Thinking back to our childhoods, the majority of us will remember constructing with cereal boxes, toilet rolls and yoghurt pots. Most early years settings still ask parents for donations of recycled materials and have an area for junk modelling. But how can practitioners take this long-standing tradition, support children’s work and elevate it to be truly creative?

The beauty of junk modelling – the act of offering recycled materials to construct with – is that the materials are relatively worthless so children can be given the freedom to build what they want, with the simple addition of resources such as tape and glue.

‘I think junk modelling differs from an art and craft activity because of the non-directed nature of the materials and resources,’ says Ben Tawil, director of Ludicology and senior lecturer in play and playwork at Leeds Beckett University. ‘Children have access to a wide range of open-ended resources and can combine them in ways that they want. They have the freedom to use them flexibly and adapt them. I feel that the lack of monetary value to the resources is significant because it is also empowering for practitioners and children to use them flexibly, such as break them apart and use the bits.’

**LEARNING BENEFITS**

**Creative and cross-curricular**

Junk modelling offers opportunities for developing children’s creativity, as well as their fine and gross motor skills. However, Emma Pace, managing director of House of Jacob, says that the freedom to use recycled materials is another important learning benefit.

‘Children develop their own ideas and explore the materials with creativity and imagination. They learn to be resourceful and develop an understanding of recycling, sustainability and sustainability, which is an important life skill for them to develop.’

All about...

**junk modelling**

The flexibility and abundance of ‘junk’ give children enormous learning benefits and unrivalled creative opportunities, explains **Annette Rawstrone**

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PHOTOS AT JAMES LEE NURSERY SCHOOL, LONDON

TERI PENGILLEY
of Objects, a Reggio-inspired scrap store and training provider in creative learning, says when children are able to construct freely, it can give practitioners an insight into children's interests and fascinations.

'Creativity is a very big and overused word, so to be more precise, junk modelling is important because it involves exercising the imagination, problem-solving, designing, communicating, self-expression, trial and error, sharing, resilience, happiness and building knowledge. And, above all, this type of activity nurtures a recycling, trash-to-treasure mentality. What could be more important than that?' she says.

Higher-level thinking
Mr Tawil believes junk modelling is important to children's learning because it swiftly shifts children from thinking about what something is and what it is for to a higher level of thinking, such as posing a hypothesis, conceptualisation and questioning. 'Junk modelling allows children to be free to explore because the resources are free. They encourage ludic thinking, playful thinking and “what ifs?”. They are becoming scientists,' he says.

Science, technology, engineering and maths (STEM)
Using different types of recycled objects enables children to learn about the basic properties of everyday materials – such as plastic, paper, cardboard, metal and wood – through a hands-on approach.

'They are learning by doing. How is plastic different from cardboard? Can you cut it? Stick it? Is it strong? Is it waterproof? It offers a first experience at manipulating and therefore understanding materials,' says Ms Pace.

'Don’t just think of it as junk modelling but that it progresses to engineering because children are learning how materials work and how they can be used to fulfil ideas.’

One benefit of using ‘junk’ is it doesn’t matter if it is broken

made from discarded washing-up liquid bottles and egg box dinosaurs should not be the end aim. It should be about the process rather than the end product.

‘If children are able to explore long enough, then the disequilibrium is there to adapt mental schemas and develop new schemas,’ Mr Tawil adds.

She suggests educating practitioners and parents about what the children are learning and talking to them about what they have made. 'It is sowing the seeds for STEM and demystifying engineering. Perhaps we need to change the term “junk modelling” to “waste innovation”, she says.
‘When children knock on the door and walk into our Invention Shed, developed through support from House of Objects, they see twinkling lights, work benches and boxes of intriguing resources,’ says Chris Gillie, a teacher at Bensham Grove Community Nursery School in Gateshead, Tyne and Wear.

‘We don’t necessarily call it junk modelling because we encourage children to create models that are special, and if we call it junk then they don’t often take as much care.’

**Invention Shed**

‘We have a free-flow system and children can access the recycled materials throughout the day indoors, and up to six children at a time can access the Invention Shed,’ says Mr Gillie. ‘The Shed’s intimate environment makes it ideal for focus groups, such as to give children with English as an additional language or those low in confidence time to explore the boxes, talk about different textures, or even no talk and just allow them to create and explore. There’s no pressure and it’s their own time.

‘Rather than instructing children to build a train or a rocket, we leave it up to the children to create what they want and use open-ended questions to encourage them, such as, “What would happen if...?”’

**Provocations**

He continues, ‘Sometimes we leave a new or interesting item on the work bench or in the nursery as a provocation, like rubber tubing, nuts and bolts, bottle tops or a variety of fabric with different patterns or textures. We use anything and everything as long as it’s safe – metal rods from crutches even became flutes.

‘The only items we don’t allow children to independently access are the handheld tools. There’s always an adult to model how to use them, manage risk and follow rigid safety routines. Children love using the handheld drill and thinking what size hole they need. This type of play allows children to take risks, concentrate and develop persistence and self-confidence.’

**Thinking skills**

‘Children are more likely to talk in detail about their model because it is precious and special to them, which helps them to articulate their thoughts. The majority of the children’s work goes home, but we display as much as we can and document what they have done.

‘We share their experience with them, so they can look if they want to extend or take things to a new level, such as saw a piece off or add new items. Many of the children ask to continue their work and have the confidence to do so independently, use their critical thinking skills and take it to the next level. It’s a fabulous experience.

‘We’ve had the Invention Shed for a year and have found that the children are much more focused in it than the busy nursery. I never thought they’d create things such as a miniature camp site to reproduce their outdoor play. We invite parents to stay-and-play sessions in the Invention Shed and they see that we’re teaching the vital skills for future engineers and inventors.’
RESOURCES

Organisation
Rather than presenting children with a load of ill-thought-out old junk, Ms Pace says resources must be well-classified and ordered, such as putting card, metal and wood into different groups to help children find what they want and classify objects according to their properties. She suggests using transparent containers on child-height shelves so that children can self-access.

‘Overall, I believe the way to inspire real creativity with materials depends on how we offer them. There is a big difference between barrels stuffed with everyday “boring” recycled domestic waste and a shelf lined with small clear boxes filled with unusual and interesting, “exciting” materials,’ explains Ms Pace. ‘If materials are interesting, and beautifully presented, they gain value and become treasure. So, how we give value and present materials entirely affects how children will perceive, value and be inspired by them.’

Variety of materials
When it comes to range of resources, settings also need to think beyond yoghurt pots and cardboard boxes.

‘We suggest asking families for more unusual and interesting stuff,’ says Ms Pace. ‘If we just ask for “recycling”, we will get cereal boxes and yoghurt pots, because that’s the tradition we are all used to. What happens if one week we ask for old keys, the next week we ask for broken jewellery and the next for fabric scraps or wool, nuts and bolts? In this way it is possible to build up a free collection of really exciting materials.’

The joy of junk modelling is that someone’s waste is another person’s treasure and free or inexpensive. While cereal boxes, cardboard tubes and yoghurt pots are all great, try to think of other items that you could use, whether that’s recycled industrial materials such as reels, wood scraps or bolts; natural objects like seed pods, feathers and shells; or recycled household items, which could include beads and buttons, broken jewellery, yarn, keys, corks and bottle tops or fabric – anything that the children will find interesting.

Also, track down a scrapstore or get friendly with your local recycling centre to get hold of more unusual and industrial materials.

Tools and other resources
Provide scissors and resources to fix items together, such as tape, glue, string, ribbon, and perhaps malleable materials such as clay or playdough. Consider other tools that you could introduce to the children to enable them to engineer their designs (see case study, below).

Health and safety
While you should use care and judgement when collecting and using materials, ‘How we give value and present materials entirely affects how children will perceive, value and be inspired by them’
Don’t underestimate the creative process a child goes through when they are adding decorations or planning what to build. Junk modelling is a cross-curriculum experience, it provides children with opportunities to think outside the box and to learn how to approach a problem, which is an important life skill.

Recently I watched a child trying to stick tubes together with a glue stick. I let him persevere and explore this method. When he decided it wasn’t working I asked if he could use something else that was sticky. He found masking tape, which then worked.

Sense of achievement
‘We value children’s work and allow them to return to their projects over many days,’ he continues. ‘We were blown away by how a small group of children built a Christmas tree together. They carefully selected resources that resembled the shape of a tree and developed it over a few days.

‘There was a lot of co-operation and communication as they thought how to extend the height and suggested different resources. Other children then helped to paint and make decorations for the tree. We attached lights and it stood in the nursery hallway.’

Mr Marlow concludes, ‘They gained a massive sense of achievement from building the tree and showed their parents. Junk modelling has really taken off, and two children have even had junk-modelling birthday parties.’
Practitioners should comment on effort rather than competency

with young children, don’t be deterred by long-standing health and safety myths, such as not to use toilet roll centres or egg boxes. The Health and Safety Executive states that there is no reason why these should not be used as long as they look clean. Its Myth Busters Challenge Panel says, ‘Everyday living presents a similar microbiological risk.’

Simply use your common sense and ensure junk-modelling resources are clean, not toxic, or sharp – use wire wool to smooth edges on aluminium cans and sandpaper for removing splinters or rough areas from objects. Remember to always keep small items away from very young children.

Introducing materials
When introducing the children to the different materials, Ms Pace recommends a ‘more thoughtful-looking and feeling approach’ by encouraging them to look at the objects with their eyes, before touching them, feeling whether they bend or squash, and then asking them what materials they think the object would like to be ‘friends’ with.

Provocations, challenges and inspiration
To take junk modelling a step further, House of Objects uses provocations to inspire the children – this can be the materials themselves, or a particular challenge.

For example, they may create an area filled with cardboard tubes, boxes and packaging alongside an overhead projector and dim the lights so children can move the objects and play with the shadows they create. Alternatively, they may pour a pile of ‘treasure’ on the floor and give the children clear containers to sort the objects.

‘It is very interesting to observe children’s own classification techniques, and we try to support but not interfere too much. They never fail to surprise us with the categories they come up with. Once the materials are sorted, we might offer clay to the children and let them explore the materials and clay together. It is very sensory and the children can make all kinds of mini sculptures,’ says Ms Pace.

‘A key thing that we notice every day working with materials and children is that although, some of the time, children have ideas of what they want to make, most of the time it is the materials that inspire the ideas. Children see stuff and it sparks off ideas,’ she adds.

‘Also, we notice that children often start with an idea but it changes and evolves many times in the creative process. We avoid asking children what they are making and rather ask them how they feel, if they need any help, or about the materials.’

Staff culture is also important to children’s engagement with junk modelling. Mr Tawil wants to enter a setting and feel a ‘general ambiance of unconditional positive regard, a general sense of permission and freedom for children to explore with their own degree of agency in their space.’

He wants practitioners to give feedback on children’s agency rather than their competency. For example, instead of saying how great a tower is, comment on how long the child has been working on it. ‘Make your comments more ambiguous, but engender in children the belief that you have a genuine interest in what they are doing,’ he explains.

Value the children’s creations by documenting the creative process and taking photographs. Display the finished work if space and the child allow, but often they will want to take their work home or continue to modify their design.

More information

- Beautiful Stuff! Learning with Found Materials by Cathy Weisman Topal and Lella Gandini
- Loose Parts: Inspiring Play in Young Children by Lisa Daly
- The A to Z of The Curiosity Approach by Lyndsey Hellyn and Stephanie Bennett
- REMIDA Day by Elena Giacopini
- ReusefulUK’s directory of scrap stores, www.scrapstoresuk.org
- http://houseofobjects.org
- http://www.ludicology.com
- http://theplayhouse.org.uk
- www.hse.gov.uk/contact/contact-myth-busting.htm
- All about… Design and Technology by Iain McLeod-Brudenell, www.nurseryworld.co.uk