

From Waste to Wow- STEM Week 2026

Intent for the Week

Recycled Structures STEM Week

Our Recycled Structures STEM Week is designed to inspire pupils to think and work like engineers by transforming everyday waste materials into purposeful, functional designs. Through hands-on challenges such as constructing benches from newspaper logs and bowls from egg cartons, children will explore how materials can be shaped, strengthened and joined to create stable structures.

The week aims to develop pupils' understanding of key STEM principles including forces, stability, design, testing and improvement, while fostering creativity, problem solving and collaboration. By working with reclaimed materials, pupils will also deepen their awareness of sustainability and learn to view waste as a valuable resource.

This immersive experience allows children to apply their knowledge in a practical context, evaluate the effectiveness of their designs, and reflect on how real engineers use similar principles to solve problems in the world around them.



Overview of Activities: EYFS

Our EYFS learners recently embarked on an inspiring sustainability journey, discovering how small actions can care for our planet through the principles of Reduce, Reuse, and Recycle. The children began by investigating a variety of materials, developing their critical thinking skills as they sorted items into those that could be recycled and those that could not.

From Waste to Wonder

To put their learning into practice, the children explored the art of "upcycling" by transforming lonely, odd socks into vibrant sock puppets. Using a treasure trove of reclaimed materials—including old buttons for eyes, milk bottle tops, and colourful fabric scraps—they gave new life to items that might otherwise have been discarded.

Creative Storytelling

We were absolutely delighted to see the unique and fun characters that emerged from this process; no two puppets were the same! The activity reached a wonderful conclusion as the children used their new hand-crafted friends to weave imaginative stories, proving that with a little creativity, an old sock can become a brilliant and useful new toy.



Overview of Activities: KS1

Our Key Stage 1 students turned into eco-engineers this week as they discovered how to transform humble egg cartons into a versatile, mouldable clay. The process began with plenty of "messy fun" as the children tore the cardboard into small pieces and submerged them in water. Through some fantastic collaborative problem-solving, the students experimented with different techniques and made the brilliant discovery that using warm water helped the cardboard break down faster, creating a much smoother, more pliable mulch for sculpting.

Engineering with Recyclables

Once the mulch reached the perfect "squelchy" consistency, the children used upturned bowls as moulds to shape their own recycled vessels. This patient process required a bit of resilience while waiting for the cardboard clay to fully dry and harden. It was a wonderful way to demonstrate how items destined for landfill can be repurposed into something durable and beautiful.

Inspired by History

Drawing on their recent visit to the Pitt Rivers Museum, the children adorned their finished bowls with intricate Inuit-style designs. These patterns not only showcased their fine motor skills but also allowed them to connect their environmental learning with cultural history. The result was a collection of unique, hand-crafted bowls that turned "rubbish" into a meaningful piece of art!



It was fun, I liked to get my hands in and mush it.

I enjoyed it because we were reusing something that had already been used.

I felt good because we didn't just let the egg boxes go to waste.

The egg box clay was mushy and disgusting!!

I was excited because I made something useful.

Overview of Activities: KS2

Our Key Stage 2 students took recycling to an industrial level this week by using a Stixx machine to transform everyday newspapers into incredibly strong, solid logs. The children were fascinated to witness the science of structural integrity in action, observing how just five sheets of paper could be rolled so tightly that the resulting rod became as strong as solid wood.

The Engineering Process

Before moving to their final builds, the students acted as design engineers, creating smaller prototypes of stools and chairs. This phase involved rigorous testing and critical thinking, as they compared the strength of different geometric shapes—specifically discovering the superior stability of triangles versus squares. They experimented with various joining techniques, ensuring their designs could withstand significant pressure.

A Collaborative Success

The project culminated in an impressive whole-class collaboration to build life-sized furniture for their classrooms. There was a palpable sense of tension and excitement as the children tested their finished chairs and stools; they were absolutely thrilled to find that their paper creations didn't collapse, even when supporting the weight of the teachers! It was a powerful lesson in sustainable design and the surprising strength of repurposed materials.



Impact statement:

The STEM projects across EYFS, KS1, and KS2 has shifted our students' perspective on "rubbish," and how to transform something seemingly useless through hands-on innovation. By engaging with the philosophy of **repurposing**, children moved beyond simple recycling and began to see discarded items—odd socks, egg cartons, and old newspapers—not as waste, but as valuable raw materials with untapped potential.

Cultivating Innovative Solutions

Throughout each key stage, students were challenged to look past the original function of an object to find innovative solutions for new, purposeful products. Whether it was reimagining a textile scrap as a characterful puppet or converting paper into high-strength structural beams, the children learned that creativity is the ultimate tool for sustainability. They didn't just "make do"; they engineered high-quality outcomes that served genuine functions.

Applied Problem Solving and Resilience

The activities served as an opportunity for real-world problem solving. Our learners demonstrated impressive scientific inquiry and resilience by:

Investigating Material Properties: Such as the discovery in KS1 that warm water fundamentally alters the molecular breakdown of cardboard to create a superior "clay."

Structural Engineering: In KS2, students applied geometric principles—like the stability of triangles over squares—to ensure their furniture was load-bearing.

Iterative Design: Using prototypes to test joining methods and weight distribution before committing to final builds.

Sustainability

The "Wow" factor was most evident in the children's pride when their creations—like the newspaper chairs—exceeded their own expectations of strength. By successfully designing and making products that are both sturdy and functional, our students have developed a "maker mindset." They now possess the confidence to approach environmental challenges with a sense of agency, proving that with a bit of ingenuity, we can create a more sustainable future by turning today's waste into tomorrow's wonders. We look forward to exploring these principles further as part of our sustainability week in the summer term.

