics get released into ecosystems every year!

Collaborators

- GALS Program (Dwakin University)
- Teachers (Michael Brown)
- Lab staff
- School community

Designing



Science Experiment

Aim:
To investigate how many microfibers are released when different fabric materials are washed.

Hypothesis:
Synthetic fabrics such as polyester will release more microfibres than natural fabrics such as cotton.

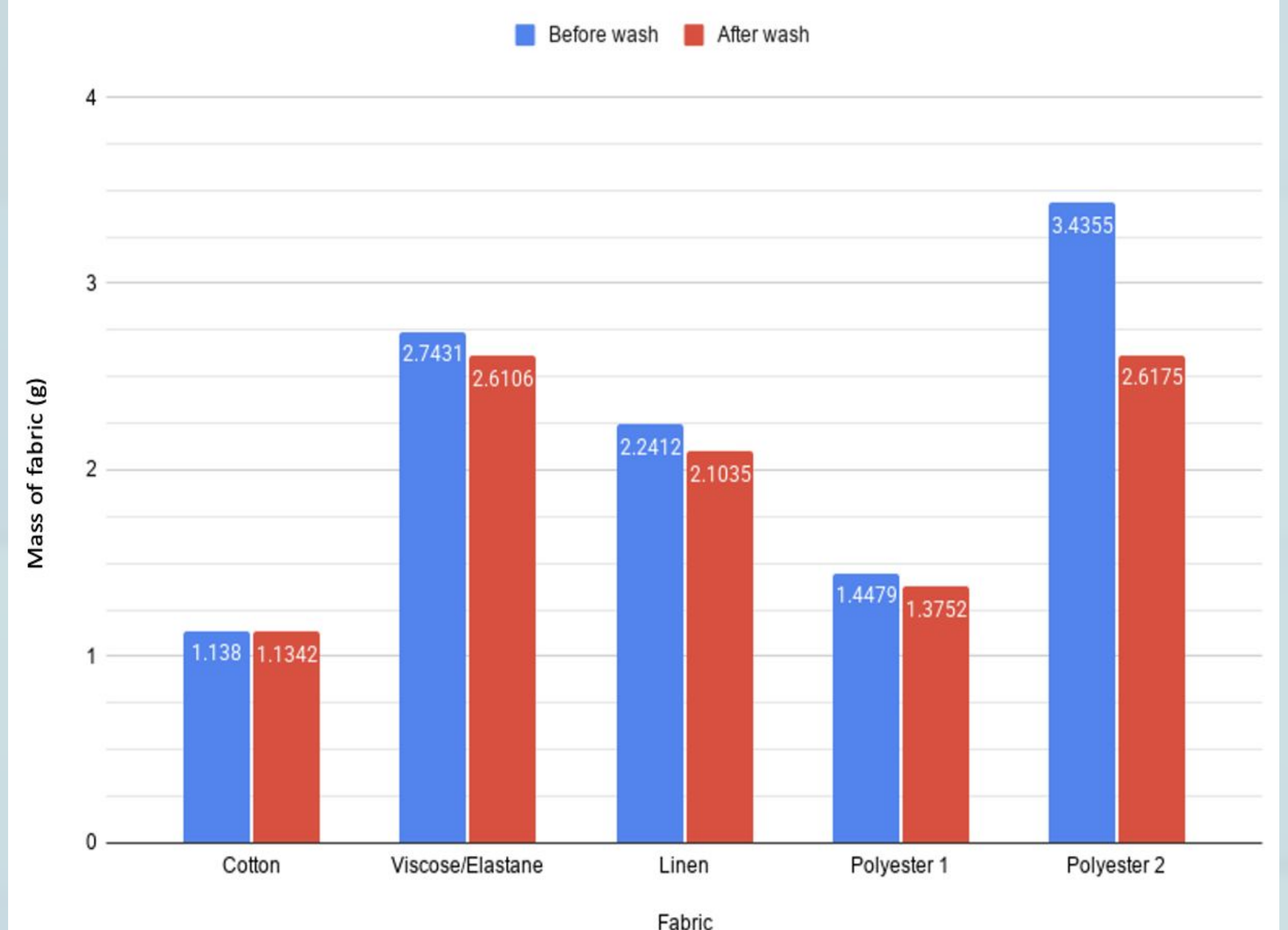
Independent
– Fabric material released

Controlled
– Water temperature
– Fabric size

Dependent
– Amount of microfibres

– Wash mode
– Wash time

Which Fabrics Shed the Most Microfibres?



Our Design Solution

What is it?

- 3D printed ball
- Collects lint and fibres in the wash
- Reusable and low cost
- Fits inside a washing machine

STEM IN ACTION

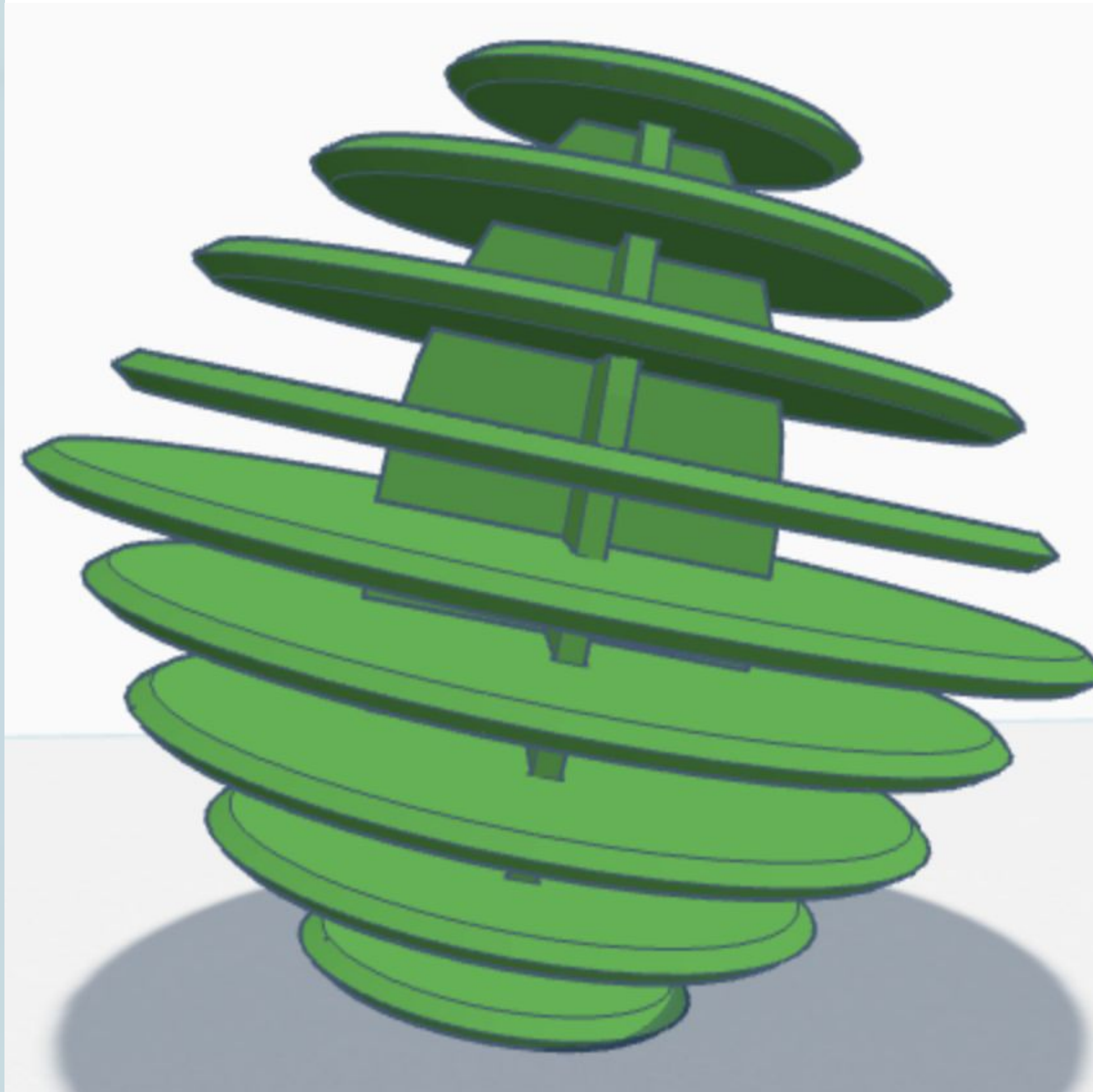
Science:
Testing different fabric types through controlled scientific experiments.

Technology:
Using filtration methods to collect released fibres.

Engineering:
Designing, creating and testing a prototype to see if it reduces the amount of microfibre release.

Mathematics:
Calculating and comparing the amount of microfibres released by each fabric.

Prototype design (Tinkercad)



Prototype design (3D Printed)



How our solution responds to the problem:

By trapping lint and fibres during washing, our prototype helps reduce microfibre pollution before it reaches aquatic ecosystems.

FUTURE DIRECTIONS

- Improve prototype
- Test more fabrics
- Investigate everyday clothing
- Raise awareness