Tuesday 14 March 2023. Delivered weekdays at 6:30am London time. No preparation. Print friendly.

THEDAY Build a better world

NEWS DETECTIVES

TODAY'S BIG STORY

Mushrooms used to make homes and clothes

Would you live in a house made of mushrooms? Businesses are starting to work out uses for fungus that could revolutionise the way we live.

Mushrooming: The Growing Pavilion, a building made from mycelium, cleans the air as it grows.

Mushrooms are popping up where you might not expect them — in buildings.

While **fungi** are normally the last thing you want to find in your walls, several new companies have other ideas.

They are using the root structure of mushrooms, a **substance** called mycelium, to make new, tough materials.

Mushrooms are actually like the fruit of the mycelium fungus. Mycelium is very strong in relation to its weight, and grows quickly, which makes it useful for buildings.

A company in London, Biohm, uses it to make **insulation** panels. It can be grown from sawdust and **biodegrades** easily, giving it many advantages over plastic panels.

Soon you might be kept warm by eco-friendly fungi.

But it is not just your house. You might be wearing it. MycoWorks, a San Francisco based company makes a leather **substitute** called Reishi from mycelium. They have already made a **designer** handbag.

Again, there are lots of environmental benefits to using mushrooms rather than cow-skins to make your jackets and bags.

Mycelium can be grown from waste, and so does not need extra farmland to be used for it. While it is alive, it also absorbs **CO2** through **photosynthesis**.

And when you are done with it, you can throw it away and it will help other materials break down.

One day we may even be able to grow living mushroom houses.

THE STORY SO FAR

Humans have been making things out of mushrooms since ancient times. Amadou, a kind of felt-like substance, was used to start fires thousands of years ago.

KEY WORDS

Fungi: The kind of creature mushrooms are

Substance: A material

Insulation: Something that keeps heat inside

Biodegrades: Breaks down naturally

Substitute: Replacement

Designer: Luxury fashion

CO2: Carbon dioxide, a greenhouse gas

Photosynthesis: How plants make energy from light

YOU DECIDE

Would you live in a house made of mushrooms?

YES. A mushroom mansion with fungal furniture would bring you closer to nature.

NO. Mushrooms are too mysterious to live in. Some people even think they can talk to each other.

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THE DETECTIVE ZONE

SPOT THE FAKE

One of these three news stories is fake. Which one?

Future of watersports could be mushroom surfboards

North Korea develops mushroom sports drink

Mushrooms found growing in shape of sphynx

Build THE Change

There is no need for mycelium buildings to look like mushrooms — but why shouldn't they? In this challenge you will design a mushroom village.

Step 1: Think about your design! Take inspiration from the huge variety of mushrooms, then think about what your village needs. Should it have a shop, for example? Why is your mushroom village better for the environment than other villages made out of bricks and concrete?

Step 2: Create your design! Draw your mushroom village. If you have time, you could even make one of the mushroom houses out of LEGO® bricks or other craft materials.

Share your genius
Show your work to your class!

Upload a photo of your work to the Build the Change gallery by scanning the QR code and have your work displayed to inspire real-world change.

Did you know?

Mushrooms are genetically closer to humans than plants. Like us, fungi require food, water and oxygen to survive.

Talking point

Some people think the idea of mushroom clothes is strange — but is it stranger than clothes made from animal skins?

Amaze someone

In the Amazon rainforest there is a fungus called Ophiocordyceps unilateralis that can take over the brains of ants, turning them into "zombies".

Fungus under the ground can grow up in what looks like a perfect circle. This is called a fairy ring. Many used to believe they were caused by dancing elves.

THE EXTRA PAGE

Mushrooms you can build with

Building blocks: Mycelium can be used to make wall insulation to keep houses warm.

Mushrooms are having a moment. But there's one part of fungi that businesses are now focused on, and that's mycelium, the root structure of a mushroom.

London-based company Biohm grows mycelium on a large scale by feeding it the likes of food waste and sawdust to create construction industry products such as insulation panels. These can then be used as an alternative to plastic ones.

"We are focused on solving global challenges, and one of the largest in terms of impact on the planet and ecosystem is the construction industry," explains Oksana Bondar, director of design at Biohm.

Once the mycelium has grown over a number of weeks, Biohm harvests and dries it, and then compresses it into brick-like panels.

"What's beautiful about this product is that the panels can be remanufactured, it can be broken down into feed stock, it's safe to be composted and 100% natural. It can fertilise soil," says Ms Bondar.

In San Francisco, a company called MycoWorks is growing mycelium to produce a leather substitute called "Reishi". It can be used in everything from hats to wallets, handbags and bowls.

"Mycelium-grown Reishi is an incredible material, and the first of its kind (leather replacement) that doesn't use plastic as a core ingredient," says Sophia Wang, MycoWorks co-founder.

"It is grown using three organic materials — water, sawdust and mycelium, which keeps carbon emissions low."

MycoWorks has already helped Hermes produce a handbag partly made from its mycelium, and it has formed a collaboration with hat-maker Nick Fouquet.

Ms Wang says the firm "coaxes" mycelium to grow into a large brick. The top layer of this, which is said to look like a sheet of animal leather, is then peeled off and can be tanned or coloured in the same way as leather.

"I think the reason for the expanded interest in mycelium for materials science applications is just increased awareness," says Dr Mitchell Jones, a researcher at the Vienna University of Technology, and an expert on mycelium.

"The allure is the 'weirdness' of the concept, for want of a better term."

Dr Jones adds that unlike most manufacturing processes — which may use a lot of energy and require machinery — fungi, a biological organism, basically does the hard work for you, simply by growing. ■

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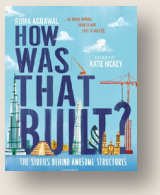

How Was That Built? by Roma Agrawal

Bloomsbury Publishing PLC
£14.99

Answer to spot the fake

Mushroom found in shape of sphynx

Build the Change

This week's challenge is part of the LEGO® Build the Change programme. It can be done at school or as homework, and parents can help upload photos of pupils' work to the online gallery.

Visit the gallery at https://bit.ly/btcgallery and feel free to use it as discussion point in class.