Author: Andrew Smith, Consultant in Anaesthesia & Intensive Care,
Barts Heart Centre

The connection between ‘medicine’ and ‘creativity’ is critical to the success of innovation & development.

The connection between ‘medicine’ and ‘creativity’ is critical to the success of innovation & development. Finding ways for both sides to communicate ideas and solutions to each other is vital and this demands that we have some understanding of how each other works, their strengths and their challenges. We need to understand each other.

Over 20 years ago we had an idea that we thought would help us with our teaching of some difficult concepts in echocardiography, a complex medical ultrasound imaging technique.

We and our peers were, at the time, using written text, diagrams, photographs and videos and even plastic models to try to illustrate complex anatomical relationships and perspectives of visualisation of this anatomy.

In the absence of a suitable product our idea was to create a digital solution - a relatively unused technology in medical education at the time. We wanted to create an accurate, detailed, interactive, animated anatomical model of the heart that might allow us to fulfil all our teaching aspirations and overcome several stumbling points in the learning process. We were certainly unsure about what could be delivered, had no idea on how it might be delivered, and knew nothing on the cost of taking such a project forward. It was hard to crystallise the idea as we weren't even sure what was possible.

Perhaps one of the key moments in our journey was the early engagement with specialists in digital development; we met with Hector Macleod and his team at Glassworks – a cutting edge postproduction and VFX company. His team were experts in 3D modelling and animation techniques and had a history of innovation to deliver digital solutions. Rather than considering what *we* thought were the available technologies, we not only had advice on what was 'actually' available but also what might be possible. These discussions allowed us to rethink and refine our idea in the light of available technology and come up with a more complete solution.

This happened once both sides, the medics and the 3D modellers, started to understand what the other was saying. The modellers began to communicate and think in medical terminology and the medics began to appreciate some of the 'behind the scenes' modelling and animation techniques.

This understanding wasn't something that could be gleaned from reading a book or watching a video (or perhaps now through using AI platforms). It needed exploration through conversation and direct questioning.

Information transfer happens both ways. Our gradual understanding of how digital models were created pushed us to careful construction of 'specification': what did we want this final development to be? What was essential and what was 'nice to have'? What might we want to develop further in the future? What information did the modelling team need to have and how was this data most usefully presented to them?

The digital team quickly developed a good understanding of relevant cardiac anatomy, the terminology, the teaching requirements, and some of the inherent structural limitations of the medical education process - particularly around the training of echocardiography.

They learned how to frame complicated modelling questions in a way that we could understand and be better positioned to provide useful information. We learned how to present that information in a way that they could understand and use.

In short both ‘sides’ learned how to communicate with each other. And when that happened the development process accelerated well beyond the initial optimistic expectations to deliver a groundbreaking improvement in cardiac ultrasound training.

The Heartworks heart is still considered to be one of the most sophisticated renditions of this organ anywhere in the world. And all because we brought two worlds together that seemed mutually exclusive, but in fact were massively mutually beneficial.

Art and science. An affair of the heart.

Author:
Andrew Smith
Consultant in Anaesthesia & Intensive Care, Barts Heart Centre