

# Digital Maker CIC : We make makers...

Digital Maker CIC has a wide range of experience when it comes to delivering inspiring & fun creative STEAM workshops. Below are some examples of the work we have run in schools, festivals, clubs and more. If you're interested in working with us, please do send us an email or give us a phone. ([info@digital-maker.co.uk](mailto:info@digital-maker.co.uk) | 07734 473 932)

## Abu Dhabi Science Festival

Digital Maker CIC ran "Underwater Robots" workshops for over 1800 kids at The Abu Dhabi Science Festival 2017. We provided two types of session, 45 minute "Learn, Build & Fly" workshops, where participants were educated on ROV's, then given kits to build & fly in tanks. A lean 20 minute session was created, where participants flew pre built ROVs & learned about their uses.



Abu Dhabi Science Festival 2017



Two types of ROV kits were flown in tanks, Lego & pre-built kits.



Over 1800 children experienced our workshop in schools & public sessions.

## Glasgow School of Art Postgraduate Interactive Design workshop

Glasgow School of Art approached Digital Maker to run a full day workshop for 27 Postgraduate Students exploring interactivity. Using Arduinos & BBC Micro:Bits we utilised various sensors / outputs to create basic interactive solutions, resulting in a 4 hour project based task where teams produce unique prototyped "puzzles" or models.



Glasgow School of Art International Postgraduate Students in the Forres Campus



Following "I/O Recipe Sheets" for Arduino & BBC Micro:Bits using Pins to control Inputs & Outputs



Using C++ / JavaScript the students prototyped ideas with electronics & simple materials

## Driverless Car workshops

Digital Maker CIC ran Driverless Car workshops in Aberdeen & Aberdeenshire, where up to 20 pupils aged 11+ could experience designing, maintaining, training 1:16th scale cars + Raspberry Pi's. U-Decide PB funding in Aberdeen & The Big Lottery funded the Aberdeenshire workshops (ongoing in 2019)



Groups of 4 stripping & building the 1:16th scale car models, mounting cameras to the Raspberry Pi



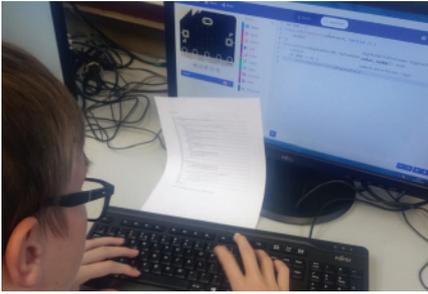
Training the Automated car via Radio Control, the taking the data & creating Machine Learning Models that make the car drive autonomously.



Certificates given on the successful completion of the 5 week course to students.

## Aberdeen Grammar s3 Project Week

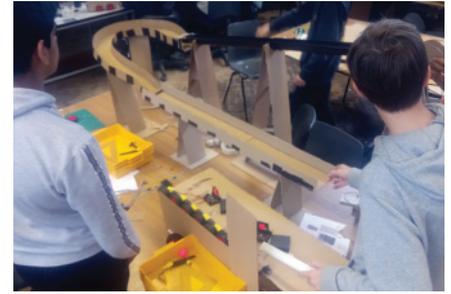
We worked with Aberdeen Grammar School's S3 pupils on their "Project / Skills Week" using BBC Micro:bits to control "machines" they made with various GPIO components and cardboard. Prototyping, Trial & Error, experimentation and JavaScript coding were employed, giving the class a wide range of activities to work on in teams. The pupils said their confidence in electronics and computer coding grew significantly.



BBC Micro:Bits were used by the class (with no previous experience of using them). Using the Drag & Drop "MakeCode" blocks.



Self initiated projects took all shapes, from a catapult and a 4 wheeled vehicle to "rollercoaster"



The Micro:Bit was used to automate the machines which was challenging & fun, leading to lots of problem solving & confidence to try & fail to succeed

## Paper engineering / Paper Rockets.

Digital Maker CIC were asked by the Tillydrone community to run summer workshops for kids aged 6+. We made paper aeroplanes and paper rockets (which we used our own high pressure launchers). This workshop gave kids practical instructions, different levels of complexity, all resulting in exciting & fun outcomes. The kids coloured in their rockets & planes & enjoyed playing with them after the workshop was over.



Using paper, sellotape & scissors, the kids were asked to follow plans for existing rockets & planes, or, they could create their own models to test.



Hand skills, coordination & resilience were key to this workshop, giving kids' confidence to try different ideas.



The high pressure rocket launcher was exciting & engaging. We asked the kids to measure flight distances and observe flight traits.

## Training Science Communicators

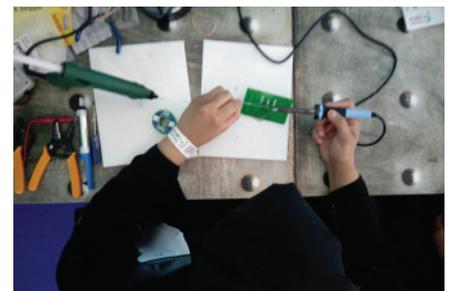
At the Abu Dhabi Science Festival, we were tasked with training local Students to be our Science Communicators during the festival. We ran training events for 2 days for the students, where we taught them about ROVs & how to put the Lego ROV kits together, how to solder broken components. We also taught presentation skills, which came in useful when Abu Dhabi news interviewed some of our students for live coverage.



Local students becoming Science Communicators at our ROV workshop in Abu Dhabi Science Festival.



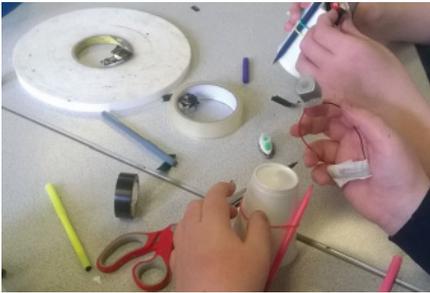
Male & female students were trained, with a lot of skills & confidence being given to the students.



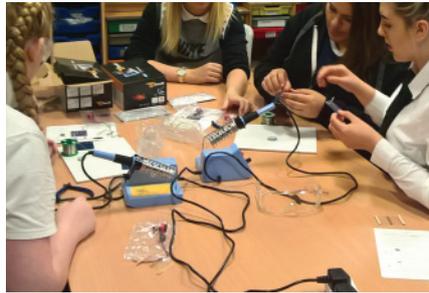
Soldering was taught & we had confident soldering, enabling students to fix any potential wiring faults quickly, between classes.

## Prince's Trust

Martin & Phil have been running Awesome Tech workshops for the Prince's Trust in various schools in the Scotland. Workshops are usually 90 minutes & involve the Achieve/Excel classes (targeting S3 & S4s). STEM based workshops with the emphasis on creativity & problems solving. We have soldered, made "Scribblebots" and created reed boats for engineering experiments.



Scribble Bots - Creative robot building & problem solving



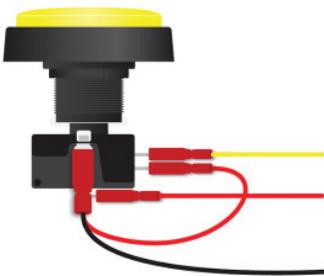
Soldering with S3 & S4's creating "Digital Bagpipes" with 46 solder points.



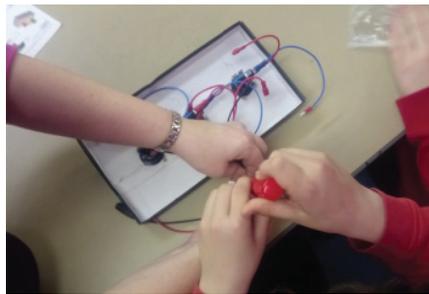
Reed Boat workshop to create "best raft" to hold as many pennies as possible.

## IoT Pilot for Education Scotland

Digital Maker CIC worked with the College Development Network for Education Scotland to pilot an "Internet of Things" curriculum development in primary, secondary schools and NESCol. We built IoT devices with the Schools & ran CPD with the College Tutors in a three week session. We hope to expand this pilot in late 2019.



Instruction illustrations & videos were produced for children aged 10+ to build the IoT devices



IoT "voting machines" were built by P7's & S1's



Data creation lead to data analysis & understanding how IoT devices & data empowers decision making

## CPD in Primary Schools

During the Arts Across Learning Festival 2017, we were asked to provide Continuing Professional Development based on our robotics workshops for P6&7's. The teachers really enjoyed the challenges & told us that a lot of the equipment & ideas we provide aren't as scary as they expected it to be. We also inspired the teachers to think how they could use robotics in other classes to create deeper learning & engagement in various subjects.



Teachers experiencing the same teaching approach we give our pupils.



Play & Experimentation were encouraged with little or no interruption / guidance from us.



Teachers were inspired by our approach of not "spoon feeding" answers to participants, giving rise to deeper learning & more resilience & inquiry.

## After Hours

Awesome Tech with Adults. Martin & Phil were asked to run a brushbot workshop for "After Hours" - an event aimed at getting adults to play & experiment while exploring local museums.



After Hours in the Aberdeen Maritime Museum



Adults invited to play with simple materials & components



Much fun was had, along with great discussion about electronics & play.

## College Development Network CPD

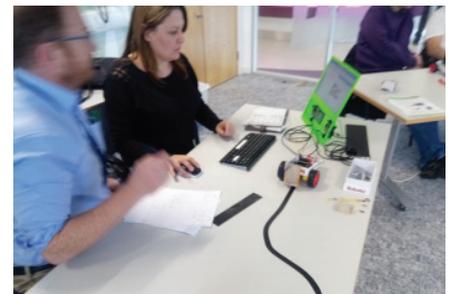
Digital Maker CIC were asked by the CDN to deliver CPD to their staff from Colleges all across Scotland. A full day's Robotics workshop was put on for the tutors, encouraging play, struggle, creative thinking and resilience, giving them insight into "what it's like to experience something for the first time", which is what their students experience in class...



Using a custom Blockly interface, Tutors are encouraged to "try some things"



Full Class of 20 Tutors from Colleges around Scotland attended the full day workshop



Raspberry Pi / Cam Jam kits. A line detecting sensor is added for a line following algorithm challenge.

## Team building and leadership assessment

Martin & Phil were asked by Hazelhead Academy in Aberdeen to run workshops during their 6th year induction day to assess leadership & team building with potential prefects. A fun day was had by all & "gamified" the Scribblebot challenge to cater for the added requirements of assessment.



Sharing resources over different groups



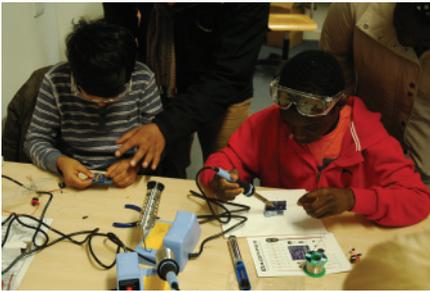
Points for "most creative solution" were awarded



We managed to identify key pupils with skills befitting great prefects for the school.

# U-Decide

Digital Maker CIC have run "Awesome Tech" workshops after winning Participatory Budget funding for communities in Northfield, Seaton, St Machar & Torry. We created after school clubs, as well as running 7 week long courses in Primary Schools for P6&7s.



Soldering taught to 9+ year olds.



Presentation Skills and Show & Tell play a big part in our workshops.



Play & encouragement to think & inquire are also key to our teaching.

## Family workshops

Digital Maker CIC were asked to run a full day's workshop to encourage families to play & learn together. Held in the Banff Sports Centre, we ran robotics & coding taster session, encouraging parents & children to learn coding & critical thinking.



Parents & Children were asked to work together to build & program a 2 wheeled robot.



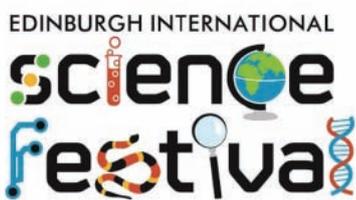
Experimentation & resilience are part of this workshop, where "trying things" to learn is key.



A wide range of skills were involved in completing the tasks. Everyone had the chance to experience something new.

## Edinburgh Science Festival

Digital Maker CIC have worked with the Edinburgh Science Festival and run workshops using Raspberry Pi, programming Minecraft with Python, scribblebots and 3d printing. The classes had up to 24 pupils per workshop & we received fantastic feedback from the attendees and Edinburgh Science Festival monitors.



Edinburgh Science Festival 2017



Our listing in the Ed Science Festival booklet.



We ran minecraft / python workshop on 6 Raspberry Pi's + scribblebot challenges.