



Modernising design & technology
David Barlex considers how design & technology can respond to the wide ranging issues raised by BIG picture of the curriculum that is being developed by QCA.



Modernising the implementation of D&T

A BIG picture of the curriculum

Mick Waters, the Director of Curriculum at QCA, is a pragmatic, enthusiastic idealist. He believes the national curriculum should be treasured and valued and that it needs to be shaped to fit with children's lives. To make the curriculum work, people in schools need to set understandings of their children alongside the learning they should meet to create learning that is irresistible. He and his team have produced a *BIG picture of the curriculum*. It is not a statutory document; it's a work in progress. On the QCA website the BIG picture is described in terms of answers to three questions. And there is a video in which Mick builds up and *explains* this BIG picture.



Mick Waters, Director of Curriculum at QCA

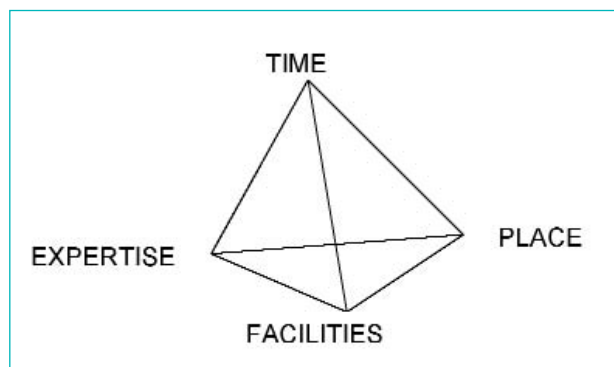
The first question

The BIG picture starts by asking the question "What are we trying to achieve?" The answers are linked to a major plank of government policy Every Child Matters and relate this to broad curriculum aims and a focus on learning.

Every Child Matters outcomes are be healthy, stay safe, enjoy and achieve, make a positive contribution and achieve economic wellbeing. These clearly relate to broad curriculum aims to enable young people to become successful learners, confident individuals and responsible citizens with a focus on learning that teaches knowledge and understanding, skills and positive attitudes and attributes. To some extent it is impossible to argue with these aims. They are like sunny days; universally popular and not controversial. It is the second question in the BIG picture that moves us into the arena of potentially radical and contested change.

The second question

The second question asks, "How do we organise learning?" and the focus is not initially on the subjects that are taught although they are of course an important consideration. One way to begin to answer the second question is to consider four interrelated features of student's learning experience. These are shown diagrammatically as sitting at the vertices of a tetrahedron. If the potential of any of these features remain unexploited the overall structure becomes weak and the organisation of learning is not as successful as it might be.



You can interrogate each feature like this:

For **TIME** ask: when do we teach, for how long do we teach and how often do we teach? This paves the way for using time in different ways from short, frequent classes, to regular immersion activities to special events at times inside and outside the normal school day.

For **PLACE** consider both inside and outside school. How often do students have the opportunity to work in other educational environments - other schools, FE colleges or Universities? What are the opportunities do they have for learning in the workplace or in the wider community. To what extent can they learn at home or through their leisure activities?

For **FACILITIES** consider not only the tools, materials and equipment within your department and across the school but also those in the wider community - FE Colleges, Universities, City Learning Centres, and local companies are usually very willing to collaborate if approached with sufficient lead time and clarity of expectations.

For **EXPERTISE** consider where expertise might be found. You, your teaching colleagues, teaching assistants and technicians are an obvious source but it is not just your subject expertise that might be useful. Your hobbies, leisure pursuits and other interests all contribute to your expertise and can be exploited. Colleagues in other schools and other educational establishments will have expertise that you can use. And there are many in the wider community and the workplace who can make useful contributions. Assembling diverse expertise requires careful planning but the benefits in terms of enhanced learning can be considerable.



And of course as a design & technology teacher you will be thinking about what this might mean for design & technology in the curriculum. So imagine yourself and a colleague sitting in the tetrahedron thinking about your response to the four features and wondering what changes to make. In deciding it is essential to look back at the aims identified in question 1 to ensure that consideration of detail doesn't skew your vision. And you will also need to look at the whole curriculum dimensions that the BIG picture identifies. These are:

- Identity and cultural diversity
- Healthy life styles
- Community participation
- Enterprise
- Global dimension and sustainable development
- Technology and the media
- Creativity and critical thinking

It's not difficult to envisage exciting design & technology activities that relate to these dimensions and contribute successfully to the main aims.

Considering design & technology detail

And it is now that you need to think carefully about the nature of design & technology. You will need to take into account the new structure for the programme of study. Each subject in the curriculum conforms to the same structure listed here.

An importance statement

This outlines the vision for the subject.

Key concepts

These need to be understood in order to deepen and broaden pupils' knowledge, skills and understanding.

Key processes

These are the essential skills and processes that pupils need to learn to make progress.

Range and content

These outline the breadth of the subject on which teachers should draw when teaching the key concepts and key processes.

Curriculum opportunities

These outline the opportunities that are integral to the learning and therefore enhance learner engagement with the concepts, processes and content of the subject.

It is essential to start with the new importance statement which reads as follows:

In design and technology pupils combine practical and technological skills with creative thinking to design and make products and systems that meet human needs. They learn to use current technologies and consider the impact of future technological developments. They learn to think creatively and intervene to improve the quality of life, solving problems as individuals and members of a team. Working in stimulating contexts that provide a range of opportunities and draw on the local ethos, community and wider world, pupils identify needs and opportunities. They respond with ideas, products and systems, challenging expectations where appropriate. They combine practical and intellectual skills with an understanding of aesthetic, technical, cultural, health, social, emotional, economic, industrial and environmental issues. As they do so, they evaluate present and past design and technology, and its uses and effects. Through design and technology pupils develop confidence in using practical skills and become discriminating users of products. They apply their creative thinking and learn to innovate.

Mick Waters and his team have produced the following useful diagram to help you use the importance statement as a starting point for your thinking.



Imagine yourself and colleagues sitting on the centre, inspired by the importance statement. As you look out you eye takes in the key concepts and processes underpinning our subject. Any good design & technology curriculum will enable students to visit these many times over. They are not 'once only tick boxes'. Range and content is different as it clarifies progress through the subject across the key stage so it will be essential to identify what is being taught and monitor coverage against time to ensure breadth, depth and balance. As you look further you come to curriculum opportunities and it is here that you will need to integrate your previous thinking about the about whole curriculum dimensions and TIME, PLACE, FACILITIES and EXPERTISE with the suggested curriculum opportunities to develop a design & technology curriculum that is compelling to the point of being irresistible for the learner. This integrative thinking will not be a simple or quick business. As with any design exercise the nature of the solution that you and your colleagues develop will interact with your perception of the problem and grow as the nature of the problem becomes clearer and the emerging solution engages effectively with the issues revealed. So don't be in a hurry to reach a solution and INSIST on quality time working with colleagues from across the curriculum to carry out this difficult and demanding process. This brings us to Mick's third question "How well are we achieving our aims?"



The third question

It is now that we come up against what many consider to be the *bête noir* of education. Here Mick and his team have been very clever categorising areas of consideration into two main groups – assessment fit for purpose and accountability measures. The accountability measures are particularly interesting in that as well as the usual suspects – to secure attainment and improved standards with further involvement in education, employment or training, it also lists behaviour and attendance, healthy lifestyle choices and civic participation. This implies an interesting addition to the current A* – C mantra. Interesting features of assessment fit for purpose include peer and self assessment, drawing on a wide range of evidence of pupils' learning and giving helpful feedback identifying clear targets for improvement.

Clearly the way you assess student's learning in design & technology will be a very important consideration in any curriculum you develop. I have to come clean and write that I am not impressed with any of the current methods of summative assessment for design & technology. The problem seems to me that they all lean towards "one size fits all" usually justified on the grounds of validity, reliability and teacher demand for a foolproof system. This seems to put the needs and preferences of the student low on the priority list. Students will design in different ways according to the design task in hand and the way they want to approach it. My criteria for a portfolio that accompanies such designing is that it contains only that writing, drawing, modelling, still photos, audio recordings, video recordings, spreadsheet data etc that are necessary for the student to make, justify, enact and evaluate their design decisions. Anything else is, to quote Mike Ive, neat nonsense. And of course the extent of each piece of evidence will be dependent on the task in hand and the student's personal design style. Messy certainly, personalised definitely, useful to the task in hand of course. My vision for assessment is that it is minimally invasive. My ideal view of the impact of assessment is given, by analogy, in this quotation:

Casterbridge was the complement of the rural life around, not its urban opposite. Bees and butterflies in the cornfields at the top of the town, who desired to get to the meads at the bottom, took no circuitous course, but flew straight down High Street without any apparent consciousness that they were travelling strange latitudes."

p. 55 Chapter 9 The Mayor of Casterbridge by Thomas Hardy



If we consider the pupil as the bee or butterfly, their learning as their experiences in a journey across the countryside, then any assessment procedures should have as little impact on the pupil as Casterbridge did on the bee or butterfly.

So there is probably more to do in developing appropriate assessment than in any other area of curriculum development. I know that Mick Waters is very keen for teachers to help with developing the means of assessing the significant features of learning that fall outside the rather narrow GCSE and similar criteria. I think it will be very important for us to develop personalised ways of assessing within the public examination system.

There is no doubt in my mind that design & technology has a crucial role to play in realising the vision of the BIG picture. This will not be achieved without all members of the design & technology teaching community playing their part. As Ken Boston puts it "we must get on with it!"



Ken Boston

Ken Boston the Chief Executive at QCA is in no doubt about the importance of the changes required by Mick's BIG picture:

... critics see education as a winnowing device to sort the wheat from the chaff - a game of winners and losers.

Those who have put this curriculum together have a contrary view:

- of the purpose of education being to give every young person the very best preparation for life
- of maximising and recognising the potential and achievement of each individual
- of bridging the divisions within our society - ethnic, religious, cultural, social, economic, regional, and those divisions which arise from disability
- of education supporting social mobility and the long-term economic security of the nation and its citizens.

Years of international research evidence have demonstrated that a new curriculum precisely along the lines of that now being introduced is the key to continued growth in educational performance for the individual, the school and the nation.

The foundation on which it is built can no longer be seriously questioned: the international jury came in years ago, and it is nationally important that we get on with it.



Embedded links in this article

BIG Picture PDF

http://curriculum.qca.org.uk/uploads/A_big_picture_of_the_curriculum_tcm6-1822.pdf?return=http%3A//curriculum.

Hear and see Mick Waters

http://curriculum.qca.org.uk/organising-your-curriculum/principles_of_curriculum_design/bigpicture.aspx?return=http%3A//curriculum

This article is one of a series available on the Nuffield Secondary D&T website.

www.secondarydandt.org



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For further reading on key issues influencing the teaching of design & technology, see the recently published:

Design & technology for the Next Generation

a collection of provocative pieces written by experts in their field, to stimulate reflection and curriculum innovation.

Available from the educational publishers CliffeCo at

www.dandt-thebook.com