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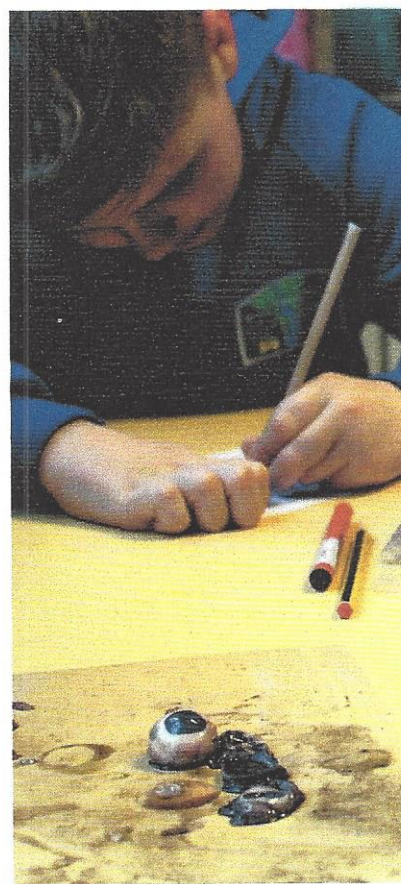
THE ART AND SCIENCE ISSUE

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

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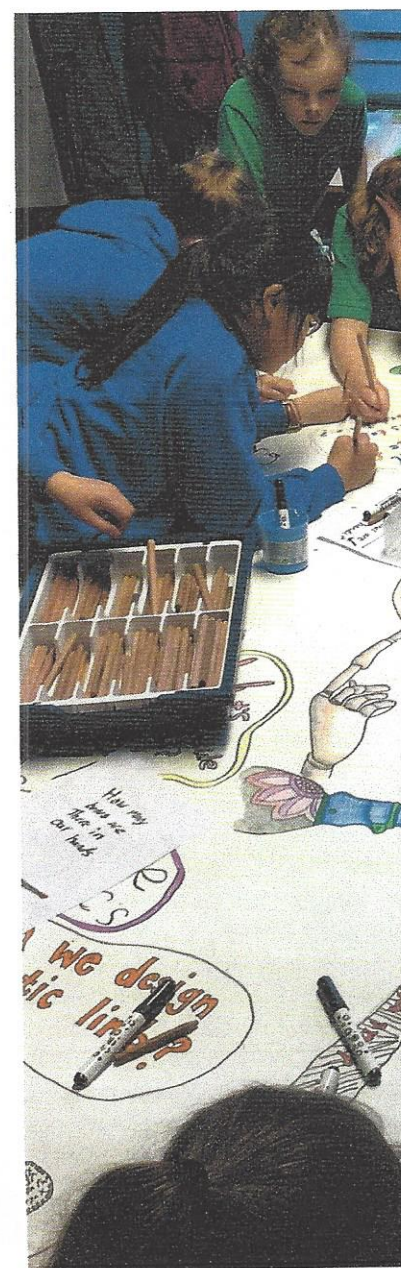
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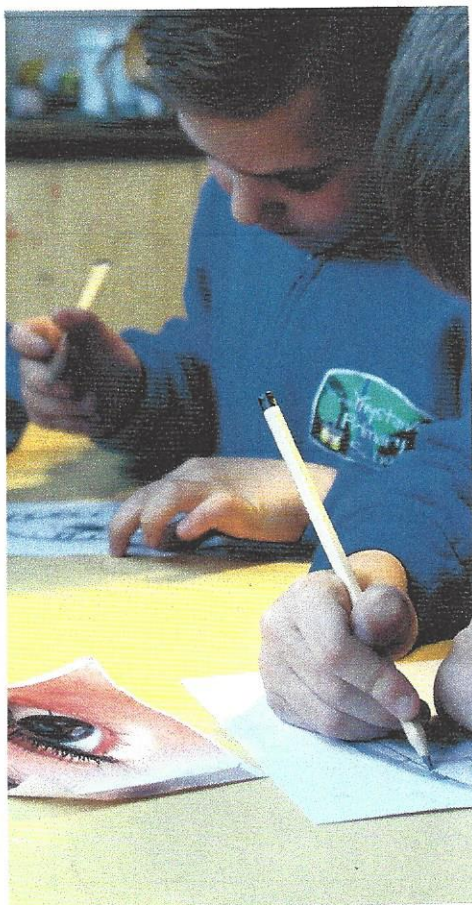
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Can pigs wear glasses?

*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 investigation: 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