

Visualising Research Competition 2021-22: Entries





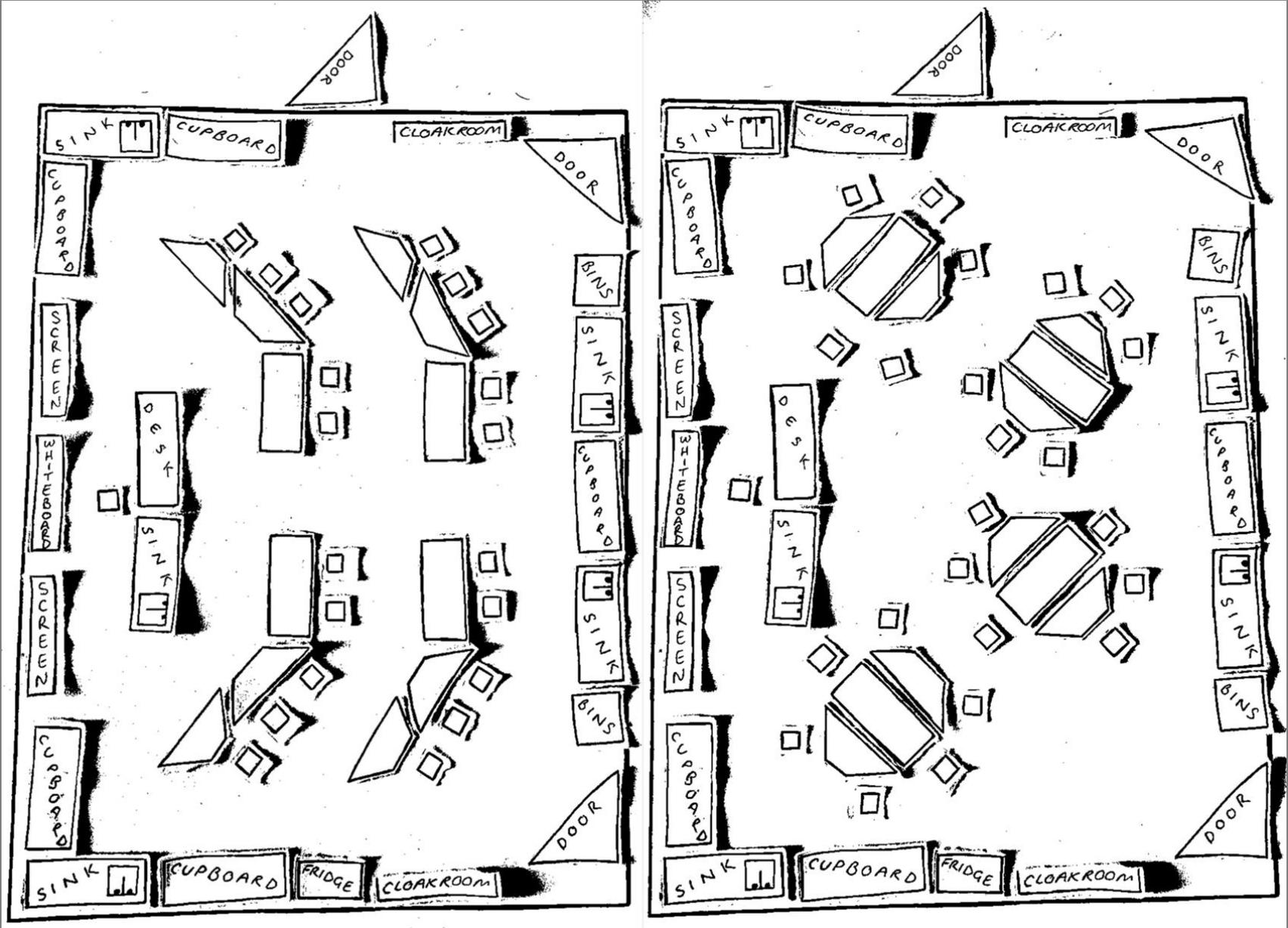
If you have to carry anyone during your early career research, choose a lightweight, and don't let them steer

This image relates to advice to young researchers starting out on their careers. Choosing advisors, mentors and collaborators can be a minefield, and this is particularly the case for young women.

There is still a massive underrepresentation of women in STEM careers, especially in engineering, physical sciences and computer science. The gender pay-gap in STEM is also very significant.

Add to this the many anecdotal early career researcher horror stories, which run as follows: female student has an idea; supervisor doesn't agree; student is discouraged, abandons the work and doesn't submit the paper; and it then turns out later to have been an important discovery when announced by someone else. A slightly different version is the Jocelyn Bell Burnell one, in which she continued the work, her supervisors received the Nobel Prize for her discovery of pulsars, and she did not. She has since been better recognized.

The message is still the same, and applies for both young men and young women: stick to your own judgement. If you have worthwhile ideas and the personal strength to pursue them, your career will follow, and in time it will become clear who was the driving force in your early career outputs.

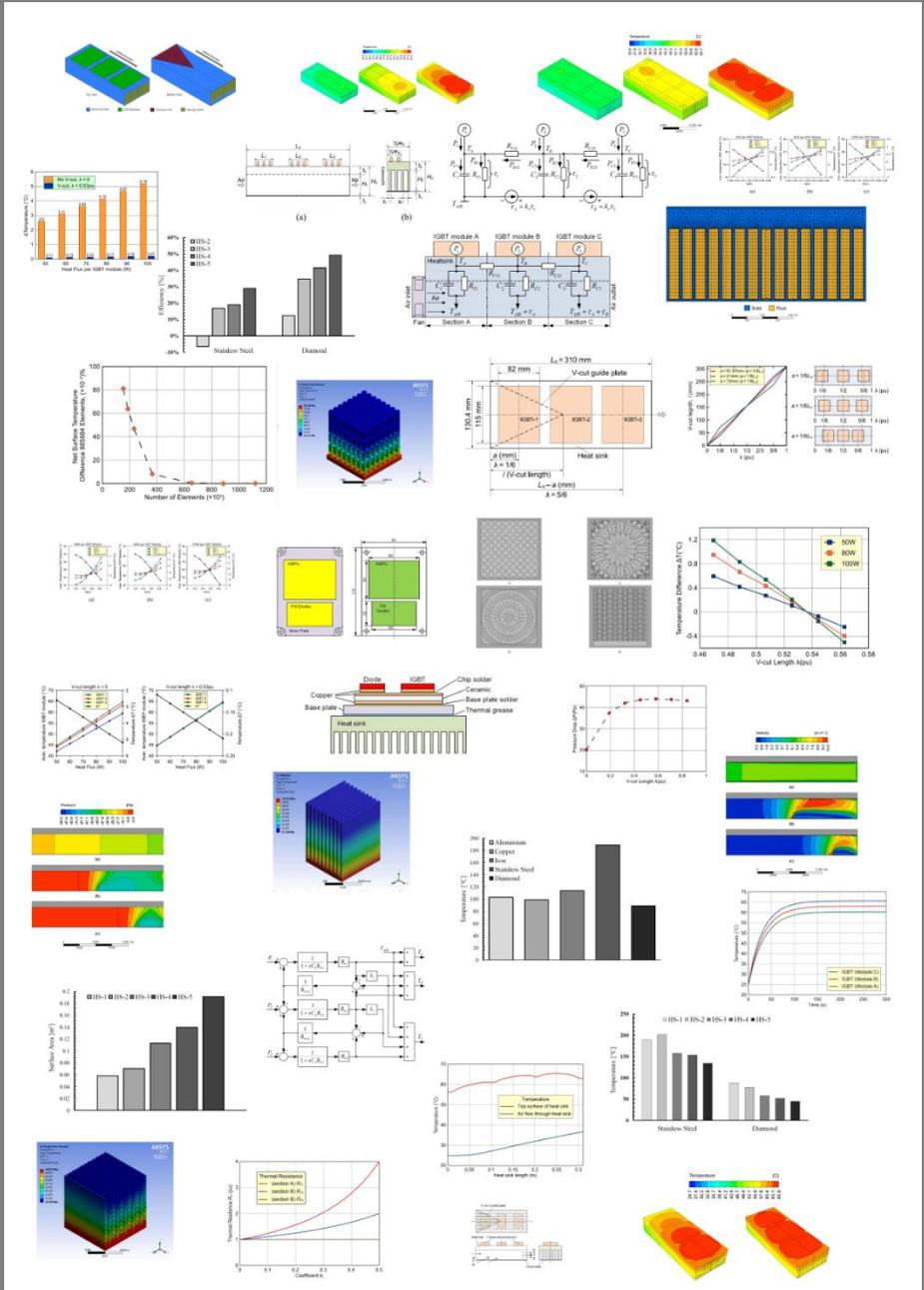


The pen and paper approach to technology enhanced teaching

As part of my EdD I'm exploring SCALE: UP methods in teaching forensic science. I'm keen to enhance the use of this pedagogy without detracting from essential laboratory experience needed. When we received HEFCW funding to renovate the labs over the summer 2022 I jumped at the chance to incorporate SCALE: UP into these new spaces.

Sitting on a hotel bed with a pen and paper in hand, I marked out the traditional laboratory layout on one page and the scale up layout on another. Hundreds of tiny torn pieces of paper and many different configurations later I produced the two plans above. An enhanced forensic science teaching area that integrated technology with furniture that could have multiple uses; a space that didn't detract from its original purpose of a laboratory but allowed flexibility.

Whilst quickly taking a photo of each in fear of accidentally blowing the plans away the irony of such a low-tech approach to plan what will ultimately be a high-tech teaching space was not lost on me. Neither was the fact that SCALE: UP originally stemmed from a science programme and so it only makes sense that it can integrate back into a laboratory setting.



Collage of my PhD Research

This is a collage of images taken from research that I have published during my PhD studies. I am researching into the premature failure of electronic semiconductor components, such as diodes and transistors, which can occur due to the uneven heat distribution conditions that they can be subjected to when they are used in electrically stressful situations, such as industrial applications or to drive the motors in electric vehicles.

The images are of mathematical and computerised models that I have developed to simulate the distribution of heat across the components.

The goal of my research is to achieve an even temperature across the electrical components and hence to prolong their life.

This collage represents a visual summary of everything I have achieved so far.



Navigating the rabbit hole

My chosen image is a collage of doorways, staircases, corridors, and windows I have taken at various locations over the past twelve months, including my own home. These passageways are places of transition, entry, and exit, and represent, for me, the winding journey of my research. My interdisciplinary approach to a practice-based study of the nature of time has led me down many paths as I try to filter out the route to take. Like time's future and past, these architectural thresholds have the promise of the road ahead and the certainty of the passage just taken.

The absence of colour is deliberate. Shadow and light are very apparent in the monochrome images and suggest the nebulous boundaries of tense within time. Past, present, and future bleed into one another, like a shadow recoiling gradually from the light. There is also an intimacy about domestic spaces that suggests a personal relationship with time that is bound up with our own perception and experiences. Peering through a partially open doorway is like staring down the rabbit hole of causality. Each of us have our own rabbit hole, which echoes to the intangible rhythm of the passage of time.



Stairwell of Exploration

My research is an investigation of the Public Arts Programme at Theatr Clwyd and their renovations. This image is a staircase within the theatre before any of the current renovations started. I know these stairs well; I have traversed them countless times as a child to now as an adult. I feel it describes my research journey: uphill but taking it step-by-step. It is dark in places and sometimes isolating but there is always some light. I always feel I am moving in the right direction but like the image I don't know what is round the next corner, but I do know my final destination.

COMPRESSION



Compression

My research considers the relationship sculpture can have with the digital realm. I am interested in the degradation of an image when it is copied and adjusted multiple times, and how this can inform the production and presentation of my own sculptural artefacts.

I want the sculptures to reflect the phenomenon of digital degradation within their forms, surface and colour.

In this image, I have taken a 3D scan of a World War 2 bomb crater beside the River Dee (a physical *compression* in the ground.) This has been photographed multiple times to produce a degraded, *compressed* digital artefact, that serves as a reference image for my hand-built sculpture.



The process doesn't always look pretty

These shoes are beaten up, tired, full of holes and have endured some pretty awful weather. Sometimes, during my own research, I have also felt like this pair of shoes. These shoes though helped me complete the Dragonsback Ultramarathon and are pretty special to me!

Key to this, is that even when we feel like the research is bringing us down or looks an absolute mess, we persevere. We work with others, we share ideas and we keep our head up. The process may not look pretty; scrawled notes, dirty coffee cups, late night sessions and untidy desks- but the end result is worth it.

Word Cloud

This 'word cloud' is generated with text comprising keywords about my research. People are able to visualise and combine words via the linguistic background of their own minds, and to process this large volume of unstructured texts. Similarly, my research analyses those texts using computing techniques, where comments and reviews are systematically identified, extracted, quantified and studied. They are normally large in volume, big sets of data, and chronologically extracted from the cloud – namely, social media platforms. People understand it as public opinion: comments are easily picked up by readers and may be of significant interest to companies seeking to understand market sentiment, to political parties or campaign groups in helping them to predict the outcome of national and even local campaigns. The information in text can be processed, managed, clustered and analysed for use in various applications, such as marketing, customer service, healthcare benefits or even civil protection.



The Lens of Science Capital

Using the theoretical framework of Science Capital, my research aims to explore the phenomenon of parent and caregiver experiences of informal science learning with their families. A poignant finding demonstrated perceptions of what science is and how science was relevant to parents. All participants described science confidently as Biology, Chemistry and Physics and more than half raised Astronomy and Space to be an area of active interest for themselves, but at a more nuanced level, differences emerged.

Participants discussed their perceptions of job roles, some recognized professions such as an engineer or a vet as scientific in nature whereas others discussed the same professions by overtly rejecting science as a base for those roles. Upon reflection of this, participants felt that they hadn't made the connection to science.

My image represents that science capital develops in different ways. What participants understood to be science is depicted in the night sky, being that all have the same concepts around them, but the reflections of participants, through the 'lens' of Science Capital shows how for some, they were able to make links from their implicit understanding, for others, their interest in science was from a more removed perspective.



Constructed Disturbances

In response to an invitation to be part of a digital residency by SIX MINUTES PAST NINE 9'6", our current research involves constructed disturbances existing between the digital/analogue. We processed physical objects and sound through free-to-use 3D scanning applications, pre-digital synthesisers and low-quality video recording equipment. The hybrid imagery is presented within an augmented reality environment, elevating the splicing and degradation of the audio and scanned objects. Both researchers' independent artistic practices drive the collaborative inquiry, which acts as a feedback loop celebrating unpredictable, fluid configurations. The research methods and resulting artwork are in the spirit of collage, a process that constructs new forms and textures from the assemblages of preexisting material.



Crisis of the Image

My current research inquiry is focussed on the cross-over between screen reliant artwork and painting. Proposing that video as an extension of painting, I examine the relationship between analogue/digital 'noise' (feedback, distortion, banding, pixelation, glitches) and the manual selective or accidental sampling and filtering strategies inherent in painting. The application of Unreal Engine is used as a tool to create the content of the 'video-painting' which is then reprocessed through VHS capture. This digital-analog hybridity is in response to questioning the ability of such approaches to question authenticity.

Hito Steyerl definition of the 'poor image' acts as a material witness of its degradation. The pixilated Jpeg, the corroded VHS, the scratched film are representative of a surface image aesthetic, that has a correlation with the surface of painting (Westgeest, 2022). In a world in which hyper 4k images can be produced that blur what is real and what is a simulation, the degraded image does something much deeper psychologically than simply spectacle. The corruption generated by digital or electrical signals cause information to be lost, thus the necessity for the human brain to work at filling in the gaps. The glitch, noise, or feedback jolts the viewer out of perceptual mundanity, forcing them to re-read the image flow as a deficient visual transmission.

Thank you for viewing!

