

# Cultural Digital Designers in Residence in Schools 2020

A project by the Comino / Ideas Foundation partnership in Greater Manchester Schools with Manchester Metropolitan University



Project Name: Bygone Bolton

CDDIR Name: Tom Cockeram

CDDIR Course: MA Product Design Allumnus

School Name: Ladybridge High School

Teachers Names: Joy Helliwell, Jess Greenhalgh

Cultural Organisation: The Science and Industry  
Museum, Manchester

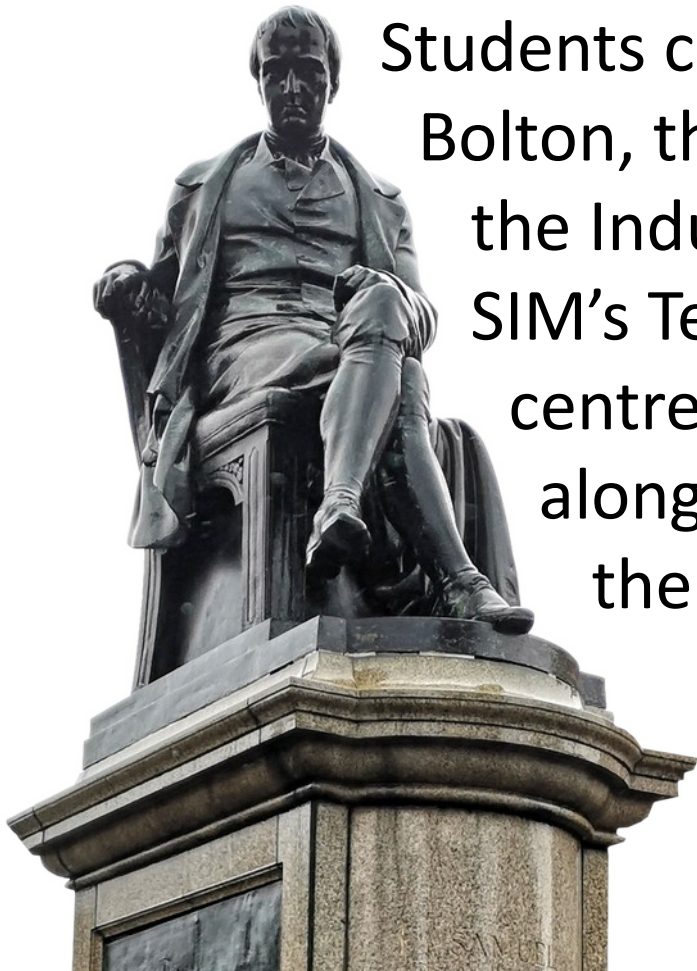
Link Staff Name: Adam Flint

Curriculum Areas: Citizenship & Art

Pupils Year and Number: 19 yr 8 and 9s

# Project Overview

Students created their own monuments to people and places in Bolton, that were significant in the town's development during the Industrial Revolution. These were informed by a trip to SIM's Textiles Gallery and a walking tour of Bolton town centre. The finished sculptures will be exhibited as a 3D map alongside the walking tour so that other students can share the experience.



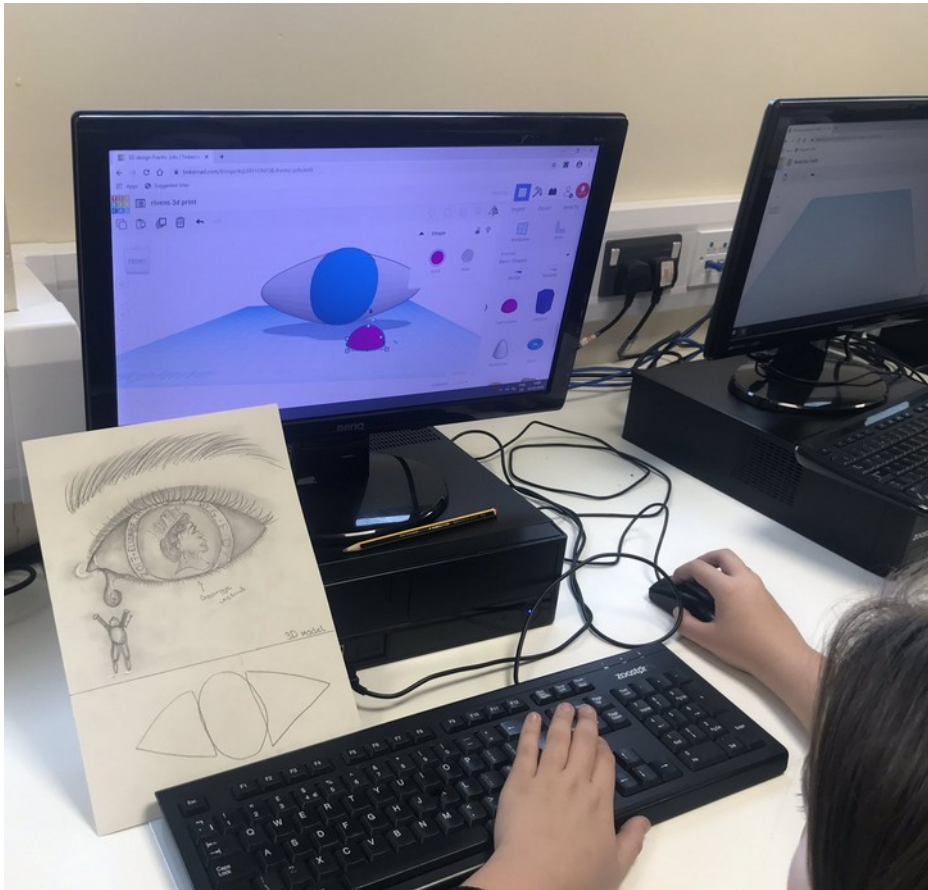
# Project Rationale

- To provide a way for the students to connect with their surroundings. It was identified by their citizenship teacher, Ms Helliwell, that students were aware of global concepts such as slavery and the rights of the child, yet not how they have directly impacted their local landscape.
- To create a project alongside the students so that they felt they were co-collaborators. The end outcomes were chosen and designed by each group as a way to share the information they had gathered informally.

# Project Rationale

- To prepare students with a grounding of what courses and careers are available for them if they were interested in pursuing an art based pathway, and in addition highlight the crossover opportunities between disciplines.
- To create a blended learning resource that could be used by other students to further their development and understanding of the subject matter.
- To further connections between all parties involved as this was the school's first collaboration on the CDDIR project.

# Digital Content



The students created their designs using Autodesk Tinkercad, a free 3D modelling program that runs in most web browsers. These were then 3D printed on a printer similar to the ones they were able to explore during their visit to MMU's Printcity.

In addition, they were encouraged to document their experiences during the information gathering stages of the project using their phone cameras. Group photographs of different landmarks “in the round” were used to create more 3D models using photogrammetry techniques with Autodesk Recap.

# Planning

During the initial phase of planning in September, all key members met at the Science and Industry museum to shape the school visit and talk about what each partner would like to achieve with the project. It was here that we settled upon making an interactive map of Bolton town centre with the students recording their responses to the locations they visit, with initial thoughts involving photography, sketching and written word.

The winter holidays were spent researching and refining a shortlist of locations in Bolton that were either the site of a key historic place or contained a statue of a figure who was significant during the industrial revolution. I took on the role of an armchair historian whilst Ms. Helliwell researched through the humanities department at Ladybridge to see if they had any record of local historic interest.

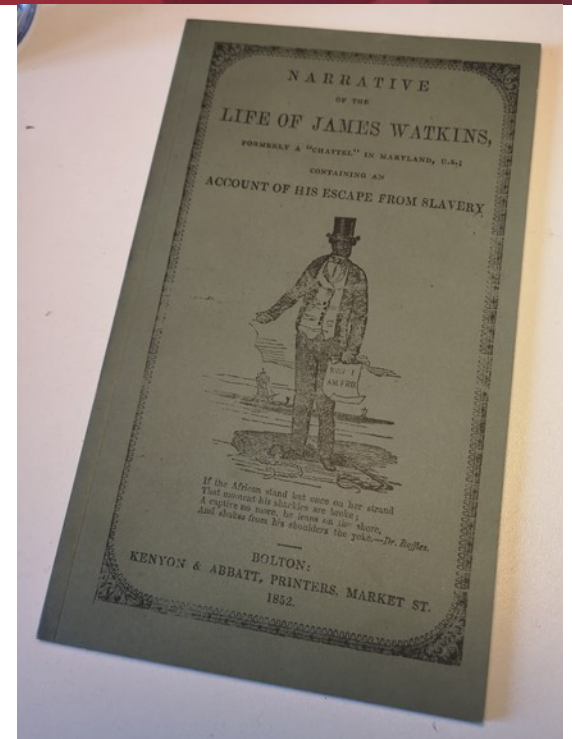


# Planning

The list we drew up was quite lengthy and contained pretty much every single surviving mill building (most had been demolished and the remaining few had been converted to industrial warehouses or apartments.) The next task was to whittle it down to locations that were either walkable between, or that were accessible via minibus that could all be reached during a school day.

Ms Helliwell, Ms Greenhalgh and myself made several field trips to different spots to assess sites for viability, health & safety and risk assessments. During these visits we contacted Bolton Museum, who were eager for us to include their local history display and resources as part of the project. This including a replica of James Watkin's Diary, an escaped American plantation slave who chronicled his experiences picking cotton

After the locations were finalised, I created a map and information sheet to be used on the day and also as a template for future visits, in addition to session plans for the Tinkercad workshop.



# The Pupils



The students are a mix of years 8 and 9, selected by Ms Helliwell and Ms Greenhalgh from their art and citizenship classes based on who would get the most out of the project. Most of the students knew about the basics of 3D printing but only one had used the modelling software before, as part of a design technology class.

As a group they are a lively bunch who were able to overcome the cold January weather of the walking tour with high spirits, and engaged well with the project. From the start, they proved to be inquisitive and able to work together in groups to create their final statues.

# Bygone Bolton Science and Industry Museum Visit



The students were able to have a hands on session with various tools that were used in the cotton mills, from loom shuttles, carding pads and even the woodblocks used to stamp the finished cotton bales.



Alongside this they were given a tour of the textiles gallery and its exhibits about life working in the mills, topped off with a live (and **loud**) demonstration of some of the machinery used in cotton manufacture.

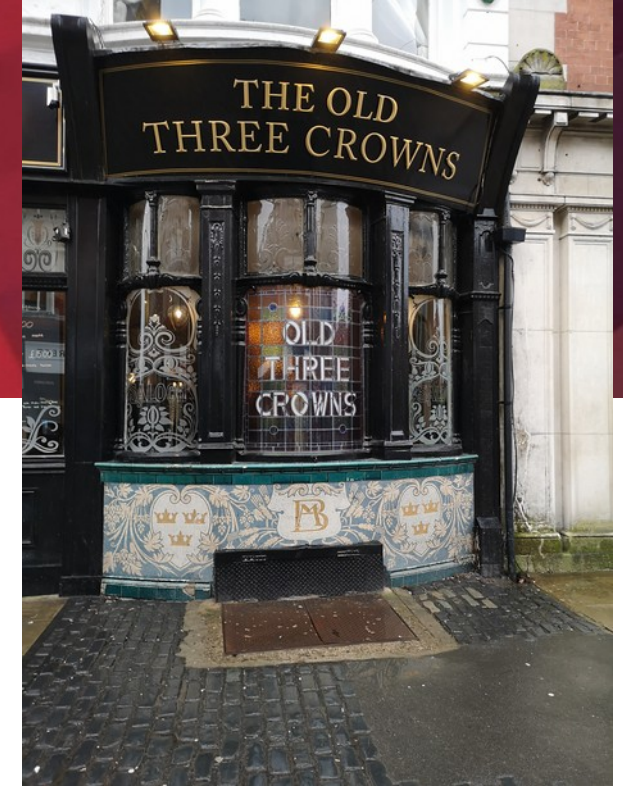
# Bygone Bolton Town Walking Tour



The tour got off to quite a damp start on a chilly January morning. The minibus dropped us off at the first site and we walked from location to location, with a short talk about the history of each before the students were encouraged to sketch and take photos.







In the case of James Watkins, no trace of the publishers where he lived remains. We stood on the approximate spot and read an excerpt from his diary about the hardships of working on the plantation.

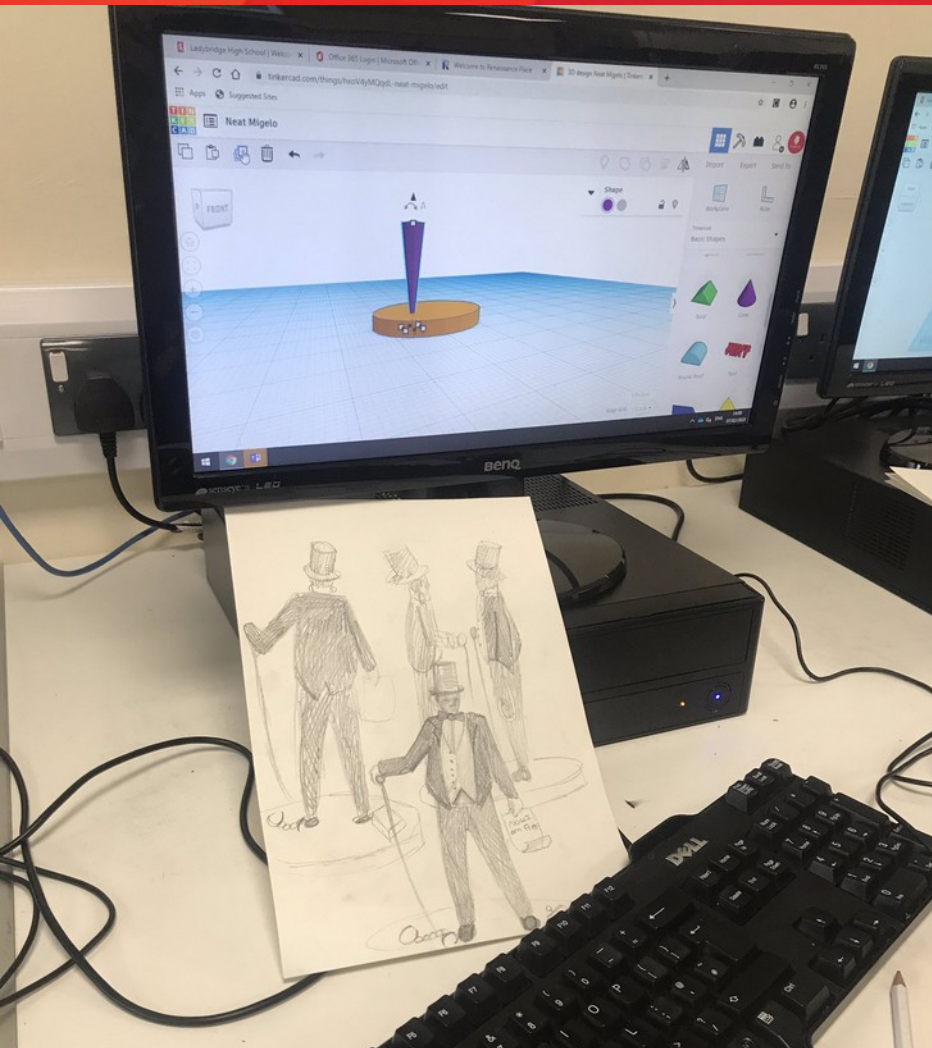


We finished the tour in Bolton Museum where we got to explore the local history exhibits (and warm up a bit). A few of the students had visited the museum and library previously, although the main focus to previous visits was on the aquarium in the basement.



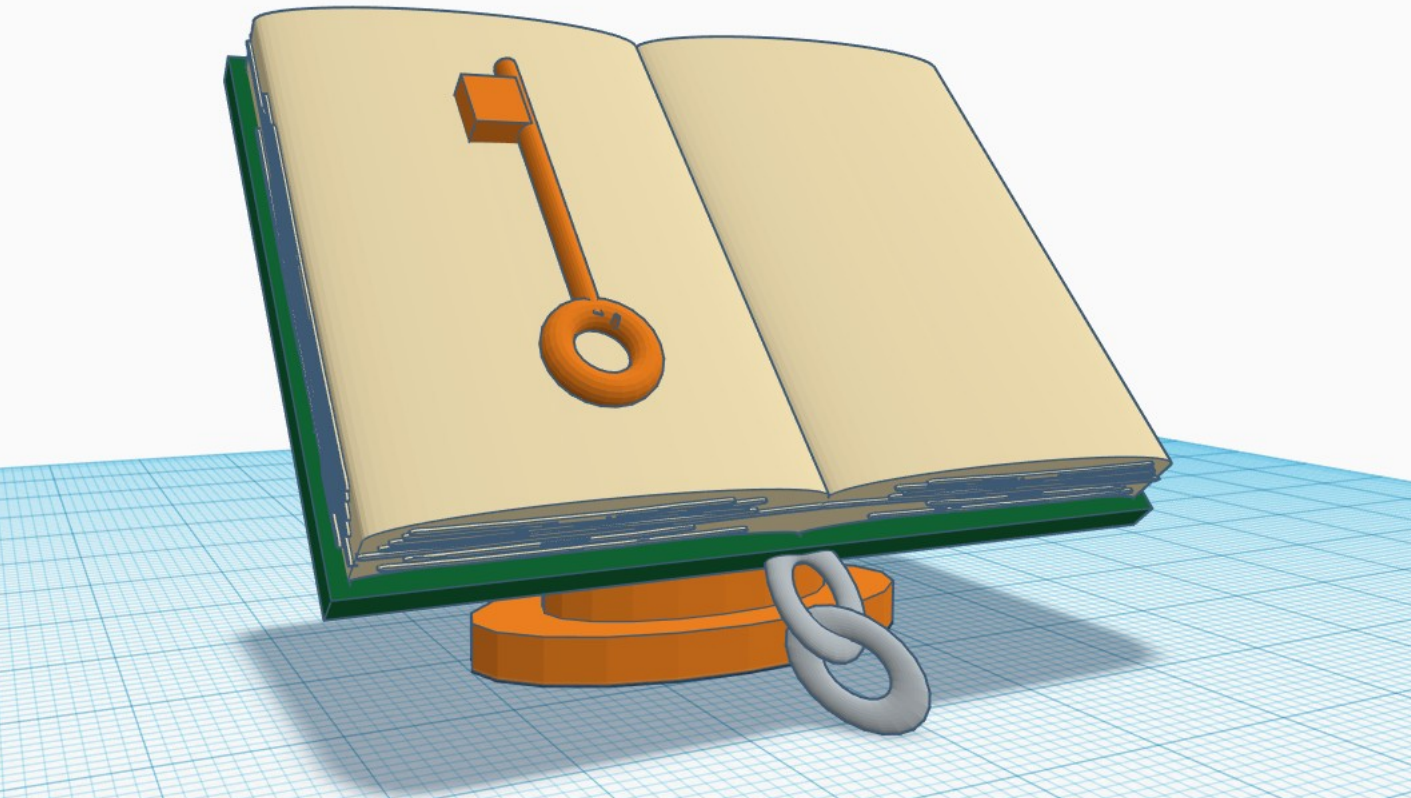
In the afternoon we took the minibus to Swan Lane Mills (now split premises for several businesses), where we had a tour of the premises and a surprise visit to a neon sign works.

# Bygone Bolton Tinkercad workshops

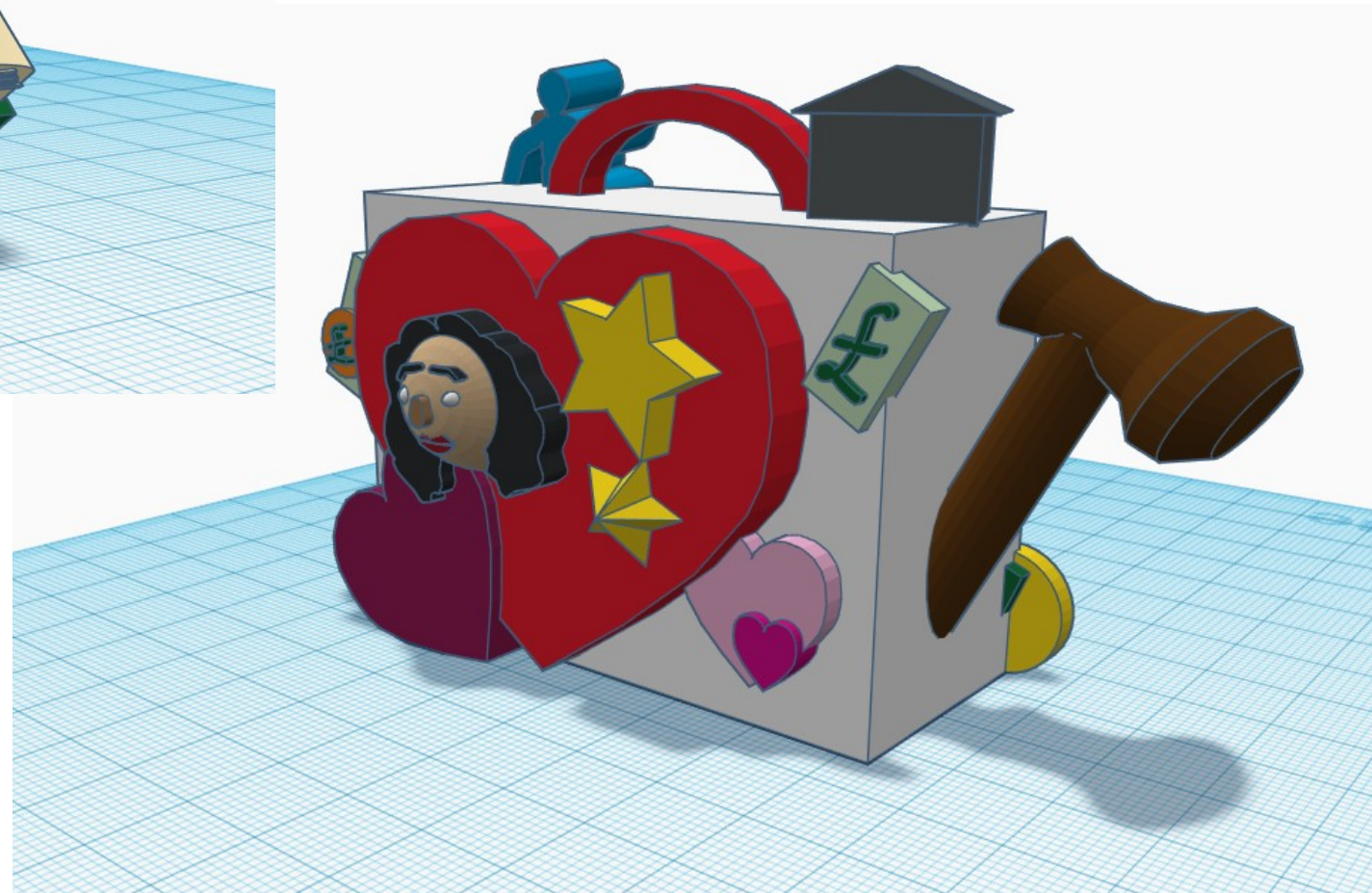


The students decided which sites were to go on the map and split themselves up into groups. They then fleshed-out design ideas that took inspiration from their sketches and photographs from the tour.

They were also tasked with a quick “design jam” to create their own mills as a way of cementing their understanding of the software before working on the statues.



Each group had a different way of working together. Some worked on a design each and then compared which ones were the most effective. Other groups worked on the same model from different computers, talking to each other about what changes they were making.



# Bygone Bolton MMU School of Art & Printcity

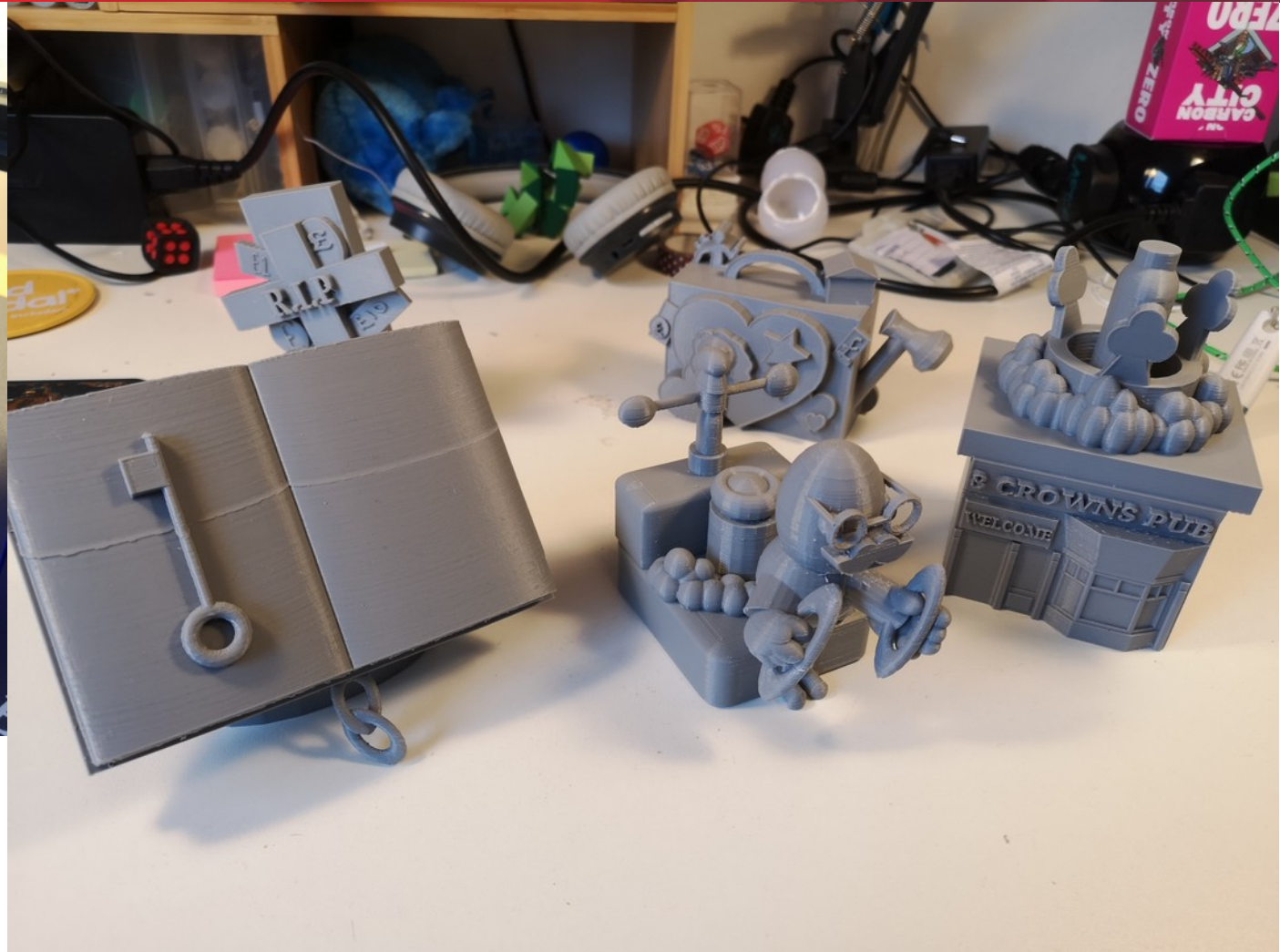
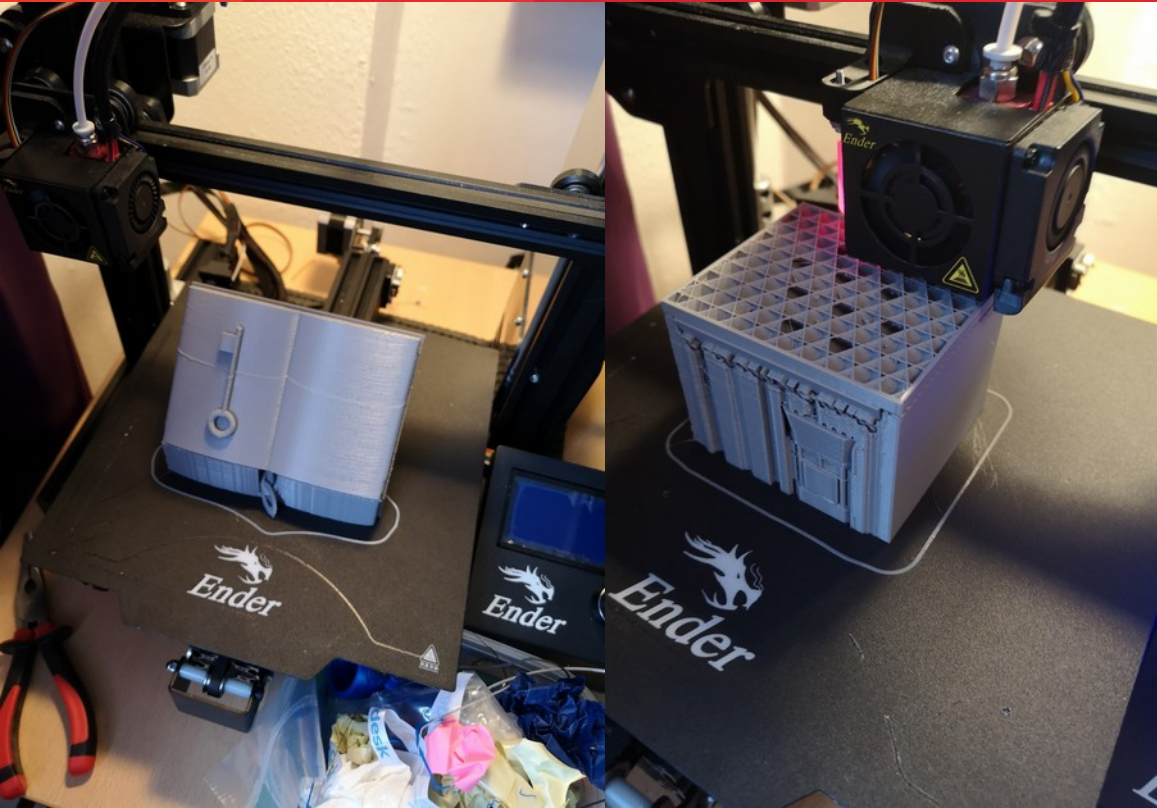


The Students were given a guided tour of the Manchester School of Art's workshops and studio spaces, chatting to staff and current students about their work as they went.



Later they went over to Printcity, where they were able to explore the different types of rapid prototyping available and its applications in different sectors. They then continued on with their statue designs in the CAD suite next door.

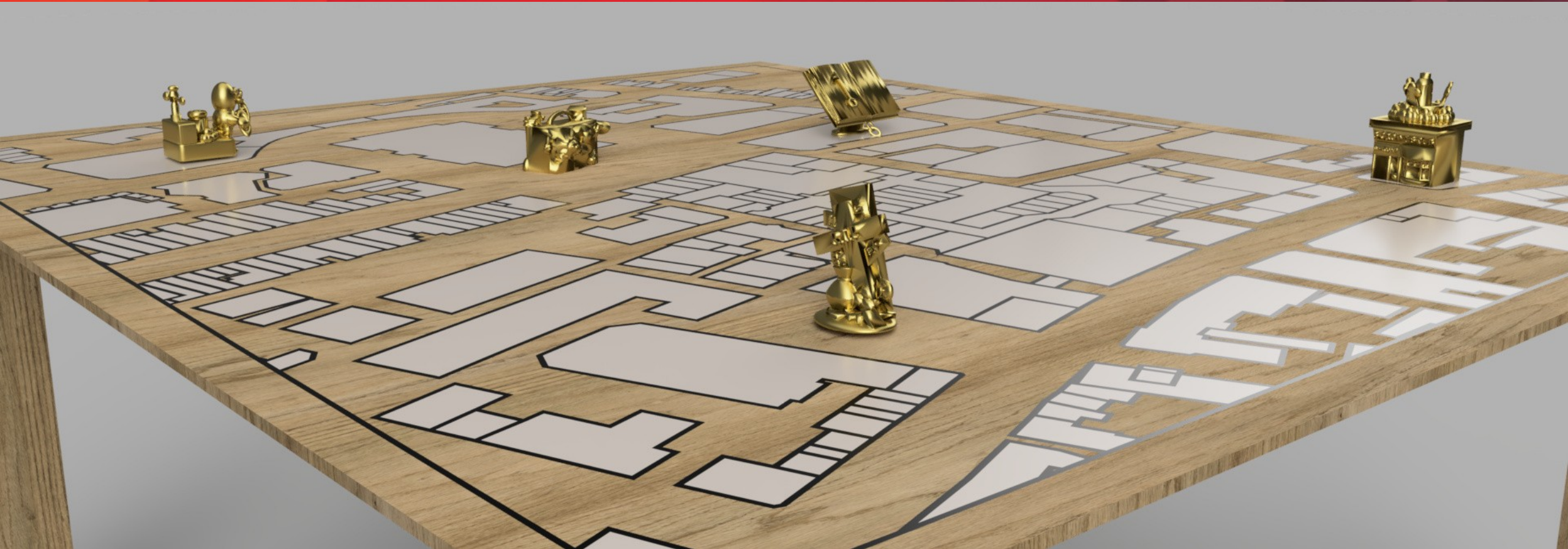
# Bygone Bolton Printing the Statues



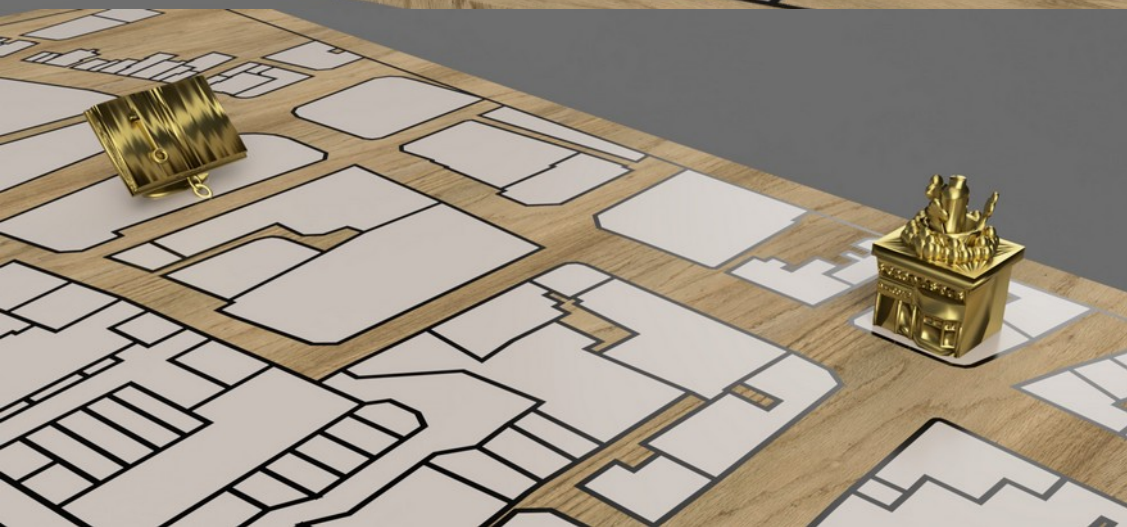
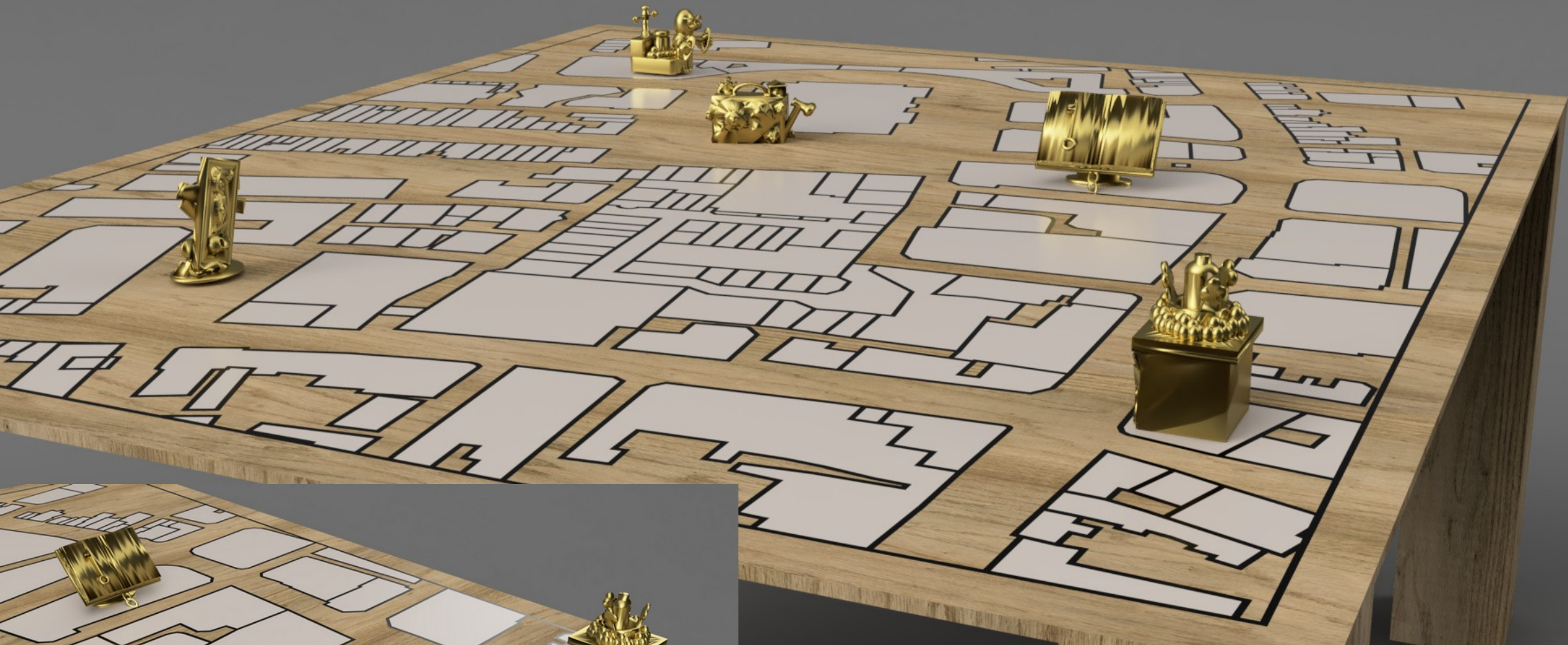
The completed designs were printed on my 3D printer before being sanded, primed and painted to look like antique metal.



# Legacy Artwork



Mock-up of final piece – The laser cut board has yet to be assembled.



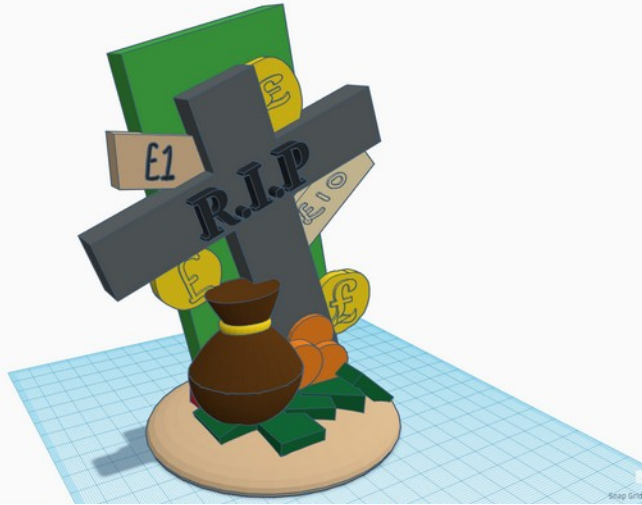
The map will be made of several boards that can be disassembled for easy transport. Optionally, the mills that the students have designed during the “design jam” can be included on the map, but that decision is for them to make.



## **The 3 Crowns Pub**

Anab, Harris, James and Yvonne

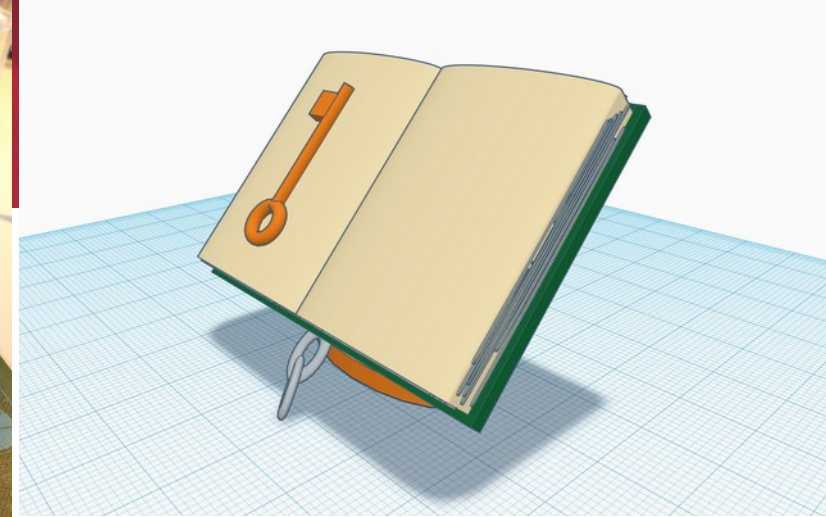
Site of a riot incited by the taxation of bleached cotton goods, the livelihood of many Bolton workers. As a result of the national outcry, the tax was rescinded.



## Samuel Crompton

Riven, Skye, Aaisha + 1 more

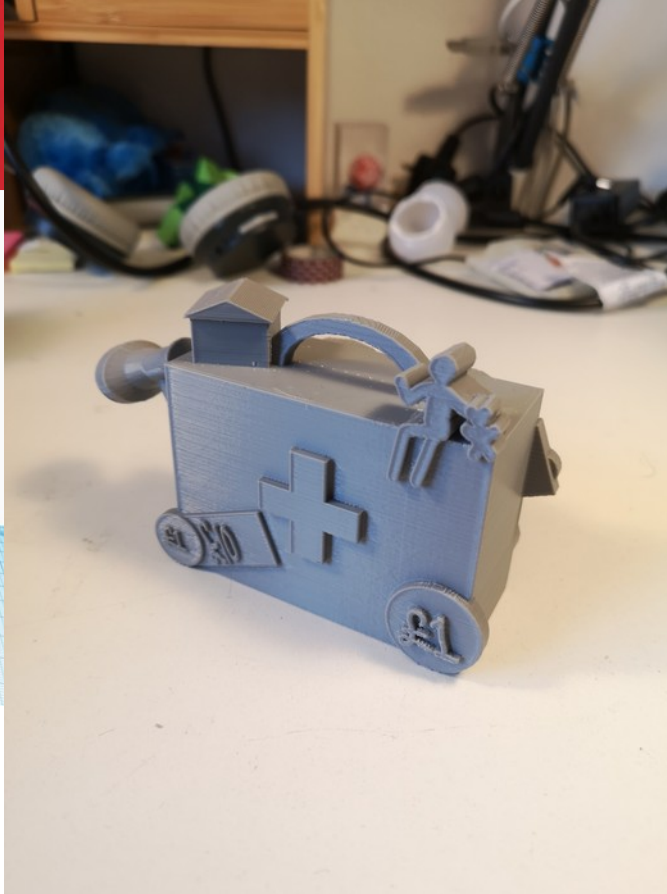
Crompton was a Bolton born weaver who created the Spinning Mule ~1779. His device for spinning cotton combined and improved several earlier designs and was adopted throughout the North West and beyond, contributing to the start of the Industrial Revolution. Sadly, he was convinced not to patent it and survived on the charity of other industrialists.



## James Watkins

Etido, Hafsah, Amirah +1 more

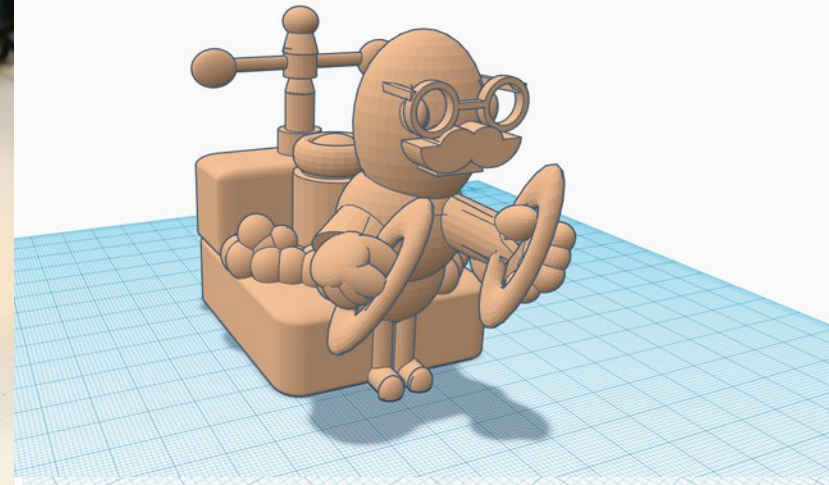
Watkins was an escaped American plantation slave who lived in Bolton and shared his experiences of the conditions in which he picked cotton with the workers. Through his diary, that was published by his landlord, he became a key voice in the abolitionist movement in the north west.



## Samuel Taylor Chadwick

Sara, Holly + 2 more

Chadwick was a Bolton doctor and MP whose philanthropy improved the health and working conditions of local workers. He founded an Ear, Nose and Throat clinic at Royal Bolton hospital, several orphanages and poorhouses and started what would later become Bolton Museum.



## **Bolton Museum**

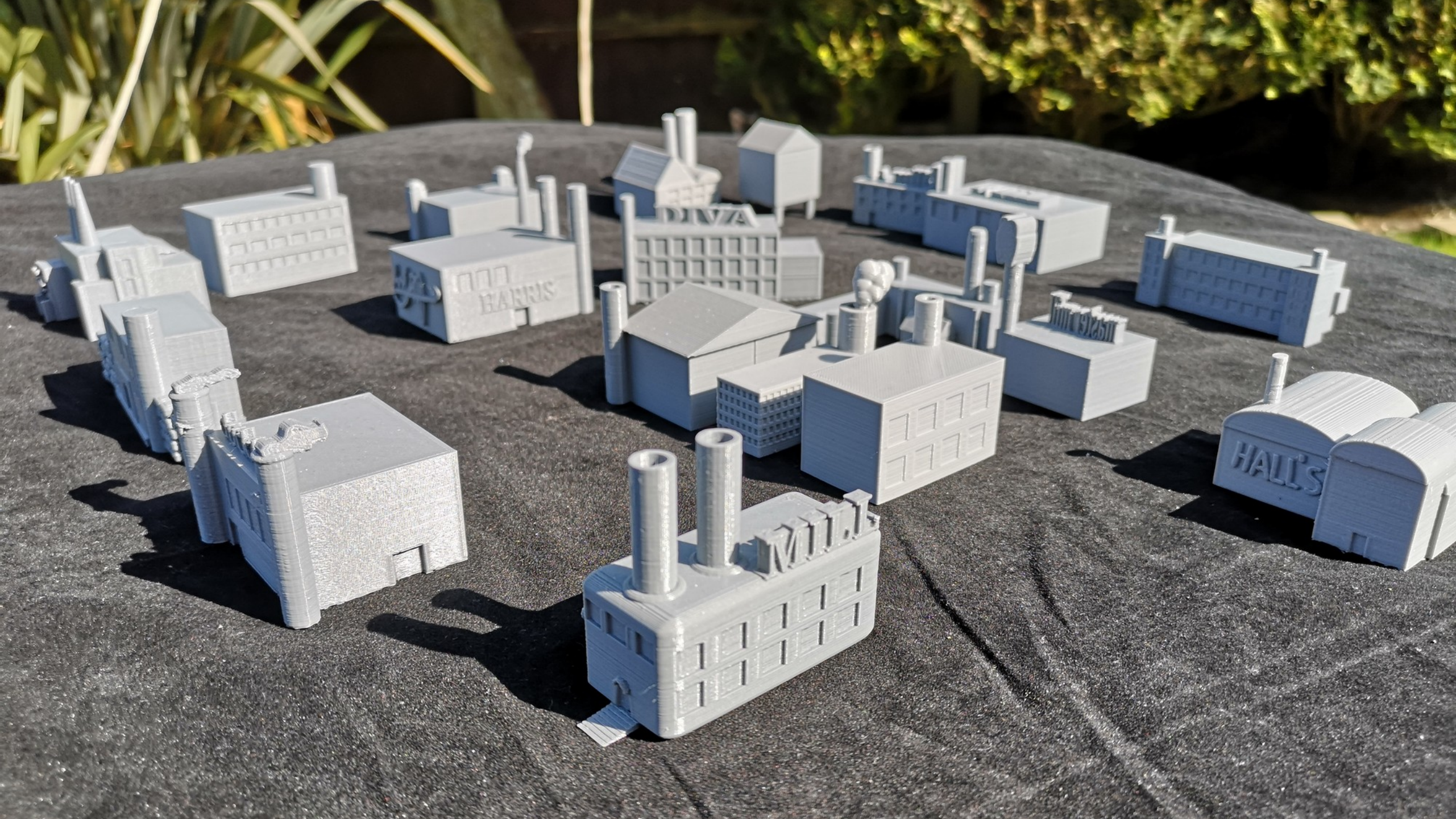
Alex and Thomas

Bolton Museum has a collection of locally historic artefacts from the Industrial Revolution, including a great example of Crompton's Spinning Mule and interactive flywheel governor.



In addition to the statues, each of the students designed a mill with no constraints as part of a workshop to familiarise themselves with the software. These might be used on the map as terrain.





# Benefits

- The students took well to using the modelling software, continuing to work on their designs beyond the classroom. It is hoped that they develop this workflow of CAD/CAM further after seeing their finished statues during the (currently postponed due to the pandemic) celebration event. They also learnt more about the history of their local area, and several took personal interest in finding out more information on the streets where they live.
- The teachers collaborated with a digital artist and across the school “silos” in order to create a teaching resource that could be expanded to include other students as part of their “Learning for life” days later in the school year. This was the first time either of the teachers had used 3D modelling programs, and by the end of the project they were interested in using the school’s own 3D printers for individual projects.

# Benefits

- After the legacy piece has been exhibited in the textiles gallery, SIM will be able to use it as a teaching resource that can be sent out to other schools in the local area in order to enhance their interaction with the museum's exhibits. This is the second time I have worked with the Science and Industry Museum on a CDDIR project and the previous project was met with similar enthusiasm in sharing them with a wider audience.
- I also found this project to be a fantastic opportunity to share my experience and methodology with a new school and enthuse a new group of students to engage with a topic in a way that they found enjoyable and accessible. This is the first time I have planned a walking tour and it has been informative learning about all the procedures needed to make it work in a school environment.

# Quotes

“CDDIR is a great opportunity for students to step out of the usual modes of learning and explore cross curricular subjects in a fun, active and holistic way. The project approach to work – encompassing multiple disciplines - is more reflective of the professional environment that students will eventually go into. It’s often difficult to work this way in school and get this vital experience.

CDDIR also gives students the opportunity to tinker and express themselves at their own speed and in their own style. Tom creates a wonderfully supportive, inclusive and inspiring environment which really brings out the best in the students. Their investment is clear to see, with a strong desire to follow through with the project to it’s conclusion. Students are proud of the work that they produce with CDDIR, evidently empowered with new confidence to create and communicate.

For us at SIM, CDDIR gives us a great chance to dive deep and really understand how students respond to our collection and articulate the themes and meaning within. In turn, this helps us to be better at communicating with and presenting for our visitors.”

**Adam Flint**  
Creative Content and Event Developer  
Museum of Science and Industry

# Quotes

“Working alongside Tom on the CDDIR project has been an absolute pleasure! Before the project began, I was a little unsure as to how it would work, especially as I don't teach a creative subject. Tom guided myself and learners through the process so clearly. His relationship with our learners was an unexpected bonus. He managed to get them working through lunch breaks, completing additional work at home and expressing themselves in ways that I hadn't seen within the classroom setting.

The visit to Manchester Metropolitan University School of Art was a great part of the project. Allowing learners to see that they could study such a range of creative subjects was such an eye opener for them. I am certain that some of them will pursue courses and careers in the creative industries as a result of this.

It was fantastic to be able to see how Tom's creativity, my subject (Citizenship) and the Museum of Science and Industry were able to work collaboratively to produce such a well thought through, engaging and thought provoking legacy piece. Although learners have not been able to see their final pieces or take part in a celebration event due to Covid-19, we are looking forward to this once things are more normal. I have no doubt that we will work with Tom again in one way or another and we most certainly will take part in the CDDIR as it has been so beneficial to our learners. ”

**Joy Helliwell**  
Citizenship, RE and PSHE teacher  
Ladybridge High School, Bolton

# Pain Points

- The two teachers working on this project were from different departments that had relatively incompatible timetables. Care had to be taken to schedule visits and workshops on days that both were available (and could find cover for their GCSE students who were undertaking mock exams at the time)
- The current pandemic situation with Covid-19 has slowed the completion of the legacy piece right down. It is hoped that the students will be able to assemble the map and plan how their research information is to be presented before the school celebration event where they will be able to discuss the project with their peers and family members.

# Thanks

Many thanks to:

- All the staff and students at Ladybridge High school, especially Ms Helliwell and Ms Greenhalgh for all the hard work they have put into researching the project, the humanities and design technology departments.
- Adam Flint and the school visit team and hands on demonstrators at the Science and industry Museum
- Melanie and Deborah from the Ideas Foundation for their continued support.
- The staff and students of Manchester School of Art, especially Adan and Glenn for sharing their knowledge with the students.
- Ed, Gary, Alan and Pete at Printcity for use of the facilities and CAD suite
- The school outreach staff at Bolton Museum arranging the visit and resources.

Lastly, thanks to my partner and family, and my son for being my continued reason to want to share all the wonderful things everyone is capable of.