

Design Rules...

John Lee & Rowan Todd from the Centre for Design and Technology Education, Sheffield Hallam University launch this first installment looking at how we teach designing.

Design Rules - or does it ?

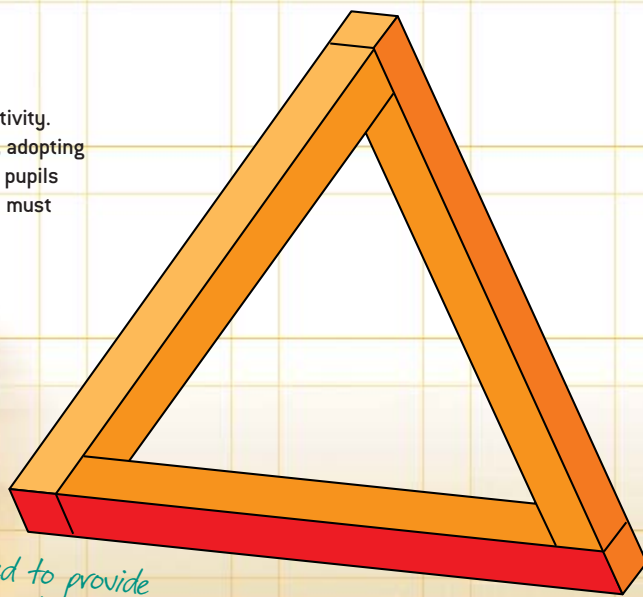
The teaching of designing in schools has been getting a bad press of late! The lack of quality teaching of designing sub-skills has been a regular feature of recent OFSTED reports and is often identified as a contributor to pupil under achievement in design and technology.

This has, for example, provided the impetus for the Key Stage 3 National Strategy, which focuses on the need for teachers to give more attention to the teaching of designing skills, promoting creative thinking and developing pupil autonomy. Teachers are being encouraged to provide contexts in which creativity and innovation can flourish - a potentially risky business with a class of twenty five enthusiastic pupils champing at the bit. Combine this with the intrinsic requirement of teachers to provide structured learning experiences and the result is a tricky balancing act! If we add to this the growing requirement to assess all aspects of pupil progress and performance, then teachers certainly have a challenge on their hands. The conundrum of the 'impossible triangle' springs to mind!

It is easy to understand the temptation to ignore the complexities of teaching designing and promoting creativity. Indeed, it seems many teachers choose to do just that, adopting instead a structured approach to project work in which pupils are effectively provided with a checklist of stages they must 'do' in order to achieve the highest grades.

This is hardly surprising - Design and Technology is a lively and dynamic subject and keeping up with developments is no easy task. Research suggests that the knowledge base of many design and technology teachers does not readily equip them to teach the sub-skills of designing effectively. Rapid changes in the subject, from its earlier craft base means that many teachers are delivering a rather different curriculum from that for which they were originally trained, and of late, professional updating opportunities have been few and far between. It is also clear from discussions with teachers that they need good quality teaching and learning materials to support developments in this area.

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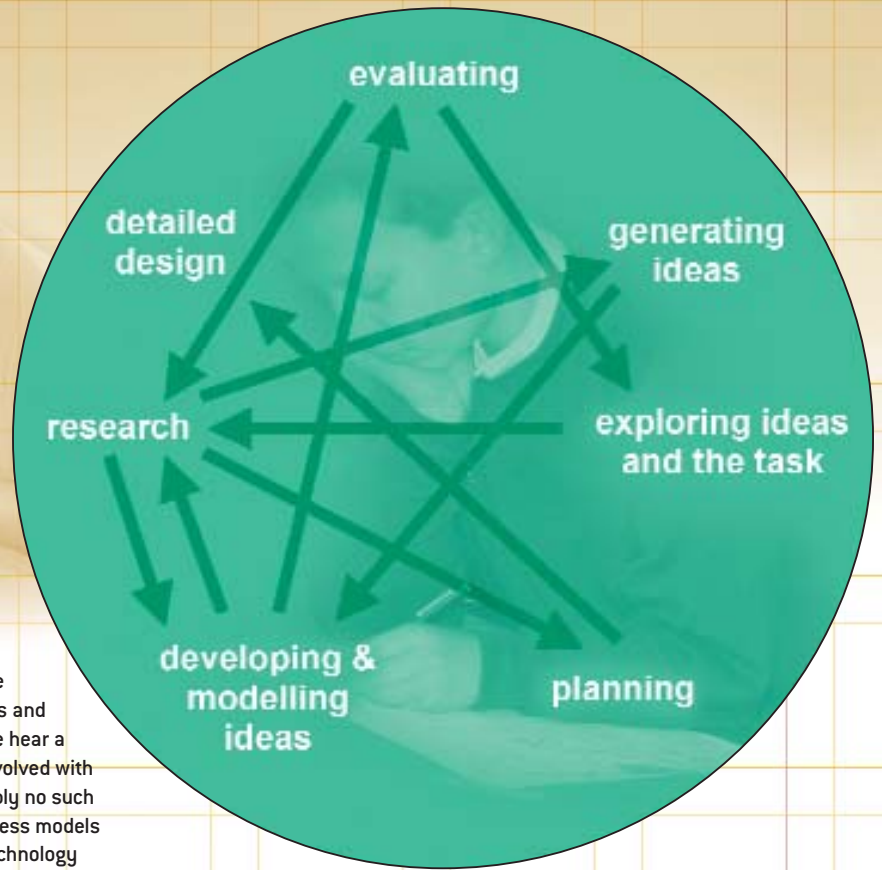


the need to provide structure to learning experiences

the requirement to monitor progress and assess performance



OK?



About Designing

As a starting point, it would be useful to look in more detail at what we understand by designing sub-skills and how they fit together in the process of designing. We hear a lot of talk about the 'design process', but anyone involved with the field of design will recognise that there is probably no such thing as *a design process*. A number of design process models have fallen in and out of favour in the Design and Technology community over the past twenty years with the earliest examples being rather simplistic, linear models, which have since largely been discredited. More recently, building on the work of the Assessment of Performance Unit, several studies acknowledge that the way in which pupils design is a rather more complex, cyclical activity.

In reality, the way a design task is approached will depend on a number of factors - the nature of the problem, the resources available to tackle the problem and the personal approach of the designer will all, to some extent, influence the nature of the process used.

For example, an architectural designer, an engineering designer and a jewellery designer will approach design problems in very different ways, but at some point they may all engage in a number of procedural stages or design functions, similar to the ones shown in the circle above. Reflecting the iterative nature of designing, the order of this engagement may vary and stages are often visited more than once.

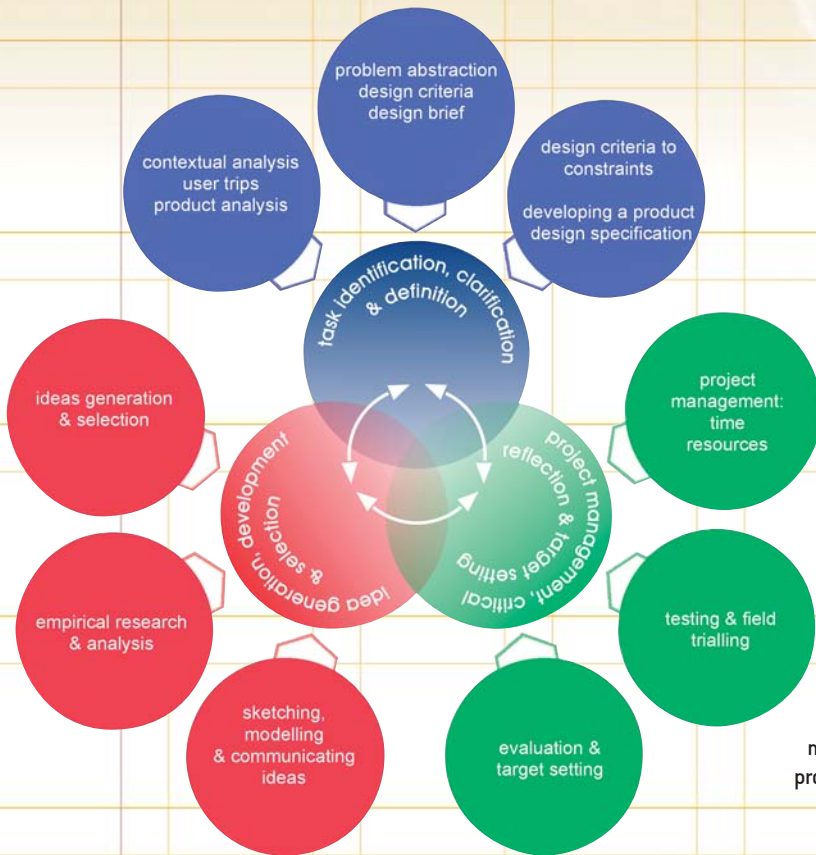
Toolkit for Designing

With this in mind, we have put together a 'toolkit for designing' that provides pupils with a flexible framework, which gives them the opportunity to structure their design activity more effectively. Drawn from a combination of personal experience and a variety of industrial sources, the toolkit reflects aspects of contemporary professional practice. The idea is that pupils can work on the design functions or sub-skills in whatever order they wish.

Ultimately though, they will need to present this work for assessment. To help with this process, we have found the following model to be useful in providing a planning 'touchstone' that allows pupils to organise and give structure to their development portfolio. It reflects the fact that design work generally falls into three broad areas - identifying, clarifying and defining the task; generating, developing and selecting ideas; project management, critical reflection and target setting.

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Design Rules... OK? *continued*



● Identifying, clarifying and defining the task

Pupils should be encouraged to explore design tasks in some detail to establish the precise nature of the problem they are tackling. At first, work in this area will probably be teacher led, with pupils working to given design briefs within constraints established by the teacher. As their studies progress, pupils should be given the opportunity to draw up their own design briefs, establish relevant design criteria and convert these into clear specifications.

This may involve them in gathering information in a variety of ways, for example through product analysis exercises, user trips, focus group interviews etc.

● Generating, developing and selecting ideas.

This involves pupils in the processes of concept generation and selection to produce potential solutions, employing creative techniques to help pupils to think divergently around a problem. When presenting ideas, pupils should be taught to select and apply a range of appropriate drawing, modelling, presentation and other communication methods that clearly expresses their thinking. Developing ideas can be greatly assisted by the use of modelling techniques. Physical or 'sketch' models can be used to verify design decisions in terms of form and function. Computer generated models can also be used to develop and test ideas.

Empirical research and analysis enables pupils to find out more about the materials and processes that may be used to produce their ideas.

● Project management, critical reflection and target setting

Work in this area includes planning and reviewing progress. Pupils need to work out what needs to be done and in what order. This needs to be done in ways that allow them to remain flexible and responsive to changing situations that may arise as the project progresses.

Pupils also need to make decisions about aspects of their designs as they develop and reflect on the strengths and weaknesses of their work. Evaluation skills can also be developed through analysis of existing products and the work of other designers.

Where to next?

In a series of articles to be published in News & Views over the next few issues, we will be looking at these three areas in greater detail and introducing you to some of the strategies from the toolkit. We hope you find it useful!