Digital Designers in Residence in Schools 2014-2015

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

“The designer in residence provides a wonderful model. It’s not just about doing a one-off project with pupils, it’s about upskilling the staff and giving them skills so that once that designer in residence isn’t there they can still run the same type of project in school.

It’s about giving the teacher the opportunity to develop alongside a professional, some teachers don’t get the opportunity to do any inset training. They do their degree, they do the PGCE and that’s it, they don’t develop any skills after that.”

Assistant Head -
in Charge of Creativity and Research,
St.Ambrose Barlow R.C. High School

Contents

Summary

This report evaluates the effectiveness of the Ideas Foundation / Comino Foundation North West Digital Designer in Residence (DDIR) Programme for 2014/2015.

Key aims of the programme were:

- To engender links across the arts/design and engineering/science/technology in schools in the North West of England and encourage cross-disciplinary working.
- To demonstrate to pupils the practical and creative applications of coding, software, and physical computing.
- To nurture the critical skills identified as key to successful progression into careers in the digital and creative industries.
- To provide pupils with an exciting and innovative experience that inspires them to consider future careers in this sector.
- To support schools in the development of appropriate ‘soft skills’ and ‘Habits of Mind’ needed for rigorous and effective practice in these industries.
- To encourage collaborative working.
- To address the diversity imbalance within the creative industries by providing opportunities for students from a broad ethnic diversity.
- To address the gender imbalance within the digital sector and creative sector by encouraging female pupils to learn skill-sets more usually practised by male pupils and vice versa.
- To update teaching staff and provide a model for teaching staff to utilise in subsequent years.

Digital Designers in Residence (DDIR) were appointed to run projects in two secondary schools over a 4 to 8 week period in the Northwest of England. The Designers in Residence were selected from an application pool from MA Art and Design students at Manchester Metropolitan University (MMU). (Appendix A: Call for applicants) The projects were set up so that pupils had to work collaboratively across different subject areas: eg computing, art and design, design technology.

One of the requirements of the residency was the creation of a ‘legacy piece’ for each school. The intention behind the scheme was to provide the opportunity for pupils to experiment with technology, and also to help to bring each school up to speed with what is ‘out there’.

A pilot scheme ran in one school in 2014, the project was repeated in 2015 so the scheme has run a total of four times. The programme was initiated by the charity The Ideas Foundation/the Comino Foundation working in partnership with Digital Innovation at MMU.

Each DDIR collaborated with a partner teacher to devise an appropriate scheme of learning to develop new skills within the current curriculum. Feedback from participants (pupils, teachers, DDIRs) indicates that this model of introducing practical applications of computing provides an engaging and useful way of learning key skills.

By enabling pupils to work across subject disciplines before entering tertiary education this model demonstrates to pupils that coding and computer science is not an occupation limited to computer scientists, and conversely shows the computing pupils the relevance of computer science and coding to the creative industries. This model shows pupils that ‘real life’ does not operate within silos, that collaboration across disciplines is an essential component of the creative industries in the 21st century.

This model provides an alternative approach to the delivery of computing in the classroom, and thus potentially has an impact on both computing, and art and design in the school, and potentially, within the creative and digital industries.

The programme also demonstrates the huge amount of ‘added value’ provided by bringing in a designer in residence to a school: teachers are brought up to date with current ideas, they have the opportunity to learn new skills, and new teaching strategies are brought into the classroom.

The projects delivered by the DDIRs also provided the opportunity for the development of ‘Habits of Mind’; key soft skills seen as core components of expansive education. Given the positive benefits derived from the scheme serious consideration should be given to running a similar programme in the next academic year.

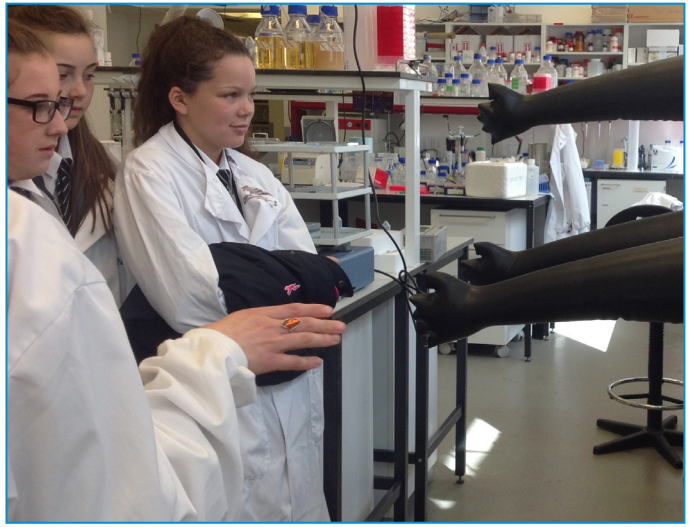
Introduction and Background

This report summarises the context for the Digital Designers in Residence programme, indicating key drivers of the project. The report outlines how the initiative was delivered (the workshops). There is a discussion of the evaluation framework. Key findings and the perceived benefits derived by the stakeholders are discussed. Finally a concluding section provides some recommendations.

The Ideas Foundation / The Comino Foundation

The Ideas Foundation / Comino Foundation (IF/CF) have been working with schools in the Northwest of England for a number of years. With the shared aims of supporting young people from areas of social challenge to achieve their personal and career potential, a strong body of practice has developed across a central Greater Manchester based ‘hub’ of 3 high schools all of which have a strong focus on creative practice, both vocationally, and in respect of creativity in teaching and learning pedagogy.

Working between schools, local industry and local universities the hub provides models of innovative practice which aim not just to improve children’s life chances, but which also aspire to innovate and inspire quality in vocational creative subject teaching, and model practice which can provide pathway learning for the hub and others.



Context

An inter-related set of drivers led to the Ideas Foundation / Comino Foundation developing the Digital Designers in Residence programme.

The initiative was informed by key reports including the Nesta analysis of employment in the UK's creative and high-tech economies[1]; the Warwick Commission on the Future of Cultural Value investigating how Britain can secure greater value from its cultural and creative assets[2]; and Create, a strategy developed by the Creative Industries Council outlining how industry and government can work together to maximize the potential of the UK's creative industries.

These drivers are:

- Growth of the digital and creative industries in the UK
- Growing digital economy in the Northwest
- Skills shortage within these industries
- Equality of access for all pupils to all aspects of culture and creativity
- Changes to the national curriculum in schools
- Increased awareness of the importance of developing key employability skills

The rationale for the project has been informed by current thinking around education, including the debate around STEM and STEAM and the recognition of the value of expansive education.

Growth of digital and creative industries

Exactly what constitutes 'the Creative Industries' is contested and subject to re-classification and re-mapping[3]. Whatever the definition there is widespread recognition, based on detailed and thorough statistical research, that the creative industries are the biggest growth industry in the UK. The Nesta report (The geography of the UK's creative and high-tech economies 29.01.15) goes as far as saying that The UK's economic future depends on the performance of its creative and high-tech industries. These are sectors where the UK is recognised as a world leader[4].

Statistics demonstrate that employment in the creative industries grew 4.3 per cent per annum from 2011 and 2013, whereas the workforce as a whole grew 1.2 percent during the same period. Nicola Mendelsohn's opening statement in Create UK, the Creative Industries Council (CIC) report of 2014 states: Recent statistics show the sector punches above its weight for the economy, generating £71.4 billion gross value added (GVA) in 2012 – a 9.4 per cent increase that surpasses the growth of any other UK industry sector[5].

The report goes on to detail other statistics:

The UK creative industries were worth a record £76.9 billion to the UK economy in 2013, after growing by almost 10 per cent year on year. Official statistics from the Department of Culture, Media and Sport, show the industries made an economic contribution which equates to £8.8m per hour of Gross Value Added (GVA) or £146,000 a minute[6].

The CIC report sets out a strategy to maintain the UK's leading role in the creative industries, and Education and Skills was identified as one of the five areas the UK must prioritise to develop the UK creative industries, to nurture and support diverse talent and skills for growth.

1. *The geography of the UK's creative and high-tech economies* 26.01.15

2. *Enriching Britain: Culture, Creativity and Growth*, the 2015 report by the Warwick Commission on the Future of Cultural Value.

3. A useful discussion about the constituents of the creative industries can be found in the Institute for Public Policy research report by Will Straw and Nigel Warner, *March of the Modern Makers*, February 2014

4. http://www.nesta.org.uk/publications/geography-uks-creative-and-high-tech-economies

5. Create UK CIC report p2

6. http://www.thecreativeindustries.co.uk/uk-creative-overview/news-and-views/news-creative-industries-bring-uk-£769bn-a-year

The CIC mission statement identifies that having an education and careers system that inspires and supports the next diverse, creative fused generation' is key to success.

The CIC report also criticizes the current education system for the marginalisation of creative subjects in the curriculum, and providing careers advice that can discourage young people from following a creative path. The report suggests pupils should be able to study a combination of creative, technical, scientific and entrepreneurial subjects and that *the education system should support creativity by promoting STEAM (Science, Technology, Engineering, Arts, Maths) and not just STEM*.

The report even goes as far as suggesting that a commitment to broad and balanced curriculum including creative subjects should be part of the Ofsted inspection framework[7].

Growing digital economy in the Northwest

Will Straw, associate director of the Institute for Public Policy Research (IPPR), called for a more coherent government strategy towards the creative industries in March of the Modern Makers; including re-directing funding towards regional clusters rather than concentrating funding in London. *Creative clusters are emerging in every region of the country and could hold the key to rebalancing the UK economy. These creative centres are helping create a more dynamic and competitive economy overall but they have not been given as much support as London. The chancellor should address this in the budget and support the UK's 'march of the modern makers*[8]*.*

Greater Manchester is now the largest centre for creative and digital industries outside London[9]*. The Greater Manchester Forecasting Model (GMFM) produced by Oxford Economics predicts that in GVA terms the sector will grow by over 70% by 2025. At the opening of TMRW, Manchester's new global technology conference in May 2015,*

Sir Richard Leese, the leader of Manchester City Council 'hailed the digital industries for helping to spearhead the revival of Manchester as it bids to become a leading creative city'[10]*.*

Speaking in Manchester in June 2014 the Chancellor said:

> ***"The cities of the north are individually strong, but collectively not strong enough. The whole is less than the sum of its parts. So the powerhouse of London dominates more and more. And that's not healthy for our economy. It's not good for our country. We need a Northern Powerhouse too… Not one city, but a collection of northern cities - sufficiently close to each other that combined they can take on the world.[11]"***

Recognising this need to develop a 'tech hub' outside London and the Southeast, to facilitate economic growth in the north of England, in October 2014 Nick Clegg announced the launch of Tech North, a new 'world-class tech cluster' spanning Manchester, Leeds, Sheffield, Liverpool and Newcastle. It's important that Tech North has autonomy and is a separate body from Tech City UK in London, as Katie Gallagher, director of Manchester Digital commented: If power is going to be devolved to the regions, it needs to be done properly.

Almost three quarters of the UK's 470,000 digital technology businesses are based outside London, so it seems silly for decisions to be coming from the capital.

On 14th March 2015 it was announced that the headquarters of Tech North would be in Manchester.

7 Create UK CIC report p11

8 http://www.theguardian.com/media/2014/feb/24/uk-creative-industries-regional-ethnic-diversity

9 The Digital sector in Greater Manchester: sector profile, new economy, November 2013

10 http://www.insidermedia.com/insider/north-west/139869-sir-richard-leese-hails-digital-spearheading-revival/

11 https://www.manchesterdigital.com/northern-powerhouse-first-we-need-talent

Skills shortage within these industries

Although there is significant growth within this sector nationally, and specifically within the Northwest region, it is evident that the UK is failing to train sufficient numbers of people with the appropriate skillsets for the digital and creative industries. According to the UK Digital Skills Taskforce report, '*Digital skills for tomorrow's world',* Britain faces a growing shortage of digital skills, while stereotypical perceptions of technology careers prevent many pupils from continuing into the digital industries'.

A survey of employers by City and Guilds found that almost three quarters of companies in the IT, Digital and Information Services Sector were facing a skills gap, and half were considering seeking appropriate employees from abroad as the UK education system isn't meeting their current needs.[12]

Specifically within the Northwest area, according to a digital skills audit of 100 companies in the region conducted by Manchester Digital, companies are having to turn work away due to a shortage of appropriately skilled labour. *57% of the companies had had to refuse business; 29% of these stated that the work was worth more than £50k, and 28% said the work was worth between £25k and £50k*.[13]

Equality of access for all pupils to all aspects of culture and creativity

Several recent reports (March of the Modern Makers, The Warwick Report, the Creative Media Workforce Survey 2014) have highlighted the lack of diversity in the digital and creative sector, with low participation by ethnic minorities, women, and those from low-income backgrounds, particularly at senior levels. Research shows a significant proportion of jobs in the digital and creative sector are recruited through informal networking channels, inaccessible to those from certain backgrounds. Permanent employment may be the result of an unpaid internship, a route not possible for those from low-income families. Females are under-represented in many areas of technology, as well as science and engineering.

The proportion of non-white people working in the creative sector is roughly half of that in the rest of the economy, and this proportion actually fell during the period 2009 to 2012 (Creative Skillset 2013).[14]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According to Sector insights: *skills and performance challenges in the digital and creative sector*, only 8% of workers in the creative sector are non-white, compared with 11% across the economy as a whole. Arts Council England chair Peter Bazalgette has described the issue of diversity as the single biggest challenge facing the creative industries:

> ***"You don't get creative industries unless you draw on all the talents and we haven't been doing that in many parts. People from relatively deprived backgrounds of whatever colour, creed or physical ability, if they don't have the bank of mum and dad, they can't go into casualised industries."***[15]

The Warwick Commission on the Future of Cultural Value undertook a rigorous a 12-month inquiry to ascertain how Britain can secure greater value from its cultural and creative assets. The key message from this report is that the government and the Cultural and Creative Industries need to take a united and coherent approach that guarantees equal access for everyone to a rich cultural education and the opportunity to live a creative life. There are barriers and inequalities in Britain today that prevent this from being a universal human right. This is bad for business and bad for society. [16]

The Ideas Foundation/Comino Foundation respond very directly to this concern by working closely with state schools to identify pupils who might thrive in the creative industries, providing an introduction to the industry. They work with schools in areas of economic deprivation with culturally diverse intakes.

12 Making Education Work: preparing young people for the workplace, City and Guilds report 14th October 2013.

13 https://www.manchesterdigital.com/news/over-half-digital-businesses-turn-away-thousands-pounds-worth-work-due-skills-gap-0

14 IPPR report *March of the Modern Makers*, February 2014, p29

15 https://www.thestage.co.uk/news/2015/peter-bazalgette-diversity-industrys-single-biggest-challenge/

16 *Vikki Heywood CBE, Chairman of the Warwick Commission on the Future of Cultural Value*

Changes to the school curriculum

There have been several significant changes to the school curriculum that are impacting on the development of skills appropriate for the creative and digital industries: the emphasis on STEM rather than STEAM, the introduction of coding into the curriculum, and the introduction of the EBACC. Over the last ten years there has been a decline in the number of state schools offering arts subjects taught by specialist teachers, and a corresponding drop in the number of pupils taking GCSE in creative subjects including design technology, art, and drama.

Between 2003 and 2013 there was a 50% drop in the GCSE numbers for design and technology, 23% for drama and 25% for other craft-related subjects. In 2012-13, only 8.4% of students combined arts and science at AS level. The number of arts teachers in schools has fallen by 11% since 2010.[17]

Commenting on the Warwick Report, Christine Blower, General Secretary of the National Union of Teachers, said:

"This is the second report in as many days to confirm that England has a curriculum and assessment system which is too narrow and simply does not allow children and young people to develop their full potential in all areas. The curriculum, reshaped by this Government, focuses on a small range of subjects and makes little concession to creativity and wider issues of personal development".

The introduction of the EBACC will marginalise creative subjects in schools even further. From this September all pupils starting secondary school will have to take GCSEs in English, maths, double science, a language, history or geography, leaving little space in the curriculum for creative subjects. Schools will not be able to obtain Ofsted's top rating of 'outstanding' unless 100% of pupils take these subjects at GCSE. There is general agreement within the cultural and creative industries, informed by research, that the government's focus on Science, Technology, Engineering and Maths (STEM) should include the Arts (STEAM) in order to meet the challenges of the growth of the sector.

Policymakers are obsessed with a siloed subject-based curriculum and early specialisation in Arts or Science disciplines that ignores and obscures discussion around the future need for all children to enjoy an education that encourages creativity, making and enterprise across the curriculum. We need creative scientists as much as we need artists who understand the property of materials and the affordances of new technology. (Warwick Report)

From September 2014 the teaching of coding became a mandatory part of the computing curriculum in schools. Whilst this is obviously hugely significant in terms of the needs of the creative and digital industries, financial provision by the government is lacking to successfully implement this change.

So far, the Government has provided £3.5 million, a sum that is simply not sufficient. The funding is equivalent to £175 per school. By comparison, Jersey is investing around £15,750 per school to make a similar step change to computing. The sum also compares poorly to recent provision for CPD for teachers in maths, physics and global issues. We need to support teachers to acquire new subject knowledge and develop their teaching style for the new computing curriculum.[19]

According to a recent YouGov survey 60% of teachers do not feel confident about their ability to deliver the new curriculum. The Digital Skills Taskforce report found that:

Only 44.9% of secondary school ICT teachers have a post A-level qualification relevant to ICT and the overwhelming majority of primary school teachers do not have a computing background. At present, CPD is not enough of a priority across education. In addition, there is an appetite from both teachers and industry for more project based, cross curricular learning which embodies and recognises creativity, problem solving, collaboration, entrepreneurship and self directed learning. However, time for both of these is a major problem. We need to give teachers (and students) the space they need.[20]

This cross-curricular learning overlaps with the 'habits of mind' discussed in the next section.

17 http://www.theguardian.com/education/2015/feb/17/arts-and-culture-systematically-removed-from-uk-education-system

18 https://www.teachers.org.uk/node/23349

19 Digital Skills for Tomorrow's World, July 2014, p10

20 Digital skills for tomorrow's World, July 2014, p46

Key soft skills/habits of mind

It has been identified that there is a shortage of young people choosing to study engineering, and also that the skills and attributes that engineers develop through their education and training are in demand not just in engineering industries but across the whole economy.[21]

These skills and attributes have been described as Engineering Habits of Mind (EHOM), and comprise the following: Systems thinking, Adapting, Problem-finding, Creative problem solving, Visualising, Improving.

It has been recognised that 'habits of mind' are of relevance not just for engineering, but have lifetime value. The Expansive Education Network has been developed to foster an approach to teaching and learning that develops life-long learners, developing 'habits of mind' to help young people deal with real-world complexity and uncertainty. These habits of mind include: curiosity, open-mindedness, resilience, resourcefulness, collaboration, reflection, ethical curiosity, and consideration.

More information about expansive education can be found through the Expansive Education Network, http://www.expansiveeducation.net. Educating Ruby, a recent publication by Guy Claxton and Bill Lucas, two key proponents of expansive education, suggests schools need to be teaching the 7Cs: confidence, curiosity, collaboration, communication, creativity, commitment and craftsmanship.

An important underpinning of the DDIR programme is recognition of the value of embedding expansive education within schools.

21 Lucas, Hanson and Claxton, The Royal Academy of Engineering's report *Thinking like an engineer: implications for the education system*, 2014

Delivery of the Initiative

Having identified the problems outlined above: the digital skills shortage in the creative sector, and the changes to the National Curriculum introduced in September 2013, particularly around the introduction of coding into the computing curriculum, the Ideas Foundation/ Comino Foundation in the Northwest of England felt it was appropriate to initiate a project that started to address these issues.

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A pilot project was set up in 2013/2014. The IF/CF approached MMU for help in locating a suitable postgraduate student proficient in digital skills/coding to devise a project to work with a group of pupils in a secondary school.

The DDIR appointed was Michelle Stephens, then a student on the MA Textiles course at MMU. Working with the Assistant Headteacher in Charge of Creativity and Research at St Ambrose Barlow RC High School and the relevant teachers, a comprehensive scheme of learning was drawn up to introduce pupils to coding, and bring together two divergent subject areas in the school: ICT, and art and design. This project was delivered in the summer of 2014.

Due to the success of this project, after consultation with secondary schools, the IF/CF decided to run an expanded programme, setting up three projects in two schools in 2014/15. In response to a call for applicants from postgraduate Art and Design students at MMU (see Appendix A: call for applicants) three DDIRs were appointed to run projects in the summer of 2015. Michelle Stephens, the DDIR from the pilot scheme repeated a similar project in a different school, Abraham Moss Community School, and two new DDIRs; Anna Frew and Charlotte Wood, set up projects at St Ambrose Barlow.The projects ran with different year groups, and different numbers of pupils, The designers had all been briefed by the Ideas Foundation so were fully aware of the aims of the programme.

Exploring different aspects of the creative and practical applications of software were a significant part of each project and thus all the projects were concerned with nurturing the critical skills identified as key to successful progression into careers in the digital and creative industries, however each project was very different. The development of Habits of Mind/soft skills was an integral part of each project. The projects directly addressed the gender imbalance within the digital industries by encouraging female pupils to learn skill-sets more usually practiced by male pupils and vice versa. An attempt was made to show the benefits of working across the rigid subject boundaries within which much education takes place. All the projects included collaborative working. Each project included contextual information about career opportunities in the digital and creative sector.

Whilst the initial project ideas were generated by the DDIRs in consultation with the IF/CF, vital to the success of each project was the working relationship with the key teacher(s) involved, in fine-tuning the details, and developing a scheme of work that was appropriate to the pupils' ages, and achievable within the time frame. Also integral to each project was the opportunity for teaching staff to update and learn new skills.

The workshops explored the fusion between digital technologies and design practice. Working with the theme of 'Order and Chaos' students and staff learnt how to use coding as a design tool… at the core of these workshops was the skill share between the designer, staff and students. This was so the digital skills obtained could be readily used in a variety of environments…[22]

To provide a context to the workshops Michelle showed examples of how designers use coding in the design process. Michelle ran a modified version of the same project at Abraham Moss Community School, in the summer of 2015: Generative imaging: diversity. The essence of the project was the same, introducing the pupils to coding through a series of workshops, however the subject area for exploration was different. Again the pupils were from year ten, this time twelve pupils took part, all of them were taking art GCSE, six of them were taking computing. The gender mix was evenly split, however none of the girls were taking computing.

Anna Frew ran a project E-zine: women in technology with eight year 8 design technology pupils at St Ambrose Barlow. The central premise of this project was to engage girls with technology, so the whole cohort was female. Working with a small group enabled Anna to run several sessions at Manchester Metropolitan University, taking the pupils out of school into a new environment. Anna also made use of two undergraduate mentors to help with the delivery of the project.

The vehicle for the exploration was the creation of a zine, as both a digital publication, and a hard copy. Online research and interviews with scientists at Manchester Metropolitan University enabled the pupils to explore careers available in STEM. Digital skills were developed through learning new skills from the Adobe suite, and being shown different digital publishing platforms for the final zine. The ethos of the project was collaborative: the pupils, the teacher, the DDIR and the mentors all worked together on the zine, and made collective decisions.

The first project, Generative imaging: order and chaos took place at St Ambrose Barlow in the summer of 2014, with a series of eight workshops ranging from 2 hours to 5 hours in length. Ten pupils from year 10 took part, five were taking art and design GCSE, and five were taking ICT. Four of them were girls, six were boys. All did either art and design, or ICT.

22 Michelle Stephens evaluation 2014

Charlotte Wood ran a project Interactive textile design with 26 year 8 art pupils at St Ambrose Barlow, exploring the fusion between digital technologies and design practice. An underlying theme was to introduce male pupils to aspects of the fashion and textile industries. This project consisted of a mixture of digital skills and hands on skills. Each pupil created an individual textile square as a contribution to the legacy piece. All the students utilised a variety of skills: Photoshop to design the tattoo/fairground motif; hand and machine stitching to embellish the fabric and attach the light and heat sensitive Lilypads to the fabric; Charlotte had the students' designs digitally printed onto the fabric and also showed them examples of digital embroidery.

Many designer makers see digital technologies as part of our 'toolkit', an aid that runs parallel to more traditional methods of making. They enable us to produce work that was previously impossible. Boundaries are pushed with the use of digital technologies, working through ideas and issues freely. [23]

Legacy pieces

One of the requirements of the programme was the creation of a legacy piece for each school. Within the Generative imaging projects each pupil created a coded piece of digital artwork, these images were then printed out and displayed as a collaborative artwork. For the E-zine: women in technology project the legacy piece was the creation of both a hard copy of the zine, and an online digital zine: http://issuu.com/anna_frew/docs/in_another_world_zine/1

For the Interactive textile design project each pupil created an individual embellished textile square incorporating LilyPads and flashing LEDs that were all joined together into one large textile.

Each of the DDIRs completed an evaluation of their residencies, these provide a useful overview of the content of each project. So, to what extent did these projects achieve the aims set out by the IF/CF? In order to evaluate the effectiveness of the scheme it was necessary to get feedback from all the stakeholders associated with the programme.

23 Charlotte Wood's evaluation

Evaluation

Evaluation Team

The evaluation was carried out by Dr Melanie Miller, Textiles Consultant and former Route Leader of the MA Textiles course at Manchester Metropolitan University, in consultation with Deborah Davidson of the Ideas Foundation.

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Evaluation method

To evaluate the effectiveness of the programme feedback sessions were held with all the Designers in Residence, the lead teachers involved in the projects, a sample of pupils from each project, a senior member of staff from each of the schools (the deputy head from Abraham Moss, and the assistant head in charge of creativity and research at St Ambrose Barlow).

Feedback was also sought from MMU, from Jane McFadyen, the Principal lecturer for Collaborative Engagement at Manchester School of Art; and Paul Bason, the director of Digital Innovation at Manchester Metropolitan University. One of the mentors who contributed to the E-zine/women in technology project also provided useful feedback. Each feedback session lasted between 25 and 50 minutes, and was recorded. Written questions (Appendix B) were provided in advance to all participants apart from the pupils. Some of the participants also provided additional written feedback.

An ethics protocol was drawn up at the start of the evaluation (Appendix C). Permission to include each of the institutions involved was obtained from the appropriate member of staff. All participants were given a copy of the ethics protocol.

The interviews were all transcribed and the experiences of the pupils and teachers evaluated against the aims of the programme as stated in the summary above. A draft copy of the report was sent to key participants for comments/clarification.

Evaluation of the evaluation process

Overall the feedback sessions went very well, all the participants provided frank and open comments. The list of questions provided a starting point for the feedback, on several occasions we diverted from the set list of questions where it seemed more useful. At Abraham Moss I talked to the whole group of pupils, and although I stressed ‘there are no right answers’ there seemed to be a perception that as a group they should be united in their feedback. It would probably have been more useful to talk to the pupils who didn’t have any experience of coding (ie the pupils taking art only) separately from the pupils taking both computing and art.

Key Findings

Overall the residencies were positive experiences for the pupils, teachers and DDIRs.

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Overall the residencies were positive experiences for the pupils, teachers and DDIRs.

> "The work created during this project has been amazing, our pupils have been given opportunities that have far exceeded our expectations, including the creation of artworks using code."
>
> Assistant Headteacher in Charge of Creativity and Research at St Ambrose Barlow commenting on the project Generative imaging: order and chaos

> "It was really interesting to plan something with a working creative, and to work with each other's strengths; I wouldn't have run it in a million years. It helped me to develop my skills, as well as helping (DDIR) Charlotte develop hers. Charlotte was really really fantastic. She was great with the kids, it was just really fun. It was fun to work with someone else, not to be on your own in the classroom, to have someone to bounce ideas off. It was a light bulb moment for me to see how much they've done"
>
> Art Teacher

Asking the E-zine: women in technology pupils if they were surprised by what they have achieved – the answer was a resounding 'yes' from all of them.

Asking the art teacher from the interactive textiles project if she would like to repeat the experience: ***I really really enjoyed it, definitely something I'd love to do in the future, the same project or a new one.***

The programme had clear aims, as identified in the summary. Looking at the evidence, the feedback that was provided by the pupils, the teachers, the DDIRs and the senior teachers involved in the projects it is evident that all the aims were met. The sections below detail the relevant feedback.

To engender links across the arts/design and engineering/science/technology in schools in the North West of England.

This was explicitly attempted within the coding projects at both St Ambrose Barlow and Abraham Moss. At St Ambrose Barlow half of the pupils were taking art, half were taking ICT, but were taught alongside each other on the project.

> "This project offered pupils the chance to think in a predictive, logical way, or the opportunity to approach the task in an experimental open-ended way. This mirrors the comparative learning approaches typical of the two curriculum areas involved, computing and creative.
>
> It was interesting to see that pupils started using the approach which typified their specialist area, but that by the end of the project the lines were blurred with all pupils drawing on both ways of thinking. It also gave each cohort a real insight into the natural fit between creativity and computing."
>
> Head of computing, St Ambrose Barlow School

The E-zine: women in technology project broke down boundaries around technology for the young women who took part:

> "Not all of them will take technology as an option, but it has definitely changed their view of what technology is."
>
> Design Technology Teacher

Michelle's project has impacted on the relationship between the ICT department, and the art and design department at St Ambrose Barlow.

> "The two departments are working together a lot more. We're transferring skills from one to another, we're not seeing them as separate entities. The project has had an even more profound effect on the art and design curriculum:
>
> Michelle's project completely blew us away: we have changed as a department as a result of her. We've changed the whole way we look at schemes of work, and we're incorporating digital technologies into every year group. Last year I'd never heard of code. I didn't even know what code was. When the pupils worked with Michelle we were so inspired, She not only impacted on the pupils but also on the staff. We've now built in coding, art through code in the art and design curriculum. This will be our first year delivering it as a unit of work (2015/16). That's all come from Michelle."
>
> Assistant Headteacher in Charge of Creativity and Research, St Ambrose Barlow School

Whilst Michelle's project has not had such a profound impact at Abraham Moss, the bringing together of two different departments (computing and art and design) was seen as a key for moving things forward. The deputy head commented:

That co-operation, the collaboration between (the computing teacher and the art teacher) is the key that can take this project forward. The benefits of teachers from different subject areas working together is something that can be developed and exploited. Creative ideas spark other creative ideas… that partnership between art and computing, we are at the start of that journey.

To demonstrate to pupils the practical and creative applications of coding, software, and physical computing, and to nurture the critical skills identified as key to successful progression into careers in the digital and creative industries.

All four projects incorporated different aspects of computing, including the teaching of coding, specific media software, and physical computing. The particular aspects of computing covered varied according to the specific project. All the DDIRs taught an aspect of computing, and also showed examples of a range of creative applications. For example within the Interactive textiles project, the students all created designs on Photoshop, and were shown how to improve their skills. Charlotte had their designs digitally printed onto cloth, and showed them examples of digital embroidery. All the pupils had experience of sewing a Lilypad – a small programmable computer – to their designs. The pupils who attended the Generative Imaging projects learnt a range of coding techniques, including image, text, data and mouse/keyboard interactions, and learnt how to hack code. They were shown examples of artists, graphic/website designers and textile designers who use coding as a design tool.

All the teaching staff involved in the programme were aware of the key role of digital skills in today's labour market:

> "I think it's really important, everything is changing every day, it's about building confidence in the pupils, and keeping them up to date with the changes."

Art Teacher

> "I am biased but I would say digital technology is important in any creative path. In the creative industries I think it's massive. Everything is digital media, social media, everything else that goes along with it. It's huge!"

Computing Teacher

> "It's very important to keep up to date. We can't send the kids off without knowing how to use the software. If they've not got the software knowledge, they can't then use 3D printers, laser cutters… They've just got to know it."

Design Technology Teacher

The teachers recognised the value of bring in external specialists, knowing that they didn't have the requisite skills:

> "Coding, it's the future. I think looking at anything like that is important… I welcome anything that the Ideas Foundation can bring, because I wouldn't teach that, I bet a lot of art teachers wouldn't teach that. So for someone like Michelle to come in with her skills, it's important."

Art Teacher

Aim Four

To provide pupils with an exciting and innovative experience that inspires them to consider future careers in this sector.

The overall feedback from the pupils who took part in all of the projects was very positive; it was evident that the projects had challenged them to work in new ways.

> "The project was really good, it's a really good experience, you do learn a lot of skills that you do need for life, and I wouldn't really change anything about it"

Interactive textiles pupil's feedback

> "I didn't realise, this project it has literally all of them in it, it has product design, you're designing things, and then you're using graphics, on the computer, and using your own skills."

Interactive textiles pupil's feedback

The teachers recognised the value for the pupils of working directly with a creative practitioner:

> "It's one of those invaluable experiences. Working with someone in real life who works in one of those jobs they've only heard about…"

Computing teacher

> "Hearing Charlotte's first hand experience made it more of a meaningful issue to the pupils, and to me as well."

Art teacher

The pupils taking part in the E-zine: women in technology project spent three days working in MMU, which was invaluable in showing them a broad range of applications for digital skills in the creative industries, from fashion to product design to architecture. Just walking through the different studio areas they came across possibilities they hadn't considered:

> "I really liked it…we saw loads of people doing different projects. Fashion, that's an area we don't really think about alongside technology.
>
> An architecture project, all the different materials they use. Couldn't stop looking at it."

And the quiz Anna got them all to take about possible STEM careers engendered a consideration of technology:

> "The quiz makes you think of lots of different career options…it's influenced me to think about ICT and technology more. Every job involves technology now."

E-zine pupils

To support schools in the development of appropriate ‘soft skills’ and ‘Habits of Mind’ needed for rigorous and effective practice in these industries.

St Ambrose Barlow is the Northwest hub for expansive education, so incorporating the transferable ‘habits of mind’ into the curriculum is done as a matter of course. The projects run by Anna and Charlotte provided opportunities to develop the skillsets outlined as being of value: curiosity, open-mindedness, resilience, resourcefulness, collaboration, reflection, ethical curiosity, and consideration. The teachers at Abraham Moss were less aware of this approach to teaching, however they went through the ‘habits of mind’ in the feedback session and confirmed that all these transferable skills were utilised by the pupils within the project Generative imaging: diversity run by Michelle.

“The project has definitely taken them out of their comfort zone. Introduced them to something they wouldn’t do in their own time. They’ve persevered, so they’ve shown resilience. They’ve helped each other; especially the computing pupils have helped the non-computing pupils. They’ve shown ethical curiosity through the consideration of the data they have used in their project, looking at song lyrics about diversity… that was really good…”

Computing teacher

Michelle commented:

“I do believe that this project has encouraged expansive education within the participants. It has created a curiosity in students with regards to what coding is, how it can be used and manipulated in a variety of forms. The project also is modeled around the ideas of life long learning, encouraging students to be open-minded when being approached with new material, as well as having resilience in exploring the new subject matter. The title of ‘Diversity’ was chosen to create ethical curiosity, get students to collaborate with one another and reflect upon the entire process.”

To encourage collaborative working

An element of collaborative working was integral to all of the projects. There was a marked occurrence of skill-sharing, with pupils helping their peers understand new processes. Some of the pupils have also cascaded their knowledge since the DDIR project. One of the pupils in the E-zine project commented:

"We've been using our skills to help others. We've been showing others the skills we learnt".

And the pupils who undertook the coding project at Abraham Moss commented: "We helped each other, we helped the girls".

The E-zine project was all about collaboration; with each other, with the DDIR, with the mentors, with the teacher. In the Interactive textiles project pupils supported each other in learning new hand skills such as sewing. As discussed in the section above about engendering links across different disciplines, teachers from different subject areas were brought together to work in tandem, so there was collaborative working by the teachers involved in the *Generative imaging* project; All the projects involved collaboration between the DDIR and the teaching staff.

To address the diversity imbalance within the creative industries by providing opportunities for students from a broad ethnic diversity.

Abraham Moss school has possibly the broadest ethnic make-up of any secondary school in the UK, so running the Generative Imaging project there did provide opportunities for students from a broad ethnic diversity. All the students who took part in this project were from ethnic minority backgrounds.

The proportion of students (at Abraham Moss) from minority ethnic groups is well-above average. The majority of these are from Pakistani backgrounds. Over 20 different minority ethnic groups are represented and there are over 60 languages spoken at the school. (Ofsted report 2014)

Aim Eight

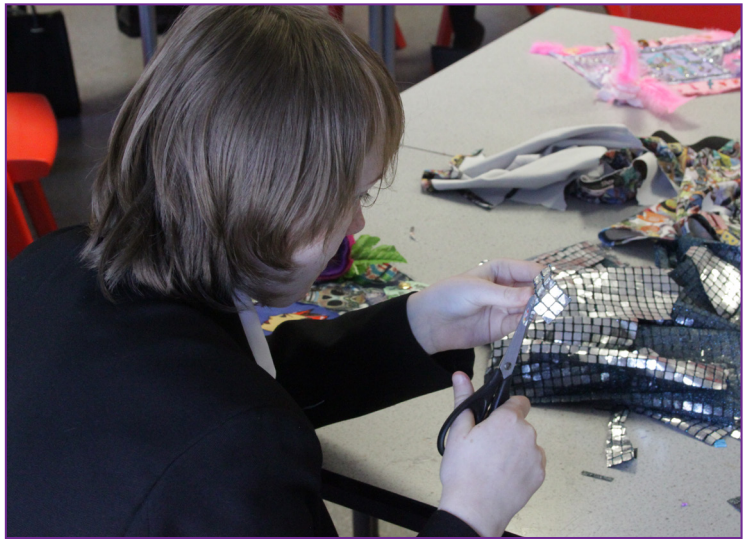
To address the gender imbalance within the creative industries by encouraging female pupils to learn skill-sets more usually practiced by male pupils and vice versa.

At St Ambrose Barlow school a higher proportion of female pupils choose to take art GCSE than male pupils, and a higher proportion of male pupils choose to take Design Technology. The teachers involved in the E-zine and the Interactive textiles projects were keen to address those trends:

> "The E-zine: *women in technology* project was explicitly about getting girls being comfortable using technology, breaking down some barriers that they might have, and thinking a bit more about how they might want to use it in the future. (DDIR) The research showed us women could do what men could do… Its shown how us as women can do whatever the men can do. And anyone can use the software"
>
> Pupils from the E-zine project.

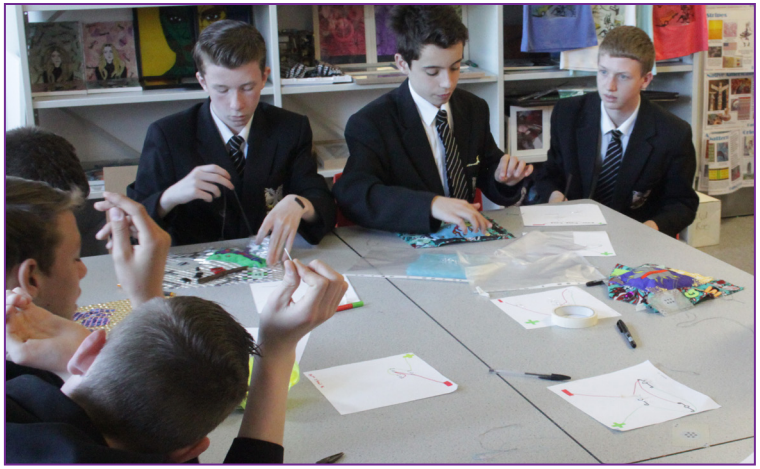
> "We have a very high take up of Art, and Design technology, but it's mostly boys in DT, girls in Art. It's completely changed the way they see themselves, and also the way they see DT."
>
> Assistant Headteacher
> in Charge of Creativity and Research,
> St Ambrose Barlow School

> "Talking to the pupils, and to the teacher who accompanied them on this project, it is evident that this project empowered the young women who took part. Of all the groups of pupils I talked to, this group were the most confident and articulate. Their teacher said they were not like that before the project started, the project has definitely had a big impact on them. Not all of them will take technology as an option, but it has definitely changed their view of what technology is."
>
> Design technology teacher



The art teacher at Ambrose Barlow is keen to address what she sees as the massive gender imbalance whereby the girls take art and the boys take Design Technology. The interactive textiles project introduced a whole raft of digital and craft technical skills. Textiles is often seen as being a subject dominated by women rather than men, and the DDIR and teacher involved in the project were unsure as to how the boys would take to a project situated firmly in the textiles/fashion area. However the boys really enjoyed it:

> "The boys loved the sewing, and the embellishment. Their faces lit up when they saw Charlottes work. They were very engaged… That really did surprise me, I thought the boys would say they loved the Photoshop and the tattoos, but they loved the textiles.
>
> This project had a big impact on the boys' perceptions of art. The art teacher undertook her own research project, investigating boys' attitudes to taking art. At the start of the project only 8% said they would take art, by the end, 9 out of the 11 boys in the class said they would take it. They think Art is a girly subject. I don't know where that stems from."



It's interesting that for the girls to be able to consider so-called male careers is seen as empowering; but for the boys to be able to consider so-called female arenas (textiles, fashion) is seen as brave.

I don't think anyone would say the boys have been empowered? Their eyes might have been opened, but they haven't been empowered.

Within the Generative imaging project Michelle noted:

> "The fusion of art/design and coding leads to various challenges in gender and specific stereo types. For example, this way of working challenges gender stereotypes – the majority of contemporary coders are male. This project challenges both genders, encouraging both of them to respond to the tasks in hand. It asks questions of them. Can the males use coding creatively? Can the females transfer their creative tendencies into a new medium, a new language?

The Assistant Headteacher in Charge of Creativity and Research at St Ambrose Barlow commented:

> "Michelle is such a great role model. She is so organised… and for the boys, it's usually a male computer science teacher, for them, it challenged that stereotype as well."

To update teaching staff and provide a model for teaching staff to utilise in subsequent years.

All three projects at St Ambrose Barlow provided an opportunity for teaching staff to update their skills. As noted in the section above discussing the first aim of the programme, within St Ambrose Barlow the project Michelle devised was very effective, and has subsequently been used as a model for teaching coding across the school.

Anna and Charlotte's projects also had other effects on the teaching staff. Seeing how Charlotte taught Photoshop to a whole class has given the art teacher confidence to teach Photoshop in a less prescriptive way.

> "I've always been a little bit put off teaching it to 30 pupils, it is quite prescriptive, I thought they've all got to do the same thing at the same time… seeing the freedom of how Charlotte delivered it, and not worrying about it being an actual taught lesson, has had an impact on me."

Having someone else running the class also gave the art teacher a chance to step back, and enabled her to build a different relationship with the pupils:

> "It's a hard thing to do… give your class to some one else, but I definitely became more relaxed into it. I think the pupils stopped seeing me as a teacher, saw me more as a colleague in the class room… (It was) good for my research (into why not many boys select GCSE art), got a debate going in the classroom… I could get more honest replies… It gave me the chance to develop more positive relationships with the pupils. Sitting and talking with them isn't something you get much time for."

The project also demonstrated that the pupils were able to be on-task, even though the project seemed to be quite open-ended:

> "Give them the materials, give the freedom, it wasn't chaos, they weren't all off task, they were all really engaged and really enjoying what they were doing, so I think it's putting trust more in them as well… when there are achievements like this project it's very worthwhile."

As a result of working on the E-zine project the design technology teacher has been inspired to make her teaching less prescriptive:

> "We allowed the kids to be very open with what they wanted to do. And that's not something as a technology teacher I would normally be able to do: letting them being the decider of the outcome. It's led me to reflect on the schemes of work that I deliver."

Other Key Findings

6

Benefits of a residency

The previous sections demonstrate the success of the programme in achieving the stated aims, the feedback sessions also revealed other key findings: benefits of the residency for the school, the DDIR and the mentors; the crucial nature of the relationship between the DDIR and the teacher(s); the importance of a visit to a university for school pupils; and the realisation that more needs to be done to raise awareness of the potential jobs available in the creative and digital industries.

It's not only the pupils who have benefitted from the DDIR scheme. For the designers a residency in a school provides a great opportunity to develop their skills in a supported environment:

> "At the start (the DDIR) was quite nervous… by the end she was leading, she had really developed her confidence. One of the mentors commented: I thought it was brilliant, I've really enjoyed it. I think it's good if you want to take it further, do a PGCE, I'd recommend it just to get the experience. I'd recommend it even if you don't want to be a teacher – you're always going to work with other people, this provides great experience of that."

Jane McFadyen, the co-ordinator at MMU responsible for widening participation, outreach, and employability at MMU who facilitates the recruitment of the DDIRs, commented:

> "The projects that we've been involved in with the Ideas foundation have been hugely important to the students that have done them. This scheme meets with all the things we are trying to do for our students: employability is very important. The skills the DDIRs have to demonstrate on a project like this - organisation, management, application, are generally all the skills needed for employment. Also, for the students, it's really empowering to work on a live project like this, it gives them massive confidence."

Working with schools and community groups is one of the most important things you can do as a student. Even if you are planning to do something else… the skills you learn by working with people who are younger than you, and actually helping them to see potentials in their future, is a bigger learning curve than other types of placements.

For teachers there are huge benefits from participating in the DDIR scheme:

> "The designer in residence model is a wonderful model. It's not just about doing a one-off project with pupils, it's about upskilling the staff and giving them the skills so that when that designer in residence isn't there they can still run with that type of project. Its about giving the teacher the opportunity to develop alongside a professional, some teachers don't get the opportunity to do any inset training, they do the degree, they do the PGCE, and that's it, they don't develop any skills after that. With this, because of the relationship, the co-planning, the evaluation together, the process of learning, it's just the best inset that you can get, you get it in bucketfuls."

The Assistant Head
in charge of creativity and research
at St Ambrose Barlow

And for the pupils:

> The difference you get when pupils work with an outside practitioner, you can't put a value on it, because it affects not just attainment, but aspiration, behaviour, the lot. The pupils respect the teachers, but they have a different type of respect for creative practitioners because they see them as experts.

The relationship between the DDIR and the teacher

It is evident that the relationship between the teacher and the DDIR is critical in terms of the success of the project. The teachers had to have confidence in the DDIRs ability to deliver what was promised. Gauging the capabilities of the pupils and putting together a suitable timetable to deliver the project necessitates a close working relationship. The teacher has to support the DDIR, there's a very clear synergy there.

> The relationship between DIR and teacher is crucial. We have been very fortunate in that. The three DDIRs have all been very different, but they've all worked.

The Assistant Head
in charge of creativity and research
at St Ambrose Barlow

At Abraham Moss the project was less successful in terms of upskilling the teachers, and this can be linked directly to the unforeseen absence of a key member of staff at a crucial point in the development of the project. Other staff then became involved, but weren't involved right at the start of the project, so never felt they 'owned' it.

> With this project, because of very unfortunate circumstances, people haven't felt they owned it… so we suffered a setback. If it could have been im proved, it would have been to have the people who ended up leading it, to have been involved from the beginning...

Deputy head,
Abraham Moss.

Visit to MMU

Visiting a university is a key way to introduce pupils to the idea of participating in higher education. Several of the teaching sessions for E-zine: *women in technology* took place at MMU. Anna saw this as really important from an outreach perspective. The mentor commented:

> "I don't think school kids get many chances to see higher education whilst they are at school… visiting a university before they have to fill in the UCAS form is invaluable, it provides an indication of what it's all about… it can also help them choose which subjects to do at A level… if you know what you want to do at degree level, you can work backwards… If I'd had this opportunity I would have changed my choice of GCSEs and A levels… Some of the pupils were saying they didn't want to go to university before they did this project."

Jane McFadyen, Principal lecturer for Collaborative Engagement at Manchester School of Art commented:

> "Bringing pupils into MMU is not simply about just recruiting, it's consciousness raising. If pupils never see the opportunities, they don't have that cultural capital. The more we do to bring pupils into the university, the more the talented people who have the capacity to be in higher education, go to higher education."

Developing new skillsets and raising awareness of the digital and creative industries

The residencies highlighted the need for schools to keep up with the changing skillsets needed:

> "It's crucial, especially now, in the current climate, it's even more important. The art and design courses in school are still very very traditional… we've realised, from doing this, and from other projects with the creative industries that we need to change, to move our curriculum to keep up with the skills that are needed. It's made us aware of how many jobs are out there."

The Assistant Head
in charge of creativity and research
at St Ambrose Barlow

Conclusion

7

As can be seen from the detailed feedback above, the DDIR programme has been a resounding success for all stakeholders: the pupils, the designers, the teachers and Manchester Metropolitan University. In participating in the DDIR scheme schools need to be prepared to take risks and trust the DDIR, but at the same time take ownership of the project and be very involved. The most successful projects were the ones where there was co-ownership of the scheme between the lead teachers and the DDIR.

With the increasing incursion of digital technologies into almost every area of work, in the future 'digital industries' will not be a separate category, but a part of all industries. Future job opportunities will require applicants with skillsets from across divergent areas, people who are creative within the technological domain, as well creatives who have technological skills.

The boundaries between digital and creative are becoming increasingly blurred and employers increasingly seek a fusion of creative and technical skills, combined with business and softer skills. [24]

The school curriculum, led by government requirements, tends to foster the division between the 'silos' of science/technology and arts / humanities. There are now many opportunities in the workplace for working across the subject areas, the DDIR programme provides opportunities for cross-discipline working.

And taking this even further, as stated by Michelle:

> "Contemporary creative practice encourages this fusion of skill sets. Growing up in a technologically driven world students nowadays can access these opportunities more easily and use them creatively, in whichever and whatever way they wish/choose to do so. Therefore, the more we can facilitate this cross fertilisation of skillsets the better, as I believe the most innovative things occur in the boundaries between subject areas. When skillsets are merged, or elements taken from one another; this is how innovation happens and pushes the boundaries of any given practice/discipline/subject area."

And as noted by Paul Bason, the Director of Digital Innovation at MMU:

> "Institutions need to understand it's not simply that a subject has changed, it's that a culture has changed."

All the evidence (from the government's own research bodies) points to the growing value of the creative industries to the UK, and yet the government is intent on marginalising the teaching of the creative subjects that underpin the creative industries. As recommended in the Nesta report The Creative Economy and the Future of Employment published on 21st April 2015, the government should end the bias against multi-disciplinary education and support the combined take-up of arts and science subjects at school and higher education, turning STEM into STEAM.

Hasan Bakhshi, director of creative economy at Nesta, comments: "*The UK's highly educated, skilled creative workforce is a shining light. That light will be considerably dimmed in the future after the EBACC becomes embedded into the UK education system".*

24 *Sector insights: skills and performance challenges in the digital and creative sector, Executive Summary,*
UK Commission for Employment and skills, June 2015

Recomendations

- That the Designer in Residence programme should take place in the next academic year.
- Consideration should be given to widening the pool of applicants to final year undergraduate students.
- That where possible DDIR projects should include a visit to Manchester School of Art/MMU.
- Pilot involvement of creative industrial employers as part of the mentor mix, for example for the DDIRs, in the next phase of iteration.

Acknowledgements

We would like to thank everyone who generously contributed to the feedback sessions for this report.

Appendices

Appendix A
Call for applicants

Appendix B
Questions asked at feedback sessions

Appendix C
Ethics protocol

8

APPENDIX A: Call for applicants

Post Graduate Digital Designer in Residence in Schools

About the Project

Project Partners
The Ideas Foundation/The Comino Foundation
Art/Digital Innovation MMU

Context and Rationale

With most recent GVA stats suggesting the UK's creative industries are now worth £71.4 billion per year to the UK economy, there is widespread recognition that the size, importance and competitive advantage this sector lends to the UK economy unquestionable. The same is true of the digital creative sector with regards to the North West economy.

> 'With one in twelve jobs across the UK now classed as 'creative' the need for talent is spread around the country with Greater Manchester now the second largest hub for creative and digital content across Europe after London. A recent analysis of the 'sub-regional economy' by Monitor found that the creative industries could bring an estimated 23,000 new jobs to Manchester over the next decade – growth of 13%.'

The Guardian – The Northern Blog:
Will Shaw – 5th March 2014

THE IDEAS FOUNDATION COMINO FOUNDATION

About the Ideas Foundation

The Ideas Foundation exists to bridge the gap between secondary school and the world of work in the creative sector. The charity is in part funded by the advertising and creative communications industry and a separate educational charity, The Comino Foundation.

In partnership with industry players and schools we create opportunities for you people from diverse social backgrounds to develop the skills and talents needed to progress to our industries.

Anticipating the rise of STEAM and to prepare for changes in the curriculum which will see a greater emphasis on code and associated technologies, the Ideas Foundation team in Manchester have been focussed on developing collaborative models which can facilitate this agenda.

In particular, over the last year, with input from McCann Erickson, we have been working with post-graduate students at Manchester School of Art (MMU) on a very successful project that has transformed many aspects of teaching in one particular classroom. This project provided a bursary to fund a 'Digital Designer in Residence' at St Ambrose Barlow High School in Salford. Here a Masters student from the school of art worked with pupils in the classroom (and their teachers) to look at new ways of individual co-creation through the use of new technologies.

The work created during this project has been amazing, our pupils have been given opportunities that have far exceeded our expectations, including the creation of artworks using code. We look forward to next year and are very excited about the new projects that we will be involved in and new people we will work with.

Bernie Furey – Assistant Head for the Arts:
St Ambrose Barlow High School

This project offered pupils the chance to think in a predictive, logical way, or the opportunity to approach the task in an experimental open-ended way. This mirrors the comparative learning approaches typical of the 2 curriculum areas involved, computing and creative. It was interesting to see that pupils started using the approach which typified their specialist area, but that by the end of the project the lines were blurred with all pupils drawing on both ways of thinking. It also gave each cohort a real insight into the natural fit between creativity and computing.

Andy Shepheard – Head of Computing:
St Ambrose Barlow High School

As a result of this successful pilot we want to extend this project in coming years. In the first instance we are looking to provide bursaries for 3 more MMU students to work in secondary school classrooms with a view to building a longer term relationship with the university in the future.

For the successful students a £1000 bursary will be provided, fully funded by the Ideas Foundation who will also provide mentoring and support throughout.

What will a Digital Designer in Residence look like?

We are looking for inspirational young designers who have a body of practice, or an area of research investigation which explores new ways in which technical aspects of computing are being used to create new directions in product or communication design. We want designers who can infuse the young people in our schools with a sense of possibility, whilst helping them get to grips with some of the basic technical building blocks that are rapidly becoming the cornerstone technologies of the future of design.

Any proposals which merge coding with creative outputs are of real interest, as are bodies of practice which connect with to emerging field of the internet of things, and physical computing. We are not looking for technology based ‘trainers’ in hardware or software application, but in brokering ‘creative agents’ into schools who can help our teachers and pupils to keep engaged and maintain their leading edge with emerging practice.

Outline Specification

Funder	Ideas/Comino Foundation
Proposition	This funding will provide 3 bursaries of £1,000 for the commissioning of digital designers in residence at selected schools across the Greater Manchester and Salford area. These schools will be selected on merit by Ideas Foundation.
Rationale	This project responds to current strategic drivers from within both education and the local economic environment. The new National Curriculum which is mandatory in all state schools, shifts the focus of both IT and Design Technology towards much more advanced creation and manipulation of digital technologies from September 2014. As a result of this schools are keen to develop projects which will bring innovative practice and leading edge expertise in these areas into the classroom. Alongside this the North West Regional economy, and in particular the economy of Greater Manchester, is experiencing phenomenal growth within the digital communications sector and employers are experiencing a 'skills crisis' in recruitment. Technical digital skillsets are likely to be key differentiators for access to successful future careers within the rising workforce.
Aims of the Project	The post-holder will undertake an exploration of contemporary practise in a specialist design and technology area and will use the learning from this to disseminate skills and knowledge to staff and students within the host school The project will contribute to embedding the student experience into real life situations and into the wider community for the post holder. This is a teaching & learning pathfinder project for all stakeholders and we aim to use and disseminate findings from the experience to inform future pedagogical practice.

Experience required for the post

The post-holder will either have a mature body of work and experience, or be working towards post graduate qualification in design. The body of work must include practice which specifically investigates an area of design which foregrounds new and interactive technologies.

At Interview

Applicants will make a short presentation of a relevant area of their own practice and present proposals for how they would build on this body of practice to create the schools projects. The project must deliver learning to both staff and pupils in host schools, and must also leave a legacy piece which showcases their work and celebrates students involvement.

Judging Entries

A panel drawn from schools, the Digital Hub, the Ideas Foundation and Manchester's Digital Industries will make a selection on merit.

Outputs required

The designer in residence will develop a proposal/brief which outlines the specific range and focus, of their investigation within the broad area of textile design and technology.

To facilitate this they will undertake an initial broad report, presented through a visual presentation which outlines 'the state of the art' more broadly, which will inform stakeholders of the general landscape, and then they will identify their proposal for focus within this. A project which involves some aspect of code skills would be particularly useful. The proposal will meet a certain set of key criteria for the stakeholders:

- The residency will involve the designer in working in schools for a minimum of 6 weeks.
- The designer in residence should expect to spend at least 8 days in school working with staff and students. This will be a mix of formal skills sharing workshops or through direct 'making' time with students, and will be negotiated with the school.

Experience required for the post	• Additional research time will be required outside this set period, dependent on the knowledge base of the designer in residence at the start of the project. • The designer in residence will produce a 'legacy piece' as an essential output for the school, this will be developed by the designer with students and staff. • The creation of this legacy piece will involve the designer in residence investigating a range digital making skills and practice. These will be shared with staff and students through workshops planned during the period of residency. • The designer in residence will produce a full written and illustrated evaluative report of the experience, which reflects the value of the experience, in developing key skillsets needed for 21st century design practice.

Indicative Timeline

1 December 2014	Application closing date/shortlisting
4 December 2014	Shortlisted candidates notified
12 December 2014	Selection Panel Presentations by shortlisted candidates. Judging panel to comprise schools, MMU, IF and industry expert.
January/February 2015	Final detailed brief and plan developed between schools, IF and Designer in Residence
February/March/April/ May/June 2015	Delivery – flexible to be negotiated between DDIR and schools on best fit
June/July 2015	Evaluative Report completed

APPENDIX B: Questions asked at feedback

PUPILS

THE PROJECT

1. What do you think you have learnt from this project?
2. Were you surprised by what you have achieved? Have you challenged yourself to work in areas you weren't familiar with/felt were outside your 'comfort zone'? Do you have family members who work in these fields?
3. Has this project enabled you to work in new ways that haven't previously been part of the curriculum?
4. Have you enjoyed working with an adult who isn't a teacher?
5. Has the project influenced how you engage with technology/ computing?
6. Do you think you have gained a greater understanding of the role of technology (coding, programming, physical computing) for careers in the creative industries?
7. What was the best bit about the project?
8. What was the worst bit?
9. What could have been done better?
10. Did you work collaboratively on this project? How was this?
11. Did the project provide you with sufficient information so that you can now apply this learning to other projects?

THE FUTURE

1. Have you thought about your future career path?
2. Has this project made you consider other career options?
3. Are you considering a degree or are you considering other routes, eg an apprenticeship?
4. Has what you've learnt through the project influenced the choices you might now make?
5. Any other feedback you'd like to share?

APPENDIX B: Questions asked at feedback

TEACHERS

1. Which new computer skills have your pupils gained competence in?
2. How effective is this project model in bringing critical skills into the department? (What do you see as the most important vocational and critical skills at the moment, were these addressed?)

2a. How effective is this project model in developing staff knowledge and understanding of the needs of the Creative Industries?

3. Do you think the experience has helped challenge perceptions or stereotypes in any way, such as encouraging female pupils to consider engineering or computer science as a future career path, or encouraging more male pupils to consider art/design career paths?
4. Do you think the experience has helped pupils from diverse ethnic backgrounds to consider careers in the creative and digital industries?
5. Is it useful for pupils to work with adults other than teachers on projects

5a. What is the benefit to staff working with external specialists?

5b. Collaboration on Schemes of Learning/Lesson plans - What are your thoughts on co-planning/co-delivery / co-creation?

6. What impact do you think this project will have on future learning in the school?
7. To what extent does your department see the use of digital technology as an underpinning for the subject area?
8. How important is confidence in the use of digital technology/ computer literacy in facilitating progress to a career in the creative industries?
9. How effective was this project model in engaging and motivating you in your work going forward? Did the project provide you with sufficient information so that you can now apply this learning to other projects? If ‘no’, is there anything the Ideas Foundation can do to help you with this?
10. How effective was the strategy of bringing different departments together?
11. Expansive education/Habits of Mind: Do you think this project has helped pupils to develop useful and transferable ‘habits of mind’ such as curiosity, open-mindedness, resilience, resourcefulness, collaboration, reflection, ethical curiosity, consideration?
12. Any other feedback you’d like to give?

APPENDIX B: Questions asked at feedback

DIGITAL DESIGNERS IN RESIDENCE

1. What (if any) is your previous experience of running projects like this?
2. To what extent did your workshops achieve their anticipated outcomes?
3. Were you trying to challenge gender or ethnic stereotypes within your project, for example encouraging females to work within skillsets traditionally utilised by males? According to various reports (eg the Warwick Report, and March of the modern makers: An industrial strategy for the creative industries) women and black ethnic minorities are under-represented in the creative industries.
4. Did your project provide the opportunity for any of the following:
   - Collaborative working?
   - Cross disciplinary working (eg making links across the arts/design and engineering/science/technology subject areas)?
5. What is your view on the merits of enhancing/merging technological and creative skillsets?
6. Did you get the project right? What was good, what wasn't?
7. How did pupils respond to working with an adult who wasn't a formal teacher?
8. Did you use other students within the project, eg as mentors? Was this useful? In what way?
9. Do you think the project has helped pupils consider a future path in FE or HE?
10. If you were to run the project again, what would you change?
11. What do you think are the benefits for you in participating in this type of scheme?
12. Expansive education/Habits of Mind: Do you think this project has helped pupils to develop useful and transferable 'habits of mind' **e.g.** *curiosity, open-mindedness, resilience, resourcefulness, collaboration, reflection, ethical curiosity, consideration*?
13. Any other feedback you'd like to give?

APPENDIX C: Ethics protocol

ETHICS PROTOCOL

BRIEF OVERVIEW OF THE PROJECT

This study aims to evaluate the effectiveness of the Digital Designer In Residence (DDIR) Programme initiated by the Ideas Foundation/the Comino Foundation.

What it will entail

- Interviews with the pupils, school staff, DDIRs, head teachers, University staff, Ideas Foundation and Comino Foundation staff.
- Observation of the pupils' work.
- Observation of the Legacy piece.

Informed Consent

Permission to include an individual in the feedback will be sought from the pupil, staff member and parents as appropriate. Care will be taken to ensure that they are fully informed of the purposes and nature of the research. Participants will be given a copy of the ethics protocol and any questions about the study will be answered.

Right to Withdraw

All participants will be offered the option not to answer questions or to withdraw from the study at any time. Pupils will be reminded of this at the beginning of the feedback session.

Feedback

A summary of the research findings will be available for all participants at the conclusion of the study by contacting a member of the research team, and copies will be given to the institutions. Efforts will be made to include the 'voice' of the participants in the report.

Anonymity and Confidentiality

Transcripts of interviews and all other collected data will be kept confidential and only used for research purposes. Names of teachers and pupils will not be included. Since the study is located within a small number of institutions it is not possible to guarantee anonymity. However, the names of the institutions will only be used in publications with the head teacher's consent. Drafts of written papers and articles will be checked with the head teacher or an appropriate member of staff for factual accuracy prior to publication. Responsibility for the interpretation of data remains with the research team.

Thank you very much for taking part in this research.

If you wish to discuss this study, please contact:

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