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Pocklington School

Conceiving, Planning and Making

Introduction

Pocklington School is an Independent boys' Day/Boarding School. The Design Centre, which opened in January 1970, brought together under one roof an existing Art Department and a new Technical Unit. From the outset it was decided that the Centre should develop an integrated approach rather than separate art and technical courses and this has led to the development of a basic course which aims to challenge intelligence and appeal to creative and aesthetic instincts. The course as developed at present is followed by all boys in the 11+ to 13+ age range. (Approximately 60-100 boys in each year group).

All boys in Forms I, II and III are time-tabled to spend two double periods each week in the Centre, one on the Art side and the other on the Technical in groups of twenty. The distribution varies from time to time and a group may spend all four periods in one place, or two groups may combine together for a joint session if a particular phase of their work demands it.

In the IVth form boys may opt to take Art, Pottery or Design Technology as 'O' level subjects, and continue on to 'A' level in the VIth form taking the Oxford and Cambridge Art exam.

The Design Centre is situated in a new single storey prefabricated building with an 'H' shaped open plan arrangement of seven main teaching areas, and has a total ground area of 6,750 sq. ft. In all the early planning of the enterprise there was the fullest consultation between the School's Architect and ourselves, which allowed us to have complete control of the ground plan, provision and lay out of services, design of furniture and fittings, and selection of equipment. This freedom has resulted in a building that has yet to limit our activities, although in our work we naturally concentrate on a fewer number of activities at any moment than would be possible in a large Design Complex. However, we do not feel that this is particularly disadvantageous.

The decision to integrate the main outline of the work has demanded a close collaboration between the teaching staff. Naturally the greater the number of people involved in a scheme, the greater the difficulties involved in ensuring common objectives, and the co-ordinated activity that enables a single topic to be pursued in a number of different areas. In the light of our experience with part-time teachers, students and schemes with local Art and Teacher Training Colleges, we feel that the scale of enterprise is of vital importance in the success of a Design Department. What we may lose in extensive facilities is more than compensated for by increased cohesion within the unit.

The Approach

Our concern is primarily with activity, encompassing the complete spectrum from the arousing of curiosity in the natural and man-made worlds – the process of data gathering: speculation: and the physical wroughting involved in the making of artefacts. We seek to do this through an exciting and structured course which is itself 'geared' to the age and experience of the children. Children react well to attractive ideas and we try to build on their interests in a way that will extend them (rather than capitulating to them) for at this age they are not necessarily the best judge of their own development.

The whole course is carefully structured so that there is a progressive build-up of the child's experience of investigatory (data gathering) activity, speculation and creative thought and fabrication skills. There is not space here to go into a detailed description of the way in which the course is organised but we shall mention some aspects which we feel are particularly important.

To our mind 'design awareness' must preclude 'design activity' and so we place great emphasis on data gathering. This provides the 'input' on which the mind can feed. By a variety of exercises which involve the drawing, painting and modelling of a whole range of natural forms (shells, seed heads, people, creatures, plants, etc.) and man-made objects (every-day items such as furniture, mechanisms, tools and the environment), the child develops his awareness of proportion, structure, technical ideas and prior art. Ingenious and creative ideas do not occur in a vacuum but are a personal synthesis and association of elements of past experience. The transition from the area of 'design awareness' to that of 'design activity' is achieved through the process of speculation. The ability to extemporise or think in a divergent manner is at the root of creativity and innovation. Thus, building from the experience of the data gathering stage, a child moves on to develop the ability to produce designs to meet all manner of given or self-motivated specifications. Technical ingenuity is successfully fostered in children of this stage through posing problems that simultaneously excite the sense of form and structure, contain a mechanical element and demand practical realisation.

Now, the generation of creative ideas can only be effective if the ability to express them receives equal attention. From the outset of our course a child learns to express himself through sketches, drawings, etc. appropriate to the work in hand. Observational and analytical drawing, for example, are of central importance in the 'data gathering' phase as they contribute so much to the development of the child's sense of form and structure. Thus sketch designing grows naturally from the 'data gathering' phase as a method of expressing new, creative ideas. However, in many situations a drawing is neither feasible nor appropriate and a mock-up in three dimensions is the only way in which an individual can effectively express his ideas. A mock-up is essentially a 3D sketch and the emphasis is on presenting the idea for subsequent comment and

rationalisation. Once this first statement has been made the child can go on to consider the practical details of materials and craft processes and may need specific exercises, demonstrations and further models to assist in this. Whenever workshop drawings are needed the emphasis is always on presenting the information quickly and accurately rather than on formal drawing techniques.

We have found the development of conceptional drawing skill to be of particular importance. By this we mean the ability to first form and then to present a mental idea consisting of several 3D forms interlocking and interpenetrating each other. This sort of drawing skill is quite different from the usual observational and analytical drawing in which the 'object' is already there to be seen. For when something new is conceived it always starts its life as a mental picture in the mind of the designer and it is vital that he is able to explore and record a rapid succession of images as his ideas develop.

We concentrate on situations of interpenetration (the slotting, interlocking, sliding, turning and moving of parts) because it is fundamental in the design of artifacts and leads to an appreciation of basic mechanical actions.

Technical concepts as such are treated intuitively in the early part of the course and are introduced and disucssed at the moment at which they can be seen to advance and improve the performance of the idea being considered. Later on, when topics such as levers and elementary structures are needed, they are introduced through simple exercises that concentrate on qualitative understanding of key ideas rather than on quantitative text book knowledge.

Thus we feel that the child needs a disciplined and ordered series of experiences. His imagination must be fed by direct observational drawing and followed by analytical studies which will deepen his intuitive awareness of colour, texture, structural form and mechanical ideas. It is from these sources that his subsequent ideas will grow. He will need periods of craft instruction and the experience of working with materials. Technical problems are analysed in the same way, treating underlying concepts in an intuitive and the qualitative manner. We feel that it is vital that the work maintains its excitement at every stage, for the richest learning experiences occur when all these factors act together simultaneously as complementary parts.

The Work

The present scheme of work reflects the way in which the course has evolved in the eight years since the Centre opened. The demands on the school time-table in the fourth and fifth forms meant that this integrated design course began by being limited to years I, II and III. We have illustrated our approach to the teaching of design with examples of some of the work from the 11 to 13 age range. Beyond the third year our teaching has been aimed at producing boys who are fluent in drawing and modelling techniques and who are able to respond imaginatively to demands on their ingenuity, aesthetic and emotional sensibility and craft skills. Boys who have followed this course have gone on to careers in Architecture, Design Engineering, Graphic Design, Television Design or Teaching. We have yet to develop fully the engineering side of this course but we anticipate that this aspect will be rectified as we develop the 'O' and 'A' level design option.

We have a strong interest in architectural and structural studies and this had led to work on folding and easily transportable small buildings, kinetic and pneumatic sculpture which require further exploration of control and construction. The final results of this work range from a green-house for the Biology Department, a large pneumatic exhibition dome and the damming of the local stream with a membrane dam. Specifically technical projects have ranged from electronics to fluidic control and to projects specifically related to Intermediate Technology and the developing countries. One project – an idea for an oscillating wind pump – won the 1976 BBC TV 'Young Scientists of the Year' award.

The integration that has been achieved in the first three years between art, craft and technology has been described in 'Studies in Design Education and Craft' Vol. 5, No. 2 1973; and in 'School Technology in Action' edited by A.R. Marshall, EUP (and Open University) 1974. A more detailed account of the second year of the course is contained in 'Design in General Education' to be published by the Design Council in May this year.

First Form: Age 11+

Project 1 Tessellation Tile Design

The first stages of this project are concerned with exploring pattern both geometrically using templates, and more freely with pastel. These explorations are combined and extended in the devising of individual tessellation patterns in pastel which are subsequently drawn accurately and become the workshop drawing. The design is cut out of plywood with a coping saw and the final finishing is a separate colour exercise in itself.

Project 2 Ballistic Missile Devices

This first metalwork exercise incorporates an introduction to mechanical ideas such as rotating and sliding parts, suspension, steering, and where possible rubber band operation. The stimulus material ranges from historical illustrations, film and photographs of large scale civil engineering activity.

Project 3 Totem

At one level this is a second woodworking exercise which introduces the child to marking out operations and the use of tennon saw and chisel. At another level it is an opportunity to work in stylised and abstract form and pattern.

Second Form: Age 12+

Project 4 Decorative Design and Jewellery
A wide ranging project which starts with objective and analytical drawing of natural forms. These drawings are used as data for the design of etched or enamelled medallions, wire sculpture or resin plaques.

Project 5 Interlocking Forms: Exploration of Space, Volume, and the Slotting Together of Parts
We regard this as a very important and fundamental exercise as it is primarily concerned with the organisation of proportion, structure and the interpenetration of forms.

Project 6 Polyester Resin Mats
Further craft activity and experience of materials that makes further use of the 'data' gathered in the preliminary part of Project 4.

Third Form: Age 13+

Project 7 Combined Art, Craft and Technical Project
This project starts with the study and modelling of crabs, beetles, etc., investigates the mechanical behaviour of articulated limbs and culminates in workshop craft activity.

Project 8 Ceramics
A variety of experiences in clay.

Project 9 Craft Work
A range of woodwork and metalwork which is always preceded by an appropriate data gathering and mock-up activity.

Project 10 Technical Work
Specifically technical investigations have, on occasions, been conducted into basic structural principles and the principles of flight.

Graphic Work
Great emphasis is placed on acquiring a proficiency in drawing techniques and graphic expression at all ages.

Advanced Technical Projects
This activity is undertaken as part of the Sixth Form General Studies Course and during out-of-school time.