

AD



THE ART AND SCIENCE ISSUE

DRAWING FOR LEARNING: DRAWING FOR DISCOVERY
IN CONVERSATION WITH KEITH BRYMER JONES
TOOLS FOR SOCIAL CHANGE

The National Society
for Education in Art
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Barbara Hepworth, The Family of Man (detail), 1970. ©Bowness. Courtesy Yorkshire Sculpture Park. Photo © David Lindsay

Editorial

Welcome to the twenty-fifth issue of *AD* magazine! Published in 2011, our first issue featured an interview with Sir Christopher Frayling, NSEAD patron, formerly rector of the Royal College of Art and chair of Arts Council England. Back then, Sir Christopher spoke of the 'missing subject', missing that is in the acronym STEM. He described what a well-balanced curriculum might look like and noted the derivation of 'the three Rs', which was not, as he explained, as we know it. 'Reading, writing and arithmetic' originally came from 'reading, *wroughting* and arithmetic', so has been lost in translation, as has the value placed on art and making. Fast forward to 2019 and the focus for this anniversary issue is science *and* art. This issue's authors share in the vision for a well-balanced curriculum and the need for a world where subject disciplines can work better together. Across all phases, from primary schools to higher education and beyond, the authors in this issue break down the false division between art and science. Instead, they describe the curiosity, discovery, knowledge acquisition and knowledge application that can be achieved when the barriers between art and science are removed.

This issue also affords us the opportunity to share in our delight and extend our gratitude to Keith Brymer Jones, the highly acclaimed potter, who has joined NSEAD as a patron of the Society. In his *AD* interview (page 2), Keith's appreciation and advocacy for art, craft and design education is clear. Also known for his impassioned television presenting, and with his most recent appearance on *The Victorian House of Arts and Crafts* in mind, Michele Gregson, general secretary NSEAD, asked: 'What would our Victorian founders make of art, craft and design education today?' In reply, Keith said that NSEAD's founders, the Victorians, would find the recent threats to the subject by subsequent governments disturbing, and joins us in our mission to bring value and understanding, just as the Victorians did, to our subject. For now, we hope Keith's poster will bring a little bit of 'Love' to your walls.

Sophie Leach, Editor, *AD*

Please send article proposals and submissions to sophieleach@nsead.org

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Cover image
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Keith Brymer Jones, potter and patron in conversation

Keith Brymer Jones leads a successful design company and appears regularly on television shows such as the Great Pottery Throwdown and The Victorian House of Arts and Crafts. We are delighted to welcome Keith as a patron of NSEAD. A passionate advocate for art, craft and design education, earlier this year Keith talked about his experiences and passion for art with Young Arts Leaders from Palm Bay Primary School in Margate, and NSEAD General Secretary Michele Gregson

Young Arts Leaders (YAL): Hello Keith. Who inspired you at school and why did you become a potter?

Keith Brymer Jones (KBJ): Well, I went to a pretty bog-standard secondary school. It wasn't all that exciting, but I walked into the art room one day and the art teacher Mr Maughtman gave us all a lump of clay. I'd never touched clay before, but when I took it in my hands I instantly realised I really liked this material. It was malleable and something I could use my imagination with. Unbeknown to me at the time I had dyslexia – I had difficulty with letters and numbers – which meant I had a different way of looking at things. Holding a lump of clay and making something in three dimensions was very good for me, and I was very good at it! It gave me a better understanding of shape and form and function, and though I didn't realise it at the time, I think that is why I really connected with the clay. So, in answer to your question, it would have to be Mr Maughtman, my art teacher, who inspired me at school.

YAL: How do you feel about other people making your designs?

KBJ: To be honest, for years and years I made everything and threw everything by hand. Then I teamed up with a bloke called Dominic Speelman, who is now my business partner. We flew over to China and went to a factory where they had started making my products and

‘When people think of the arts, they think of it as a sideline which you can't make a career of it. Well, you absolutely can!’

designs. I must admit I was blown away. It was incredible to think that someone else would take the time to make my products and to sell them around the world – these products that came from my head. I've been doing that for a number of years now and I still find it amazing. When I think of a design, the most important thing is

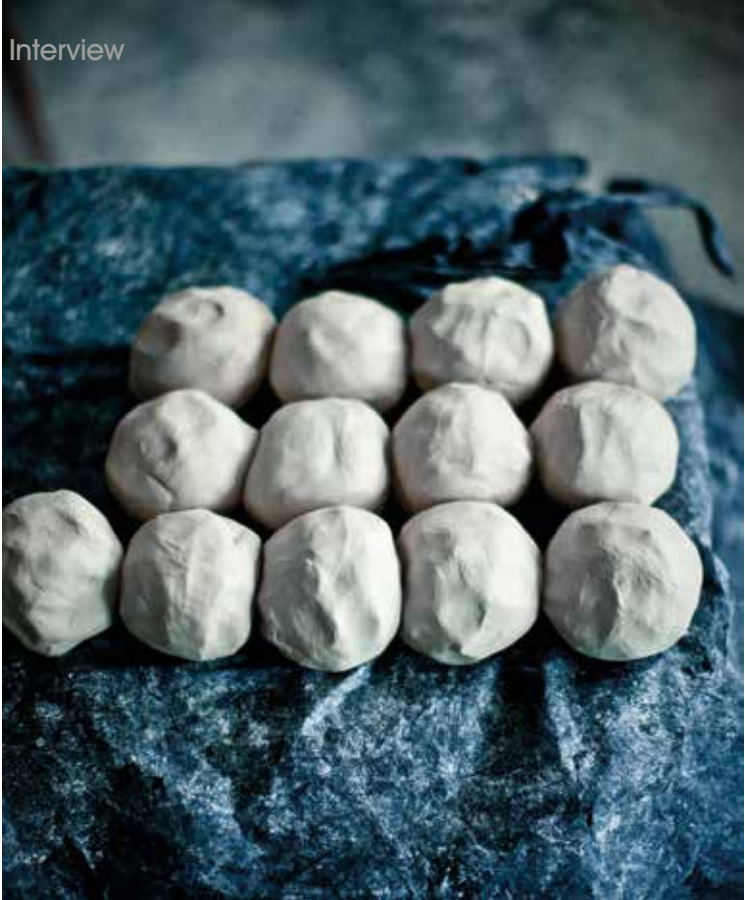
the communication. I love the idea that I can design something and make it, then send it to someone on the other side of the world – you communicate through that design [*wipes away a tear*]. I once designed a mug called a bucket mug. I called it that because it looked like a bucket – I'm a bit simple like that. We now sell half a million bucket mugs a year, all around the world. So yeah,

I find it very special that someone else makes my designs – it's incredibly humbling.

YAL: How do you control the people making your designs?

KBJ: With an iron rod! No, no – interesting question though because I have a saying: “I can design a straight line, send it to China and it will come back different”. That's because my interpretation of a straight line might be completely different to that of someone from a different culture, background or language. It's incredible that you can feel that you are designing something very simple and straightforward, but to communicate to someone thousands of miles away can be ►





‘Children have a tremendous imagination and creativity that is not cluttered by ‘knowing stuff’, and I’m not being patronising when I say that’

► quite challenging. So what I do is visit the factory five or six times a year. I eat, sleep and work with the workers all-day long and we discuss through the clay or through an interpreter the design and what we are trying to make. It’s a brilliant way to thrash it out. I love it – it’s the best part of my job really.

YAL: Why do you make art that is usable and not just for decoration?

KBJ: I think that all art is useful because it is sending a message. When you paint something, make something or product a sculpture you have an idea in your head. What you are trying to say or do with that particular piece is your interpretation and you are communicating that. Now, I’m quite a practical guy. I thought when I set up my pottery studio, what do people really need and what talents do I have to make money? I thought people really needed cups, bowls and things to eat from, so I made domestic ware. Then I thought, why not put something on it to convey a message? A lot of my mugs had little words on them. Quite ironic when you think of it, as I wasn’t very good at reading and now I’m known for this range that has words on it.

YAL: Yes, we saw the ‘drama queen’ mugs!

KBJ: Those are some of my favourites. I made them initially for my son Ned because he was a bit of a drama queen!

YAL: How much time do you get to make art?

KBJ: Not enough. Last Sunday I was in Lisbon, Monday I was with a client in Swindon, Tuesday I was in Bedford with our website people, and yesterday I was in a warehouse in Nottingham with some people from a trade fair. It’s Friday now and I still haven’t sat down at my wheel to make anything this week. I get a bit funny if I don’t get to that very often, because I love to make or paint. I have to make sure that I set aside four or five days every so often just to spend time in my studio.

YAL: Are you interested in any other kind of arts?

KBJ: Believe it or not, before I did pottery, I was a dancer. A ballet dancer – I know, unbelievable isn’t it! But from the ages of three to 18 I did ballet and dance. I was convinced that I was going to be a dancer, but then I

touched that lump of clay and my life changed forever. I was also in a punk band for years, but pottery is my soul.

YAL: What do you think about children being art leaders?

KBJ: Young people are probably the best people to be art leaders and a lot of famous artists agree. As Picasso famously said: “It takes a lifetime to draw like a child”. Children have a tremendous imagination and creativity that is not cluttered by ‘knowing stuff’, and I’m not being patronising when I say that. As you get older there are barriers, constraints on your time, or other people’s opinions that can dampen down that creativity, but when you are a child you don’t have that. So yes, children as art leaders? Who better?

YAL: We are young arts leaders. Do you think that NSEAD can help children be leaders for art?

KBJ: NSEAD is an amazing organisation. They support art teachers in their work, give advice and offer opportunities to learn different ways of teaching. NSEAD is extremely important.



Michele Gregson (MG): You have been flying the flag for craft and making for a long time. Why is that so important to you?

KBJ: I didn’t go through a formal education. I was going to go to art school, but then I got a job in a pottery as a clay boy – sweeping the floor, making the tea – it was like an apprenticeship. And then I worked on my own for years and years. It was only when I did The Great Pottery Throwdown that I was thrown into the limelight. All the years I have made pots it has been a real passion, so having the opportunity to extol the virtues of all things craft is a real honour.

MG: Do we need more champions from the creative industries talking to children and young people about the opportunities?

KBJ: Yes, absolutely. When people think of the arts, they think of it as a sideline which you can’t make a career of it. Well, you absolutely can! The more people that children meet who are remotely successful making a living in the creative industries, the more they will realise that they can absolutely do the same. This country has an incredible history in the creative arts – from dance and music, to painting and sculpture. The creative arts generate a huge amount of money for this country, so don’t let anyone ever tell you that you can’t make a living out of being an artist or working in the arts.

MG: Lots of schools struggle to offer the chance to learn how to use clay or work in 3D at all. What would your advice be for teachers?

KBJ: There are a few things that you can do. Even using air-drying clay is a start to get pupils used to the malleability of the material. Working in 3D gives you a much better idea of space, volume and proportion. These days you can get ►



► really efficient small kilns, which don't have to be all that expensive. The initial outlay will give benefits that are mind-blowing and incredible for years. I think one of the reasons that art education struggles to be funded is because the 'suits' in Whitehall and government don't see that you have to put in investment to get something back. They like to see ticks on a box rather than pictures on a table. Our message to the people who have all the money – give us some of it so that we can make something creative and amazing. Invest in children and our future.

YAL: We went to the Houses of Parliament to talk about our art and why it mattered.
KBJ: Good! Art can take you to some exciting places. I will try and not to get emotional again, but I remember the first time I went to China

and visited the factories. I have an office in Hong Kong. I booked into the hotel and on the 35th floor there was a swimming pool. Every morning at 7am I would go for a swim, and I had this realisation that I was looking over Hong Kong harbour and there were eagles flying above – incredible right? And I thought to myself, my job got me here, to this creative place, and isn't it amazing where your profession can take you – no more so than in the arts.

MG: We really enjoyed your TV programme The Victorian House of Arts and Crafts. The NSEAD began in 1888 and still has the same purpose now – to champion the importance of our subject. What do you think our Victorian founders would make of art, craft and design education today?

KBJ: Throughout the 50's, 60's, 70's and 80's art and design was pretty healthy in all its forms. So from that perspective I think they would've been quite blown away to see art and design as a staple form of communication in this modern age, and in society as a whole. The rise of women in arts and crafts too – in fact, it was due this very pursuit that women, and men, were enabled to express themselves in ways that societal boundaries had previously closed off. But, and there is a big BUT, more recently art, craft and design in both formal and informal settings has become increasingly threatened by subsequent governments. I think NSEAD's founders, the Victorians, would find this disturbing.

I believe the reason for the reduction in support for art, craft and design is because they are unquantifiable in being recorded, monitored or ordered. And this is where I get hippie-fied, because humans have always had a desire to control, and to control results in whatever field or endeavour this may be. It is the very fact that one cannot control art or creativity which makes it so exciting and appealing to those who pursue such artistic careers. I feel as a body [NSEAD] we need to convince the powers that be, and the wider public, that art education is NOT an alternative to an academic or sports career, but a career pursuit in its own right. And referring back to your question, I believe this is indeed what the Victorian founders had always envisaged. ■

Keith was in conversation with Michele and Young Arts Leaders Ade, Summer, Chloe, Rosie-Belle, Lottie-Rose, Rifka, Melody, Freya and their teacher Mrs Tong.

Images: © Keith Brymer Jones
Studio Keith and Palm Bay Primary School © NSEAD



boredomresearch: with art and science

Following the success of AfterGlow, Vicky Isley and Paul Smith from artist collective boredomresearch discuss their collaborations with scientists and question the misconception that art and science sit at opposite ends of a spectrum

In the shadow of a semi frozen waterfall, struggling to keep a giant snowball balanced on the handrail of a bridge above a deep ravine, Vicky cut me a glance to see if it was ok to let go. A nod indicated I had the microphone on this time, and with anticipation we watched the snowball's long silent descent. We were at the start of our career as artists on a residency at the Banff Centre for Arts in Alberta, Canada.

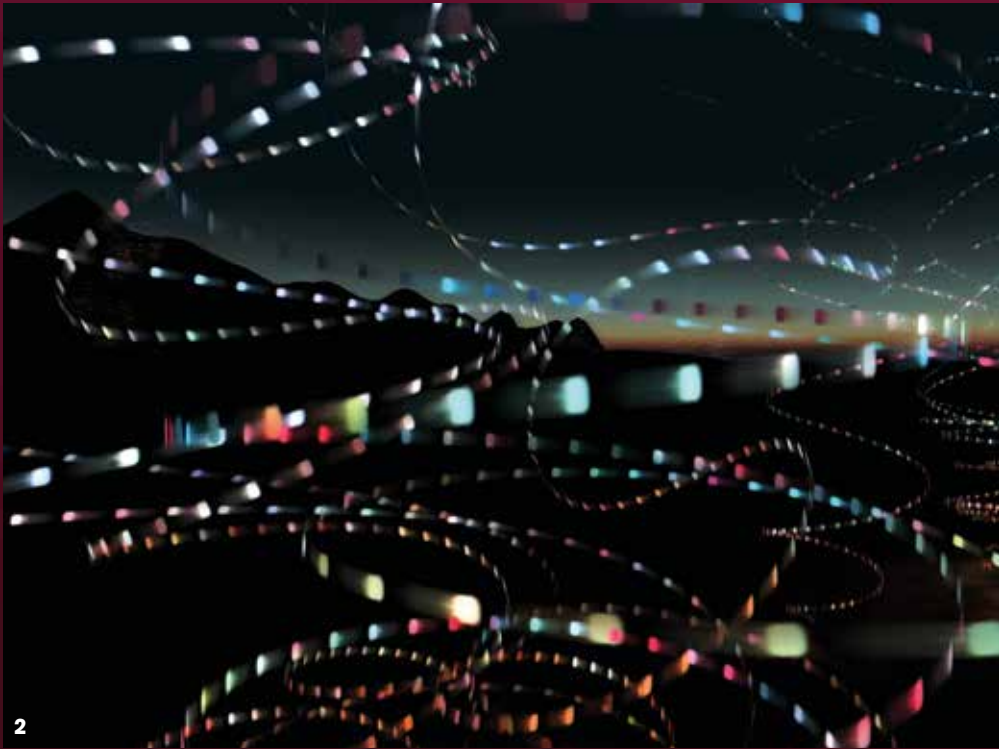
A walk in the mountains had presented the opportunity to collect sound for an artwork. The work, titled *System 1.6*, is a brightly coloured simulated world populated by small beings whose antics arose from simple rules written in code. We often think back to this work as marking a change in how we understood the potential of digital art. From a scientific perspective *System 1.6* would be best described as an agent-based simulation, used to explore things like predator prey relationships, but for us it was just a new way to express ideas about the world. As the tiny beings of *System 1.6* chased each other around our screen, they produced an audio composition made from the sounds we had been collecting. The most dramatic sound of all was derived from the reverberating impact of a large ball of snow, colliding with the icy water, below that bridge on which we stood back in 2001.

More recently, in 2014 the organisation Animate Projects invited us to attend an art and science speed dating workshop in London. They were keen to set up collaborations between artists working in animation and leading biomedical scientists, to create experimental artworks and exploring new ways of thinking about biomedical research. During the event we found ourselves sitting opposite Dr Paddy Brock, a mathematical modeller working in the field of

epidemiology. With a well-concealed fear of presenting to artists, he turned his laptop to reveal a screen bustling with little green men. As we watched these simple human figures bump into each other, changing colour on contact, Paddy explained that the colours indicated states of infection in what is known as a SEIR (Susceptible Exposed Infectious Recovered) model. What we didn't realise at the time was that he was showing us the most visual thing he had. Reminding us of *System 1.6* we quickly got into an excited discussion that betrayed a shared fascination, one that successfully led us into the trap of working with a statistical modeller whose research consisted entirely of painfully complex mathematical models written in what seemed like the least human readable programming language ever created.

As a researcher Paddy was frustrated by the lack of scope for certain types of creative exploration, feeling that many beautiful and obliquely interesting things were missed in the practical drive for results. He wanted to enrich the scientific process by exploring aspects of epidemiology from a more visual perspective. Experiencing these visually impoverished models made us appreciate his desire for some aesthetic stimulation. It also led us to question what made them different from art? Was it just the absence of an engaging visual surface or was there something more profound? The more we looked for difference, the more we found similarity. Instead of finding a world of rigid fact we found one of simplification, stylisation and symbolism. Worried we might be missing something, we challenged Paddy to explain how models, so full of abstraction, could be considered fair representations of real world scenarios. His response was to quote the late ►

‘This separation [between artists and scientists], first by room and then by institution, hides the common values of inquisitiveness, intrigue and a desire to be creative’



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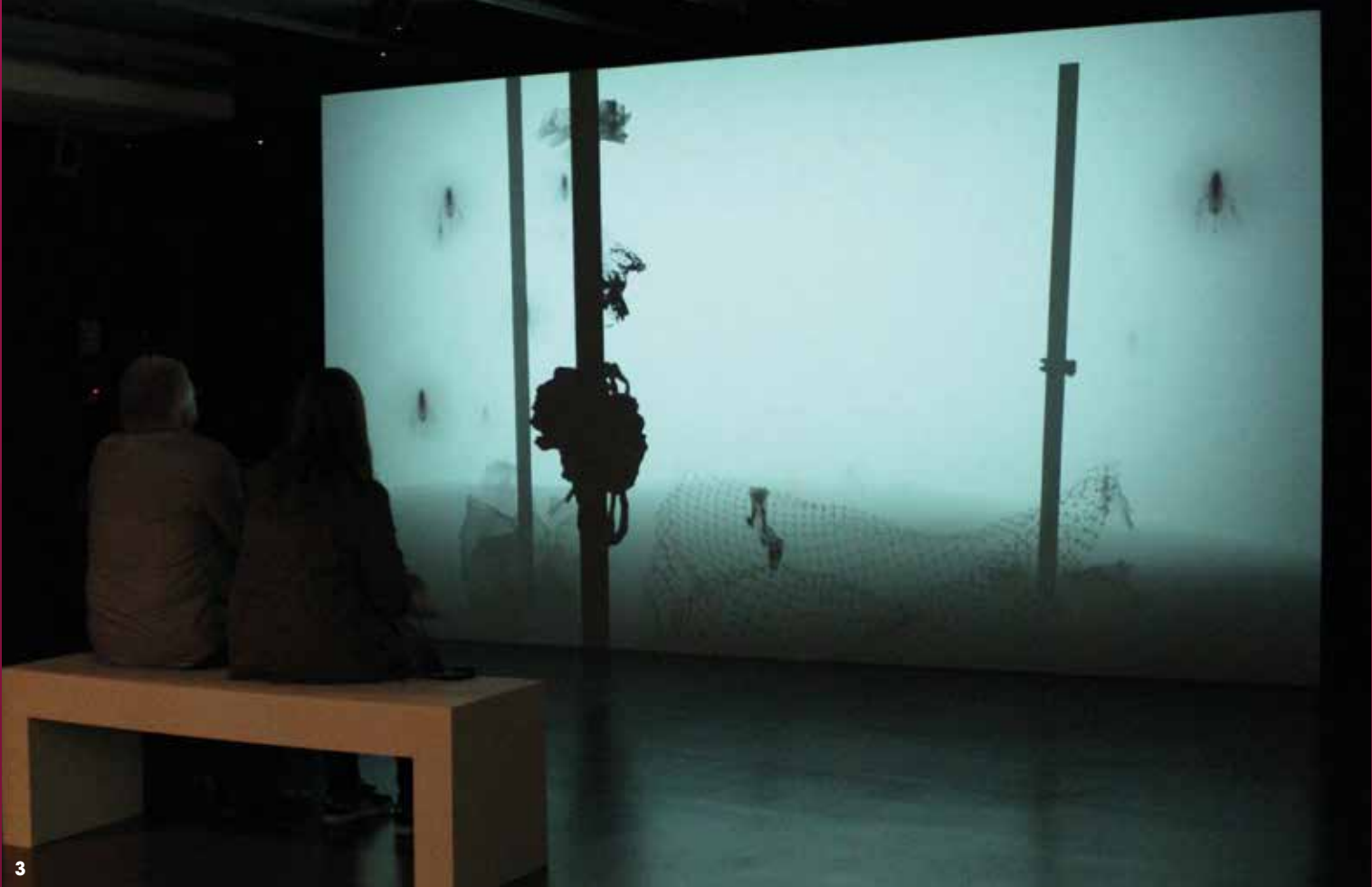
► British statistician George Box: ‘All models are wrong, but some are useful’.

Then it clicked that, like art, scientific models are works of fiction, for they allow interesting ways of seeing the world with a focused narrative. As Box expresses in his book *Statistics for Experimenters* ‘the most that can be expected is a useful approximation to reality’. Enlightened by this newfound knowledge of our shared values, it was easy for us to see Paddy as a fellow creative practitioner.

Together we started working on *AfterGlow*, an artwork that explores how malaria interacts with the landscape, for Animate Projects’ touring exhibition *Silent Signal* (2016-17). *AfterGlow* is informed by research into a form of monkey malaria that has crossed the species barrier into the human population, and where, carried by mosquitoes, it is a significant concern for human health. Working in software normally used to make 3D games we made an expression of this disease that could be experienced more like a film. In a world locked in perpetual twilight – prime mosquito blood-feeding time – *AfterGlow* presents a terrain progressively illuminated by glowing trails, evocative of mosquito flight paths. These spiralling forms represented the packets of blood infected with the malaria parasite. The spectator is taken on a real-time journey through the eyes of an autonomous camera, which traverses an island following the infection. Though *AfterGlow* is not clearly useful within the constraints of a science dependent on values and data, it allows those less versed in statistical modelling to experience the compelling complexity of disease spread by billions of flying insects, largely invisible in the landscape. We were delighted when *AfterGlow* won the global Lumen Prize 2016 moving image award, demonstrating that mathematical models can indeed be visually exciting.

This success of *AfterGlow* destroys a misconception that science and art sit at opposite ends of a spectrum. Artists and scientists work within different frameworks. Right from the start in education, they are encouraged to self-identify with a particular discipline. This separation, first by room and then by institution, hides the common values of inquisitiveness, intrigue and a desire to be creative. We say this with confidence, having had the privilege of breaking this separation by working in some of the world’s most significant science research institutions.

Arriving at one such institution in the summer of 2016, as part of an initiative called Future Emerging Art & Technology (FEAT), we found ourselves at a table occupied by a mix of robots and cake. On our first day at the Artificial Life Laboratory (a-life) of the Karl Franzens University, Graz, Austria, we were given a mug



3

‘Humanity’s problems can only be addressed by the conflux of all its many dispositions’

of coffee with a polite warning never to use the mug on the top shelf. Looking at the mug with some concern, we were told it belonged to Ronny and that he was quite particular about it. We had first met Ronald Thenius (Ronny) at a FEAT workshop in Amsterdam where he fixed us with a penetrating stare, calculated to command honesty, and demanded we disclose any connections to military bodies, ‘We will not work with the military’ he told us. Ronny is a biologist with an immensely warm personality for whom the title of scientist does not suffice. Aware his work with swarm robotics had significant societal implications, he was keen to engage with its concepts on a more philosophical level. Cake seemed to play a central role in this respect for its ability to pull researchers from their desks and gather them around a table in the centre of the a-lab. These discussions greatly informed our artwork *Robots in Distress*, a simulation informed by the lab’s work with emotional computing. The work reflects the complex mix of optimism and anxiety found at the edge of emerging technology.

Our time in the a-life lab not only gave a channel through which ideas could be shared

with the outside world, but also allowed new perspective to enter. The lab’s founder, Thomas Schmickl, reflecting on our artwork said: ‘Hopefully after some thinking we understand why this is cool and get a new view on our own work’. This dialogue between art, science and society is increasingly becoming recognised by the best scientific institutions. They seek not just to break down boundaries between their own specialisms, but to also dissolve barriers between the specialist and the ordinary citizen.

We returned our imagination to the frozen waters of Banff, to waterfalls locked in icicle encrusted prisons, awaiting spring’s warmth that will rouse them gently into motion, granting them the freedom to flow and join forces with others on a winding but determined course. We think of a similar awakening across a range of cultural settings, warmed by the energy of those who recognise that humanity’s problems can only be addressed by the conflux of all its many dispositions. For us, working with scientists is both a pleasure and a duty. ■

Find out more: boredomresearch.net

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Background
System 1.6,
boredomresearch,
2001, a computational
soundscape

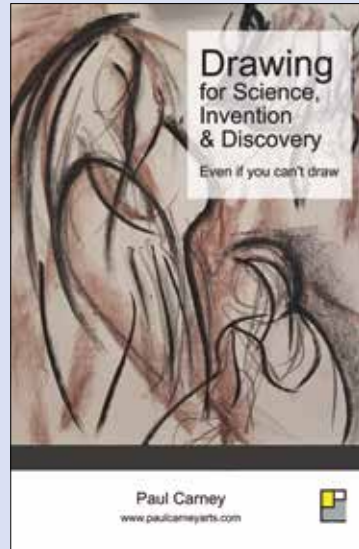
1–2 *AfterGlow*,
boredomresearch,
2016, 3D real-time
computational artwork

3 *Robots in Distress*,
boredomresearch,
2017, a simulation
of autonomous
underwater agents

4 *Dreams of Mice*,
boredomresearch,
2015, 3D real-time
engine playing neural
activity recorded in a
dreaming mouse



4



Concerned by many policy changes that impact on the provision of art, craft and design in education, Paul Carney, author of Drawing for Science, Invention & Discovery, puts forward his argument that visual art is intrinsic to innovation, invention and discovery in all STEM subjects

Like many who work in art, craft and design education I've been angered by the marginalisation of our subject from the effects of government policies that create a hierarchy of subjects and places STEM subjects above arts subjects. Despite the political rhetoric to the contrary, we've suffered huge losses in arts and creative subjects at the chalk face and I believe this will have a terrible impact on our children's education.

Some educationalists argue that creativity is easier than learning secondary knowledge. They contend that the more knowledge you have, the more you have to think with and therefore creative thinking increases with

greater knowledge acquisition. Now I would never want to denigrate the need to learn the substance of your field. After all, I need expertise in order to understand what the problem is and to find solutions. I have no quarrel with increasing knowledge, so long as we deliver a well-balanced curriculum in which conceptual knowledge, procedural knowledge and metacognitive knowledge are valued equally as well as factual. But, I would argue creativity is not 'easy' and we need to know what creativity is or how it works.

'So what are you going to do about it?' I asked myself. I'm not a motivational speaker, nor am I politically adept, and I'm certainly not academically influential enough to make persuasive research arguments to the contrary. So I wrote a book instead. A pragmatic yet evidential book, that could demonstrate why visual art is intrinsic to innovation, invention and discovery in all so-called STEM subjects.

I wanted to show that drawing, a simple process artists take for granted, can illustrate or explain how just about anything came to be. I also wanted to demonstrate that, far from being a mysterious, unknowable force that cannot be taught, creativity is a series of processes that can be understood, even developed, through simple creative drawing exercises.

Drawing for science, invention and discovery



Above
Visualisation drawing by Mark Skipper

Top right
Paul Carney with Professor Alice Roberts at The ASE Conference



'Drawing is something we've been doing as long as human beings have been conscious'

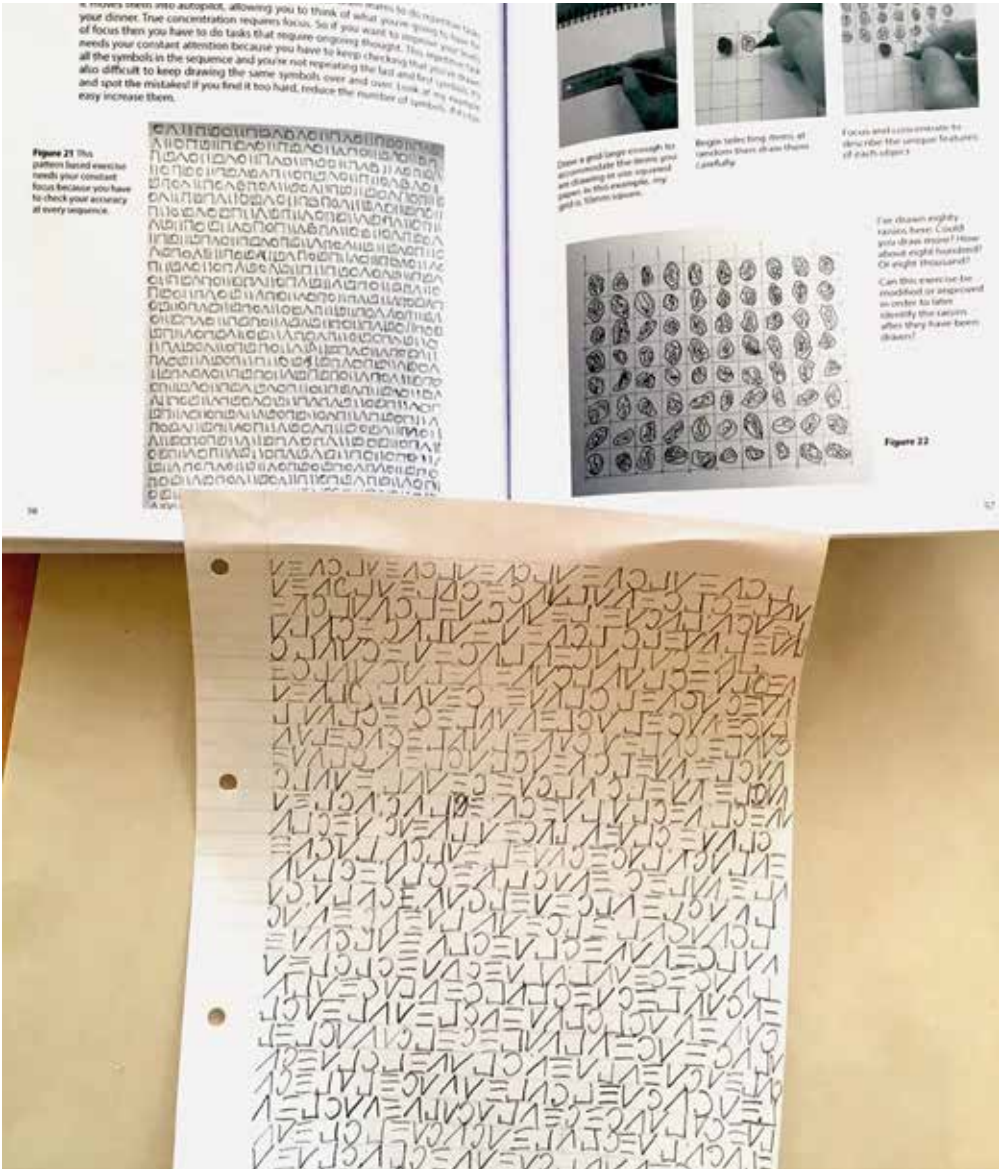
Drawing is something we've been doing as long as human beings have been conscious. I believe it is fundamental to what it means to make rational thought and is the perfect vehicle for explaining how we think and create. Now I realise there are many people for whom drawing is an anathema, so I knew I needed to make my book as accessible, yet persuasive, as possible.

I spent two years researching the creative processes behind the world's greatest inventions and discoveries. I wanted to know what the driving force was behind the breakthroughs, rather than just the surface facts. This was surprisingly difficult, because scientists, like artists, often back-fill their research afterwards. Just as some artists fill their sketchbooks after the final piece is complete, so scientists strengthen their argument to ensure it is more robust in light of peer review. What I found surprised me, because everything I encountered was very familiar to me, whether I was reading about Albert Einstein, Linus Pauling and Stephen Hawking, CBE. Yes, they had greater domain knowledge than most, but they were also

using the same creative thinking approaches as we use to make art.

Serendipity, for example, plays a huge role in discovery, as does trial and error and the ability to collaborate with others. Sometimes innovation is made by sheer dogged determination and painstaking analysis, or by keen observation. One of the most significant ingredients to innovation is visualisation; the ability to construct actions and sequences in ones own mind and play them through, to imagine and dream. Scientists, engineers and mathematicians use the same visualisation techniques to determine whether an experiment will work as an artist does when they make art; that is they construct it in their minds and analyse its efficacy.

American Nobel Prize winning scientist Barbara McIntock¹ described her success in genetics as being so familiar with the plants that she could imagine herself down among the genes. Nobel Prize-winning molecular biologist Joshua Lederburg² claimed 'I literally had to be able to think "What would it be like if I were one of' ►



►the chemical pieces of a bacterial chromosome?” And try to understand what my environment was, try to know where I was, try to know when I was supposed to function in a certain way, and so forth.’ A large body of research exists on the importance and efficacy of visualisation skills in maths and science, and also the relevance of spatial thinking to solve maths problems, yet often it isn’t formally taught.

In my book I describe nine major processes of innovation; adaptation, alternative viewpoints, trial and error, knowledge, collaboration, methodical, visualisation, serendipity and observation. Each process is explained from a scientific, mathematical perspective and then compared to the same procedure from an artistic perspective in a bid to show that art isn’t external, distant from ‘hard’ domains, but rather it is integral and just as important as the knowledge itself.

Teaching creativity isn’t straightforward, because despite all the recent developments in neuroscience, no one knows for sure if creativity can be taught. It does however appear to have

‘I believe it is fundamental to what it means to make rational thought and is the perfect vehicle for explaining how we think and create’

some heritable traits. Some people are naturally more creative than others, but we need to ask ourselves: ‘Can education improve on what creativity we have? Can we learn to understand creative processes better?’

I believe drawing is a very important route into teaching people to understand what creativity is and how to be more creative themselves. For example, a familiar drawing process we use everyday is trial and error, repeatedly making something over and over, modifying it as we go. This teaches us patience, tenacity, and the ability to recognise and correct

mistakes before moving on. This is not merely an artistic frivolity; Thomas Edison discovered the most efficient light-bulb filament in this way.

Drawing is important in other ways too. It helps us observe and record what we see with deeper understanding of our subject. In 1980 scientist John Sulston was told that photographic methods had tried and failed to map the embryonic cell stage of nematode worms. So he decided to study their evolvment by hand. He worked alone, drawing the worm cells through his microscope, eight hours a day for eighteen months. When he had completed his work he was able to sequence its DNA. This is scientific creativity in action, and it’s the same diligent, repetitive actions that many artists go through to make their art.

We are wrong therefore to dismiss creativity as being a ‘soft’ subject. Creativity isn’t a natural by-product of greater knowledge, nor is it easy, but it is a process that can be learned and developed. Creativity isn’t a mysterious, unknowable, unteachable craft that is beyond definition. We as artists have to stand up to so-called ‘hard’ STEM subjects and say: ‘This is what creativity is, this is how you can teach it and this is why it is imperative that we do so.’

Art, craft and design is not a hobby subject for after school. It isn’t an interesting curio for a few interested scientists to play with now and again. Art is part of the very fabric of everything you see around you – every invention that’s ever been made, every discovery, every leap forward and every breakthrough. Art, craft and design are the mechanics of invention, the processes that breathe life into lifeless knowledge or facts. It may appear at times to be eccentric, playful and even pointless, but that idle curiosity is what humanity is built on. It’s the force of wonder and motivation, and I can’t think of a better thing to keep fighting for. ■

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Top left
Methodical drawing by
Dr Alison Hardy

Drawing for Science Invention & Discovery
by Paul Carney is published by
Loughborough Design Press. Hard copy:
£9.99, ebook £3.99



Be a Creative Producer

Last year, a group of teenagers from Cambridgeshire set out to inspire young people, like themselves, to shift from being consumers of technology to being creative producers. Alex and Amelia explain here how a mix of collaboration, technology and ambition, together with a trip to Westminster, is allowing them to achieve their mission

Alex:

We are the Creative Producers. In June 2018, four friends and I joined together to pool our creative skills and start an animation project. We now meet twice weekly after school and on weekends with Paula Briggs of AccessArt to exploit and develop our skills in music, dance, art, woodworking and animation. We develop stop-motion animation videos with the ultimate goal to encourage creativity in fellow teenagers.

The project started as a message to help teenagers like ourselves become aware of how much time they are spending consuming digital media, and to remind them that they can be producers as well as consumers. There are many fantastic, easy-to-use digital development tools for all areas of creativity and, when merged with physical skills, they can produce some really amazing stuff. With this in mind we are creating an animation to inspire, motivate and encourage other young people to be more creative.

A typical Creative Producers meeting starts with snacks, chat and an update from Paula on where we are with the project and what we have to achieve in the session. We work together making props for an animation or filming one using props we have already made. We all have different creative skills in the physical or digital world. Immy and Amelia like dance and music (composing and playing), Rowan likes visual arts, Lluis enjoys woodwork and I enjoy composing and producing music digitally. Our clips are then put together to make a scene. I have composed many of the soundtracks at home.

Everything has been designed or made, which is why creativity is so important and why we want to encourage it.

By producing fun, entertaining and informative videos I believe we can capture the imagination of creative teenagers and inspire other teenagers to be creative too. As well as this, we can remind teachers, parents and policy makers to support creativity in schools.

Our final 20- to 30-minute film will be launched in February at the Cambridge junction.

‘Everything has been designed or made, which is why creativity is so important and why we want to encourage it’

Our dream after launch is that this film will reach a global audience and be used as a tool to encourage creativity in 11-15-year olds. All our animations will be available as a free download for schools to use in assemblies to inspire pupils.

Amelia:

One of our most amazing achievements has left a memory which I don’t think any of us will be forgetting any time soon.

Last year Alex, Immy, Lluis, Rowan, myself and the #BeACreativeProducer team were invited by NSEAD to present our project at a meeting of The All-Party Parliamentary Group

for Art, Craft and Design in Education. The secretariat of the APPG is NSEAD with meetings chaired and attended by MPs, members of the Lords and arts influencers who think that art and design education is really important.

We knew this was an opportunity to share the project and we were keen to learn what policy makers would think about our project. We accepted the invite.

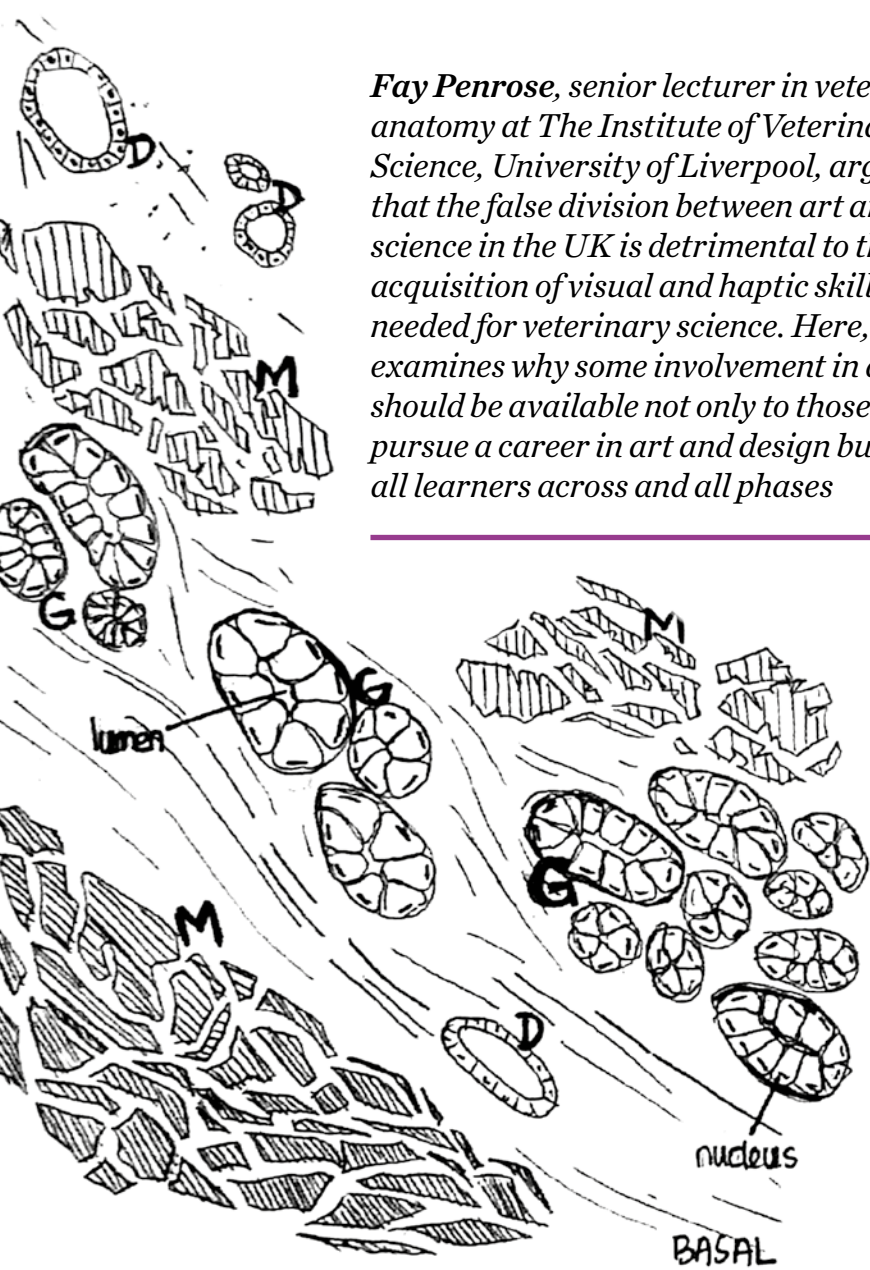
The run up to the meeting involved several weeks of seriously hard work. We wrote and practised our presentation and made plans for the day to come. We were joined by Access Art, and our art and design teacher, Mr Joseph from Comberton Village College.

As soon as we arrived in Westminster it felt as though we had entered a whole new world. Politicians were running around endless corridors, and in and out of meeting rooms. After a bit of a tour we were shown to Committee Room 14.

We were so excited to see what the rest of the day would be like. Most of us hadn’t done anything like this before, so naturally we were very intrigued. Would they be strict, understanding or intimidating? Actually, everyone was really supportive and attentive. They also had loads of questions for us and while we were speaking there was a real buzz in the room. It made us feel as though we had a voice, and made us feel more grown up, like we were part of the adult world. And I think after holding the floor for about 40 minutes we managed to leave an impression on those present, plus we really developed our public speaking skills and confidence.

In the future we hope to inspire teenagers like us to create and get involved with activities that they otherwise only use. We will be developing our website to encourage our peers to create and share their own animations. We were really welcomed and supported at the Houses of Parliament, so we want other teenagers to know that they can find supporters there too, and that there will always be someone out there to motivate them. ■

Read the full transcript of our presentation with pictures at accessart.org.uk/houses-of-parliament/ and find out more about #BeACreativeProducer project here: accessart.org.uk/be-a-creative-producer



Fay Penrose, senior lecturer in veterinary anatomy at The Institute of Veterinary Science, University of Liverpool, argues that the false division between art and science in the UK is detrimental to the acquisition of visual and haptic skills needed for veterinary science. Here, Fay examines why some involvement in art should be available not only to those who pursue a career in art and design but to all learners across and all phases

Visual and haptic literacy are key in veterinary science and anyone using the services of a vet should assume a high degree of observational skill and manual dexterity. Can they identify which leg a trotting horse is lame on, palpate structures under the skin to check for abnormalities, interpret CT or MRI scans, or identify pathological cells when looking down a microscope? Performing surgery is as much about visualising the three dimensionality of anatomy and knowing what to avoid, as much as it is about locating and repairing structures.

But where do vets learn these skills? Knowledge, for example the names of bones, the actions of muscles, the course of nerves and blood vessels, is taught during the five-year undergraduate degree. Skills, however, can be taught from early childhood. Learning to look carefully and draw accurately, cutting out intricate shapes, building models, sewing, knitting and even baking are key activities that are invaluable in becoming a clinician. But the value of such skills is often unrecognised and underappreciated. Students wishing to become vets are more frequently told to focus on the three sciences, and often succeed at school by rote learning of past papers in science or maths. The sudden jump from the learning by reading and writing (or more often typing) done at school, to the detailed observation of complex forms, handling surgical instruments, palpating and repairing delicate structures that is expected at university, is massive. Many students initially struggle to move away from writing and to explore other forms of learning and to apply their knowledge to practical situations.

This is evident when we look at our first-year undergraduates. Most students would prefer to write a description of a structure rather than do a quick annotated sketch. The use of laptops during lectures further favours the use of the written word over a small but useful drawing. This seems particularly counterintuitive when, upon reading a written description, to truly understand it you must translate it back into a mental image. Why not just draw it in the first

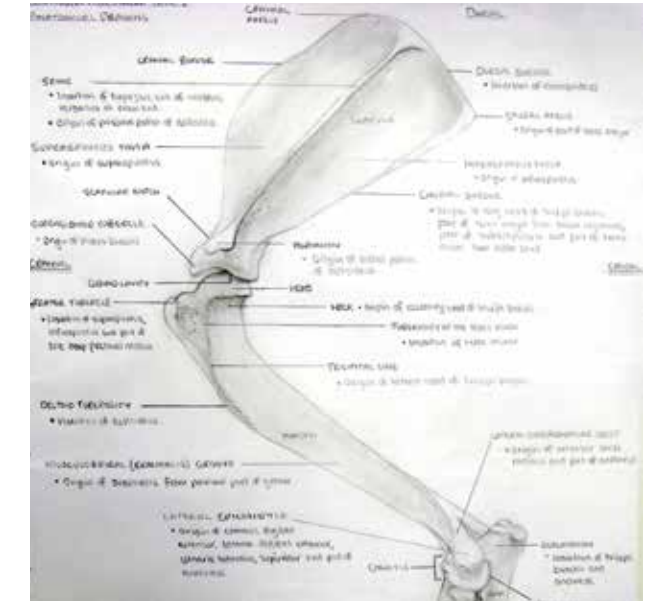


place? The answer appears to be, in the case of some students, a lack of confidence in their own abilities, but in many cases such an idea would simply not occur to them. The idea that drawing equals art and is therefore not relevant to studying science is deeply ingrained.

To introduce students to the idea that drawing is a quick and effective way to describe visual and three-dimensional structures we introduced three compulsory drawing tasks for first year veterinary science students. Firstly, we asked them to draw and label slides of samples seen down a microscope, and secondly, to draw part of a skeleton from our collection. Thirdly, we asked them to draw a schematic plan of the gastrointestinal tract of a horse. Some students complained that these tasks were not about learning veterinary science, and that they could just download those images easily from online sources. We discussed the idea that creating a drawing is in itself the act of learning, and ultimately all students submitted the work. The standard was very high and almost no students failed any of the tasks. During examinations knowledge in the subjects from the tasks was good, although this was not tested with a control group.

The short-term goal, to demonstrate knowledge through the use of a drawing rather than writing, was clearly achieved. Whether the longer-term goal, to consider drawing as a tool for efficient learning was achieved, is less clear. Students who have been through this process and are now in the higher years do sometimes draw to learn or revise, but many of whom did excellent work still prefer to write. Evidently three short tasks are not enough to convince our students that learning can be easier and more efficient through drawing.

The introduction of the drawing tasks did however reveal that many students do have an interest in art, and many have pursued drawing or painting as a hobby before coming to university. In response to this finding, together with my colleague Rosie MacDiarmid, we have set up an informal art group for our undergraduates. This runs once week during student's free time. The focus is on drawing anatomical specimens, but students who wish to attend and do other work are equally welcome. Some of our participants are new to observational drawing, whilst others are more experienced. All enjoy exploring art in a friendly and supportive



‘My own feeling is that the disconnect between ‘art’ and ‘science’ runs so deep in the UK education system that students commit to one course or the other early on. The false division of art and science is detrimental to learning, both at school and in higher education and beyond’

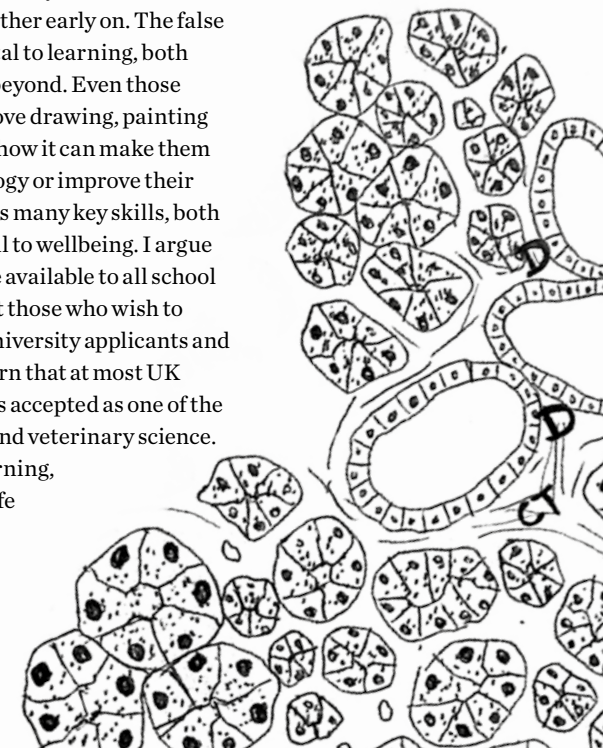
environment, and many make new friends outside of their usual friendship groups. In addition to improving their observation skills and bettering their anatomical knowledge, these sessions enhance good mental wellbeing. Students report feeling more relaxed after enjoying the simple tactile pleasures of creating something. Following an international conference presentation by Rosie a similar group has been set up Dublin vet school by Niamh Nestor, who now runs weekly observational drawing sessions with undergraduates.

My own feeling is that the disconnect between ‘art’ and ‘science’ runs so deep in the UK education system that students commit to one course or the other early on. The false division of art and science is detrimental to learning, both at school and in higher education and beyond. Even those undergraduate science students who love drawing, painting or making often see no relevance as to how it can make them better at learning anatomy and pathology or improve their surgical technique. And yet, art teaches many key skills, both applicable to sciences and fundamental to wellbeing. I argue that some involvement in art should be available to all school pupils and university students, not just those who wish to pursue a career in art. Many people (university applicants and teachers included) are surprised to learn that at most UK universities art A level, or equivalent, is accepted as one of the three A levels for medicine, dentistry and veterinary science.

We want people who are great at learning, able to apply their knowledge to real-life situations and are compassionate and resilient. Art teaches this. ■

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Left and below
© Tashia Anindwita
Top left
© Fay Penrose
Above
© Ben Lloyd-Bradley



Drawing for learning in veterinary science



Can pigs wear glasses?

Ynystawe Primary School in Swansea was one of the first schools in the UK to pilot the Leonardo Effect, a creative teaching approach integrating art and science that continues to evolve. ‘Can pigs wear glasses?’ and the other questions below were all asked by pupils at the school, aged between 3 and 11, and are interwoven in this discussion between **Deirdre Robson** and **Ivor Hickey**, The Leonardo Effect developers, and Ynystawe Primary School’s head teacher **Helen Houston-Phillips** and deputy head, **Sarah Williams**. Here, they discuss the value of questioning without subject barriers for deeper integrated learning



‘Why are pig’s eyes so small when the pig is so big?’

Deirdre Robson and Ivor Hickey (DR & IH):

There is always a focus on teachers to ask effective questions but, surprisingly, less emphasis is placed on children to ask their own questions. Children’s questions should be more highly prized, because they are driven by curiosity, and curiosity is the ultimate driver for learning.

‘What’s inside our eyes?’

Children’s curiosity is astonishing to witness, arising spontaneously and powerfully, in a marvellous outpouring of questions when pupils are face-to-face with stimulating real-life experiences. In such situations learning requires no encouragement. It’s rather troubling then to find that access to first-hand experience of life is becoming less common in schools with the accelerating prevalence of screen-based media. Ynystawe Primary School recognises this.

Sarah Williams and Helen Houston-Phillips (SW & HHP):

We are currently in the midst of an exciting digital age, but sadly many of our children are beginning to see our wonderful world only through a pane of glass, that being a television screen, tablet, mobile phone, car window or even a classroom window. As a school we are aware of the impact this sedentary activity can have on our children’s learning and we are determined to change this by providing all children with the opportunity to explore the world around them through first-hand, experiential, memorable experiences.

Learning that involves all of the senses and provides the richest opportunities to engage children deeply and memorably. It produces the irresistible motivation to want to find out more. Without exception, children experiencing the world first-hand will surprise you with their high level of engagement, the acute observations they make, the language they use and the thoughts that they have.

‘It has a really long tongue’ and ‘It is purple and pink and beautiful’. Comments made by pupils upon investigating an octopus

DR & IH: It is well documented that first-hand experience compelled Leonardo da Vinci to think deeply, to observe with purpose, record through drawing and writing, and subsequently invent and create. He asked his own questions,

made connections and developed ideas that continue to have relevance 500 years after his death in 1519. He was an inter-disciplinarian who explored the world without subject barriers to limit his understanding.

More recently, the physicist David Bohm [*Creativity, 1998*, Routledge] said it was adults who create the unnatural separation between art and science, which children do not: ‘They [children] are gradually trained to think, feel and perceive in terms of this kind of separation.’ Beyond the school curriculum collaboration between the fields of art and science is once again prevalent, with the potential for innovation from closer interaction becoming more widely recognised. The Laboratory, based at Harvard University, brokers ideas between art and science. They write: ‘Idea development in culture, industry, education and society can be conceived as a kind of experimentation, where the catalyst for change, for movement – for innovation – is a fusion of those creative processes we conventionally think of as art and as science.’

In 2007 we piloted an experimental teaching approach ‘The Leonardo Effect’ in primary schools across the UK. Ynystawe Primary School was one of the first schools to embrace the pilot. This is a school that has creativity and innovation at the core of its philosophy for teaching and learning, and children’s art and design is evident throughout the fabric of the school.

SW & HHP: In your book *The Leonardo Effect: Motivating Children to Achieve Through Interdisciplinary Learning* [2012, Routledge], the learning culture in our school was described: ‘At Ynystawe the staff members learn from each other, so creative teachers can bring creativity out in other teachers. Just like the children, the teachers are continually seeing links and are always making connections.’

DR & IH: The Leonardo Effect provides a framework as opposed to a prescriptive programme that would stifle teachers’ creativity and prevent them responding to the developing interests and ideas of the children. Its four-stage structure follows the path undertaken by many artists and scientists, including Leonardo da Vinci; investigating widely; experimenting and developing ideas; applying knowledge and creating; and reflecting. But the ‘rare beauty’ in the approach is the space and time for children to research well, observe from first-hand experience, to inform their deeper investigations that can be taken forward without restriction of subject boundaries, or restricted by a ceiling on learning. Art and science are equals; neither plays a supporting role. ►

► **SW & HHP:** As facilitators in Ynystawe we try to only sow the initial seed and see where the children take it without us imposing our ideas. It lifts the barriers to learning. Creative teachers excel in this environment and foster the creative skills in their pupils building greater understanding of the world and developing the potential of all pupils.

‘Can we design a robotic limb?’

SW & HHP: This term, the whole school has been exploring the theme of ‘*Prosthetics*’. The interdisciplinary learning opportunities have been exceptional. Children have looked at the human senses, found out about the visually and hearing impaired and even learned some sign language to support their performance of a Shakespearean play. They have studied the NHS, Aneurin Bevan, and health and wellbeing. After researching and finding out about diabetes, we looked at how our eyesight can be affected and our children agreed that an eye dissection would be the best way to find out about it. We learnt about the purpose of the pupil, retina, cornea, iris, lens and optical nerve and we made detailed, scientific observational drawings – just like Leonardo da Vinci would have done. By giving wings to our children’s curiosity and allowing staff to be more flexible, it created autonomous learning and allowed children to make connections across the learning landscape. Our children rose to the learning challenges and surpassed any ceilings that traditional approaches may have set.

‘I loved drawing with my whole body’ and ‘I can paint with all of my body, not just my hands’. Comments made during a human Spirograph activity.

DR & IH: In Ynystawe, artistic expression is highly valued and integrated with investigative science and the wider curriculum to realise the potential of children.

SW & HHP: We firmly believe that by nurturing and inspiring our children to develop their own skills and talents across the whole learning landscape, anything is possible; our children are able to reach for the stars! We ensure a skills-based, interdisciplinary, hands-on approach that embraces The Leonardo Effect. Our children are truly inspired to learn.



DR & IH: Too often children are limited through well-intentioned topics that offer unexciting activities and tenuous cross-curricular links. Ynystawe is exposing learners to experiences they will never forget. Through interdisciplinary art and science teachers are empowered to be creative, think differently and be inspirational teachers.

‘I held a real pig’s eye in my hand; it was very cool. By seeing it myself, it helps me to learn about how we see and I will always remember it. Plus, I want to be a surgeon one day.’

SW & HHP: The Leonardo Effect approach ensures that vital transferrable skills, namely creativity, critical thinking and interpersonal

skills are at the very core of what we do at Ynystawe. Such an approach allows staff to help our pupils to explore the depths of their human ability, break down barriers and make connections between what they see, hear and feel.

‘My skin peeled off in the sun on holiday’ and, ‘It’s crinkly with patterns, like diamonds’. Comments made by early-years pupils investigating a snakeskin.

SW & HHP: All of our children leave us with lifelong memories, kind hearts and a love of learning carefully shaped by passionate practitioners. ■

ynystaweprimary.co.uk
leonardeffect.com



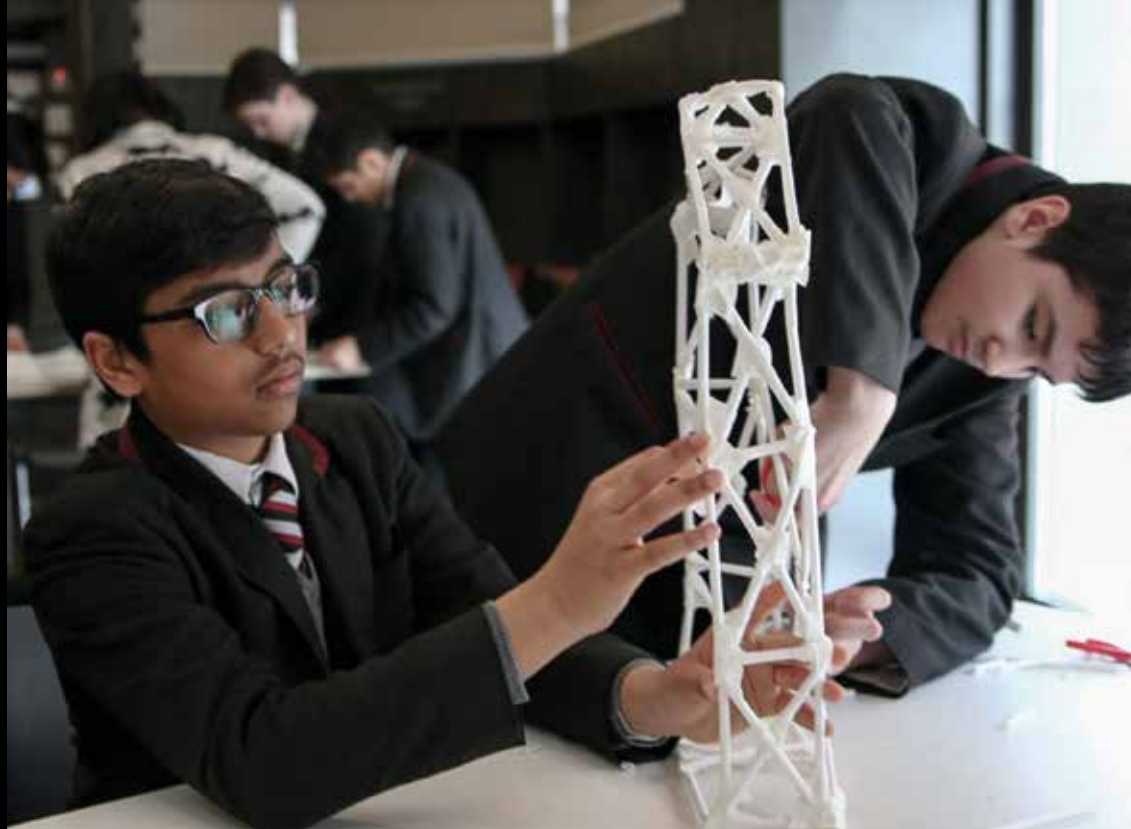
Here comes the 21st century...

There are many impediments to invention and creativity. Here Jayne Phenton, communications manager at The Edge Foundation explains what a 21st holistic education system might look like and how this will equip young people with the skills they will need

Next month marks 60 years since the novelist and scientist C P Snow delivered his seminal lecture *The Two Cultures and the Scientific Revolution*, provoking widespread debate and criticism. Over half a century since Snow contended that the dichotomy between the sciences and the humanities was an impediment to invention and creativity, this polarity persists, despite the highly accelerated pace of technological change which is increasingly blurring the traditional delineation of subjects.

Edge advocates for a broad and balanced curriculum for all children and young people, but the idea that a ‘rounded’ education benefits people whatever their professions or career pathway is not a new one. The engineering giant of the 19th century, Isambard Kingdom Brunel, was encouraged to draw from a young age by his noted civil engineer father as a way of understanding buildings and structure. Aged eight, he was sent to boarding school to learn classics and then went to university in France. After completing an apprenticeship with a French master clockmaker, he returned to Britain to work as an assistant engineer. ►

‘Career Footsteps’ at the National Theatre, an Edge event



► While on the surface, drawing, cultural history and horology seem a disparate mix of skills, clearly together they informed the brilliance of mind which created some of our most iconic buildings and structures. However, in our increasingly complex technological world, it is more critical than ever, not just have some knowledge or experience of a range of subjects or a mix of skills, but having the ability to apply those same aptitudes to different problems or challenges.

At the V&A Museum of Childhood last year we brought together educators and employers to discuss why having creativity at the heart of the curriculum is so important. What the conversation clearly articulated was that what we learn from designing, creating, making and doing – the essence of art, dance, drama, music, design and technology – are fundamental skills which find an application across professions, sectors and industries.

Professor and surgeon Roger Kneebone pioneered the use of simulated tissue models in surgical training. He is now Professor of Surgical Education at Imperial College London leading a multidisciplinary research group which explores the relationships between the sciences, craft, humanities, art and performance. Speaking at the V&A event, he commented:

‘It is a concern of mine and my scientific colleagues that whereas in the past you could make the assumption that students would leave school able to do certain practical things – cutting things out, making things – that is no longer the case. We have students who have very high exam grades, but lack tactile general knowledge so they struggle even to perform chemistry experiments. An obvious example is of a surgeon needing some dexterity and skill in sewing or stitching. It can be traced back to the sweeping out of creative subjects from the curriculum; it is important and an increasingly urgent issue.’

Of course it isn’t difficult to find an interdisciplinary link to just about everything. A Sudoku puzzle doesn’t require arithmetic and calculation, but rather is about reading patterns – mathematical logic. Reading and writing music is not a thousand miles away from writing computer code.

‘While on the surface, drawing, cultural history and horology seem a disparate mix of skills, clearly together they informed the brilliance of mind which created some of our most iconic buildings and structures’

Architecture and the visual arts rely on geometry. Conducting an experiment in the chemistry laboratory, you employ many of the same skills as when you bake a soufflé. Professor Kneebone invites lace-makers into his operating theatre to demonstrate stitching techniques.

As large areas of our workplace is progressively automated and the pace of technological change accelerates, the challenge of what we may need to know – or the skills we may need – in the future is increasingly uncertain. It’s frequently cited that we are educating children for jobs that don’t exist yet; so what should a 21st century education look like?

The current EBacc mirrors the 1904 curriculum, except that then it included drawing! Subjects such as art, music, and design & technology are no longer an entitlement in some schools, and potentially, access to the ‘arts’ will become the preserve of those who have the social capital. In turn this will become an economic advantage. However, at the heart of the issue is not just the fundamental inequity of people being denied the opportunity and means to enjoy a richer life through arts and culture, but the failure to recognise that these subjects need to be at the heart of learning, not an embellishment or a ‘nice-to-have’.

While other countries have recognised the need for pedagogies to reflect the changing employment landscape, Britain’s policies have steered our schools towards a regime of rote learning and testing to meet exam grades. The Victorian principles of every child learning the three Rs may have been marked progress for a population then which had previously

Top left Rotherham College students working as moulage artists

Above Students making a truss framework

little access to the education Isambard Kingdom Brunel enjoyed, but seems nonsensical today.

The Director for the Directorate of Education and Skills at the OECD, Andreas Schleicher, articulates this as follows:

‘For most of the last century, the widespread belief among policymakers was that you had to get the basics right in education before you could turn to broader skills. It’s as though schools needed to be boring and dominated by rote learning before deeper, more invigorating learning could flourish.

‘Those that hold on to this view should not be surprised if students lose interest or drop out of schools because they cannot relate what is going on in school to their real lives.

‘If you were running a supermarket instead of a school and saw that 30 out of 100 customers each day left your shop without buying anything, you would think about changing your inventory. But that does not happen easily in schools because of deeply-rooted, even if scientifically unsupported, beliefs that learning can only occur in a particular way.’ The robots aren’t coming; they are already here. The things

Above An Edge careers event, students meeting Deona, a military doctor

Below Edge Foundation event at the Museum of Childhood

that equipped us for the workplace 50 years ago are largely irrelevant now. The mid-century stampede to embrace the uniform and the mass-produced has begun to give way to a higher ecological consciousness and ascribing value to the unique, the handmade and the sustainable. Projections for growth in jobs tend to be in sectors which require capabilities robots don’t have, such as health and care, high-end hospitality, entertainment and creative industries.

In Edge’s latest report, *Towards a Twenty-First Century Education System*, we lay out our vision for a coherent, unified and holistic education which enables young people to become creative team-players who can solve problems, lead and communicate well and with confidence. We also highlight the work of the teachers and principals in schools and colleges who will lead the way in making education fit for purpose.

At Plymouth School of Creative Arts creativity is at the heart of the curriculum. They work with local employers and organisations to create real-world solutions to local issues. Talking about his students, head teacher Dave Strudwick, says:

‘We integrate people doing real jobs into the projects; it’s important it has authenticity and because they’re working with businesses, what they create actually has to work.’

The school is not only preparing young people for further education and the world of work, but they are working creatively to help build and mutually support the local community and economy.

The breach between science and humanities described by C P Snow can heal. Perhaps the most obvious example being the growth in the gaming industry – demanding imagination, technical knowhow and digital skills. If young people are to thrive in this complex, exciting new world then our curriculum needs to respond and reflect it. ■

Jayne Phenton



Art and science close up

Mandy Barrett, specialist art teacher, shares how Gomersal Primary School in Cleckheaton, West Yorkshire, nurtures creativity and curiosity through art and science

‘Oh man; it’s blown my mind. Look in there!’ Sam then runs off to find a friend to peer into his microscope. ‘It’s like a galaxy swirling in the dish; it’s just blown our minds!’ And so begins Sam’s quest and a search that fittingly illustrates how Gomersal Primary School’s specialist art room and our creative curriculum has helped to develop curious and engaged minds.

Since the introduction of a specialist art teacher and the development of our art room in 2013, art is fully embedded into the curriculum, offering pupils across all year groups the opportunity to take part in visual art lessons that not only link with other areas of the curriculum but also place the focus on art as a subject in its own right.

Creativity has been placed at the heart of our school development plan, and by conducting a curriculum audit it was recognised that developing our science curriculum was the next step needed to fully foster and develop curiosity and creativity amongst our children.

To begin with we signed up for the Polar Explorers programme (stem.org.uk), which has helped our children to learn about life in the Antarctic. Most people will have heard of ‘Boaty McBoatface’, the polar research ship, and this was our opportunity to work with the team involved in the making of this boat and the investigations connected to the programme.

It allowed us to build strong links with real scientists who helped both staff and children conduct meaningful investigations. Not only did this enhance our scientific knowledge and investigative skills, it introduced our children to a range of real careers that they could aspire to.

As part of this project, we were given the challenge to design a flag to represent Antarctica. Our year 5 children (ages 9 and 10) produced many carefully designed images that were sent to the Antarctic with an explorer. Receiving images of our artwork displayed in the Antarctic, surrounded by ice, snow and seals along with a message from a Polar Explorer, is something our children will never forget.

We also hosted a science week throughout school, which was implemented in the art room. We built sculptures inspired by molecular structures, and created Petri dish art using marbling and wax resist. We decided whether the colourful contents of the Petri dishes was unicorn blood or fairy tears, or other such creative ideas. Coloured electrical tape was used to turn the entire floor into an enormous electrical circuit. The learning, investigating and pure enjoyment that occurred during this week vastly impacted on our children’s thirst for scientific learning. Science was now considered to be ‘cool’ and ‘epic’, and was quickly becoming a valued subject within our primary curriculum.

Our next step in the quest for improving our capacity for teaching science was signing up for the Primary Science Quality Mark (PSQM). Through this we had the opportunity to borrow a set of high quality microscopes from The Royal Microscopical Society, accompanied by an array of Petri dishes containing a variety of specimens. These were used within classrooms to support learning during science-based lessons. Towards



the end of the loan the microscopes were brought to the art room, where we were able to utilise them in a creative way. We spent the first hour exploring the contents of the dishes, and it soon became evident how inspiring this was. One child then found a fly and a shrivelled spider in the corner of the room, which were quickly scrutinised under the lens. The excitement was palpable, one child exclaiming: ‘Whoa... you’re telling me, spiders have more than two eyes!’ It was proof that by allowing children to discover for themselves, the impact is far greater than simply listening in order to regurgitate given facts.

From hours of pure discovery, with minimal teacher intervention, we moved onto sketchbook work. Children drew their microscope, developing their observational drawing and getting to know the parts of the equipment they were using. Using a wide range of art media they went on to draw the contents of their Petri dishes. Sketchbook pages were soon bursting with stunning imagery. The classroom was a hive of activity and their peer-to-peer discussions full of excitement. ‘This is the best lesson, ever!’ said one pupil. Children would pop back to their microscopes for a further look, before embarking on another sketch. This lesson was repeated with all 240 key stage 2 children (ages 7–11) – with each class the excitement never dwindled.

With some year groups, we took the creative journey even further. We had recently learned that Professor Roger Kneebone, a surgeon,

believed that increasingly surgeons are losing the dexterity needed to sew: ‘Essentially, people need to do things with their hands...they need to do stuff with stuff...we are missing the science in art and art in science.’ In response, we embarked upon a textile project with our year 6 classes (ages 10 and 11) who were given a small felt circle. Inspired by our microscope sketches, we used thread, beads and a range of eclectic haberdashery items to create an embroidered Petri dish. Children learnt a variety of stitches and the simple skill of sewing buttons and press-studs into fabric. You know you’ve made a difference when you hear: ‘I thought sewing was for just for girls, but it really isn’t’.

As a result of our weeklong art and science project, we have secured funding to buy our own set of high-quality microscopes. We’re busy collecting a range of inspiring Petri dish contents and some of our children received their own microscopes for Christmas. Our science curriculum has strengthened and we have given our children the opportunity to develop a curiosity for science. Our art curriculum is not just about painting pictures and developing drawing skills. We allow our students to think like independent artists and now scientists. We will continue to use the visual arts as a way to build and deliver a curriculum to empower and to nurture curiosity and creativity. ■

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‘Creativity has been placed at the heart of our school development plan, and by conducting a curriculum audit it was recognised that developing our science curriculum was the next step needed to fully foster and develop curiosity and creativity amongst our children’





Who are you? Where are you going?

Reflections on identity

Lyn French, psychotherapist and A Space director, in conversation with Georgina Evans, art psychotherapist and lecturer, have shared their experience of delivering art and therapy informed workshops designed to provide a safe space to talk openly about identity and difference. Lyn is also author of the Emotional Learning Cards, which they use to facilitate their workshops

Lyn French (LF): Georgina, we've both facilitated Iniva Creative Learning (ICL) workshops using ICL's Emotional Learning Cards to explore the kinds of experiences, beliefs, unspoken messages and unconscious biases that shape our perceptions of ourselves and others. These workshops place emphasis on the ways in which gender, culture, race and class influence how our identity is constructed and how power dynamics impact. The ICL workshop programme that has been running since the early 2000's uses applied ideas from psychotherapy to create a unique experiential space. Participants are encouraged to make deeper personal connections through the exercises we facilitate and by representing their own experiences either literally or metaphorically in the art they make. When I lead these workshops, one of the Emotional

Learning Cards that really captures the imagination is Aya Haidar's Peregrinations, from the card set: 'Who are you? Where are you going?'

Haidar has sewn an outline of a map inside each shoe. The threads lace across from one to the other, perhaps symbolising bringing more than one world together. It can also represent how we create internal 'maps' made up of the stories we've been told about who we are, narratives which are inevitably coloured by our family history and our parents' sense of 'insiderness/outsiderness'. Our experience of 'self' is consciously and unconsciously influenced by our family's perception of their place in the world. Like Haidar's shoes, our storylines may become entangled which can be enriching but might also make it harder to define who we are or work out who we might become.

Georgina Evans (GE): I find the themes featured in the Emotional Learning Cards represent complex individual and collective experiences making it possible to facilitate conversation around perceived difference as well other sensitive issues. Participants seem to welcome sharing stories of their own journeys. It's interesting to see how the group can identify with each other's challenges and feeling states even if their personal story is very different. We all know that identity is a social construct but, in everyday life, there are not many opportunities to think more deeply about what this means. We can re-write our internal 'scripts' and re-frame the stories passed down to us as well as those we've told ourselves, however to do so, we need to identify and de-construct the storylines we've inherited and process the emotional content.

From left to right
Peregrinations, 2008, Aya Haidar
Nelson's Ship in a Bottle, 2010, Yinka Shonibare, CBE
Hannah's Diary, 2008, Christian Thomson
From the ELC set 'How do we live well with others?'

‘When I lead workshops I note how binary constructed social frameworks of race and class – as well as gender and sexuality – can be understood to serve and maintain dominant power structures’

LF: Talking about difference can be uncomfortable and unsettling, especially as we are all still processing the multi-dimensional legacies of colonial history. This brings to mind Nelson's Ship in a Bottle, by Yinka Shonibare, CBE, which is one of the images from the card set How do we live well with others?

Nelson's Ship in a Bottle (2010) by Yinka Shonibare, CBE Intriguingly, the ship's sails are sewn out of the kind of brightly patterned cloth that we commonly associate with African dress. Perhaps Shonibare is encouraging us to think about what can result when two very different cultures come together. History is full of examples of the more powerful culture taking control. This notion is reflected in personal relationships too – those born into privilege, whatever form it takes, can unconsciously assume a position of perceived entitlement.

GE: When I lead workshops I note how binary constructed social frameworks of race and class – as well as gender and sexuality – can be understood to serve and maintain dominant power structures. Discussions frequently focus on how these constructs impact on each of us differently – be this in terms of privilege, prejudice, opportunity or constraint. Moving between personal image making and group dialogue allows for a more complex exploration of both individual and shared socio-cultural experiences. This can be thought about in ways that avoid what Stuart Hall, the pioneering cultural theorist, described as 'wars of difference' (e.g. 'my disadvantage is worse than yours') and also homogenisation or universalism, where our political differences are minimised or disallowed.

LF: Another card which often draws attention is Christian Thomson's *Hannah's Diary* (2008) from the card set What do relationships mean to you? As an Aboriginal Australian,

identity, sexuality, race and memory are key themes in his work. In 2010 Thompson made history when he became the first Aboriginal Australian to be admitted into Oxford University in its 900-year history.

GE: Yes. This calls to mind Reni Eddo-Lodge, who has said we're in denial about racism in the UK although there is a growing awareness of this now. Workshop participants of all cultural backgrounds are often keen to express and hear about some of the nuances of institutional or structural racisms and to understand how racism affects us all differently. Discussion can turn to how power structures are often established and maintained by socio-cultural frameworks of meaning that promote the agency of some over others – for instance, white people in racism, men in feminism, the economically privileged in classism and the persistence of heteronormativity. We are all aware of how these mechanisms operate and discriminate. The need for reparation can be seen in many liberation struggles around the world, such as black lives matter, Kurdish, Catalanian and Scottish calls for independence, and LGBTQI activism.

LF: When writing the text for the emotional learning cards, I was thinking about how everyone's life stories intersect with, and are molded by known and unknown family 'scripts', the social and political climate of the day and past histories. For me, Stuart Hall's book *Familiar Stranger* [2017] written with Bill Schwartz and published after Hall's death captures this notion. Hall says, 'I was born and formed in the closing days of the old colonial world. They are the conditions of my existence. This is, as I see it, the starting point for narrating my life, the source of a curious, unreachable and abiding unease.' He says that 'much of my life can be understood as unlearning the norms in which I had been born and brought up. This long, continuing process of disidentification has shaped my life.'

GE: As therapists, and I would say as artists too, we know there is a dynamic relationship between internal shifts and external change. We need to be able to have open conversations with others which draw from lived experience. As the Emotional Learning Cards compellingly illustrate, many contemporary artists focus on the kinds of themes that we've been discussing and their work provides a unique way in. ■

Iniva (Institute of International Visual Arts) is a leading UK contemporary visual arts organisation based in London. With the Stuart Hall Library acting as its critical hub, Iniva is dedicated to developing an artistic programme that reflects on the social and political impact of globalisation.

A Space for creative learning & support (ASpace) provides therapy services and emotional learning projects to schools, engages in research in the field and disseminates best practices through delivering CPD events, publishing books and creating emotional learning resources.

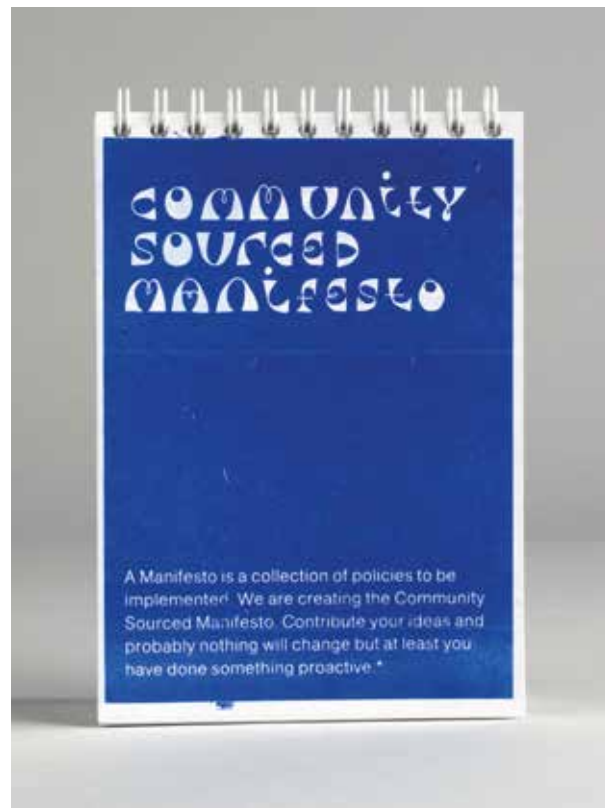
The work of Iniva Creative Learning reflects a long-standing partnership dating back to the early 2000s between Iniva and A Space. They jointly deliver art education and therapy services for schools and community groups in East London, and apply questions of race, gender and sexuality to everyday life. Reflections on difference and diversity are central to their ethos.

iniva.org/learningandaspaceinhackney.org



Tools for social change

Etta Voorsanger-Brill, designer and recent graduate, shares how typography, printmaking and feminism intersect and how self-publishing, the core of printmaking, is an important vehicle for social change



Self-publishing is at the core of printmaking. You only have to think of Virginia Woolf's Hogarth Press to connect these ideas. By publishing her own work independently she wasn't expected to censor her words.

I am a designer and an advocate for self-publishing through risograph, a type of printing which affords you beautiful, low-cost prints with a low environmental impact. My practice centres around the intersection of typography, printmaking and feminism. I have worked with a variety of risograph presses around the world, including Housework Press and Endless Editions. This method of printing has huge educational value, which is only just now being recognised.

Risograph's history is almost as interesting as the prints it produces. Designed as a stencil duplicator in the 1980s, it is famed for being incredibly efficient for large print runs. For this reason Riso was initially used by prisons, political parties and hospitals, amongst other organisations. More recently, Riso has been re-appropriated by creatives to produce increasingly vibrant prints. The colours that you can acquire from Riso are unparalleled in digital printing, including inks such as fluorescent pink or metallic gold. It has become a cult phenomenon.

I studied graphic design at Central Saint Martins, but it wasn't until my second year when I undertook an exchange programme at School of Visual Arts in New York that I learned the power of Riso. If you have access to a machine, it allows you to have a voice – you can make printed matter within seconds.

On returning to London I knew I needed to find somewhere to print as CSM didn't have a risograph machine. I came upon Rabbits Road Press, an open access press in London run by women and encouraging community engagement. In writing my dissertation I was

'In a world where politics has become increasingly oppressive, self-publishing is a needed tool. The allure of Riso is that it is simple and effective'

exploring ephemera's link to feminism and Rabbits Road's Riso became my vehicle for experimentation.

Following this, and together with a fellow student Indiana Lawrence, we decided to facilitate a Riso workshop where our peers made a publication called *Destroy Your Dissertation*. We showed the students how risograph can create a community by taking education into our own hands. This was a turning point because the university started to notice. It wasn't until we, the students, decided to take a stand that they listened. I became the face of Riso. Throughout the year I had many meetings with CSM about buying a machine and in late 2018 they invested.

Since finishing my BA I've had some amazing opportunities because of my advocacy for risograph. I have returned as a graduate teaching lecturer to Central Saint Martins. I've continued working with Rabbits Road Press and running workshops. I've even been teaching on a foundation course in Shanghai. Recently I had the opportunity to put into practice the research I had done regarding feminist ephemera. I took part in The Secret to a Good Life exhibition at The Royal Academy. In order to pay homage to Mary Moser, the second female Royal Academician, I made a zine detailing her work. The zine was then fly posted onto a sculpture, which was collaboration with the artist Bob and Roberta Smith. It is a physical representation of Moser and I, two female artists, inhabiting a space.

According to Kerning the Gap, a collective committed to showing gender disparities within

the design industry, 70 per cent of graphic design students are female. However, women only account for 11 percent of leading creative directors. If the tools are taught to students earlier about self-publishing, this can and will significantly help to remove unspoken barriers in the design and creative industries. In this way all artists can make themselves heard in the future.

This cuts to the core of why Riso is a resource for social change. If you can make printed matter you can prove you existed. In a world where politics has become increasingly oppressive, self-publishing is a needed tool. The allure of Riso is that it is simple and effective. But as it gains popularity the question of who has access to the machines will become more prevalent. A growing number of young designers are using this method of printing as a route to empowerment. In future, universities and the wider risograph community need to follow the example of Rabbits Road Press. They should consider implementing spaces in which open access is a possibility. Risograph is at the heart of self-publishing and offers an opportunity for a diverse range of voices to be heard. ■

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Opposite
© Etta Voorsanger-Brill

Above Left to right sculptures: Etta Voorsanger-Brill, Bob and Roberta Smith, Jessica Voorsanger
© Royal Academy of Arts, London/Marcus J Leith



The Art School for Rebel Girls

Art School for Rebel Girls is the latest engagement programme organised by Pavilion, a Leeds-based visual art organisation. Inspiring young women in schools in Leeds to express themselves creatively, the project explores the role of images and social media in shaping attitudes and beliefs. Here Pavilion's programme managers examine the challenges and project approaches

The programme was developed in the context of increased awareness of the reduction of arts education across all phases, and growing concerns around the negative effects of technology on secondary-aged girls (11–18) and their self-image. Supported by Soroptimist International Leeds, the initiative is now well into its second year.

Pavilion's challenge has been to devise a programme that critically engages with debates around the representation of women, whilst also fostering confidence, creativity and collaboration between the female participants. Art School for Rebel Girls (ASFRG) seeks to inspire young women to dream big, to value themselves highly

as individuals and to believe they can succeed. Informed by Pavilion's own beginnings as the UK's first women's photography centre in 1983, ASFRG draws on feminist pedagogical practices in creative workshops for 13–15 year old girls in two inner-city Leeds schools.

Over the last two years, after-school sessions at Carr Manor Community School and The Co-operative Academy have led towards intensive spring and summer schools held during holiday periods. Day-long art workshops have brought both groups of girls together to form a creative collective. Artistic collaboration with established women artists and curators throughout the spring and summer schools has further developed a peer group into an intergenerational working group.

Key themes addressed by the project include identity, representation (particularly representations of women in the media), gender, social media and politics. ASFRG encourages girls to think critically about these issues and their place in the world, using art as a tool to explore and express their ideas, and to develop their confidence. As such, ASFRG outcomes closely align with aspects of PSHE (Personal, Social and Health Education) and allows participants to build skills and knowledge in this area.

After school clubs

Expanding ideas of what art is and who produces it, our workshops are centred on exploring the girls' own experiences in relation to the work and

ideas of other women and non-binary artists. In the after-school sessions we have introduced the groups to a range of local and international artists working today and throughout history, and equipped participants with image-making skills and techniques using, for example, collage, sculpture, chemical photography and video.

One session focused on the work of Anna Adkins, the first woman photographer who was a pioneer of the cyanotype process. In another session, the group were encouraged to situate themselves politically, exploring and articulating their concerns through the medium of the protest placard inspired by examples of contemporary protest art by women artist activists around the world. Work produced during after-school sessions formed part of the Art School for Rebel Girls summer exhibition.

The after-school club was key in developing a relationship with a group of young women who might struggle to be heard in larger groups or find it difficult working with others. One of the teachers we worked with commented:

'I think that the workshop genuinely enabled the pupils to find an outlet for their difficult emotions and I have to say that, knowing the children, I could see a direct impact of the session even as it was taking place. There was a twinkle in the eyes of the some of the girls that I haven't seen in a while!'

Summer school

Last year's activity culminated in an intensive summer school at the School of Fine Art, History of Art and Cultural Studies, University of Leeds. The week included workshops by textile artist Sarah-Joy Ford and artist and designer Soofiya Andry, and visits to The Tetley and Feminist Archive North. Other sessions aimed to deepen engagement with image production and its politics through photography, video, textiles and curation.

Inspired by the practice of consciousness-raising developed from the 1970s by groups of women who were feminists, summer school activities aimed to build horizontal structures of learning and collaboration into our workshops and reflect on personal experiences as a way of developing a critical understanding of the world.

We worked with a small group of student volunteers and an assistant during the week, recruited from the fine art programmes at University of Leeds and Leeds Beckett University. They were central to the project success in multiple ways; firstly as an example of current art students speaking about their experiences, but also because they gave crucial practical assistance for delivery and set up each day. They also worked with the girls to help them with their own work. We all made work, sharing ideas together as a collective and thus



'Pavilion's challenge has been to devise a programme that critically engages with debates around the representation of women, whilst also fostering confidence, creativity and collaboration between the female participants'

their participation was central to the collective learning process.

A collectively made exhibition of artwork opened at the end of the summer school to the public at the School of Fine Art, History of Art and Cultural Studies, University of Leeds. All members of the summer school collective took part in making the art, curating the exhibition and installing the finished pieces.

Isabella Carreras, a summer school assistant, reflected that working collectively was empowering: 'Making work together as a collective of practitioners at different ages was really interesting. Communication became more fluid and directed by them. It was exciting to see how proud the girls were about their work and themselves, and it was noticeable in the way they were talking and presenting themselves at the exhibition that they were feeling empowered!'

Next steps

Moving forward into the next two years of the project we will continue working with the teachers and pupils to refine and adapt what we have achieved so far.

We are looking forward to introducing new skills, including animation and weaving, while also discussing important topics like beauty standards around women's hair. Key work will also be developing intergenerational collaboration centrally within the project. This will involve expanding our cohort of student volunteers so that women of various ages, experiences and backgrounds continue to work with the girls on a collective basis.

A new group of girls (ages 13–14) will also be joining the group from last year who are now year 10 (ages 14–15). The summer school highlighted the clear benefits of intergenerational working and how easily the genuine sharing of ideas, experiences and friendship can take place between different generations of women if the circumstances allow. ■

Elsbeth Mitchell and Sarah Harvey Richardson are producers, Art School For Rebel Girls, Pavilion; Kerstin Doble is programme manager, Pavilion

pavilion.org.uk

Images © Pavilion





All the fun of a theme

Sacha Guppy, head of art at All Hallows Preparatory School, decided to change her approach to teaching and learning in her subject with a themed creative showcase which involved the entire school. Here she describes the process

‘Aside from evident ‘fun’ involved, students became aware of the many strands that can exist in one theme, which is not only rewarding but helps to prepare them for the more involved and self-directed work needed at examination level’

With my new appointment as head of art at All Hallows Prep school, I was ready to change my approach to teaching and learning in our subject. This change was initiated with an invitation to take part in the school’s creative showcase. This was the first time in my teaching career that I had carte blanche to create projects and an exhibition of my choice.

In the past I’ve had the privilege of curating exhibitions, including co-curation of the Stoke Newington Festival. With this experience in mind I decided the exhibition would be far more cohesive and interesting if we used a common overarching theme.

As a starting point we used the cranes depicted on our school’s logo. Every student in every year produced drawings, paintings or sculptures based on the bird and all that it symbolically represents. The year 6 and 7 students (ages 10–12) went on to produce clear-tape sculptures of objects that represent the journey and transformation from childhood to teenager – for example a teddy bear and a guitar. One student produced a video about ‘talent’, showing everything from standing on one’s hands to singing solo. Collectively, all the work was shown as an art installation depicting the school, our students’ and their experience.

This exhibition shifted the way I wanted to teach. I realised that working collectively to create an exhibition, and to work with a singular theme across all year groups, was rewarding and exciting. It instilled in students a sense of collaboration and provided a common goal – an exhibition. Students not only took pride in doing this but also were beginning to freely offer ideas of their own.



My second challenge was to mount an exhibition at an independent exhibition space using the students’ work. The theme was ‘All the fun’, with each year group exploring a facet of this concept. We began with the title ‘Circus, Theme park and Carnival’.

Year 2 (ages 6–7) produced huge painted circus characters; year 5 (ages 9–10) painted 3D clown legs or cardboard clown shoes; year 6 (ages 10–11) produced painted theme park rides, and year 8 (ages 12–13) produced Pop-Art-themed park food. We hung the work up in a local art space called the Silk Mill in Frome and invited other creative disciplines to contribute. Creative design produced vacuum formed shoes, drama performed clown-acts and recited poems, and one student sung ‘Clown’ by Emile Sande.

After seeing the extraordinary output and enthusiasm from our students and other departments, I am convinced that this way of working is beneficial. Aside from evident ‘fun’ involved, students became aware of the many strands that can exist in one theme, which is not only rewarding but helps to prepare them for the more involved and self-directed work needed at examination level.

A whole-school thematic approach also takes away the possible factory-like yearly repetition, keeping things fresh for the teachers and giving students a sense that they are a part of ‘a happening’. This, in my own opinion, is good for us all. Each term we will now have one new theme for all years and all students to explore. ■

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A diary of an Artist Teacher Masters

*Having embarked on a part-time 3-year MA in Education – Artist Teacher Practice secondary school art teacher **Zoe Crockford** will be sharing aspects of the course with AD readers, writing about her experiences and progress. Here, in the first of three annual instalments, we learn how it feels to be a student once again*

It's June 2018 and I'm reading the NSEAD's group chat on Facebook. Someone called Rachel Payne has posted some details about an MA course for artist teachers at Oxford Brookes. I email her and within a couple of weeks I have committed the next three years to studying.

I am the only art and design teacher in a small secondary school in Hampshire. Throw in a lively family, a nervy cat, a raft of DIY projects, an allotment and a sideline in craft workshops and you would be right in thinking I am busy. I am, very, busy. But, despite all, I think I can do this.

August: I'm doing some pre-reading on the beach. It's a bit breezy and the wind catches the pages of the wordy article I have started to plough through. Nothing is sinking in, but then the sea is tempting me. Is this the best time or place to start learning again?

Now I'm in Oxford. I'm looking at a room full of people and feeling shell-shocked, but that might be down to the early start and long drive – we are all looking a bit stunned to be fair. I have instantly forgotten everyone's names and what they do for work, but I do know that we are all ages and from very varied backgrounds. Our one uniting theme is that we are all here to re-engage with our practice, whether that be art, teaching, teaching art or a combination of all three.

All my old student insecurities have risen to the surface. I am out of my comfort zone, even though the prospect of working for two days in The Pitt Rivers Museum is making me drool. I am worrying I am not clever enough, eloquent enough, serious enough or arty enough. Does everyone else feel the same? God I hope so. Why did I wear these shoes? Those ladies have funky earrings – I want funky earrings.

Once I get past this superficiality I am ready to start absorbing.

Day 1: Gallery-based workshops. We are to work in groups, which doesn't sit easily, ever, but we are all compliant. We have to speak out about the work we have done and share ideas. The horror of past art school crits is reawakened. Mercifully it's a positive, happy, accepting experience.

Day 2: More substantial work with artist Dionne Freeman. I am paired up with people following similar themes. I'm still not comfy with this and the sudden rush of ideas and concepts is alarming.

Day 3: A day at uni. Oxford Brookes Harcourt Hill campus is cute. It reminds me of Sion Hill in Bath where I spent three years socialising under the pretext of getting a ceramics degree. I feel more comfortable, although I have not got the clothes right today either. This is an admin day where we are planning our research projects. It feels as if the reins have been put on us because I really want to get cracking on making again but I have to do this first. This course is very skillfully written. By January we will be gagging to paint, draw and make.

We create a Facebook group, swap Instagram names and emails. This is our support network and as distance learners this could be a lifeline.

November: We are back in uni. Our calendar is very manageable and fits in with our lives well. Our uni days are, on average, once a month on a Saturday and I for one am delighted to be escaping child taxiing and laundry. We are data coding, which is new to all of us. Using a big table, highlighters and sticky notes we are organising our early research and evidence into coherent themes. Some of us even make pie charts! In that last couple of months we have all undertaken action research and started our essays. There's a

'All my old student insecurities have risen to the surface. I am out of my comfort zone, even though the prospect of working for two days in The Pitt Rivers Museum is making me drool'

lot of chat about writing introductions, citations, and reading. I am pretty sure that everyone present today has not written an essay for years, let alone one at Masters level. There is a lot to take onboard, but we are all keen and focused and sharing tips on time management.

Finding time to study is a major concern. It feels totally self indulgent and all consuming, which is not the way we usually do things. We are snatching hours wherever we can. Thankfully, Rachel and Dionne have been hugely positive and supportive throughout and we go away determined to finish our essays before the Christmas holidays. This time next month, the complexities of Harvard-style citations and word counts will be lost in a smear of acrylic and charcoal. ■

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News

Calling all members

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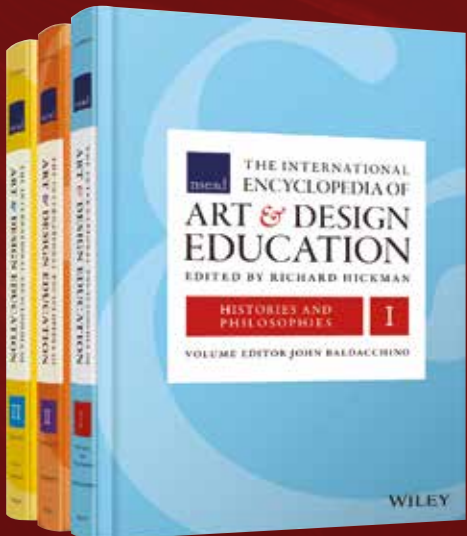


NSEAD course: Where Have All The Boys Gone?

Where Have All The Boys Gone? is a highly successful and hugely popular course that is returning Friday 14 June 2019.

In recent years the attainment and participation gender divide in our subject has grown. This one-day course will help departments address the divide with targeted interventions relating to curriculum design, content and teaching styles. These interventions will benefit and support all your learners.

The course, hosted by Durham Sixth Form Centre, is suitable for art professionals from all phases and is run by Susan Coles, Past-president, NSEAD.



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Edited by Richard Hickman

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