

MadLab

Children and YP Workshops Brochure

Summer 2019



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1 MISSION

Welcome to MadLab, the UK's longest-running and **most active** makerspace. We're passionate about making Science, Technology, Arts and computing not only fun – but relevant, compelling and exciting – to a broad and rapidly growing spectrum of users.

MadLab's creative workshops are great for children, offering engaging learning experiences that can be aligned with the curriculum.

MadLab also works on behalf of organisations, schools, local councils, third sector and creative/ tech organisations, to deliver making and digital courses to their users.

"I brought my 10 year old brother to Make Stuff because he was interested in a job in programming like me - and now he knows that's what he definitely wants to do. We have found out about more courses now at MadLab and have already signed up." 21 year old attendee at Make Stuff in Bury

Previous clients include: Arts Council England, FutureEverything, Jaguar Land Rover, The Prince's Trust, The Wellcome Trust, Nesta, The Nominet Trust, The University of Manchester, Manchester Metropolitan, Brighter Sounds, Whitworth Art Gallery, Manchester City Council, and John Lewis.

Contact us:

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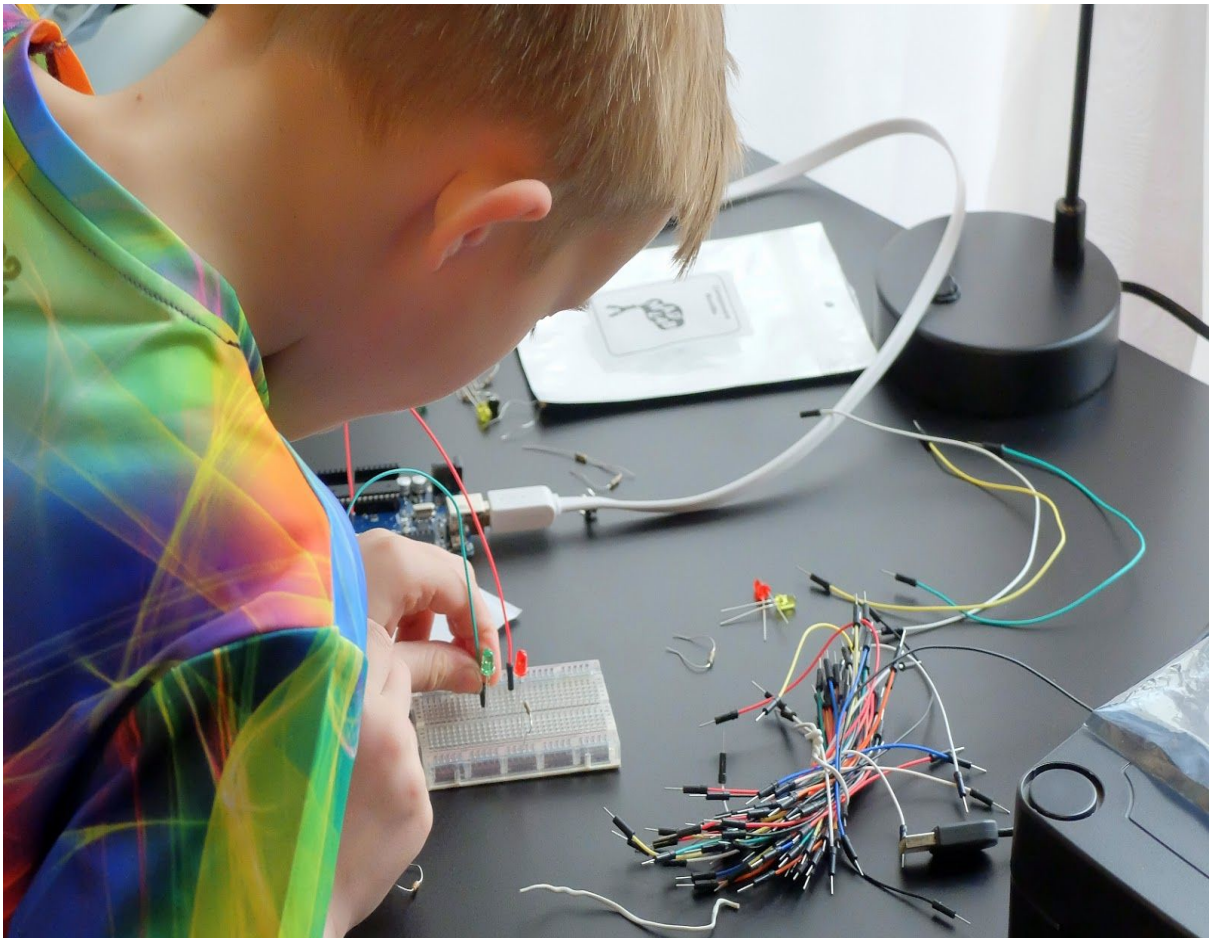
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2 ELECTRONICS

MadLab is an excellent place for children of all ages to learn and be creative. Our workshops are suitable for schools, events and libraries to host. Workshops can be tailored to suit each audience and age range.



i. LEARN TO SOLDER

The 'I Can Solder Badge' is a basic soldering kit that provides the ideal platform for teaching people how to solder. A couple of minutes and the deft wave of a soldering iron, and you'll soon have a flashing badge to wear with pride!

Our Learn to Solder workshop is best run as a drop-in session. Each badge takes just 5 – 10 minutes to complete, and one facilitator can instruct up to four people at one time.

Suitable for beginners aged 8+

ii. ARDUINO

Have a go at coding with electronics in this taster session workshop. Learn to connect & configure the Arduino, upload programs, prototype circuits & interact with different components.

This workshop will take you through setting up the Arduino, and creating circuits to run example codes.

Suitable for beginners aged 12+

iii. GET THE BUG FOR CODING WITH CODE BUG

A fun and engaging introduction to easy drag-and-drop programming and electronics. CodeBug is a Manchester-born initiative, designed to give children a fun and engaging introduction to drag and drop programming and electronics.

In just a few clicks you'll program this versatile little computer to display your own message. By the end of the session, you'll have created a scrolling name badge and a many-faced bug!

Suitable for beginners aged 7+

iv. CODING WITH THE MICRO:BIT

The BBC micro:bit is a pocket-sized codable computer that allows you to get creative. From making an interactive badge to hand-held electronic games you'll be a coding whizz in no time.

This workshop is suitable for beginners aged 11+

v. OTTO ROBOTS

Otto is an interactive robot that anyone can make. It's open-source, [Arduino](#) compatible and 3D printable, the perfect opportunity to build and have your very first robot, learn robotics and have fun.

NB. Otto needs to be 3D printed prior to the workshop. This workshop is ideal for testing a new 3D printer or getting to grips with 3D printing and electronics at the same time.

This workshop is suitable for those who have played with basic electronics before aged 11+

vi. DOODLE BOTS

Come and join us making a Doodlebot, a chaotic vibrating drawing robot that creates fascinating patterns as it swirls around and around. Those taking part in the workshop will use engineering learning on how to build simple electronic circuits and using physics to control how gently or vigorously their doodle bot responds, everyone will be unique.

Suitable for beginners

vii LIVE ACTION STOP MOTION

Learn how to create a live action stop motion video using your friends and family as the characters in your own movie. Learn how to create magical effects to make your movies come to life.

Suitable for 8+. Laptops, smartphones or tablets with cameras are required.

viii. MAKEY MAKEY

Build a burglar alarm, banana piano or even a flappy birds game where you control it by flapping your arms. Using Scratch the free online programming language used in many primary and secondary schools and the maker makey, a small board that lets you connect your computer programs to the real world.

Suitable for 8+

3 RASPBERRY PI

All our Raspberry Pi workshops are taught using the Pi-Top CEED, all equipment can be supplied by MadLab.



i. CODING MUSIC

Learn to code creatively on the Raspberry Pi by composing or performing music in an incredible range of styles!

Suitable for beginners aged 7+. There is no material cost for up to 20 participants.

ii. HACKING MINECRAFT

Explore the virtual world of Minecraft Pi, and use Python to manipulate the world around you.

Learn to teleport, set blocks within the Minecraft World, leave a trail of flowers as you walk, blow up huge TNT blocks on command, flow lava, and create your very own 'whac-a-block' game!

Suitable for beginners aged 8+. There is no material cost for up to 20 participants.

iii. PROGRAMMING SCRATCH

With Scratch, you can program your own interactive stories, games, and animations – and share your creations with others in the online community.

This workshop teaches fundamental coding concepts such as sequencing, repetition, variables, selection and operators.

Suitable for beginners aged 8+. There is no material cost for up to 20 participants.

iv. PHYSICAL COMPUTING WITH SCRATCH

Use Scratch to control the GPIO pins on a Raspberry Pi. Create simple circuits to flash an LED and control a traffic light system.

Suitable for beginners aged 12+. There is no material cost for up to 20 participants.

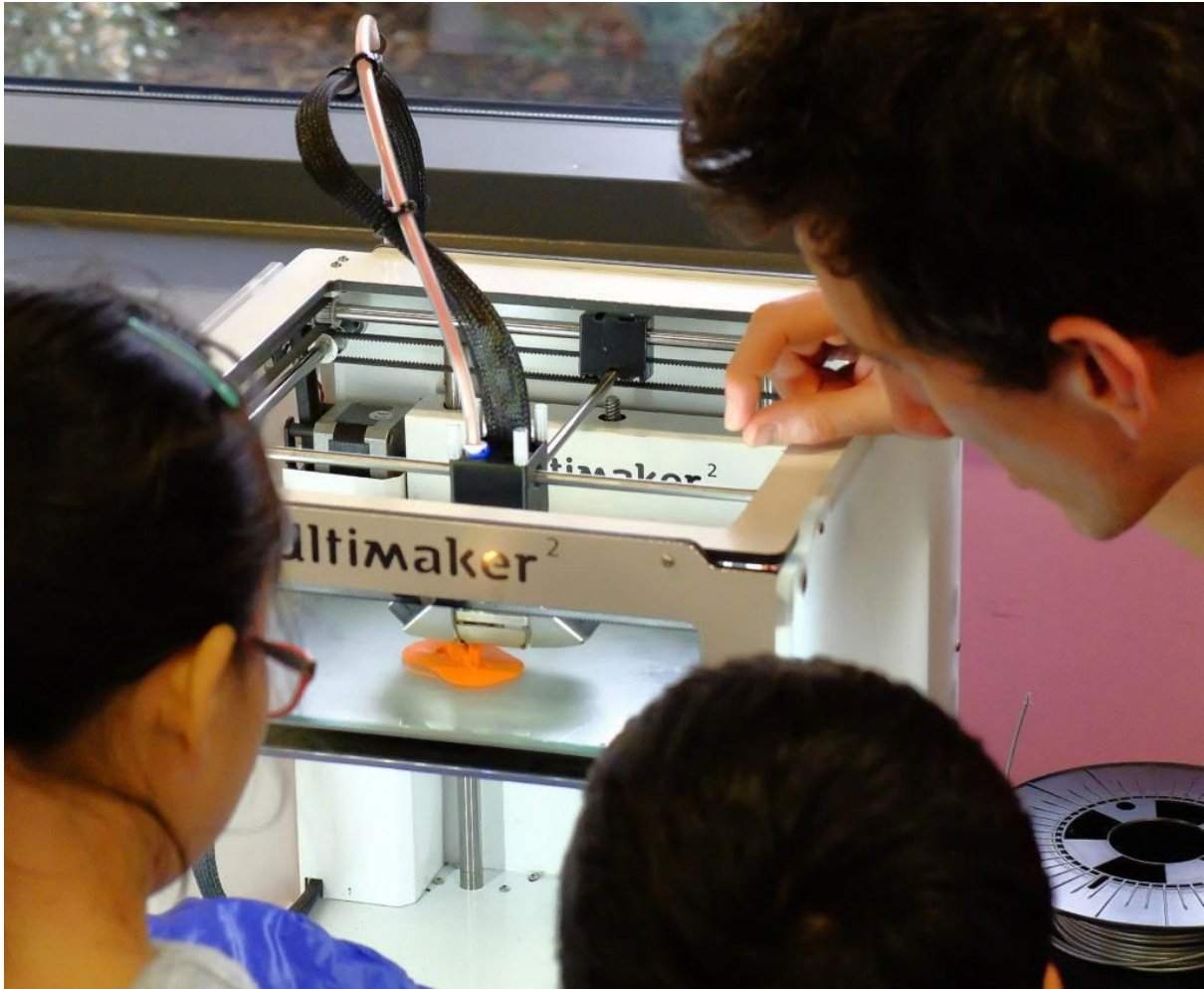
v. GAME DEVELOPMENT IN SCRATCH

Put your basic coding skills into practice to create games in Scratch on the Raspberry Pi.

Suitable for learners already comfortable with basic coding concepts in Scratch aged 12+. There is no material cost for up to 20 participants.

4 SCIENCE AND DIGITAL MAKING

Sew and paint electronics or get messy with physics, our science and digital making workshops offer a fun, alternative approach to learning about science and technology.



i. SCIENCE BUSKING

Our science demonstrations use simple everyday ingredients to conduct experiments that wow!

Get hands-on with engineering or messy with physics. With a large range of exercises we can tailor each session to your requirements.

Suitable for beginners aged 6+

ii. 3D PRINTING DEMO

You've heard all about them, now see one in action! Our 3D printer will be running all day, come watch and maybe take home your own 3D printed mini mascot.

Suitable for beginners aged 6+. Each item takes 30 - 60 minutes to print.

iii. WEARABLE TECH

Explore the future of fashion and technology and design your own tech tote bag. In a 2-hour session you'll construct a sewn circuit, sew with conductive thread and make your LEDs light up while having tons of fun along the way!

Suitable for beginners aged 8+

iv. CONDUCTIVE PAINT

Get creative and bring it to life with a collaborative canvas of art & light. Use your imagination to draw simple image of your choice, while learning how to incorporate a battery and LED to complete a circuit, adding some twinkle to your picture.

Suitable for beginners aged 8+

5 PATTERNCRAFT

PatternCraft is an analogue to digital punch card reader that teaches the fundamentals of programming and encoding data through the write-once medium of a physical punched card.

With links to binary and the computing curriculum as a whole, PatternCraft is a cross curricula tool that can be used for in the support of STEM activities and support soft skill development in areas of creativity, problem solving, team working and communication.

Designed and created by Gemma May Latham, an artist and maker, Gemma is interested in the relationships between textiles and coding. Having only started to learn to code in 2012, Gemma endeavors to develop accessible methods for understanding code and computing theory. We offer a wide range of workshops using PatternCraft, detailed below.



i. BINARY MINECRAFT ANIMATION

Explore how binary data is used to store images in the form of 0s and 1s and create images in Minecraft using punch cards. Following this introduction pupils will work in groups to design and program an 8x8 2D animation in Minecraft. Older children will have the opportunity to explore the Python coding behind the process and make changes to their animation by editing the code.

Suitable for everyone aged 7+

ii. ENCODING DATA

Use punch cards to explore how binary is used to store data in the form of 0s and 1. Students will be learn how to convert denary numbers to binary and encode and decode numbers using Minecraft builds. The group will then progress to creating messages using the ascii alphabet and use punch cards to make text appear on screen.

Suitable for children aged 7 - 14 years

iii. INFRARED CIRCUITS

Beginning with an introduction to PatternCraft, each student will make a punch card see their data translated into a Minecraft build. The group will then explore how the reader works, building infrared detectors using simple components and electronic prototyping boards. Students will be encouraged to test the detector using different 'punchcard' materials and varying hole sizes and draw their circuits using recognised symbols.

Suitable for children aged 7 - 14 years

6 ADDITIONAL INFORMATION

The duration of the workshop can be tailored to suit your requirements, the minimum for each being one hour. Many can be arranged as a drop-in session to run within a larger event, or as a package of workshops.

Facilitator times include travel, setup and clearing down. Drop-in workshops run for a length of time of your choosing. Please allow 1 hour for setup and 30 minutes for clearing down. Please also note, facilitator costs are in addition to any material costs, dependant on the number of facilitators required and the length of activity.

Unless otherwise specified, computers/laptops are not provided. These can be hired from MadLab, or would need to be made available by the venue or provided by the learner. We would also require the venue to have open access to free wifi.

Workshops outside of Greater Manchester may also include travel and accommodation costs.

7 CANCELLATION POLICY

In the event of cancellation, we cannot offer refunds with less than two weeks notice of the event and we will expect payment in full.

MadLab hires independent tutors to lead workshops, and as part of a fair working contract with them, we make sure that we give them notice of any changes. This policy ensures we can provide you with high quality tutors at all times.