

Turning The Tide

“The flooding here can be so bad it puts people’s lives at risk; the water can reach seven or eight feet high in this park. I remember the last time it flooded - the fire brigade was here, working to save a person from the currents. It really puts a different perspective on things.”

Mark Taylor (right) is sitting in the bandstand in Miller Park, one of the many public spaces he oversees in his role as Assistant Director (Head of Neighbourhood Services) at the Communities and Environment Directorate in Preston. The park is a floodplain, designed to let in huge amounts of water to save other parts of the city but today the sun is shining and the area is busy with sunbathers, dog walkers and people having picnics. Some are relaxing by the park’s beautiful stone fountain, which lies broken due to flood damage in its pipes.

“The cost behind putting that right is astonishing. It’s going to cost tens of thousands of pounds to get it working,” Mark adds.

Miller Park may be small but it shows the huge impact of climate change. It’s a big issue in Preston, which sits on the north bank of the River Ribble in Lancashire - a new £54.7m flood defence scheme is currently being built near the park to reduce flood risk to 4,700 homes and businesses.

According to the Lancashire Climate Change Partnership, which contains dozens of organisations from across the county, in the past few decades the North West of England has seen higher temperatures and an increase in high intensity rainfall - resulting in increased flooding of major rivers.

A few miles away from Miller Park, Mark’s 11-year-old daughter Olivia is taking part in a Computer Science lesson at Archbishop Temple School. She is one of the first people to explore Rivercraft, a new world in Minecraft: Education Edition that shows the destructive impact flooding could have on Preston, and teaches users about climate change, the environment, STEM, digital skills and engineering. It will be available globally in multiple languages.

“It’s a really fun way to learn,” she said. “But it also helps us understand what could happen in the future and how most places around here are going to be flooded if we don’t do something. In the Minecraft world we had to build flood defences and a floodgate, then we had to replace the concrete in the park with grass, so some of the water would be soaked up and the flooding won’t be as bad.”

Her friend Isabella also played the new Minecraft world. She added: “Minecraft is something you recognise and enjoy, so it’s a more effective way to learn. Because it’s an interactive game, you can really get into it in and concentrate. It makes me want to take more action to help tackle climate change, so when I grow up it’s a better planet for me and, if I do have kids, it’s a better planet for them, too.”

Rivercraft was created as part of a collaboration between Minecraft, the Environment Agency and BlockBuilders, an organisation that specialises in digital youth engagement. The world contains three games, all of which take place in an exact replica of Preston:

Managing Flooding - players build their own version of the Preston flood defences, flood storage areas and flood gates. They will then flood the area with water to learn the pros and cons of each approach and their suitability within local communities

Flood Prevention - players explore how individual actions can alleviate climate change and how understanding flood risk can reduce the damage to people and property

Our Local Environment - players conduct an ecological survey using a digital workbook and in-game camera. They must spot and record wildlife species including water voles and otters.

Justin Edwards (right), Director of Learning Programmes at Minecraft, was at the school to see the pupils play the world for the first time. He said: "When we introduced this Minecraft world to the young people, we saw them engage in the topic. They learnt about flooding, they understood what the local flood defences will do and gained more knowledge about the community they live in.

"It's teaching children environmental skills, the mechanics of flooding and flood protection but it also teaches them about project management, teamwork, engineering concepts and communication with others wherever they are in the world.

"The other important skill the game teaches is failure in a safe and fun way. The children can build a flood defence and it might not quite work but they can learn why it hasn't worked. One of the great ways we all learn is when things don't go as planned."

Archbishop Temple School teaches 782 pupils aged 11 to 16. Its leaders are passionate about sustainability and digital skills, so bringing the two together in Minecraft was a win-win for teachers and pupils. In the library, where the lesson is taking place, rose gold Surface devices are on every desk, while the corridor walls feature pictures of computer science field trips and pledges the children have made to be more environmentally friendly - use less water, turn off lights, walk to school more, eat less meat.

In the computer science room, next to the library, trophies that have been won at robotics competitions sit alongside small handmade robots that the current class of pupils have built.

Helen McLean (right) is head of computer science and also oversees online safety and IT at the school. She said: "So many children play Minecraft already, so any lesson that can involve Minecraft is a win-win straight away. I love seeing young people really engaged in a topic and enjoying what they're doing, because if you enjoy what you do, you learn better. It's great that they can make mistakes in a safe environment like Minecraft, because that's how they learn to fix things.

"It's great to see them building flood defences. Flooding does happen across this area and

there was a devastating flood a few years ago. People I know saw the bottom floor of their houses submerged in water and some lost their businesses, while roads became giant rivers. Flooding is becoming more and more of an issue around here.”

Lancashire is regularly rocked by flooding, most notably in 2015 and 2020. In December 2015, more than 2,500 homes were flooded across the county, with residents in 229 separate communities affected by rising water levels. Soldiers were deployed in Lancaster, where Army trucks were used as ambulances as flooding cut the city off from the power grid. The total cost of the damage caused by the three storms that month was estimated at £1.3bn. Even when water levels subside, residents face months of repairs to property.

The new flood defences in Preston - comprised of flood walls, the use of glass panels and embankments - aim to reduce the risk of a 2015-style disaster.

Andy Brown (right), Area Flooding Coastal Risk Manager for the Environment Agency in Lancashire, said: “Flooding is a significant issue here in Lancashire but also more broadly across the country, and it’s one that’s going to get bigger and harder, so it’s really important that we all focus on it and understand it.

“Minecraft is helping us engage with the public on how we manage flood and coastal erosion in the context of climate change. It helps young people in particular understand what’s going on and their part in it, because they are the ones who are going to face the hardest impacts of the climate emergency.

“One of the brilliant aspects of this collaboration with Minecraft is that these games are going to be available around the world. If we can stimulate just a small number of people to think: ‘my career of choice is something in science, technology, engineering or maths that relates to managing flood risk in the future’, then that will be a great success for us.”

The journey from playing to learning is something that Minecraft excels in. It’s also why the Environment Agency and Minecraft approached BlockBuilders, Brighton-based experts in creating immersive worlds, to build Rivercraft.

Megan Leckie, Co-founder and Co-director of BlockBuilders, watched the Archbishop Temple School class as they explored the replica of Preston that her company had spent four months creating.

She said: “We got the 3D data of Preston, which is freely available online, and turned it into a Minecraft world. But that data creates generic buildings, so we collected screenshots and imagery of Preston and added details to the structures to replicate how they are in real life. When minecraft were exploring, they felt a connection to this place in Minecraft because it looked exactly like their city. They are fully immersed in this experience.”

BlockBuilders have given the Environment Agency information packs and video tutorials about Rivercraft, so they can run their own educational sessions within Minecraft. This will

enable them to teach more people about the risks of climate change and what they can do to help.

Back at the bandstand in Miller Park, Mark Taylor says sustainability is a part of everyday life in their household. He is keen to ensure that his family help the environment by recycling every product they can, monitoring energy use, turning lights off, having shorter showers and not leaving taps running.

Mark is confident that the Rivercraft world in Minecraft will help his daughter Olivia and her friends understand their responsibilities to the environment.

“It can be a tricky thing for children to learn because they often don’t realise the implications of climate change,” he said. “But Olivia was telling me about Rivercraft and we got into a conversation about recycling. She said she was recycling in the game and picking up litter, and we have to make sure we do it in real-life. I was just thinking: ‘yes, exactly’.

“Platforms like Minecraft can be used really well to deliver those messages, whether it’s at school or at home. Using it to educate children on some of the biggest issues we’ve got in the world is fantastic.