

# CDT and Very Able Pupils

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The main issue that we have to contend with in considering Very Able Pupils is quite clear. How do we attract them to the subject? By definition, a very able pupil is talented in a number of areas and the pressures are increased by society's view of the practical arts and industry as career alternatives. Too many of our very able pupils see Medicine, Law, 'The City', Commerce, The Classics and the Pure Sciences as the route to respectability. Unless this issue can be resolved and the image of Designing and its financial incentives improved, the high-flyers are likely to continue to beat a path to Oxbridge and maintain the status-quo. Thus we must ask what CDT has to offer them and, conversely, what have they to offer in return. A second question is simply answered. If we as a trading nation are to hold our own in the open market, then we need our brightest brains to become our Designers and 'Captains of Industry'. In addition, those who move into other professions such as Banking will benefit from an understanding a Design and related areas when attempting to appreciate the needs of the budding entrepreneur.

CDT has much to offer very able pupils. The opportunity for experimentation, initiative; 'imagineering', resolving real issues, putting theory into practice, and developing individual expertise of a unique nature, offers a real challenge to the intellect. The broadening effect of this type of experiential learning has a pronounced effect on the confidence of the individual, a factor which is not necessarily a companion of ability. Indeed, the spoon-fed very able pupil is often thrown by the request to 'find out' or 'experiment', having been used to the rote learning cycle of listen, remember, regurgitate. This can predominate in a classical traditional education system in which many of our very able pupils find themselves, deprived of the opportunity to think divergently or innovatively.

How then can these issues be overcome? Firstly, in order to exploit the full potential of the very able pupil, we need a broad-minded divergent-thinking very able teacher.

Because of the wide-ranging nature of the subjects within the CDT umbrella, it is critical that a well-organised department should organise its teaching

resources to cover a wide range of skills. There are massive INSET implications involved to enable aspects of CDT to be covered which were absent in the old single-material approach. The GCSE CDT umbrella allows for a department to follow a Design approach within the limits of existing expertise, be it Technology, Craft or Design biased. More broadly-based departments are gravitating towards the CDT Design options which are now appearing. These have the same aims and assessment objectives as the other CDT options, but allow for a greater flexibility of approach in areas such as Product Design, Furniture, and Fashion Design (as in the NEA mature students GCSE syllabus for example).

Very able pupils have a greater capacity for storing, manipulating and utilising information. Given the opportunity, they are more likely to use initiative, to think imaginatively and work logically through a series of related issues toward the solution to a problem. It is the responsibility of the CDT department to enable this to occur. George Hicks, the Staff Inspector for CDT, wrote in 1983<sup>1</sup>

'Teaching facts is one thing; teaching pupils in a way they can apply facts is another, but providing learning opportunities which encourage pupils to use information naturally when handling uncertainty in a manner which results in capability is a challenge of a different kind'.

How can these learning opportunities be availed? In a recent article,<sup>2</sup> I made the point that 'life is not subject specific and increasingly neither is work'. Employers I have spoken to are enthusiastic about the prospect of a thinking person with the ability to respond to change.

In 'Making Changes', Tony Rogers and Keith Gentle<sup>3</sup> say:

'When designing and making, the 'problems' to be solved can still be too easily identified with the concerns of teachers. The issues, ideas, interests and events which are part of the child's life and living are seldom brought into the purview of school and education, and we are reminded that school is not part of, or a preparation for, the 'real world'. In this world, there is an interaction

of 'self' with others, place, community and culture'.

Contact with the 'real world' figures very highly in what we have begun to do at King Edward's School, and I would like to illustrate this with some examples of work from King Edward's School.

## A) The Avery's Project

This was a pilot scheme for King Edwards School and came about through direct involvement of Avery's, a Birmingham company who manufacture weighing devices, in the funding of our proposed new Design Centre. Early discussions with Tony Kirkman, the Assistant Managing Director, gave rise to the project 'Kitchen Scales for the Blind' and preliminary talks with the staff and students at the Queen Alexandra College for blind and partially-sighted people (a large proportion of registered blind people are in fact partially-sighted) showed that there was nothing on the market specifically for blind people.

Avery's seconded an engineer, Alan Kitebay, to the project and he acted as our link man within the company, setting up meeting with specialists in software engineering and electronics as well as a 'Full Design Team meeting' at which the 5 boys involved with the project presented their ideas.

The project has involved the boys in teamwork, each one having a specific function within the 'Company' structure. They were involved in role-playing covering marketing, production, costing and design.

Other departments which have become involved within the school include Science, through Electronics, and Maths, through Computing.

The boys have become aware of the social problems associated with 'blindness' having worked with blind students at (i) The Queen Alexandra College and (ii) The City of Birmingham Rehabilitation Centre. We have had contacts with the Royal National Institute for the Blind and are hoping to put forward a product proposal which they may market.

Avery's have committed themselves to supplying the components and expertise to develop the product to a 'stand alone prototype' and thereafter to supply parts

to be assembled 'by the blind for the blind' in the rehabilitation workshops.

Birmingham University have recently been drawn into the equation to help with software and printed circuit board development.

The boys reached the last 20 of over 200 entries in the Schools Design Prize. They were commended and received £25.00 each and a similar sum for the school.

I am not pretending this is an easy option. It is very time consuming but the end results are well worth the effort.

**B) BLOCKED** — a board game for 2-6 players:

This project came out of pupils' personal interest and recognition of a gap in the market. The boys won their age group in the Schools Design Prize (under 14) and the game is at present with a leading games manufacturer with a view to production.

**IN CONCLUSION**, the objective of this seminar was:

- a) to define the issues associated with very able pupils in CDT;
- b) to illustrate some possible solutions;
- c) to offer suggestions for further development.

The APU Report<sup>4</sup> page 20, 4.14 states

'Capability in Design and Technology involves a complex integration of processes, concepts, knowledge and skills. The possession or otherwise of individual bits of knowledge or skill is not in itself any indication of design and technological capability. It is efficient use of relevant (task-related)

knowledge and skills, and the ability to recognise and respond to the need to extend them that indicates genuine capability'.

It has already been pointed out that very able pupils are more than capable of individual initiatives and we must exploit all developments which further this end. For example, distance learning, computer data bases, interactive video, all allow these qualities to be extended whilst at the same time relieving the Project Manager (teacher) of tasks of repetition and skill endorsement enabling assessment to be thoroughly carried out and contacts to be made and developed. Very able pupils' and teachers' capacity can be further extended by bringing in outside influences, eg. the Institution of Electrical Engineers — 'Project Uncle' — will send qualified personnel into school to help manage specialised projects.

The Smallpiece Trust runs in-house and in-school courses as well as a summer school during which pupils are subjected to intensive problem-solving exercises related directly to production, materials and cost factors.

The Engineering Council, through its 'Opening Windows on Engineering' project, will link schools with a young engineer who will talk about their day to day work.

The acceptance of these external influences extends the 'team' and adds new dimensions to the work in the department. Parents have many skills to offer and they need not be practical to give useful assistance in a Design Project, for example they could be

administrative and/or management service skills. Other contributors may include an Artist or Designer or Craftsperson in residence. Such a person will help to develop intellectual and aesthetic sensitivity in very able pupils and teach appropriate skills as the pupil's project dictates.

Experiences which place Design in context and put pupils in the position of having to resolve non-design issues before progress can be made, such as local opposition to planning proposals for a new play area in the 'Southlands' project developed by David Dickinson\* and colleagues in Manchester, need to be exploited.

There are inevitably problems with proposals such as these as no two schools are alike. However, there are areas of common interest and I have singled out four which need further discussion: (i) industry links; (ii) computers (CAD, CAM, etc.); (iii) cross-curricular activity and (iv) time management.

**References**

1. G. Hicks, Assessment of Performance Newsletter, No. 4, 1983.
2. R. Wiley, King Edward's School and Design Education, View 32, Summer 1987.
3. A. Rogers and K. Gentle, 'Making Changes', Studies in Design Education, Craft & Technology, Winter 1986.
4. APU: 'Design & Technological Activity: A Framework for Assessment'. HMSO 1987.

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