

CREATIVITY THROUGH DESIGN & TECHNOLOGY

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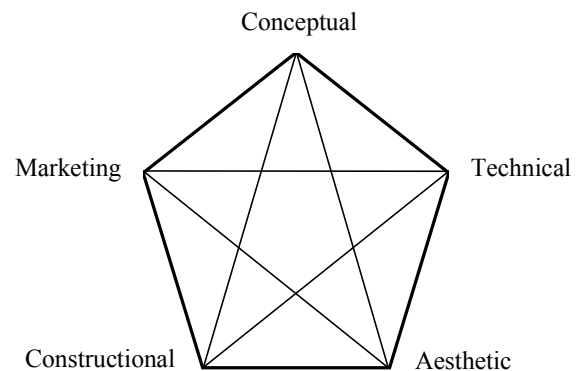
The talk will begin by discussing the definition of creativity as outlined in the report “*All our futures: Creativity, culture and education*” (Robinson, 1999) which argues that a national strategy for creative and cultural education is essential to unlock the potential of every young person. The report saw creativity in terms of the task in hand as having four features:

- using imagination
- pursuing purposes
- being original
- being of value

It is of course possible for a number of ‘subjects’ in the school curriculum to teach pupils to respond to tasks that engage with these four features – writing an essay or poem in English, composing a tune or song in music, painting a picture or making a sculpture in art, developing an explanation in science and designing and making a useful artefact in design & technology (often called simply technology in many countries).

In this talk I will concentrate on being creative through designing and making useful artefacts. I consider this a unique sphere of creative activity in which pupils ‘intervene in the made world’ (Department for Education and Science, 1988). There is no doubt that literature, the visual arts and music provide stimulus for the mind and the senses which make living in the world more pleasurable and profound. But they do not intervene in the made world in the same way as design & technology. Whereas science requires creativity to reveal and explain what is, design & technology is concerned with what might be and utilises the creativity in designing making to bring into existence items of use hitherto unknown. Gunter Rhopol captures this well writing about engineering “He (the engineer) has to conceive of a concrete object which does not yet exist, and he has to determine spatial and temporal details which cannot yet be observed, but will have to be created by the designing and manufacturing process” (Rhopol, 1997). An essential feature of these items is that they are functional across a wide spectrum of functionalities – working technically, appealing aesthetically, meeting economic constraints, avoiding harm to the environment, being socially acceptable and responding to users’ needs. It is through the act of designing

that this wide range of requirements is met. In thinking about designing by pupils in schools I have developed a simplified description of the design decisions that pupils may be required to make (Barlex, 2007a). It can be shown diagrammatically as follows.



The five key areas of design decision are: *conceptual* (overall purpose of the design, the sort of product that it will be), *technical* (how the design will work), *aesthetic* (what the design will look like), *constructional* (how the design will be put together) and *marketing* (who the design is for, where it will be used, how it will be sold). The interdependence of these areas is an important feature of design decisions; hence the lines connect each vertex of the pentagon to all the other vertices. A change of decision within one area will affect some if not all of design decisions that are made within the others. Usually the teacher identifies the sort of product the pupils will be designing and making. This makes it very difficult for pupils to engage in conceptual design particularly if they are required to make what they have designed. But even if the type of product is identified for the pupils there are still many opportunities for making design decisions in the other areas.

I will then describe a not untypical designing and making journey that could be carried out by a pupil at school as they grow from being a child aged 5 to a young person aged 14 years and describe the creativity embedded in this designing and making by considering the design decisions the pupil has

made in terms of the design decision framework noted above. Quite deliberately I will not consider artefacts involving food or textiles as although the successful use of these materials features in design & technology in England this is not the case in most other countries. The items considered will come from the work of the Nuffield Primary Design & Technology Project and the Design & Technology Association's Modernising the Curriculum Initiative. The nature of the artefacts changes as the pupil becomes more adept at designing and making. Those produced in the early years use easy to work materials and simple construction techniques. As the pupil makes progress the nature and purpose of the artefacts produced become more sophisticated although in all cases the pupil is making design decisions in response to meeting the needs and wants of an identified user.

Against the back drop of this journey I will consider the classroom conditions that are required for pupils to be creative through designing and making and the different roles that the teacher has to take to support this activity in ways that leave ownership of the endeavour with the pupil yet manage risks inherent in any creative activity. This consideration will be based on the research and development carried out jointly by the Qualifications and Curriculum Authority (QCA) and the Nuffield Design & Technology Project (Barlex, 2003). I will then consider the extent to which pupils can be creative through designing WITHOUT making and how such activity can be used to develop collaborative creativity. This will be based on the work of the Young Foresight Project (Barlex, 2007b). Finally

I will describe and discuss the approach being developed by the Design & Technology Association's Digital Design & Technology initiative to give pupils a voice in deciding what they will design & make.

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