

GLAM Digital Makers

An IT Innovation Fund Project
to explore the potential of digital
making in Oxford University's
Gardens, Libraries & Museums

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IT
INNOVATION
For your ideas



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Introduction

The GLAM Digital Makers project ran between June 2019 and February 2020. Funded through the University of Oxford IT Innovation Challenge, it brought together a group of Ashmolean and Bodleian staff, as well as staff from the Makerspace at Oxfordshire County Library and Science Oxford, to explore the potential of digital making within Oxford University's Gardens, Libraries & Museums (GLAM).

What is Digital Making?

Digital making is defined by innovation foundation Nesta¹ as '*learning about technology through making with it*'. Activities can include computer coding, visual arts, photography and music, but also integration with electronics or crafts activities. The emphasis is on engaging with and manipulating technology creatively rather than just passively consuming it.

The most recent National Curriculum places a greater emphasis on developing children and young people's computing skills. Within the University Libraries, a knowledge of coding has also been identified as an important emerging skill for staff to develop².

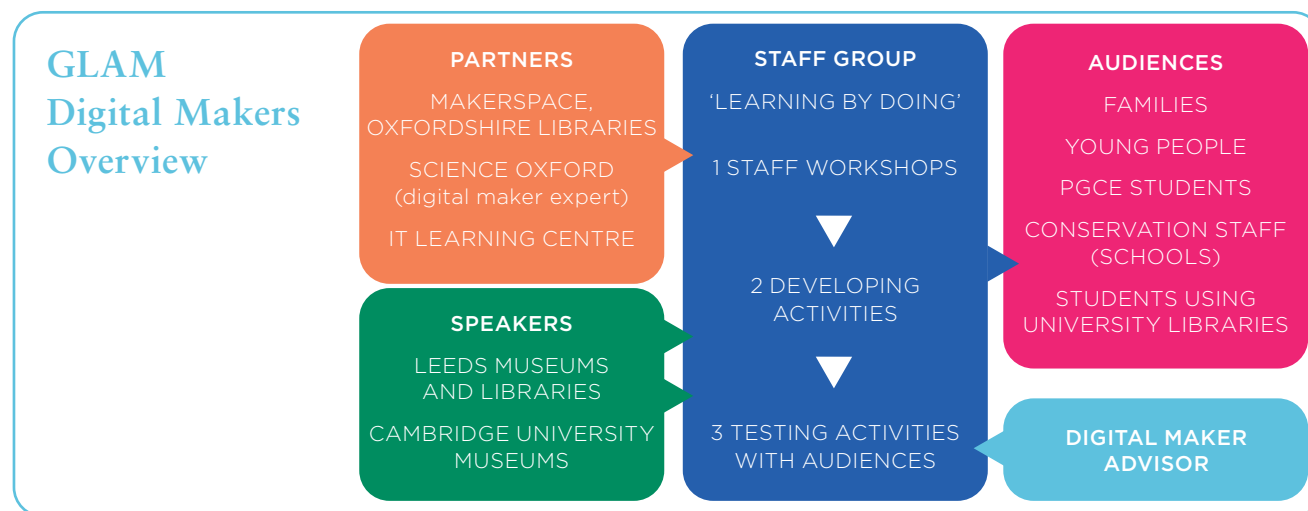
¹Formerly NESTA: National Endowment for Science, Technology and the Arts

²For a review of digital making in museums and the maker movement, see Noble, K (2018) University of Cambridge Museums Digital Maker Residency End of Project Report

The GLAM Digital Makers project set out to explore two key questions –

What potential does digital making have for GLAM's work with audiences?

What potential does digital making have to support staff development?



Key aims of the project –

- ▶ Experiment with new ways of programming to develop our offer for existing visitors and to explore the potential to reach new audiences.
- ▶ Develop staff digital literacy and confidence through learning maker skills and gaining experience of being involved in maker activities.
- ▶ Create a local network for GLAM staff interested in digital making and encourage collaboration across GLAM and with external organisations such as the Makerspace at Oxford Central Library and Science Oxford.

The project was organised in three distinct, connected strands –

- 1 Establishment of a small staff group to learn, explore and experiment with digital making through collaboration and play.
- 2 Staff development of digital maker activities inspired by GLAM collections, supported by a Digital Maker Advisor.
- 3 Testing of activities with a range of audiences including families, young people, university students and PGCE students.

The project funding has enabled the creation of a GLAM pool of maker kit and accompanying resources that will support future digital making activities. The IT Learning Centre at University of Oxford offered useful advice on planning for the long term administration and maintenance of kit purchased.

What We Did

Staff Group

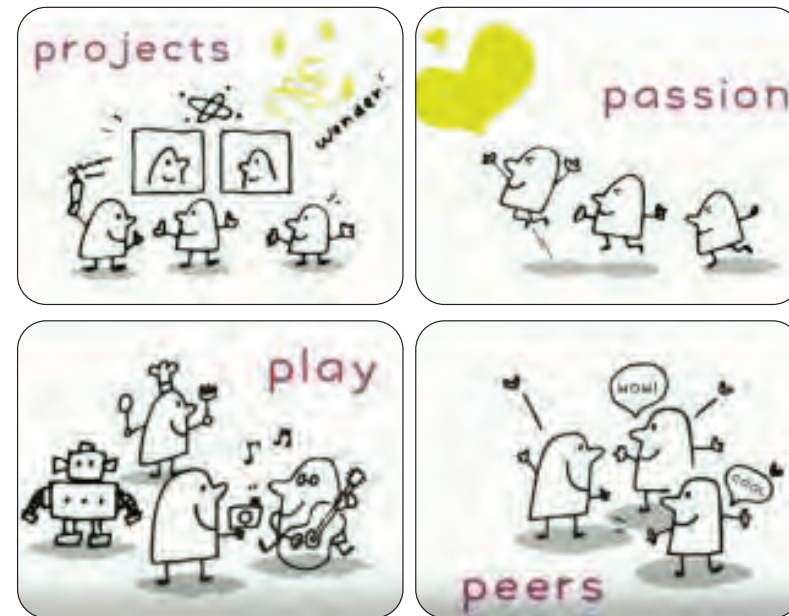
The project aimed to create a space for staff learning through collaboration and play. A group of 12 staff from the Ashmolean and Bodleian Libraries was established to work alongside each other on the project. Staff were drawn from a range of roles including Learning, Public Engagement, Conservation, Science, Music and Education Libraries. The group were also joined by staff from the Makerspace at Oxfordshire Libraries, who provided invaluable input.

Project funding allowed us to recruit a specialist Digital Maker Advisor to work alongside and support the staff group. Our digital maker had existing experience in running various types of digital making projects and workshops at Science Oxford. This external expertise and experience were key to maintaining the momentum of the staff group.

A series of sessions were designed to introduce staff to digital making and provide opportunities to experiment and play with the kit. External speakers from other museums and libraries also came along to give talks sharing their experiences of digital making and inspiring the group with examples.

Throughout the project, there was an emphasis on ongoing reflection. Staff were encouraged to use Slack as a tool for recording and sharing their thoughts and learning.

This project approach loosely reflects the 4Ps of Creative Learning advocated by Mitch Resnick, Director of the Lifelong Kindergarten Group at the MIT Media Lab³.



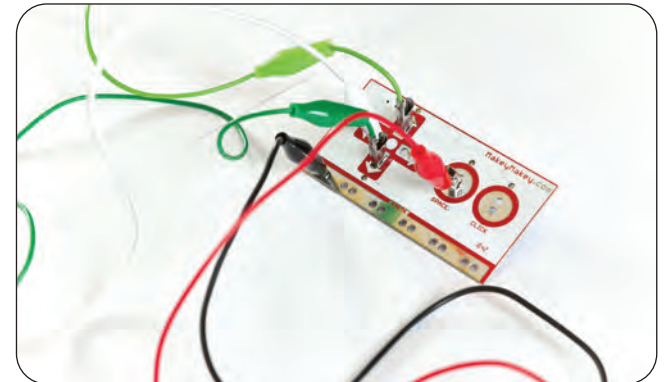
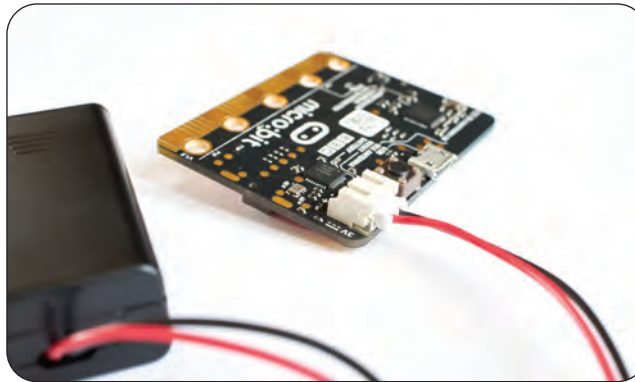
4Ps of Creative Learning © Dr Tim Kitchen



Staff workshops

Overview of Staff Sessions

SESSION 1	SESSION 2	SESSION 3	SESSION 4	SESSION 5	SESSION 6	GLAM DIGITAL SHOWCASE
13 Jun 2019	9 Jul 2019	11 Sep 2019	2 Oct 2019	3 Dec 2019	14 Jan 2020	25 Feb 2020
<i>Makerspace, Oxfordshire County Library</i>	<i>Ashmolean Museum</i>	<i>Radcliffe Science Library</i>	<i>Ashmolean Museum</i>	<i>Radcliffe Science Library</i>	<i>Ashmolean Museum</i>	<i>Natural History Museum</i>
<p>Introductory presentation by Mark Sutcliffe, Manager of Makerspace.</p> <p>Carousel of activities included Ozobots, Micro:bits, 3D printing, Makey Makeys and Raspberry Pi.</p>	<p>Presentation by Izzy Bartley and Claire Duffield from Leeds Museums & Libraries about their digital programmes.</p> <p>Staff group activity exploring the Micro:bit.</p>	<p>Presentation by Kate Noble from The Fitzwilliam Museum about their digital maker residency.</p> <p>Staff group activity – Sarah Townson from Science Oxford led activities with staff groups.</p>	<p>Families and Conservation groups met to work up activities for testing around October half term.</p>	<p>Micro:bit library induction group and PGCE groups met to trial activities developed.</p>	<p>All groups gave short presentations on activities delivered and lessons learnt.</p> <p>Final group project reflection and evaluation.</p>	<p>Members of the staff group attended and ran a stall sharing and demoing maker activities and kit.</p>



Maker kit – Ozobot, Micro:bit & Makey Makey

Tech We Focused On

Following our initial explorations, we identified four types of tech to focus on to develop activities for testing –

- 1 Ozobots** – mini desktop robots that can read colour, lines and code.
- 2 Micro:bits** – a pocket sized computer with features including programmable LED lights, an accelerometer, a built in compass and a bluetooth connection to interact with other devices and the Internet.
- 3 Makey Makey** – these devices allow almost any object that can conduct electrical current to be turned into a device which can control a computer. By matching this with different software applications it is possible to use this kit in a variety of ways.
- 4 Twine** – an open source tool to create interactive, non-linear stories.

Activities Developed

After the first 2 workshop sessions, staff organized themselves into smaller groups to work together on areas of interest. Groups focused on developing activities and resources in detail so that they could be tested with target audiences or trialled with other GLAM staff.

Five interest groups emerged focusing on a range of audiences –

- 1 Games and crafting activities for Families**
- 2 Art themed activities for Young People**
- 3 Conservation activities for Schools**
- 4 Library induction activities for University students**
- 5 Digital making taster sessions for PGCE students**

It has not been possible to fully work up and test all these activities within the time available for the project; e.g. the Conservation activities were tested with colleagues as a precursor to trialling with a school. However, it has stimulated many ideas that staff intend to follow up.



What We Learnt From Testing With Audiences

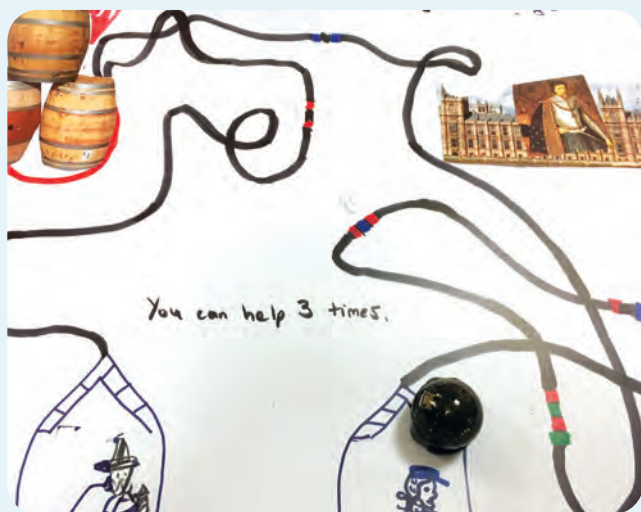
A range of activities were tested, to varying depths. In most cases, surveys were used to collect feedback from audiences and / or colleagues.

Staff were also encouraged to document activities through taking photographs and posting their immediate observations and reflections on Slack.

The PGCE taster sessions culminated with a group discussion and the key points of these were recorded by staff to analyse alongside completed surveys.

At the final staff session, working groups gave short presentations on the activities they had delivered, sharing what they had done, what feedback they had received and evaluating what had gone well and not so well. Staff then participated in a final group reflection activity to draw out the key lessons learnt from the project, as well as to discuss ideas for building on this work.

Families



Family events at Ashmolean Museum and Oxfordshire Children's Library

▶ 2 Workshops

At the Ashmolean Museum attended by 40 children and 20 adults

▶ 1 Workshop

Attended by 20 children and 8 adults at Oxfordshire Children's Library

▶ Ozobots

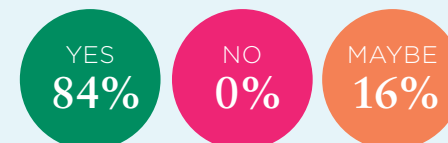
Design a game to stop Guy Fawkes blowing up Parliament

▶ Makey Makey & Scratch

Create and animate your own firework

Audience Responses

Would you be interested to do more digital activities at the Museum?



Ozobots 4.73 out of 5 (Rating out of 5 - 1 low, 5 high)



Scratch & Makey Makey (4.16 out of 5)



‘The Ozobot is very clever and knowledgeable’ Child

‘All three thoroughly enjoyed the tasks, experimenting with various ways, enjoyed the challenge of Ozobots game’ Parent

‘It was amazing – I’d definitely recommend it. Recording your own sound.’ Child working on Makey Makey activity

‘Different, fun, mind boggling, so much science / IT / maths, very 21st century, fascinating... you will need a lot of slots as these are going to be very popular.’ Parent

Our Observations and Reflections

- 1** The Ozobots were universally popular. They were intuitive and easy to access for all ages, allowing for lots of open ended learning.
- 2** Many children were familiar with Scratch from school, but none had used a Makey Makey or had participated in 'tech-craft' activities.
- 3** The activities especially appealed to older boys.
- 4** The activities seemed to appeal to quite a few dads. One 8 year old and his Dad spent over an hour engaged in the activity extending it by working out how to write some code to create an accompanying firework animation.
- 5** As an initial experiment it worked well to incorporate testing of digital maker activities into existing museum programming rather than adding it in as something 'extra'. However, future programming might need to be more bespoke.
- 6** The National Curriculum's greater emphasis on computing presents an opportunity to further develop a digital making offer within families programming.

'They enjoyed the storytelling aspect of the Ozobots, and being able to be creative with their paths, and there was some fantastic experimentation with colours and patterns as well.'

Digital Maker

'I can see the potential to develop this type of offer, to reach an older age range (10+) who either find the family activities currently offered too 'young', or are put off by the number of younger kids taking part.'

Family Learning Officer

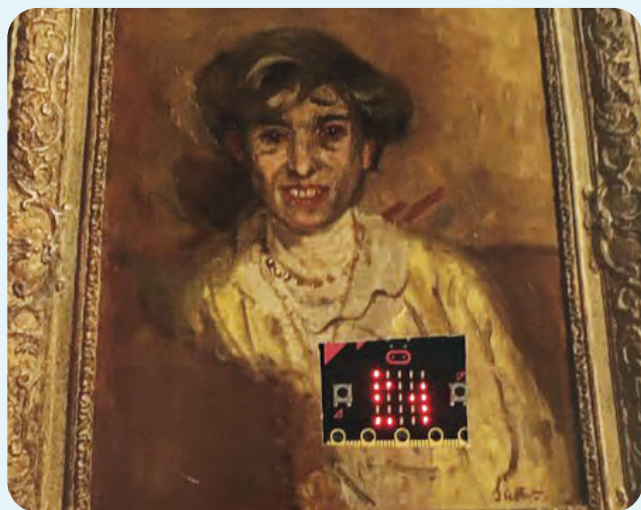
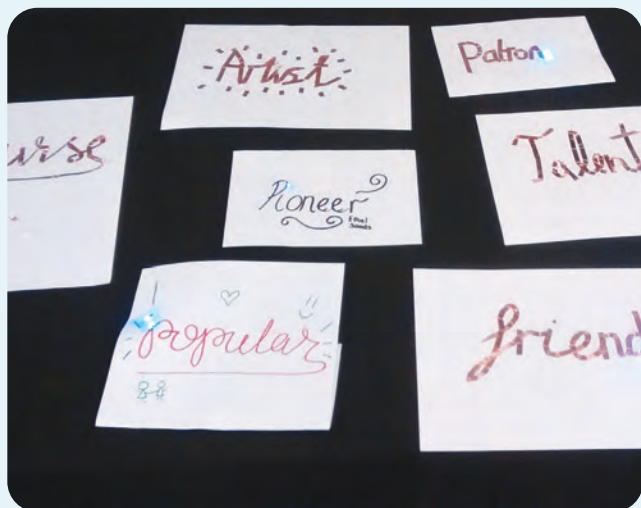
'One of the limits is the number you can cater for at any one time... That said, the high quality of experience reported by families who took part in the digital activities, shows the great scope it has.'

Family Learning Officer

'The main issue I noticed was timings – families did not want to leave (a compliment!), and also felt entitled to do both activities, even when there wasn't space at the table for them'

Digital Maker

Young People



CREATIVES workshop

▶ 1 Workshop

With CREATIVES at the Ashmolean Museum - attended by 9 young people (all girls) aged 16 to 18 yrs
Note: young people come from several local schools, opting to attend in their free time

▶ Micro:bit

Randomizer activity selecting words to reinterpret Ethel Sands

▶ Inductive copper tape

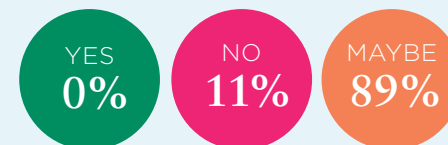
Design a slogan for Ethel Sands.
How would she describe herself?

▶ Makey Makey & Scratch

Create and interpret a still life painting

Audience Responses

Would you be interested to do more digital activities at the Museum?



'I found it really interesting to see all these different ways of incorporating art with technology which I had never seen before.' Member of CREATIVE group

'Technology is very hard...' Member of CREATIVE group

'Through writing these words digitally, we were able to bring to life the forgotten voice of Sands in an interactive and contemporary way, which as a group of art and/or history enthusiasts was both informative and fun!' Member of CREATIVE group

Our Observations and Reflections

- 1 There seemed to be some reticence about engaging with the tech. This might be explained by factors such as the group not knowing each other well, but it raises the question whether there are barriers to address when offering digital making activities to teenage girls.
- 2 The copper tape activity really appealed to the arty interest of the group – many of whom had little experience with the tech. Those that did the Micro:bit and Makey Makey activities enjoyed them, but most seemed reluctant to try them once they had started on the copper tape activity.
- 3 Our theme of representing women in the museum was very well received but was too complex to explore alongside the maker activities. Given the limited experience of the group with digital making, a looser focus on technology and art might have worked better.
- 4 For a future workshop we would commission an external maker to develop and deliver the whole session. This would give a stronger focus on meeting artists and finding out about careers in the creative industries that would appeal to the interest and motivations of the group.

‘More step by step instructions for the activities might have helped to make it less intimidating – with the downside of less independent thought / learning!’

Digital Maker



CREATIVES workshop

Conservation Activities for Schools



Staff trial of conservation activities at Radcliffe Science Library

- ▶ Held at the Radcliffe Science Library with 7 participants made up of conservation staff from across the libraries and museums.
Note: this was a trial of a session which we anticipate delivering to groups of secondary school students to explore collection care and conservation issues.
- ▶ Activities involving the micro:bit and environmental sensing extension kit called an enviro:bit.
- ▶ Participants built and programmed environmental sensors to detect light, temperature and humidity.

Staff Responses

The participants were asked if they had used a micro:bit previously -

2
OUT OF
7

REPORTED THAT THEY HAD USED A MICRO:BIT BEFORE

3
OUT OF
7

REPORTED THAT THEY HAD PREVIOUSLY HAD SOME EXPERIENCE OF COMPUTER CODING

‘I really enjoyed the theme of environmental monitoring’ Participant

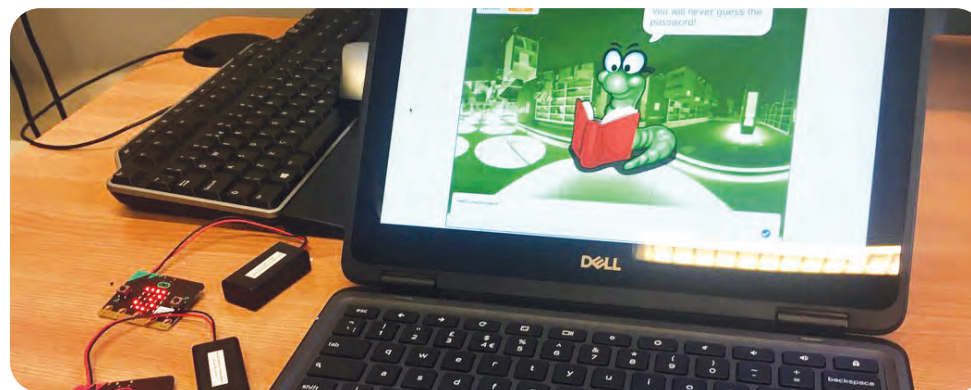
‘Interaction is key to learning!’ Participant

‘Loved the software for building code. Enjoyed thinking about environmental conditions from the perspective of the computer that measures it’ Participant

Our Observations and Reflections

- 1** In practice, a schools session would be combined with a talk by a conservator to link the theoretical ideas about conservation with the digital maker activities. By creating their own sensing equipment students would be able to explore what this tells them about the environment.
- 2** Some participants felt that they had insufficient time to explore and expand on what they had learnt in the session. On reflection we spent too much time going into details of coding the micro:bit rather than just covering the basics so people could get started. The trial showed us that it is essential to allow plenty of time for people to experiment with using the devices.
- 3** It was important to give people 'quick wins' to get engaged with the activities. This is particularly the case with the micro:bits which require more set up and initial explanation than some of the other technologies we have been using.

Student Library Induction



Staff trial of student library induction at Radcliffe Science Library

We also trialed an interactive library tour, designed to offer a fun and more memorable introduction to the library rather than the traditional library tour and induction talk usually offered to new students.

The idea was to use a puzzle game which would involve participants moving around the library and locating clues to solve the puzzle. On the way, participants would be introduced to key resources in the library. For example, having to use the library catalogue to solve one puzzle and being taken to our group study rooms.

Using the micro:bits we developed a series of 'beacons' that could transmit a radio signal to another micro:bit acting as a device to detect and find these beacons. The induction game worked well, but it did require a considerable amount of set-up and preparation. However, it would present an engaging way to provide inductions to small groups and is something library staff are keen to explore further in the future.

One thing we learnt is that this induction took a long time to set up and it would only be suitable for small groups. We would need to think carefully about how to target this activity, perhaps concentrating on students who missed other induction opportunities.

PGCE Students



PGCE taster sessions at Makerspace, Feb 2020

Optional Taster Session

At **Makerspace** led by Oxon Libraries staff – attended by 15 trainee teachers from a range of subjects.

4 Taster Sessions

At **Makerspace** led by GLAM staff – attended by 39 trainee teachers on English and Geography courses (24 English and 15 Geography).

Note: Most students had very little or no experience of digital making

General Taster Session

- ▶ Carousel of kit to play with including **Ozobots**, **Micro:bits**, **3D printing**, **Makey Makeys** & **Raspberry Pi**

English Taster Session

- ▶ **Ozobots** for storytelling activities
- ▶ **Makey Makey & Scratch** to create soundscapes
- ▶ **Twine** to create interactive fiction

Geography Taster Session

- ▶ **Ozobots** for mapping activities
- ▶ **Makey Makey & Scratch** to create interactive posters
- ▶ **Micro:bit** measuring soil moisture levels
- ▶ **Micro:bit** creating a compass

Trainee Teacher Responses

Can you describe one thing you've learned that you didn't know before?

'Introduction to technology that I wasn't even aware existed, to think about in the classroom.'

'The creativity and how it could be used in the classroom... coding is not too difficult'

There was lots of enthusiasm about the creative potential of technologies:

'It made me think outside the box. How can I teach in other ways?'

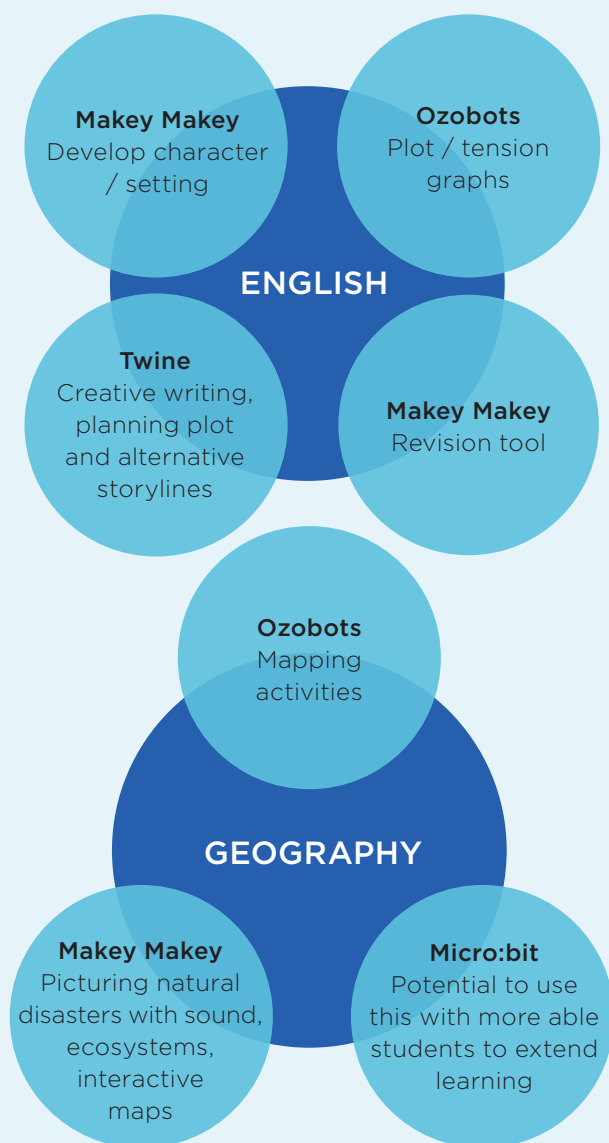
'I liked thinking about how to approach lessons in different ways.'

A number of students indicated that digital making might not be as tricky to incorporate into the classroom as they had perceived:

'Code / instructions/ functions can be accessible.'

'...you can use coding / tech in English lessons!'

The taster sessions generated lots of ideas about how tech might be used.



‘GCSE Language Paper 2 – students have to look at an image and write a descriptive piece. The Makey Makey brings this to life!’

‘[Ozobots] Great fun (‘I want one!’) and can see it applying to Geography, although a little temperamental with pens, it might be worth exploring OzoBlockly and doing via computer instead?’

Despite the general enthusiasm, a number of student teachers highlighted constraints in school, raising practicalities such as whether some of these activities could work for classes of 30 and the availability of kit in schools. Concerns were also expressed about issues such as behaviour management and the time available to cover the curriculum.

‘It would be important to pick right class & year group to try out digital making activities in classroom – would need to think carefully about behaviour management.’

‘We are very limited by resources in school, behaviour management etc’

‘Think it is all very interesting, but not sure I would have enough time to implement in a lesson.’

‘Not sure I would use this in the classroom, despite how fun it was.’

However, students agreed there could be scope to offer digital making activities in smaller groups with for example SEND children. It was also suggested that digital making activities might lend themselves well to whole school enrichment days or to after school clubs.

One tutor was keen to encourage her students to think about the learning potential –

‘You might get through less content, but it’s likely to be more memorable and understood.’ Geography tutor

Our Observations and Reflections

- 1 We were surprised at how receptive trainee teachers were, given the many demands of a PGCE course. Most students had limited or no awareness of digital making and valued the opportunity to find out more. They enjoyed the creative aspect and were quick to make links to their own teaching practice.
- 2 The sessions have demonstrated that there is value in incorporating digital maker taster sessions into PGCE training to raise awareness of opportunities and plant ideas that may be picked up on in future teaching practice.
- 3 Direct evidence of impact came from a student who, inspired by the first PGCE taster session, went on to obtain a small amount of funding from their Oxford College to purchase kit that can be used for environmental monitoring activities, such as recording air pollution. She has used these with classes and a science club on one of her school placements.
- 4 It would be useful to develop this work further by conducting some research into the availability of maker kit in local schools. There may be a value to the Department of Education Library purchasing kit that can be borrowed by PGCE training teachers during their course. There may also be potential to extend digital making taster sessions to teachers in partner schools.

Our Wider Observations & Reflections

About Designing Activities

- ▶ The technology should be something that naturally allows people to carry out or explore the task. Putting 'technology' and 'digital' up-front in describing a task or workshop can discourage some participants from engaging because they self-identify as technophobic or not computer literate.
- ▶ Quick win activities that everybody can access quickly are helpful to give a sense of achievement for audiences new to digital making. However, make sure that activities can be extended and there are more challenging activities / ideas available for those who need it.
- ▶ Planning for digital making activities needs careful thought. We found that themes that don't require lots of context worked better; e.g. the theme for the young people's workshop of representing women in the museum was very well received but meant too much time spent on communicating content and less time for play and creativity.
- ▶ It's important to create a balance between instruction and leaving things open ended. It's tricky to always predict how long to allow for activities. Plan for less so that there is plenty of time for open ended play and exploration.
- ▶ Plan for variety in the sessions and encourage the creative, making aspects. Maker sessions should be tapping into creativity and problem solving rather than just technology.

About Kit


- ▶ We weren't aware of Ozobots at the beginning of the project and they ended up being a popular discovery. They are a great way to introduce the idea of programming and are intuitive and easy to access. We had a lot of fun using accessories like paper hats to make them into characters.
- ▶ Micro:bits have huge potential but the set up / use is more challenging and requires more time. We were able to enhance their functionality easily by purchasing a range of additional sensors and basic electronic components.
- ▶ The Makey Makeys were a great tool to be creative with. By matching these with different software applications it was possible to build musical keyboards from fruit, add sound to craft projects or make interactive drawings by adding conductive tape to the picture.
- ▶ We found that Twine can encourage people to consider different ways of answering a question or exploring an activity. The emphasis is on active participation rather than passive consumption of information.



‘Children and young people will take ideas and run with them leading to a variety of creative outcomes.’

Staff group

Families event at Oxfordshire Children’s Library

A photograph of a man and a woman engaged in conversation at a booth. The man, on the left, is wearing a grey jacket over a light blue shirt and is holding a glass of wine. The woman, on the right, is wearing a bright green sweater and glasses, and has a name tag on her chest. They are standing behind a table covered with a blue cloth, which has various items on it, including a laptop, a calculator, and some papers. The background is a busy event space with other people and purple decorations.

‘Good to explore a very different way of thinking about collections and creativity. Good to be pushed out of comfort zone – refreshing!’

Staff group

What Staff Learnt from the Project

At the start of the project, only 10% of staff said they had 'a lot' of experience of digital making and computer coding. The majority said that they had no experience of this at all. Only around half the group indicated that they were 'very confident' or 'extremely confident' in using new digital technology.

Although this project has only scratched the surface of digital making, in the final staff survey staff reported feeling more knowledgeable and confident about digital making generally.

Average Scores from Final Staff Survey

(Rating out of 5 - 1 low, 5 high)

4.2

Awareness and understanding digital making

4.6

Confidence collaborating with other staff on digital maker activities

At the final staff session staff were also asked what they would take away from the project. There was a greater awareness of the relevance of digital making to GLAM and staff were overwhelmingly positive about the potential to develop this further.

'Digital making is a great way to introduce the museum collection to a new audience. Digital making can help show the stories of the museum in a new and more engaging way.'

'It's been really enjoyable and has boosted my confidence in terms of both thinking creatively and being able to have a go with the tech - even if I still am fairly bewildered by a lot of it! Also been fab to work with people across GLAM and exchange ideas, and to meet Mark [Oxford Public Libraries] and Sarah [our digital maker]'

'Enjoyable and fantastic to learn about an area which is new for me and to see potential. So many possibilities and potential to build on, it's been a fab project, thank you for the opportunity for me to be involved - even as a total digital novice.'

Several members of the staff group have already been involved in sharing their learning and experiences in digital maker taster sessions for colleagues. Four members of the staff group stepped in to deliver sessions for PGCE students when the Makerspace Manager, due to run these, was seconded to another role and was no longer available.

Whilst this presents a very positive picture, it should be noted that much of the progress made by the staff group was made possible through having access to external experts able to advise and troubleshoot at critical moments.

The 4Ps of Creative Learning in Action



Staff workshops

PEERS

Collaborative Learning

- ▶ Set up a network of interested staff to learn alongside each other. Plan for people to drop out – but be flexible about allowing others to join.
- ▶ Identify potential partners to get involved that offer access to external expertise as well as different perspectives and experiences.
- ▶ If possible, vary the venues for staff workshops to further encourage opportunities for staff to learn more about others' areas of work and organisations. Tea breaks are important too!
- ▶ Promote the use of tools such as Slack for ongoing discussion, sharing of interesting projects and to encourage ongoing reflection.

'Great to have such a varied group of people from across GLAM and beyond to discuss and develop ideas with. Has provided a great source of ideas to draw on.' Staff Group, staff evaluation at Session 6

PLAY

Learning Through Play

- ▶ Provide lots of opportunities for staff to experiment with kit together.
- ▶ Allow staff to borrow kit to play with at home with family and friends.
- ▶ Managers need to be open minded and supportive of staff taking time out to explore and play alongside other colleagues.
- ▶ The play / fun aspect also helped alleviate some participants intrinsic anxiety or reluctance to engage with digital / computer based technology.

'I really enjoyed seeing how everyone responded to the kit and the conversations it sparked from getting in a playful frame of mind.' Makerspace Manager, following Session 1

PASSION

Maintaining Staff Engagement

- ▶ Invite in speakers from other organisations to share their work and inspire others with ideas and examples.
- ▶ Recruit staff from a range of work areas and encourage them to identify 'problems' that the tech might help address so it becomes meaningful to the; e.g. limited provision for tweens in Ashmolean families programmes.
- ▶ Enable staff to explore what tech might mean to their own work areas; e.g. Conservation work, *'Makes a dry subject more inviting, more enjoyable.'*

'Thank you all for a fab workshop last week. I really enjoyed Claire and Izzy's presentation, lots of inspiration there, particularly the fact that neither of them were from a tech background - there's hope for me yet!' Staff Group, following Session 2

PROJECTS

Learning Through Working on Projects

- ▶ Support staff to deepen their learning through shaping small projects to work up for testing. Planning activities with a specific audience (or colleagues) in mind focuses thinking and encourages collaborative working.
- ▶ Encourage staff to embrace an experimental mindset. Very often things may not work immediately. Developing activities is an iterative process requiring lots of tweaking and problem solving along the way.
- ▶ Be flexible in the format of staff sessions, for example, splitting off into smaller more focused groups to workshop ideas in more detail rather than always working as a large group.

'I'm wondering if Micro:bits could have potential for some basic monitoring or recording devices that are used in Preventive Conservation? Audiences could have a more active involvement in the measuring of temperature, light, vibration, etc by building their own equipment?' Staff Group, following Session 1

Final Thoughts & Next Steps

In the final staff workshop, staff reflected on the learning from the overall project, identifying both challenges and opportunities, as well as suggesting potential next steps for the project.

Opportunities

- ▶ The National Curriculum's greater emphasis on computing presents an opportunity to develop a digital making offer within families programming. Our experience indicates that there is an appetite for this that would also help us address a 'gap' in our current provision for tweens.
- ▶ Digital making offers great opportunities for people to demonstrate and explore their creativity. There is a growing recognition of the importance of creativity in education that was highlighted in the recent Durham Commission on Creativity and Education report⁴. Although the current project did not work directly with school groups there is scope to integrate digital making elements within schools programming or outreach⁵.
- ▶ Our current programmes for young people aim to make links with practitioners and highlight possible future careers. Collaborations with local makers would enable young people to discover more about careers in the creative industries. Our existing groups tend to be very female dominated and this could be a useful way of tackling perceptions that tech careers are not for women.

- ▶ Digital making may have a role to play in museum's missions to be more inclusive and representative. Maker activities can enable people to engage with our collections in new ways and for their own projects, bringing with them new knowledge and perspectives. There is scope to tap into this with community outreach and co-curation projects.
- ▶ A notable highlight of the project was the work with the PGCE courses. There is an opportunity to build on this work and embed these sessions within teaching courses. There is also scope to conduct research into digital making within local schools and to identify ways that GLAM might support this agenda.
- ▶ The project has developed the digital skills and confidence of the staff who were involved, and they participated enthusiastically, enjoying the chance to collaborate and learn through play. Six members of the group ran a stand of maker activities at the GLAM Digital Showcase and there is an opportunity to build on this by involving them in delivering taster sessions for other staff.
- ▶ Offering further sessions to staff that are more focused on well-being or creativity might be an alternative way of encouraging people to engage with digital making; e.g. the copper tape exercise enjoyed by the young people's group was successful because it focused on artistic creation rather than the means to do it.
- ▶ One of the biggest issues staff reported was managing the logistics of delivering digital maker activities. Setting up activities can be time consuming and practicalities such as keeping kit charged need to be built in too.
- ▶ Digital making activities tend to be limited in the numbers that they can cater for at any one time. GLAM needs to think carefully about where limited resources should be directed. There may be scope to address inequalities in access to digital making.
- ▶ The greatest challenge is maintaining the momentum of this year's Digital Makers project. There have already been several staff changes and the original staff group has lost some key members.

Challenges

- ▶ It seems clear that some people are put off by the idea of 'digital' or 'technology' focused workshops and we need to be mindful of how to navigate this. By demonstrating that engaging with technology can be creative and fun, there is the chance to change perceptions with both audiences and staff.
- ▶ The Digital Maker Advisor was key to the successful delivery of this project. Having a dedicated person to support and advise, enabled staff to focus on the creative aspects of designing and running activities. Future development of this work will require modest funding to enable GLAM staff to continue to tap into the expertise of a Digital Maker Advisor.

⁴ www.dur.ac.uk/creativitycommission/

⁵ Quinlan, O (2015) Young Digital Makers: Surveying attitudes and opportunities for digital creativity across the UK. Nesta report



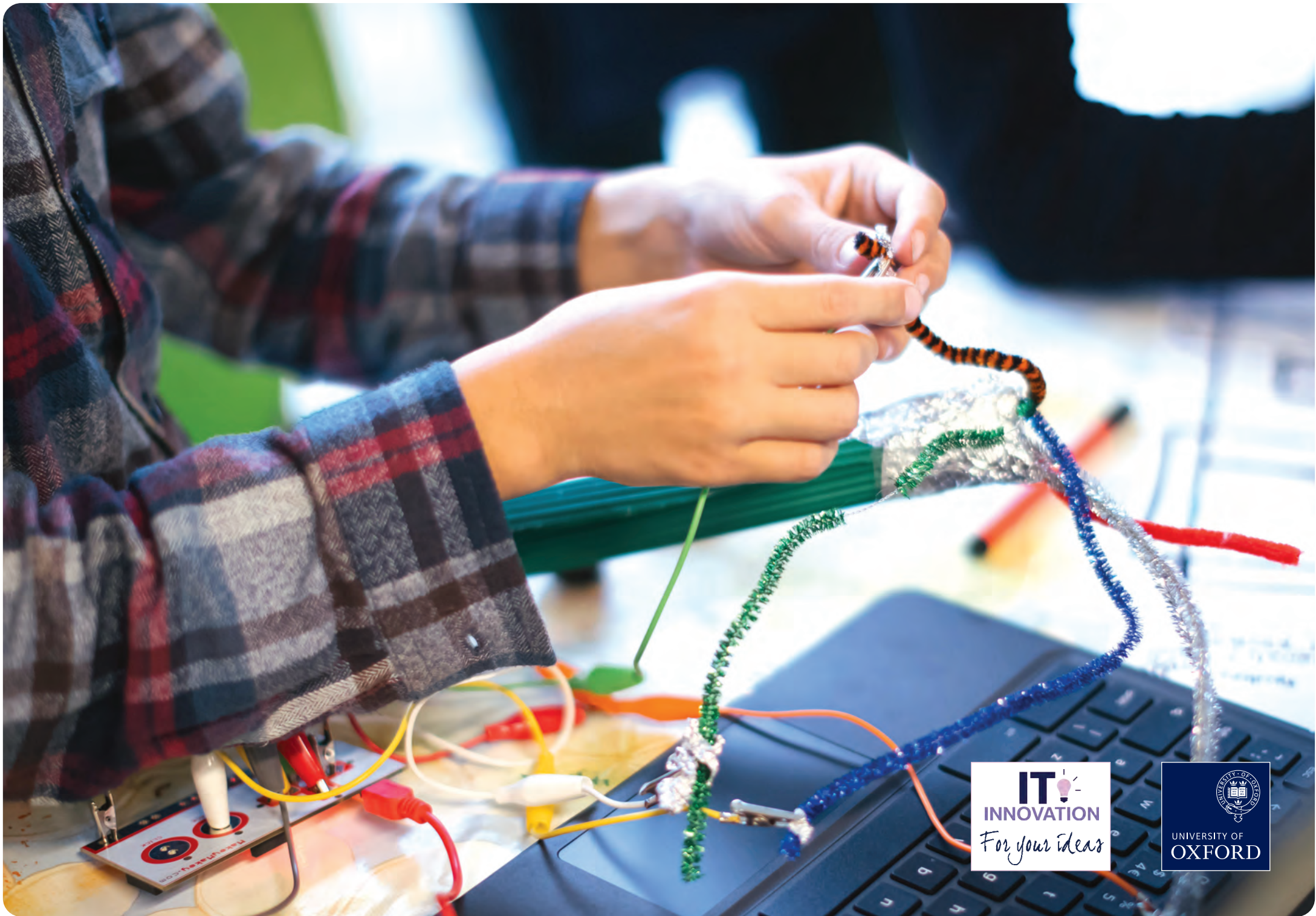
GLAM Digital Showcase, Feb 2020

Next Steps for GLAM

'If we don't keep up the opportunities I might not carry on with this on my own.'

Staff group

- 1 Conduct further testing of activities that it wasn't possible to fully test with audiences during the project timescale; e.g. Conservation school activities
- 2 Refine and further develop activities / resources to share online. These might be promoted to schools / coding clubs as ideas for projects to work on.
- 3 Establish a centralized GLAM centre with IT Learning Services to look after tech / kit / resources and manage bookings. Investigate setting up a 'Makercart' of kit to run pop up events.
- 4 Develop staff taster sessions to raise awareness of digital making and share learning from the project. Investigate how this year's programme could be repeated in a lighter touch way to pull in further GLAM staff. This could be run over a series of sessions again or as a day long hack event.
- 5 Continue to meet up as a GLAM networking group, sharing practice via 'show and tells' etc. Grow the group into a city-wide network of practitioners interested in developing and delivering digital making activities.



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