

Primary School CDT:

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Context: (Neil Nuckley)

It would be helpful initially to ask why we should engage in an activity such as CDT in the primary school. It might suffice merely to say 'Why not?' CDT exists as a discipline within the secondary phase; primary schools are preparing children for 'the big school', therefore why not prepare them with a helping of CDT before they reach secondary school? There are a number of misconceptions in this line of argument.

Firstly, many people contend that the primary school should not be seen just as a grounding for the secondary school. For example,

'the primary years ought also to be seen as worthwhile in themselves'.¹

Cockcroft was suggesting here that the activities which take place within the primary classroom need not be compromised in order to get children ready for the transition between primary and secondary. Secondly, we must ask ourselves, is CDT really wanted by primary practitioners? It is naive to think that teachers of younger children look in awe at a good deal of the secondary CDT practice. Much of it, they might contend, is epitomised by its

irrelevance, poor standards and lack of imagination. The tendency to be over-concerned with activities which stress skills and processes, convergent thinking and finding reasons not to make (because of the Health and Safety at Work Act, low ability pupils, lack of facilities, etc.) lead many to believe that this type of approach generates inflexible attitudes and gives very little scope for creativity. CDT may not be a suitable model for the primary teacher.

Perhaps what is required is to look away from the general secondary concept and approach the task from a more fundamental viewpoint. Many educationalists have argued for a practical approach to the acquisition of concepts in the early stages. Modelling as a means of formulating ideas has long been held as a valuable means to understanding. Bruce Archer once talked about the 3Rs in education — he wasn't the first. But Archer's² view was significantly different. He argued that reading and writing were merely different forms of the same process, therefore you could substitute another R for one of these. He chose to insert *wroughting*. To many, this might stimulate images of large hairy-armed blacksmiths manipulating red-hot steel.

It was seen by Archer, though, as more than the physical application of effort. His view was a much more subtle, but nevertheless all-encompassing skill, embracing a whole range of mental and physical activities applied to a task.

I would content that CDT in its secondary form is not appropriate to the primary sector. The feeling that primary teachers already have enough to do without the addition of a new 'subject' is very real. We need to respect this viewpoint and establish or improve upon a general approach to tasks which firmly places making, doing and using activities in the primary context. Any teacher who is genuinely striving to improve effectiveness in the classroom will constantly be looking for methods which will enhance the acquisition of concepts, skills, attitudes, etc., in a powerful way — making, doing and using will do this in mathematics as Cockcroft argued:³

'for most children, practical work provides the most effective means by which understanding of mathematics develop'.

I believe the same is true in other academic subject areas.

So within the context of the primary school, where very often 'subjects' are taught within the framework of topics or themes, practical activities will play their part in the process of learning and not merely as an extra limb stuck onto an already overstretched body. Designing and Making should be vital parts of the integrated whole.

Design is already central to the spirit of many primary schools where the concepts of 'activity-based learning'⁴ and 'learning by discovery' (Plowden 1967)⁵ are long established. What we now require is a more systematic approach to effective learning whereby continuity and progression are guaranteed. It must be seen that 'design-related activities' (Design Council Report)⁶ do not merely stimulate children to *think* — *thinking* and *learning* arise from *doing*. If children are encouraged to *think* and *do* from an early age, then the 3 year olds of the 1980s will be the *capable* citizens of the 21st Century.

It is important to foster team work at an early age



Implementation: (Michelle Wolman)
During my year as Teacher Fellow at Edge Hill College of Higher Education in Primary School Design Education, I was attached to eighteen Sefton primary schools. The exact nature of my visits (on average, five half-days) and the planning of topics was discussed prior to my attachment.

It was important to build upon the classteachers' confidence and the list of topics reflected the degree of apprehension regarding 'technology'.

- * design activities in the nursery school
- * discovering the seashore
- * dragons
- * parks and playgrounds
- * fairgrounds
- * castles, the Romans
- * energy
- * communication
- * Eskimos
- * rivers and mountains
- * transport/vehicles/machines
- * milk
- * structures and movement

I propose to outline four projects across the age ranges, stressing the cross-curricular nature of the design-related activities.

1) Design-related activities in a nursey school:

Working with six children at a time, I encouraged them to explore various junk materials plus wood (balsa, jelutong, ramin), sandpaper and simple tools. Junior hacksaws were held in both hands and wood was firmly clamped to the table. Models of animals, mum dad and teacher were predominant. Few models 'worked' but several cars and aeroplanes had turning wheels.

Using 'touch' to explore the materials and learning about safety when using tools provided many opportunities for language development.

Even at this simple level the children were experiencing discovery, thinking, investigation, decion-making, problem-solving, construction, evaluation and modification.

2) Top infants (6 to 7 years old): Dragons

The vertically grouped class were involved in a general topic on China. I worked within the class with eight top infants.

A story about dragons sparked off interest in designing and making dragons masks and models of dragons. The planning of the masks included sketching 'designs' and exploring colour, texture and strength of paper. Drawing the side view of the dragon's head proved difficult as was transferring this 'plan' into a mask.

On completion of the masks the children embarked on models of dragons with 'moving' parts, including:

- a) moving jaws/breathing fire
- b) flapping wings
- c) on wheels

Cutting and joining materials improved manipulative skills and the classteacher demanded a high standard in the aesthetic appearance of the models. Creative and descriptive written work, art work and language development were an integral part of the design work. The children's sense of achievement and delight was obvious.

Testing the end product, in this case a floating platform, can be a capturing experience



**3) Lower juniors (7 to 9 year old):
Fairgrounds**

A 'Look and Read' television programme stimulated this project in five schools. Several classes also visited Southport Fair. Four classes and their teacher participated fully. In one case, I worked with six children.

The children required time to examine some working models and explore the use of different sources of power (elastic bands, falling weights, motors). Various solutions were produced in response to the challenge:

Design and make a fairground ride using

- a) the energy stored in twisted elastic, or
- b) the energy stored in a falling weight, including merry-go-rounds, roller-coasters and big wheels.

Children worked in small groups. Success was important and great encouragement was given in making the models work. Many other models, for example, swing boats, Noah's Ark and a

motorised aeroplane ride, were produced.

Teachers noticed high motivation and the development of manipulative skills, mathematics, language, co-operation and decision-making. The children's designs, written material and working models enhanced the display of art work and creative writing.

**4) Upper juniors (9 to 11 years old):
Vehicles/Transport**

These topics were explored in 4 classes. One effective starting point was the use of Technical Lego. Children quickly designed, built and powered vehicles. Another stimulus was a television programme on different modes of transport.

Each class was directed in the construction of a basic chassis (using the Jinks' Technique).⁷ Fixing axles and wheels, powering the vehicle, designing body shells and constructing background street scene allowed the children to develop their

own ideas. The relevance of planning, testing and evaluation was stressed. Groups of children were encouraged to discuss problems with their classmates and importance was placed on making their models work better and/or look better.

Again, there was evidence of high motivation and the development of various skills.

References

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4. Board of Education, 'Primary Education', London 1931.
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6. Design Council, 'Design in Primary Education', 1987.
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Primary pupils making working models

