Questioning the design and technology paradigm

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Abstract
The pace of technological change means that the school subject of design and technology must be in the process of constantly reinventing itself. Yet the way that we are teaching has changed little since the beginnings of the subject. We are still delivering and assessing in the same ways we were 30 years ago. Why?

The industries and philosophies which power our thinking have, and are, changing drastically. We would seem to be concerned to give citizens of tomorrow the new tools without the new ways of using them.

Much vaunted issues like collaboration, creativity, sustainability and the reasons why we do what we do, are little questioned. The subject of design and technology would seem to be in a unique position to influence designers, consumers and citizens of the future.

Ideas of learning and designing styles, choice and collaboration would seem to be the watchwords for the future. So how do we do it? As a group will share ideas and plans for ways of rethinking what we are about, therefore how we should enable the learners of the future and then how we should assess it.

This will be a collaborative experiential session, which challenges the traditional perceptions of the keynote presentation and will be more theatrical than is conventionally done. The attached paper is therefore a commentary to the presentations but will not be the text of the presentation. Those presentations will be members of the team giving the situation in role. There should be time within the questions session for individuals in the audience who feel that we have polarised and misrepresented their positions to speak to the rest of the conference.

In our abstract we highlighted the areas of collaboration, creativity, sustainability and the philosophy of design and technology. The issues surrounding these missing links in our views were collaboration, creativity, sustainability, and philosophy.

Collaboration
Whilst constantly highlighted as one of the most desired skills in a future workforce, the education system seems to be able to give little value to the development of this as a capability. Whenever there are learners working collaboratively, there is always that sharp intake of breath from the teachers and the inevitable question, ‘but how are we going to mark and assess who did what?’.

Across the staffroom are a scruffy group of colleagues in ill-fitting lycra and polyester garments or rainbow jumpers and fedora hats, who have no problems with the development and assessment of collaborative capability. So who is wrong? Why are we having so much difficulty with the concept? Could it be that the design and technology teacher is a congenital ‘loner’, capable only of producing beautiful widgets, alone? Or could it be that we find ourselves in a curious situation where pupils are taught as a homogenised group (which they are not) and assessed as individuals without reference to having worked with others (which is similarly not true)? All of the systems for gathering statistics on the efficacy of the educational experience follow the same model. Thus, schemes of work are balanced against individual attainment grades. The metaphor is of children as blotting paper that are put onto the conveyor at one end and ‘sprayed’ with educational paint uniformly and then measured to see how much the individual blotting paper, has absorbed. When we find, to our surprise that the children have different absorption patterns, what do we do? We check their absorption rate, put all of the same rates together and put them through again, or we check the spray rate of the individual teacher. (That must be a management model because it bears no resemblance to actual education and actual learners, in our experience.)

We might ask that have we, in the last 150 years of research into brain function and learning styles, had nothing that we can apply to help with children and their learning?

Creativity
Creativity is the ‘magic’ quality that has allowed a hairless and relatively toothless species to become the dominant creature on this planet. Yet as soon as it is mentioned, there is yet again that sharp intake of breath the words. This time, ‘how do you measure it?’

Yet we have no problem with electricity, you can’t see it but you can feel the effects. Look again across the
staff room to that mottley crew in the other corner, in the collection of silk scarves and fly-away hair or shaved heads and working boots. They have no difficulty in developing and assessing creativity as a component of pupils' work. They are well-versed with the contents of the Robinson Report, and they like us to know that you can look at creativity in the following ways:

- using imagination
- pursuing purposes
- being original
- judging value.

None of these terms, in our fraternity of twinsets, ties, white coats and pinny’s, are we unfamiliar with. So why can’t we do it?

Designing is about coming up with things that are new, better and different. That means being creative. If pupils are not encouraged to be, and are rewarded for being, creative, then they can’t do designing. The notions of a creative workforce of the future will be uninfluenced by us unless we can give learners the space to be creative, and rewards for having tried. (Kimbell, R., 2000) It is not surprising that the 3M company instruct all of their employees that 15 per cent of their time at work should be spent in being creative. The potential payback is well recognised but we have to know enough about it to give it time to develop.

Sustainability
Sustainability as a concept takes two forms. Firstly, the use of kit and stuff in a way that will mess up the planet in a less serious way than at present. Within the activities of designing and technologising, we have the ideal opportunity for the citizens of the future to wrestle with, and solve of their age (not their parents). It is one thing to learn the theory of sustainability, another to clear up the mess that your parents have made, and a completely different thing to engage with the problems, first-hand. We can do this in design and technology.

Secondly, and more philosophically, the notion of sustainability education is one of equipping young people for their futures, without overburdening them with the past. Buckminster Fuller said we were, ‘advancing into the future looking backwards’.

Philosophy
What are the philosophies, beliefs and attitudes that will be sustainable in a world with diminishing resources, accelerating climatic change, diminishing resources and increasing population? Should we still be teaching how to package another ‘burger’ and, if not, what else should we do?

Much of the work done on the working of the brain would seem to suggest that we are trapped in a left-brained, logic-driven, and socratic model of educational assessment, in a world that is recognising and valuing the activities of right-brainedness. To not recognise the pressure that teachers in school are under would be naïve, but to stand just on the touchline shows that by being obsessed with scientific, quantitative measurement that many of the pressures are self-proliferating.

‘What can be measured gets done’
This means that all of us attempting to deliver, only focus on those things that can be measured. There has to be a way of deciding what is important and making it measurable. That is giving value to the aspects of creativity, collaboration sustainability and philosophy, so that teachers and pupils will be able to exercise and develop these capabilities, knowing they are following both their hearts and their calculators.

- What if you could only get an A* at GCSE if there was evidence of collaboration?
- What if at all grades above C at A’ Level there had to be a creative contribution, either personal or to the world?
- What if all project work contained a sustainability audit, worth 20 per cent of the overall marks?
- What if each A’ Level project evaluation had to contain the reasons why the project was attempted and the value to the client of the solution?

The actual presentation will contain all of these issues but will take the form of:

1. Creativity exercises.
2. Interactions and feedback sessions.
3. Cameo presentations to a student teacher from the viewpoint of a head of a design and technology department; an OFSTED Inspector; a Chief Examiner; and a Government think-tank leader.
4. Questions and discussions.