

An Integrated Art Workshop Curriculum Innovation: Art in a Professional Course of Teacher Education

John Lancaster

St. Mary's College of Education, Cheltenham

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Introduction

In this paper the writer describes a curriculum innovation that he directed at St Mary's College — a constituent college of education of the University of Bristol — in the 1971–1972 academic session, with a group of first year students who were training to teach in first schools.* The assumption underlying the experiment was that empirical innovation in the teaching/learning situation is absolutely crucial to the initiation of new ideas and ideals; the development of these factors; and the promotion of educational change. Indeed, it was and still is the writer's belief that the most vital issues involved in this process are acknowledged to be: practise in practice and not simply a study of unrelated theory; rational and lateral thinking in the creative process; self-determination; personal responsibility; direct involvement and active decision-making. In view of this, therefore, it appeared important that *free-activity* — defined by the writer as activity which is selected and carefully controlled by the person or persons involved, not simply unstructured involvement or what is often termed lightly as free expression, *experimentation* and *individual expression* should be balanced carefully with *instruction* in order to maximize growth potential in a flexibly-conceived, integrated learning workshop where diagnostic and practical skills would be juxtaposed with social interaction in stimulating personal understanding and development. In other words, that the more traditional form of teaching situation in which the teacher is mentor, leader and activator of pre-conceived programmes would be replaced by an 'open classroom' situation in which the participants, both staff and students, would create a rather

* A first school is one for children between the ages of five and nine years. It is concerned with primary education and is gradually superseding infant and junior schools.

special, integrated learning ethos. This would allow for flexibility of involvement in teaching/learning situations, group discussions, visits and practical work.

The innovation was concerned with the role of visual education in the integrated classroom in which the most crucial factor is the integration of learning experiences — a factor that many students and even some experienced teachers have difficulty in comprehending — and it was designed in such a way that the participants would consider Art as the core subject in all their learning experiences. Educational philosophies and curricular strategies relevant to work of an integrated nature were profoundly important, as were basic, pragmatic considerations pertinent to the successful implementation of integrated learning concepts at classroom level. Because of this, a great deal of attention was given to the design of the particular integrated learning environment; to the actual design and arrangement of first school classrooms; to the organisation of resource and visual aid materials; as well as to the planning of curricular studies themes in which art, science, mathematics, the language arts (a most apt expression applied by American educationists to the arts of literary expression) and other areas of study are linked.² Interaction within the group tended to foster project work in which traditional subject boundaries were crossed and re-crossed as the participants experienced learning situations similar to those of the integrated day classroom in primary schools.

The innovation

This educational innovation, then, formed part of a professional course of educational studies. The writer was assisted by a team of tutors comprised of lecturers in art, science, mathematics and education. Its programme consisted of a balance of practical work, seminars, observations, lectures and written

studies in an attempt to more realistically relate practice with theory. Members of the group also worked with children from local schools who came into the college for short periods throughout the year, and as many as possible carried out integrated studies in the summer term when they were undertaking a period of school practice lasting four weeks, but this depended upon favourable conditions and teacher attitudes: factors that tended to vary.

The participating team

A total of forty students participated in this experimental course — a number that was rather difficult to accommodate in the available studio space of the Department of Visual Studies* — and yet the actual size of the group tended to stimulate and sustain a lively ethos, although it also inhibited the quieter members during discussion sessions when they were over-shadowed by the more vocal students. One shy participant noted in her personal diary** that she had '...felt it was not worth making an effort...' and such statements were invaluable when children's behaviour, response and classroom interaction were considered in relation to Spratt's³ discussions on this subject. It was apparent that the wide-ranging experiences, interests and individual expertise of the participants contributed greatly while the subsequent feedback through discussion and journal commentaries tended to be much greater than would have been possible with a smaller group. This factor, however, is disputed by Abercrombie,⁴ Collier⁵ and Oeser⁶ in their studies on this subject.

Although the physical conditions were cramped and the time table allotment of two

hours contact time each week was an uncomfortable hurdle, the writer, noting Michael Young's maxim that 'Research should be married to innovation'⁷ considered it important to proceed with the experiment in an attempt to analyse its effectiveness as an aspect of professional training and to try to determine its usefulness as a possible springboard for the planning of future courses in art education.

The integrated art workshop

The idea arose from discussions by tutors in the University School of Education and Area Training Organization regarding the restructuring of the Certificate of Education course within a unit system, and it was thought to be a useful preliminary exercise before curriculum strategies were rationalised. It was hoped that if the proposals of the James Committee into Teacher Education⁸ were implemented they would not seriously affect any new 'First School' courses which the College might wish to mount in 1974.

In the early stages of planning the writer decided, in consultation with other tutors, that the curriculum innovation should take the form of an *Integrated Art Workshop* in which the participants would be concerned primarily with the role of art in integrated learning situations. This would necessitate their coming to terms with underlying educational philosophies and teaching/learning strategies appropriate to the experiment for it was felt that many of the students would, in all probability, teach in *integrated day* or *team teaching* situations at some stage in their careers. In view of the increasing practice of such methods in the schools, it was also considered important that they

* Visual Studies is the name given to the art/craft department in this college and embraces painting, graphics, sculpture, ceramics, textiles, art history and art education.

** Each participant kept a personal journal in which she noted personal comments, ideas, criticisms and discussion points and kept a week-by-week account of her own involvements.

should be allowed numerous opportunities to experience some integrating forms of learning in their period of initial teacher education by being actively involved in a carefully structured, integrated curriculum experiment, and that some form of assessment should be made to try to determine its value in the training of 'First School' teachers.

Experimental research

In the opening chapter of his book *Innovation and Research in Education*, Young notes the value of an experimental approach to curriculum research where a deliberate change is made and its effects observed.⁹ He says:

Where change is deliberate there is a better chance than with a survey of investigating, not differences between researchers, but the different effects of a single researcher upon different groups of subjects.¹⁰

Although this particular study could not be defined as research, but rather an experiment or innovation, the implication was that the participants themselves would benefit, and that it would permit them to see whether this method would, in practice, be 'as desirable as it may sound in theory. Innovators may then more readily be able to persuade people to co-operate'¹¹ no more so, according to Young, than in the field of education where institutions are deliberately planned. But the writer was aware of the difficulties involved in actual research while being convinced that involvement on a practical level would be immensely valuable in initiating change — change in the students' own thinking, change in attitudes to innovation, change in actual teaching/learning strategies. Even so, he considered that an evaluation (intuitive or otherwise) of an on-going college experiment might make a useful contribution in the development of future strategies. As Taylor points out 'colleges and departments of education have

played very little part in the research and developmental stages'¹² and he makes the point that colleges of education should be involved more with innovation and assessment. Taylor stresses that:

Although curriculum evaluation is a difficult and complex business, requiring substantial resources and specialised skills to yield worthwhile results, there is something to be said for small-scale efforts such as the colleges might undertake because of the way in which institutionalization of innovations tends sometimes to be very much quicker than the evaluation itself.¹³

This statement has proved to be a determining factor. It motivated the writer to proceed with the experiment, while supporting his own belief that research and innovation in a college might be more valid if conducted by experienced 'practitioners' involved in a situation which they comprehend because of their actual involvement in it, rather than by 'researchers' who must, because of the very nature of the exercise, be detached from such a curriculum innovation as observers.

The writer assumed, for the purpose of the experiment, that the main function of an educational institution is to promote change — although he is aware of contrary arguments put forward by Holly¹⁴ et al, that schools, as organs of society, actually maintain the *status quo* and are therefore not intended to be change agents — and the curricular strategies and content of the innovation, determined at times by tutors and at others by both participants and tutors, were conceived with this intention.¹⁵ Indeed, as the majority of first-year students entering college do so after approximately twelve years of primary and secondary schooling and with little experience of the world, their thinking and attitudes need to be changed in order that they may better cope with their future functions as teachers. They need to consider the pragmatics of classroom management and organisation. They must learn to know and understand children. They need to develop their own

minds so that they will be receptive to dialectical arguments about fundamental educational philosophies, ideologies, new teaching methods, learning concepts, educational materials, etc; and, in the case of this innovation, they had to experience an actual programme of integrated learning in which art was the core subject and also complemented other areas of study.

Definition of 'Integrated Learning'

A clear statement of intent and precise terms of reference had to be made available to participants and tutors. The purpose of the innovation had to be understood; its aims and curricular strategies outlined; and the innovation itself had to be meaningful to those whose involvement in it would demand a substantial degree of personal involvement, interest and conviction. Such involvement and conviction was vital if it was to be a success,¹⁶ although failure and unfavourable reaction would be credited as legitimate aspects of evaluation. Consequently, definitions of various terms were sought and reference was made to the work of recognised authorities. *Education*, for instance, was taken to imply, in part, the act of learning and the reciprocation of interests by teachers and learners. It also commands knowledge, of which Bertrand Russell has said:

Knowledge wielded by love is what the educator needs, and what his pupils should acquire. In earlier years, love towards the pupils is the most important kind; in later years, love of the knowledge imparted.¹⁷

If, therefore, learning implied knowledge, where, one could ask, does this phenomenon spring from? Does it flow from the teacher? Is it discovered in some kind of mysterious way from the environment or from reference sources? Does the learner absorb knowledge from his cultural ethos, from the customs of the society in which he lives and from interaction with its members? And if edu-

cation demands active participation by the learner, does learning spring from a balanced diet of instruction, discovery and personal interest as the individual lives, works and matures in the educational setting? Tyler maintains that this is so, and that learning results from the individual's reactions to his environment,¹⁸ and this supports the argument that the environment is a very real educator. He refers to the school situation in general and to the classroom environment in particular, both of which are reactor agents. Cantor, emphasising that education, and therefore learning, is a living experience is convinced that true learning is self-learning and self-discipline.¹⁹ He throws the duty for learning right on to the learner and lifts it

The responsibility and motivation for acquiring knowledge should be placed on the learner. It is his course, not the teacher's. For learning to take place, the effort must stem from the pupil... The teacher cannot be responsible for the pupil's learning.²⁰

While agreeing with this the writer wishes it to be known that it is important for the teacher of young children in a first school to manipulate the classroom environment in such a way that learning will result. Returning to Tyler, for a moment, we see that the underlying assumption is that the learner must have a desire to learn if learning is to be significant for him. It is no use teaching a person Russian, for instance, if the job he is training himself for is in Mexico. Learning must be meaningful to the learner who must not feel threatened as he learns in meaningful and stimulating atmospheres which encourage questioning attitudes.²¹

The dictionary definition of the word *integration* shows that it is the making up of a whole by combining the separate parts,²² and this leads to the assumption that *integrated learning* is therefore the action of combining disparate experiences and knowledge. Yet all learning takes place within the individual and he alone can integrate his experiences and knowledge of environmental

matter. This implies active behavioural processes on his part, a fact that has been noted in curriculum studies experiments at the University of London Goldsmiths College Curriculum Laboratory. Taba, referring to both Dressel and Bloom, supports the view that *integrated learning* is a process which happens inside a person as he struggles to organise in a meaningful manner, knowledge and experience which might be unrelated,²⁴ and Tyler, viewing the subject differently, is concerned with an 'horizontal' description where different subjects are seen to be related²⁵ by what Bloom would have called 'integrative threads'. Kerr, a curriculum exponent, limits his conception of integration severely²⁶ but Kay Metsi actually describes an integrated learning experience in a junior school²⁷ in which, significantly, art activities have an important role²⁸ alongside other curriculum activities.

The writer defined *Integrated Learning* as:

all the learning taking place in an educational environment which is carefully structured and controlled by the teacher; and in which the participants (the learners) are free to select, enquire and pursue learning experiences for themselves either as individuals or in groups under the guidance of the teacher, as well as being encouraged to develop their studies through related aspects of the curriculum, in which the learners are immersed in the basic processes or technology of learning; processes which are not restricted to subject boundaries but which cross and re-cross such boundaries as learning develops.

The hypothesis

The hypothesis underlying this curriculum innovation was that student involvement in an integrated learning situation would bring the student to a rapid understanding of the science of teaching (or educational technology) implied by integrated methods and

inherent theories, while giving the student confidence to practise this way of working in the school situation through personal experience and an understanding of it. Conclusions were that student attitudes would be changed through such involvement and that student thinking would, in consequence, be deeper and have a more rational basis than would have been the case if the student had not had this experience. It was also felt that participation in the Integrated Art Workshop should enable the student — through personal experience and development — to gain confidence in the use of materials at an adult level, and that the role of art as an important factor in integrating learning experience would be better understood as the course developed.

The purpose of the experiment

The fundamental aim of this innovation was to promote significant changes in student thinking, attitudes and patterns of behaviour.²⁹ Its objectives were:

- (a) to foster confidence, through experimentation with materials and ideas leading to self-understanding;
- (b) to develop manipulative skills, techniques and self-direction in creative art work;
- (c) to stimulate experimental attitudes and personal inventiveness in relation to curriculum strategies in schools;
- (d) to foster deep-thinking attitudes and an understanding of the part which art can play alongside other areas of study in an integrated learning situation through personal involvement, study, writing and discussion;
- (e) to afford students many opportunities for selecting their own learning experience within a carefully conceived curriculum and environment;

- (f) to allow the participants to experience and practise educational technology — including the keeping of records, the planning of curricula, classroom organisation, visual communication in the form of classroom aids and display;
- (g) to promote in the students a critical, objective attitude to assessment and the evaluation of teaching/learning strategies, to individual and group work, through discussion, comment and active decision-taking and self-direction;
- (h) to encourage sensitivity to other participants.

In the writer's view point (a) is one of the most important characteristics of the good teacher of young children, although it is one which should also apply at all stages. The teacher who has a real understanding and love for the child will be a sensitive person: some teachers have a natural sensitivity, others possess it in varying degrees. What was important was that in attending this course the students actually worked in an educational environment quite similar in conception to that of the integrated classroom and like the children, they had freedom of choice and movement. As they moved around the visual studies department to pursue their learning experiences they were in very close yet changing relationships with others. They were in a *reactor* situation in which they interacted with each other, materials, ideas and problems. They were, and had to be, conscious of the presence of other participants and could not glibly brush each other aside for they were interdependent. This experience and practice of personal relationships and the development of co-operation and a sensitive awareness and respect for others was, therefore, a vital one for them to have prior to their going into school situations demanding like behaviour on the part of younger people. Who

better than an infant teacher to expand on this point? She writes:

To have the opportunity of nurturing and watching the development of my present class from the age of four and a half is quite fascinating. The major progress has been social, they have mostly moved from the egocentric to co-operative friendly assistance.

What I believe and know to be so from experience of both types of grouping allies to integrated approach so well and logically is vertical grouping rather than horizontal grouping. The atmosphere in such a class is something to be experienced to be believed. The ability of one child to soothe and comfort another and communicate a process, has untold advantages, both for the younger and more mature child.³⁰

Such sensitivity and awareness calls for effort and restraint and leads to a delightful classroom atmosphere and a learning environment which nurtures young minds.

Having determined the objectives before the course commenced it was important to take account of the likelihood of change. Midway through the session, therefore, the participants were asked to state the aims as they understood them so that these could be recorded and compared with those tabulated above — an interesting exercise.

Method of working

The testing of the hypothesis necessitated the establishment of the working situation already described. The term 'Art Workshop' was used rather than classroom, lecture theatre or even studio in order to foster practical activity as the core for all the learning which would take place within it. This workshop was to be comprised of a number of minor practical areas where the participants could experience various aspects of the visual arts: those, for instance, of drawing, pattern, printing, lettering, clay-work, three dimensional structure, painting — some of which had links with mathematics, English, science and/or other areas of study; while other areas were for quiet reading, or were resource centres containing books,

natural forms and a variety of items which might stimulate interest and be of value to ongoing work.

The teaching staff included two lecturers from the department of visual studies, two education lecturers, a scientist and a mathematician, both of whom attended for single sessions of up to four weeks at a time, and practising teachers were invited to give talks. The participants were free to select the areas in which they would like to work, as young children do in an integrated day classroom, within prescribed curriculum strategies and the physical limitations demanding responsibility, self-selection and motivation as well as an ability to study harmoniously and with mutual respect alongside others in the group.

Natural forms were used as a stimulus for many of the initial learning experiences. Some were analysed closely in order to train the eye to be selective and 'to see' basic growth structure, pattern and colouring, and this led to: (a) self-questioning, and (b) the use of natural objects as starting points for creative work. Much of this study was seen to be relevant to personal interests which were developing in a number of related areas of study. Some aspects of it included enquiry and scientific reasoning; others led to a simple translation in art materials and designs; and there was a place for expressions of interest in simple drama.

Although personal involvement with materials was to be the main criterion, discussion was considered to be important and from the commencement of the course, recordings and transparencies were made of interesting discussion points and comments of relevance to discussions so that these could be used for further seminar work and as reference material. It was expected that the participants would read quite widely around the subject to enable them to relate their experience with 'real' children, as well as in 'Education', so that a logical fusion of experience and ideas would occur. To assist

with this a number of criteria were examined. These included: *child-centred education, freedom and choice, discovery methods, environment* (a term referring to the everyday world of the child — home, streets, parks, etc; as well as that of the school and classroom), *integrated day, open classroom, family grouping, child activity, play, self-expression, and teacher's role.*

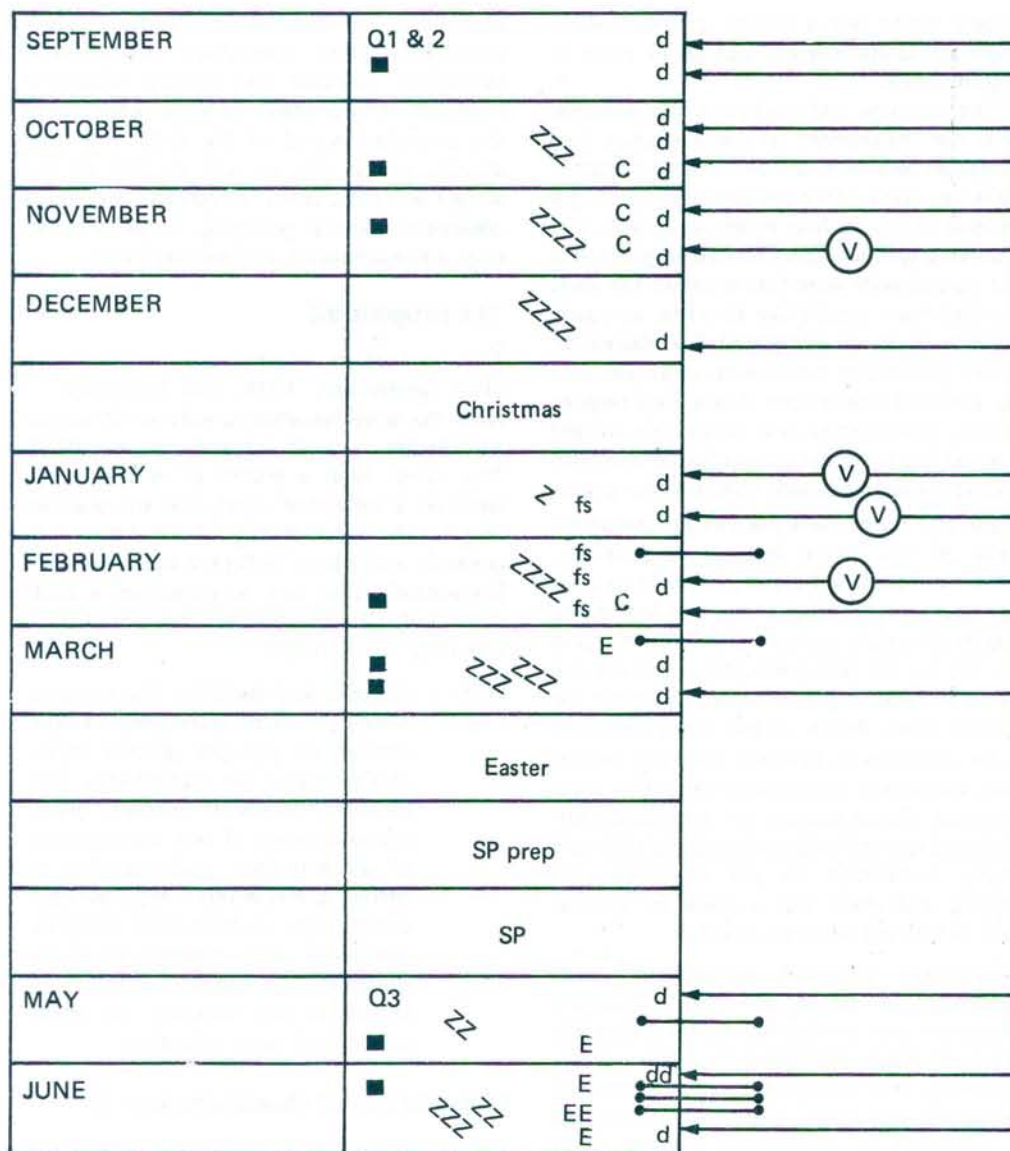
The programme

The innovation commenced on Thursday 30th September, 1971, and continued — with the usual vacation breaks at Christmas and Easter — until the end of June 1972. The writer kept a record of events in the form of a tabulated chart, and the diagram (Fig.1) illustrates clearly the monthly progression and where different activities were juxtaposed. This can be explained a little more fully if a few extracts are noted from the diary. For instance:

Week 1 *Introductory sessions.* The students filled in two questionnaires (intended to provide general information about the participants. This included details of previous teaching experience, if any, earlier study of art and their understanding of certain terms about integrated education, etc, so that these could be compared with answers to Questionnaire 3 at the end of the innovation to see whether the innovation had been effective).

Organisation of Questionnaire (1)

This questionnaire was structured to procure some general background information about the participants. This included, for example, details of their previous teaching experience; the extent of their art studies before coming to the College; the breadth of sixth-form work; and, most importantly, their understanding of philosophical terminology



KEY

- Demonstration
- z Practical Work
- fs Free Study
- E Editorials
- V Visiting Lecturers
- Tape Recordings
- ← Actual teaching/lecturing peaks

Fig. 1: Visual Summary showing the methods employed (based on Dahllof's Macro- & Micro approaches diagram in 1970/71 Paed.Eur., p.31)

directly relevant to the innovation in which they were to participate and which it was hoped would be better understood by them at the end of the experience. The questionnaire was completed before the writer had even spoke to the group about the nature and organisation of the experiment in order to produce completed unbiased responses.

Responses to the questionnaire

The first two questions regarding Main and Second subjects to be studied in the Certificate Course resulted in a clear indication of the areas of study in which personal interests and expertise was to be found. The numerical analysis (see Fig.2) showed that a majority of the students intended to specialise in 'arts' subjects, with English and religious education predominating — the emphasis upon the latter reflecting the nature of the College's Church of England foundation. Science and mathematics, on the other hand, were clearly undersubscribed and this pointed, from this and evidence produced in discussion, to a lack of appeal by these subjects to students. This being so, the writer wonders whether it could have significance — if proved to be a national characteristic — in the education of children in Great Britain between the ages of five and eleven years whose women teachers might lack both the interest and expertise to teach these curricular aspects. Indeed, this could prove to be a detrimental omission in the curricula of First Schools and even in the planning of curriculum strategies in the initial education of the nation's teachers. As this is pure conjecture, however, on the part of the writer, it would have to be proved by empirical research.

Other responses to the enquiry show quite clearly that 52.5% of this group of students had had some previous experience of Art at school; 47.5% had had little or no previous experience of creative work with materials; 25% had studied the

subject to 'O' level and only 5% to 'A' level. A majority of 60%, however, had done some previous teaching and this indicates their strong interest in teaching as a career. Not one student had, or admitted to having, significantly, any previous experience — either as a pupil or teacher — of any form of integrated learning.

Structure of Questionnaire (2)

This contained four terms associated with 'Integrated Learning' and was devised to elicit whether the participants — who were asked to write brief descriptions of the terms — had any real understanding of integrated learning methods.

Responses to the Questionnaire

These proved to be varied in the extreme. Many of the group attempted to define the terms, others (33%) left the questionnaire blank. An analysis showed that the majority did not understand the terms or were confused as between, for example, 'Integrated Day' and 'Team Teaching'; and in general there was a complete lack of understanding of Integrated Learning in the educational context.

The Integrated Art Workshop participants were divided into four sub-groups (ten in each) so that the organisation of work and available facilities could be more easily activated. The first task for one of these groups was to design a simple method for keeping a record of what each participant did in the course — a very necessary aspect of integrated learning if individual commitment and progress is to be noted — and it was decided to make this 'visual' in character. It became a simple wall chart (see Fig.3) which was placed on a wall in the corridor that was readily accessible, and each student was responsible for keeping a weekly recording of her involvements.

Questionnaire 1

Please study the following questions carefully before answering. Notice that some require short written replies, others a tick or a circle.

1. *Principal Subject* (now being studied at College)
.....
2. *Second Subject* (if any)
3. *Complementary Subjects:*
(a) (b) (c)
(d) (e) (f)
4. *Subjects studied in the Sixth Form at School*
(a) (b) (c)
(d) (e) (f)
5. Have you have any previous experience of *integrated* learning?
YES/NO (please circle one)
6. If 'Yes' was this in your:
(a) Infant School (b) Junior School.....
(c) Secondary School.....
(Please tick)
7. Are you taking any integrated courses (other than this art course) in College.
YES/NO (Circle one)
8. If YES, please state the subjects involved:
(a) (b) (c) (d)
9. Have you had any previous teaching experience?
YES/NO (Circle one)
10. If YES, did it include any form of integrated teaching?
YES/NO
11. If YES, what was the age group?
12. Did you study Art at secondary school?
YES/NO (Circle one)
13. Did you pass Art at 'O' Level? YES/NO (Circle one)
'A' Level? YES/NO (Circle one)

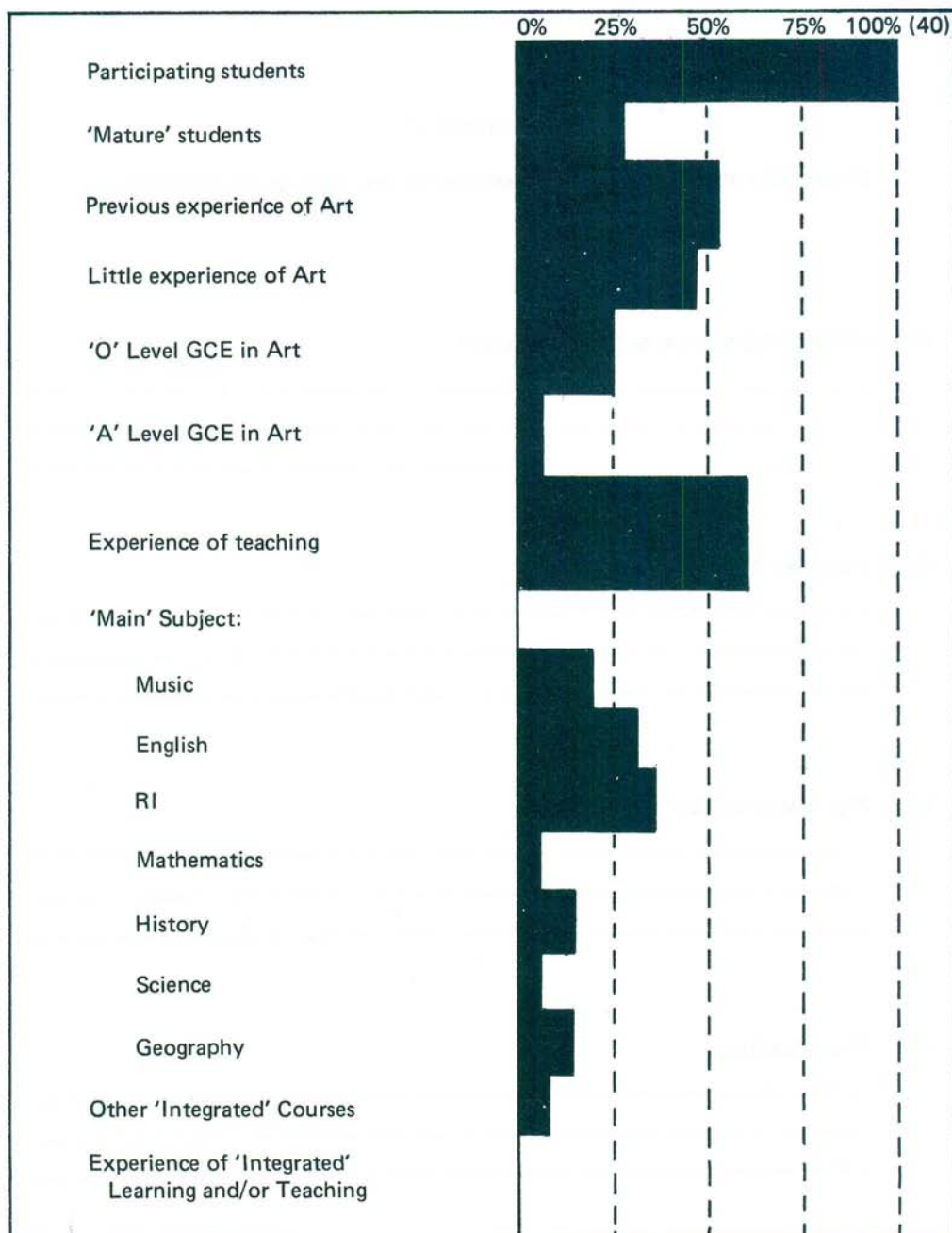


Fig.2 Analysis of Questionnaire (1)

Questionnaire 2

Please write down a short explanation of what you mean by the following:—

(a) *Integrated Classroom or Open Classroom*

.....

.....

.....

(b) *Integrated Learning*

.....

.....

.....

(c) *The 'Integrated Day'*

.....

.....

.....

(d) *Team Teaching*

.....

.....

.....

STUDENT	Drawing	Pattern Making	3D Work in wood & metal	Painting
A		Sc		
B			M	
C				Sc
D				
E			M	
F	Sc			

Note:

This RECORD CHART (only a small part of which is shown above) took the form of a wall chart that had been designed and made by a small group of participants. It was placed in the corridor and each participant was expected to indicate, according to the code devised by the students concerned, in which aspect she had worked each week. These aspects were shown in the top horizontal column and were added to as the course proceeded.

Key

(four examples only)



A line denoted one week's study in one aspect up to a maximum of four.

Indicated where discussion had taken place.

Links with science, eg, nature study; levers; mobiles, etc.

This shows where art integrated with mathematics.

Fig. 3 INTEGRATED ART WORKSHOP RECORD CHART

Practical work and integrating learning activities

Practical work consisted of a mixture of tutor-directed exercises in a number of aspects of art and design for it was considered important that the participants should acquire manipulative skills and confidence in handling materials and problems of a design nature. These included print making; display and the presentation of work in the classroom; three-dimensional work — constructing with wood, paper, card, polystyrene, etc; claywork, and an introduction to pottery; the design and making of visual aids; lettering for use in the classroom; the making of 'number' and work cards; pattern and picture making with paint, crayons, collage, etc. Alongside this, however, went seminar discussion, written work, reading, and some work with groups of children.

In *Week 9*, a science lecturer met the group and stimulated project work in which art and science were inter-related. This consisted of the design and construction of pendulum painting machines which produced *dribbled* imagery in ink or paint and which led to a study of natural phenomena — motion, mathematical shapes and pattern. As a lateral thinking exercise, it involved the participants in the manipulation of ideas and the solving of practical problems so that the machines would actually work. Some of the students developed this project further in artistic form — pattern, painting and sculpture; in science; in mathematics; in the language arts; or in more than one of these areas of study.

Three specimen projects

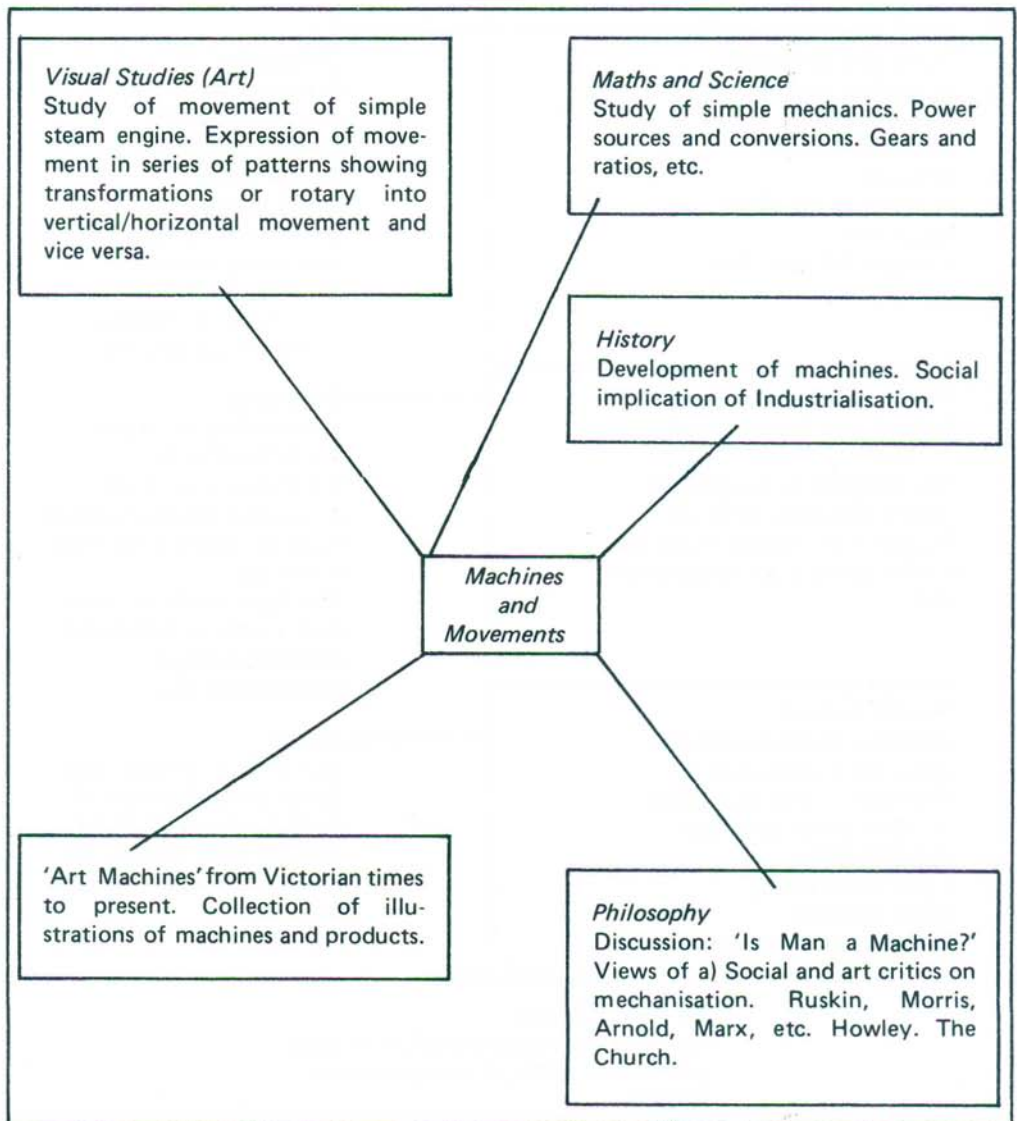
Group and individually-conceived projects erupted and were pursued in many directions but with the participants coming together to examine and discuss progress. They

also considered the meaning of *integrated learning experiences* with the two lecturers in education and every individual student and tutor produced 'flow charts' to give them practice in designing integrated learning programmes. This promoted a considerable amount of educational thinking and discussion about the relevance of such ideas in the school curriculum, and a number were actually carried out at student level in an attempt to assess their value and ways in which they might be translated for use in the first school. The three examples given here certainly stimulated some serious thinking about integrated curriculum work and are self-explanatory:

Other work undertaken in the innovation included the study of children's language in which tape-recordings of classroom conversations were analysed and children's stories were written and illustrated by the participants. Observations were made of classroom interactions and the way children learn and practising teachers joined discussion groups. Art and mathematics were integrated and one such theme in which the relationship of shape, illusion,* pattern, colour, balance and structure were vital, is worthy of expansion for it proved to be one of the most worthy integrated activities engaged in, especially as the first school teacher is expected to teach mathematics as well as all the other curriculum subjects.

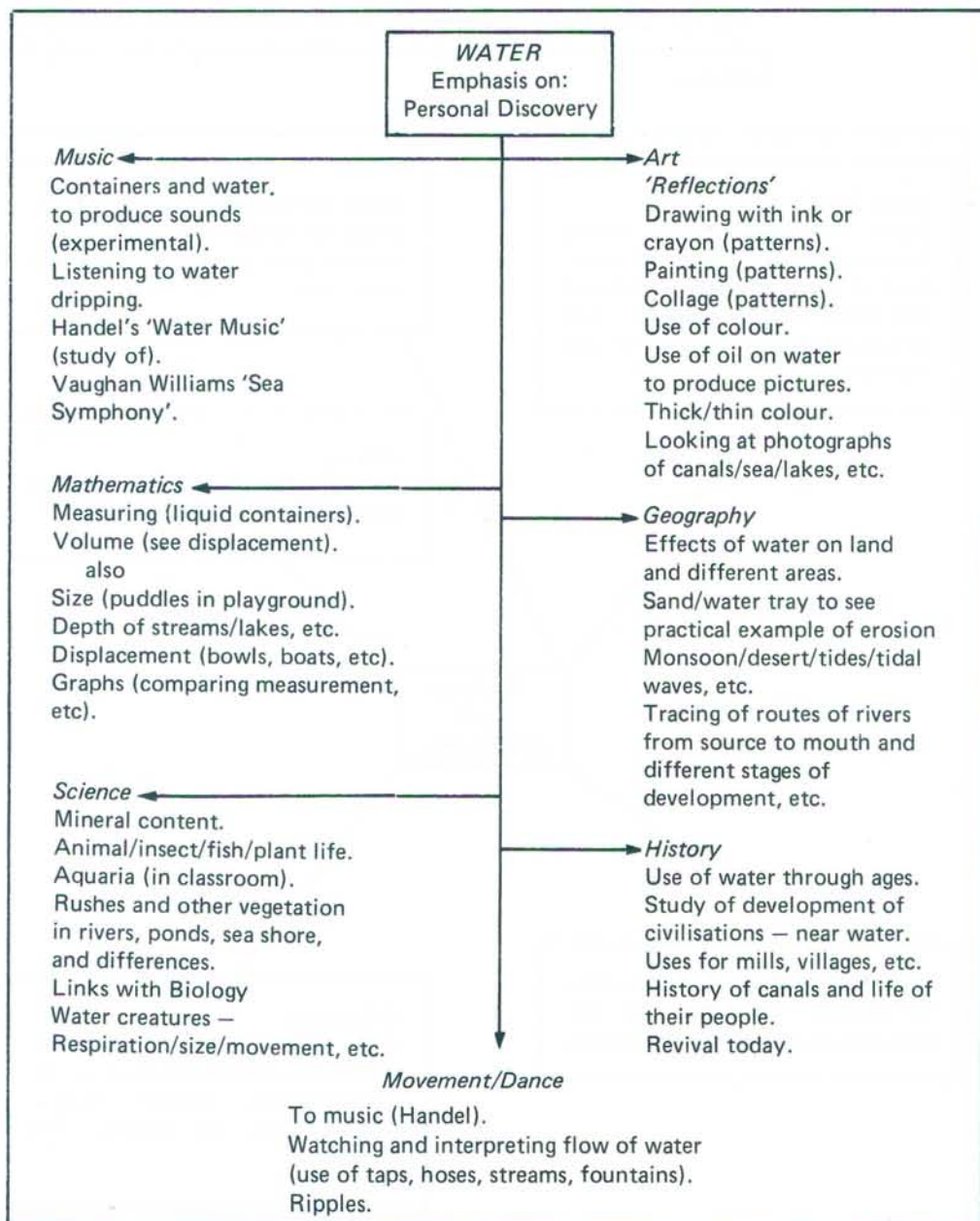
* In this context optical imagery was explored and some of the resulting ideas and illustrative material was used by the writer in his book *Introducing Op Art*. (31)

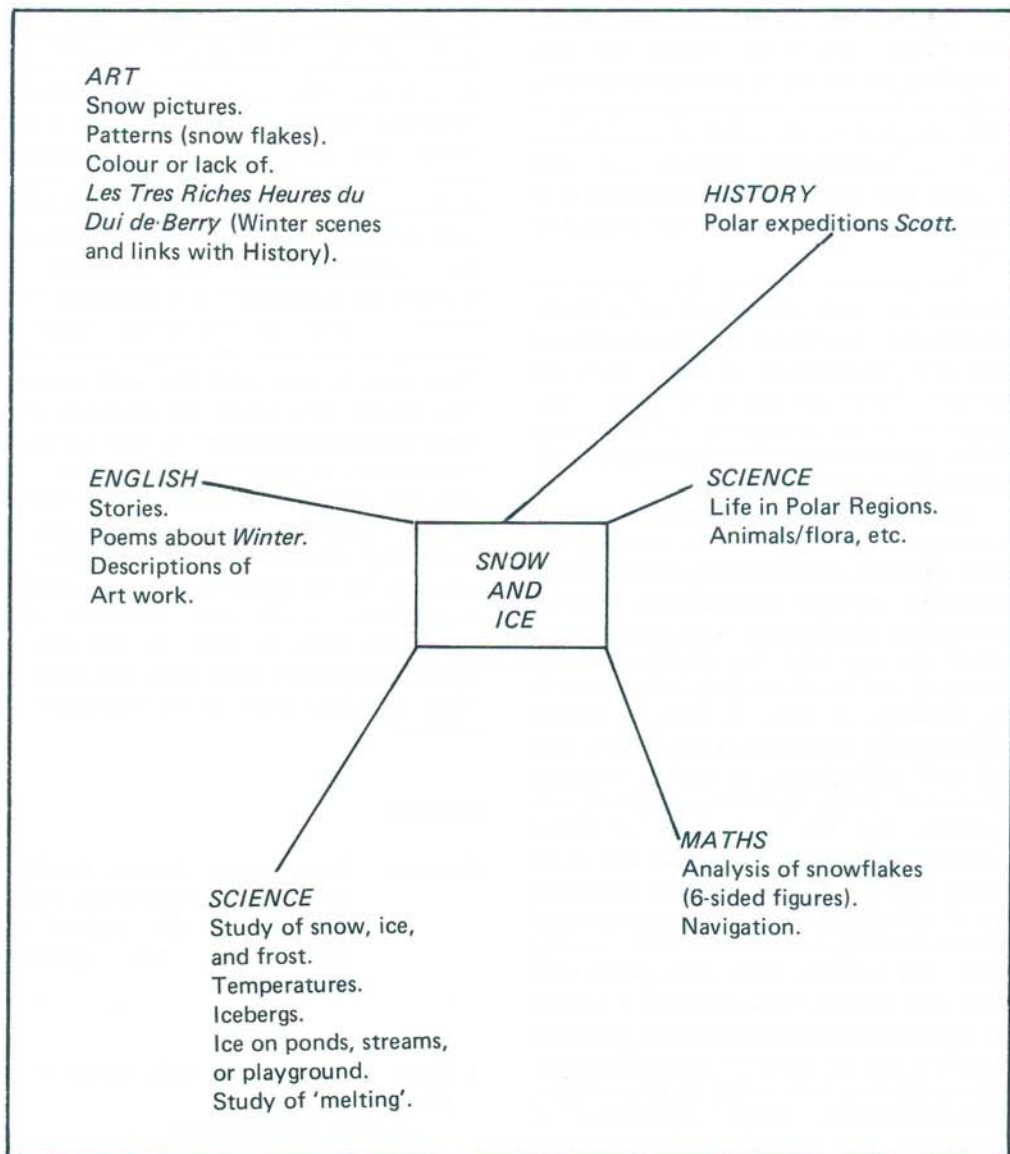
Main objective: To examine, in many aspects, the relationship between Art – The Machine – Society, and to develop discussion of the dualistic theory which sees a gulf between Man as a creative being and Man as a social unit – a cog in a machine.



Idea 2 Water (A theme for integrated learning conceived by one of the participants for study by a group of fellow students and/or children)

20





NOTE: Such a study might best be considered in an Autumn or early Spring Term so that the children could experience winter conditions.

Art and mathematics: a mathematical/art toy

At one stage, the participants decided that mathematics should be studied and ideas regarding the linking of art and mathematics began to formulate. The one outlined was, in fact, designed by the writer in consultation with a mathematics lecturer and each student was asked to solve the problem as an additional piece of work to the innovation itself.

The problem set was the design and making by each participant of a *Mathematical/Art Toy* based on the concepts of sets and relationships. A basic chart was devised (Fig.4) and had to be taken cognisance of in the production of what could better be termed a teaching/learning aid with which the children could play.

The basic concepts of number — those of comparing, matching, sorting, ordering, etc. were included so that the toy would actually stimulate, through manipulation, learning experiences. Participants were asked to construct the toy from any appropriate scrap materials and to use brightly coloured paint to decorate it with. It had to provide children with interesting experiences in both art and mathematics, as well as involving them with shape, symmetry, addition, subtraction, and the exploration of colour relations and patterns. In actual fact it did more than this for the students concerned for it stimulated their own imaginative or lateral thinking and involved them in using hand and machine tools with which they were not familiar. They mastered a number of previously unknown techniques and made excellent use of these in producing block-type sculptures from wood, plastic and card; three-dimensional linear experiences in dowel rod, wire and wood; jig-saws; interlocking shapes, etc. and this placed art and mathematical ideas and concepts well within their own experiences.

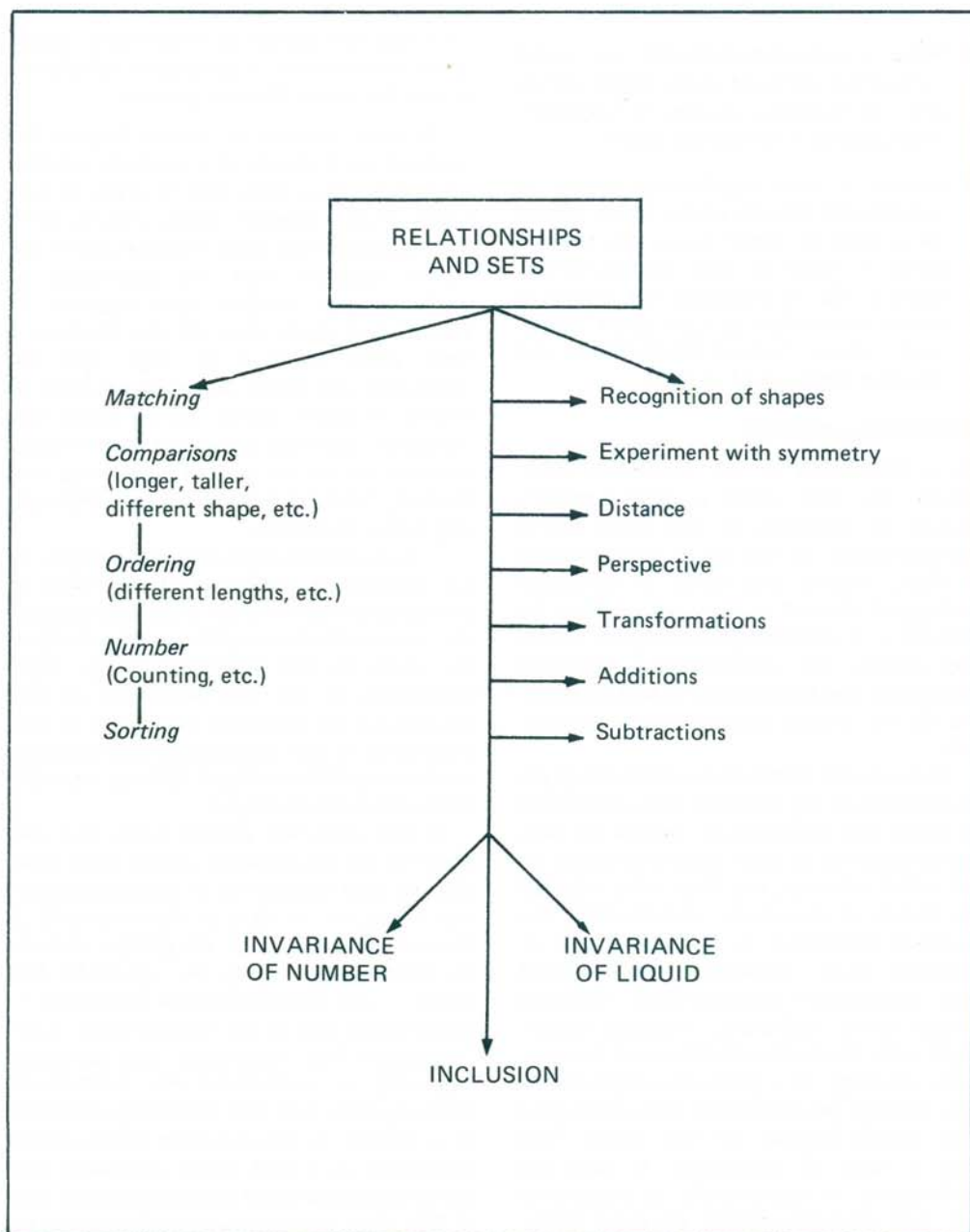
Some of these toys were actually used as teaching aids on School Practice in the Summer Term, and two students recorded children talking as they 'played' with them. These showed that such stimulation can, and does, encourage imaginative verbal communication. 'It's a money-bird machine' exclaimed Carole. 'Mine is a ship with tall masts' said John. 'This one,' exclaimed Mary, 'is a bird that pecks and sings.' Surprisingly, though, these comments seemed to have nothing in common with the toys' intentions, but were invaluable in bringing the participants to a realisation that young children do not always react to learning in the way we imagine they will. They seem to learn what *they* wish to learn. The teacher can supply the stimulus of a lively learning environment as well as having expectations of what should be learnt — in this case things to do with art and mathematics — and perhaps it went part way to prove that children will be themselves. It certainly led the group to question whether mathematics or art were important, and stimulated them to think. It also led to further experiment with these two areas of study and their value in the education of children.

Schema

Materials: Wood, card, broom handles, dowel rods, garden canes, newspaper, old tin cans, yoghurt cartons, string, wire, drinking straws, etc.

1. Make a wooden toy with which it is possible to:
 - a) count (mathematics);
 - b) make coloured patterns (art).
2. Produce a 'Sorting Box' in which are a variety of empty containers in the same

Fig.4: Mathematical/Art Toy: BASIC CRITERIA



colour. Make a set of shapes in two colours and of different sizes which can be sorted out into the containers.

3. Make a symetrically-shaped toy whose component parts are black, white, yellow and red triangles, squares or rectangles. This could be a flat jig-saw puzzle.
4. Design a three-dimensional model of wooden geometrical pieces which slot on to a strip of wood. Paint the separate parts in three or four complementary colours. By re-arranging the shapes it should be possible to learn about 'shape', 'size', 'space', 'colour relationships' and the basic elements of 'design'.

Concluding remarks

As a description of the curriculum innovation has been given a brief summary should be adequate at this stage and is complemented by the visual representation in Fig.5. Indeed, this model of the actual curriculum process — based on an idea by Kelly³² — is intended to show quite clearly and simply the developmental processes underlying the experiment as well as pointing to the skeletal structure used throughout.

It should be noted that at the start of the experiment all the students were introduced to ideas and philosophies integral to integrated learning as they were understood by the tutors involved, and these were reflected (as shown in discussion, written work and personal comment) to a large extent in practical work, theoretical considerations and subsequent developments. Students moved from initiation, practical experiment with materials and ideas and development of these, to a point two thirds of the way through the innovation when they went into School Practice for four weeks. This was a stage of divergence. It gave the participants an opportunity to experience the 'real' situation and for the more adven-

turous to try out some of the experimental work which had been discussed or even practised in the Integrated Art Workshop. This was the period of empiricism, acceptance, rejection or, in some cases, of apathy. It was the meaningful test-ground.

On their return from School Practice the students were placed in a situation of consolidation. They were able to examine children's work, compare notes, discuss common problems and ideas together and it was clearly apparent that the experience of working with children and teachers in schools had made most of the students a little more sensitive to their own inadequacies and needs, as well as to those of others. 'I didn't realise before doing this "practice" just how dependent infant school children are on the teacher', remarked one student, 'who has to be a teacher, organiser and friend all at once.'

The experience had certainly brought to the students a realisation of the value of *professional* work in their initial training and the School Practice experience consolidated for most of this particular group, their experience in the Art Workshop so far. Because of the apparent importance of this experience it will be interesting to consider it further before looking in detail at a sample of the methods employed.

It had been the writer's hope that the majority of the students would have been able to have experience in integrated learning situations. In fact, as *Questionnaire 3* showed, only 48.3% of the group had such an opportunity — Miss 'A', visited by the writer — her School Practice Supervisor — towards the end of her second week in an 'Integrated Day' classroom, was obviously beginning to understand this method of working quite well and becoming confident as a teacher in the situation. Some weeks previously, in a small group discussion, she had actually expressed strong scepticism, but at this stage her uncertainties had begun to

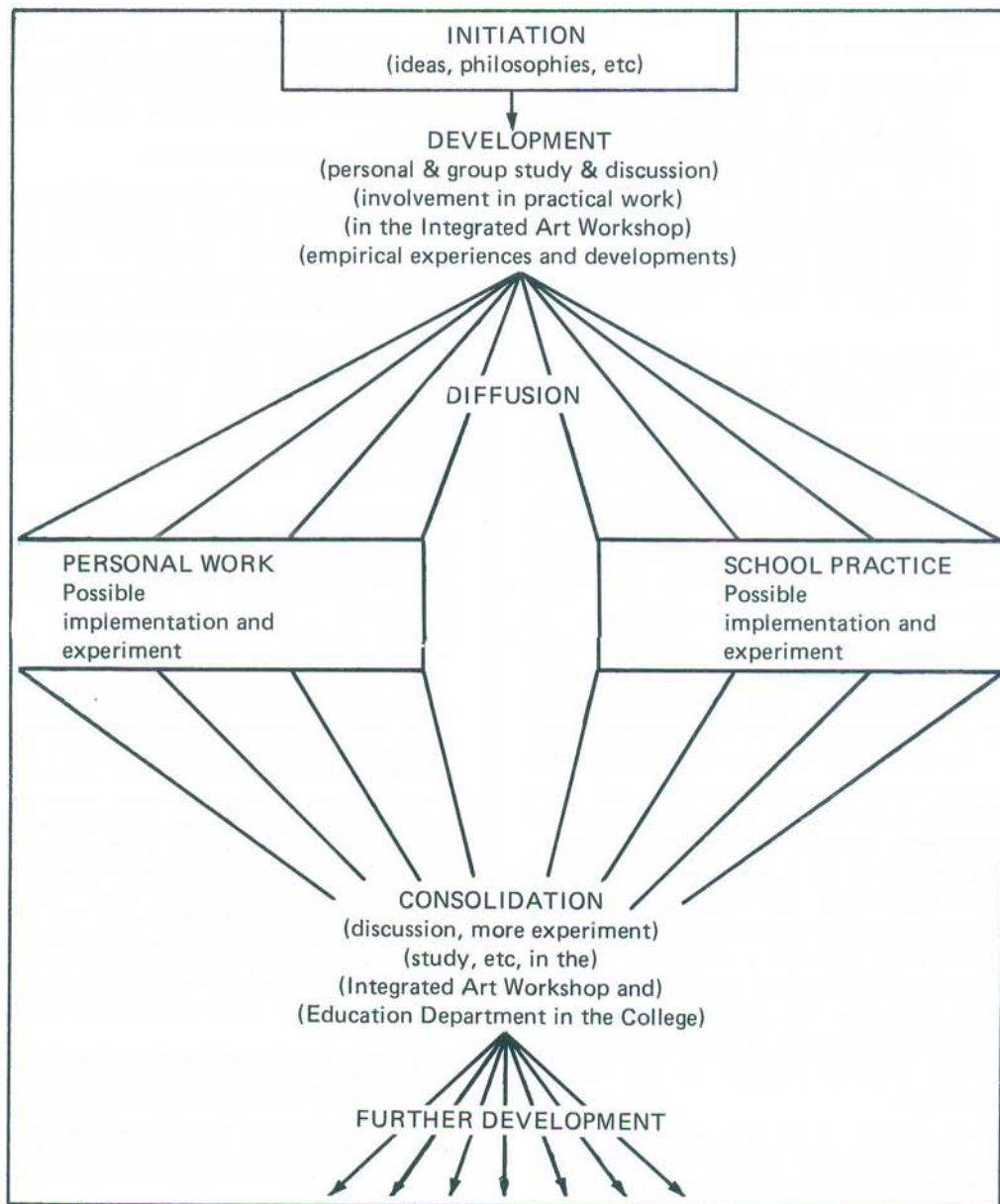


Fig.5 Model of the Integrated Art Workshop Curriculum Innovation Process – showing stages of development from the initiation of ideas and philosophies through practical development, diffusion, consolidation and divergence of further development. (Based on Kelly, 1971, p.88).

disappear. In conversation with the class teacher and writer she said:

The main idea behind all education is learning through interest. No child in this Integrated Day situation has to sit down to the prospect of twenty minutes of *English* every morning as I had to. Topics of work are introduced through class or individual interest, and as a teacher my role is to help each child to explore his work in different aspects of the curriculum.

(Student teacher, Miss 'A' *Integrated Day* classroom in an infant school — class aged six years)

Some time later when Miss 'A' and the rest of the group had returned to College, the idea of the child being made to concentrate on a subject was discussed at some length. It was felt by some of the students that there is nothing very harmful in studying *one* set subject such as that quoted for at least it would demand disciplined attention and self-control, and might act as a useful anchor point for the day's activities — an interesting point of view which led to a lively discussion between a tutor and three of the participants about its actual relevance in the education of five- to seven-year-olds.

Some of the students had made use of topic work; indeed, a number had been allowed little freedom to innovate, and their classroom teachers had expected them — particularly in the junior area — to continue with work they had themselves initiated before the students went to the schools. This might have resulted in rejection or even hostility but the writer was intrigued by the realisation that the majority of the participants were inclined to favour project work of one kind or another. As one student explained:

By studying a topic as a whole with all the connected subjects, we hope that the children will acquire greater understanding of the topic, be more interested, and benefit more from it.

(Taken from a transcript of a group discussion)

The consensus of opinion arising from this group was that when this happens the children are more likely:

... to develop enquiring minds, while working at their own pace, and with the help of the teacher they will receive the *real* foundations of learning so that they may take any opportunities and face any challenge which comes their way.

(Statement arising in discussion)

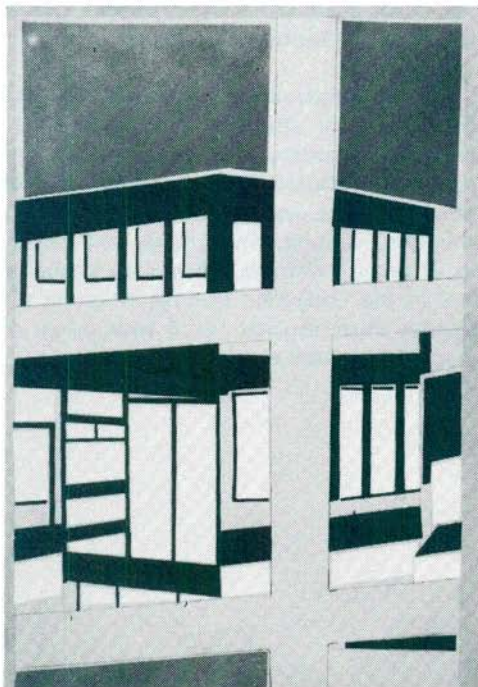
It can be seen that idealism was already rampant and that further experience was needed to produce rationality. Unfortunately, the time remaining at the end of the summer term was insufficient and at the request of the students was used for practical involvements and not so much for theorising. Nevertheless, discussion continued and the following extract from a personal diary goes to show that thinking had not halted:

I would like to ask: do you feel that children are not learning in the same way that we ourselves did at school? If the answer is 'yes', then I think I would entirely agree with you — they are not!

Children in an integrated day situation are learning all, and more, than we or their parents learnt at primary school but in a new and exciting way. Not for them the dreary classroom with its rows of desks and 30-minute sessions of dreary maths or English. Children are growing intellectually today in the same way that they are growing physically. They are 'experiencing', and in this way their learning is both useful and pleasant for them. Have no fears, though, for they are not wasting their time on silly projects. They will learn the same maths and English we did but in a way that will be remembered as part of a total learning process. While they are learning one thing they will at the same time become enlightened about many others, even if they are unaware of this themselves.

They are the adults of the future, of course, and it is our job, as their teachers, to help them to gain experience that will not easily be forgotten and will stand them in good stead in later life. I think the poor teacher is the one who just fills their heads with quickly forgotten, meaningless facts and figures.

As the main purpose of the innovation was to promote significant changes in student thinking, attitudes and patterns of behaviour — particularly at classroom level —

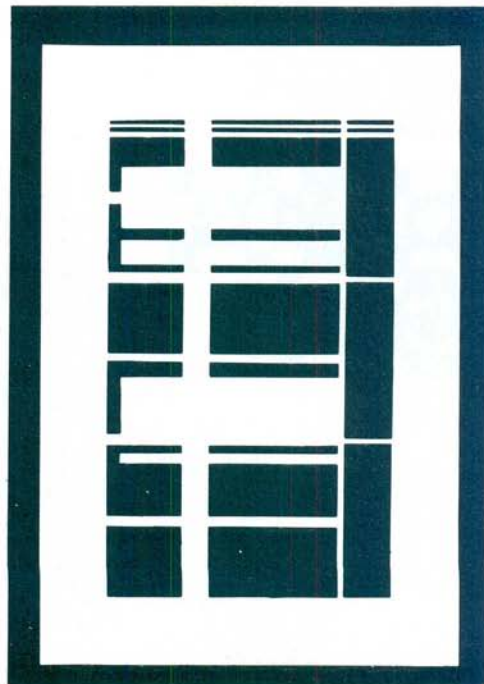
**A**

An Integrated Study:
 'Through the Window' by
 one of the participants.

A. Observed study of
 structure, space and form
 (Art/Design)

B. Development into
 printed image (lino cut)

This simple project shows art,
 mathematics, and study of
 structures in the immediate
 environment are
 inter-related.

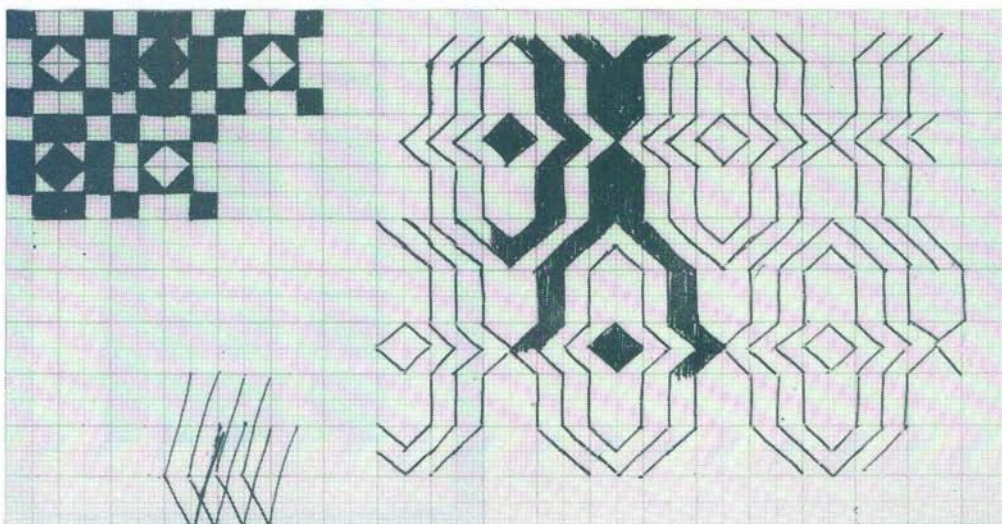
B

the foregoing commentary and statements by the participants are significant. Perhaps they are some proof that the Integrated Art Workshop Innovation was a useful paradigm. It has proved to be worth-while as a pioneering exercise in which the majority of the participants admitted that their involvement in it had caused them to think, act and re-act in situations demanding active behaviourism — participation and involvement — on their part. Some were frustrated at their ineptitude in practical work where the use of skills and techniques is crucial, but said that this

had made them more aware of their pupils' limitations in learning situations.

Such an innovation, in which staff and students work alongside each other in an empirical situation, can be assumed to be a useful springboard for the stimulation of new ideas and developments. It should be a situation seething with struggle and tension in which the learning process is a challenge and in the integrated learning situation the teacher must provide for a wide range of interests and intellects.

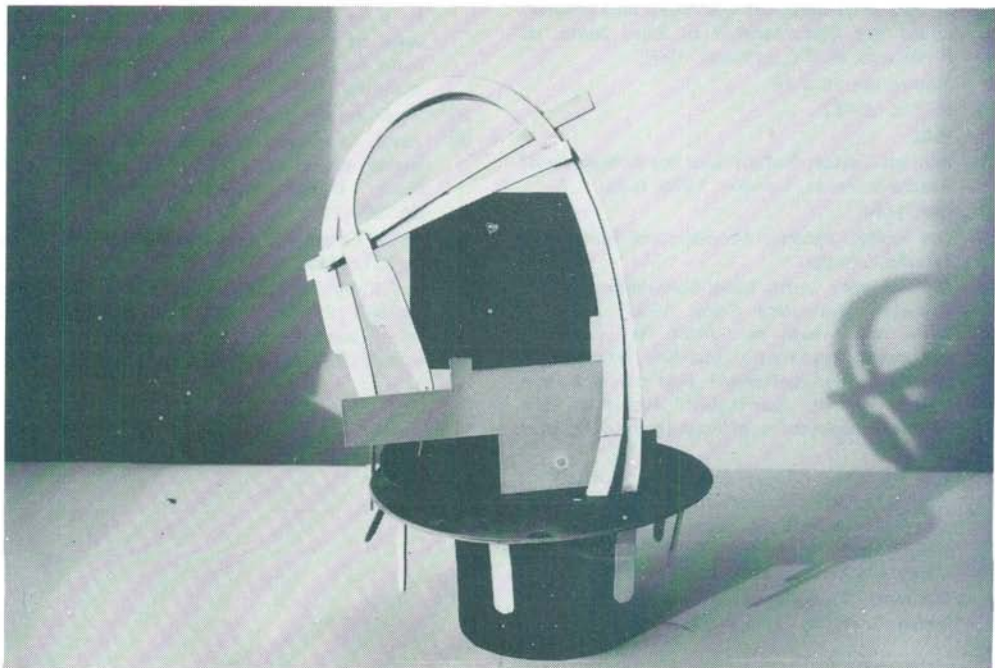
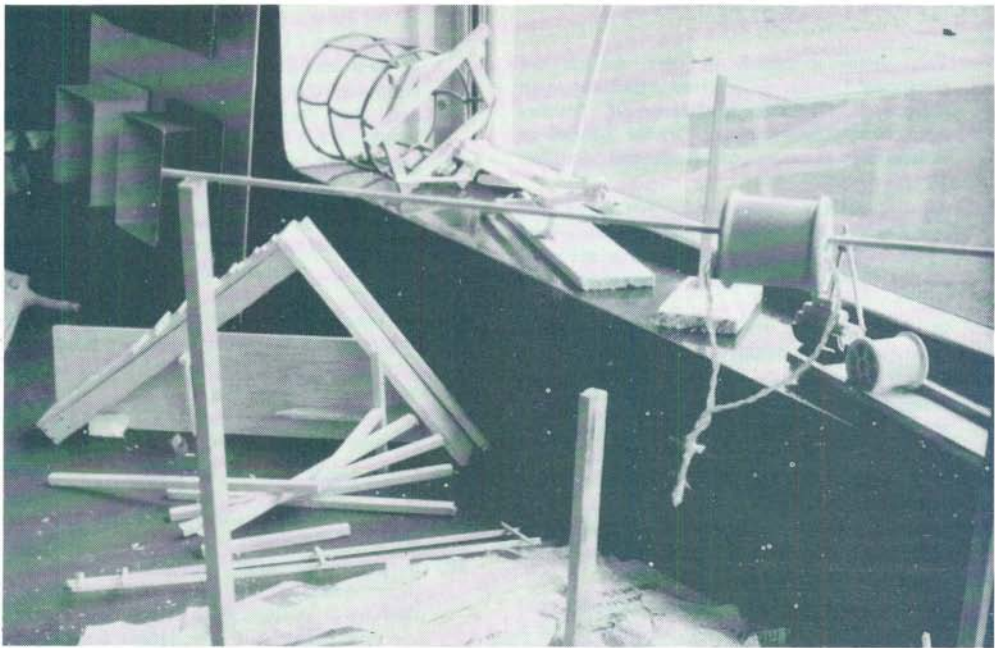
Preliminary sketches on prepared graph paper for development in pattern repeats (as pictures or prints) by one participant of the Integrated Art Workshop, and linking Art with Mathematics.



Corner of the Integrated
Art Workshops Studies
where on-going three-
dimensional work in wood
polystyrene, line and balsa
wood can be seen.

A mathematically
— conceived model
constructed in cardboard.
The idea stemmed from
machine parts.

29



- 1 This paper is based, in part, on an unpublished Dip.Ed dissertation titled *Art in an Integrated Professional Course of Teacher Education*, University of Bristol School of Education Division of Advanced Studies, 1972.
- 2 John Lancaster, 'Integrate or Atrophy?' *Art and Craft in Education*, Evans, London, April 1973, p.26. (The writer edited this series of nine articles about art and integrated learning.)
- 3 W J H Sprott, *Human Groups*, Penguin, Harmondsworth, 1958, p.116.
- 4 M L J Abercrombie, *The Anatomy of Judgement*, Hutchinson, London, 1960.
- 5 K G Collier, *New Dimensions in Higher Education*, Longmans, London, 1968.
- 6 O A Oeser, *Teacher, Pupil and Task*, Tavistock, London, 1960.
- 7 Michael Young, *Innovation and Research in Education*, Routledge and Kegan Paul, London, 1967, p.87.
- 8 *Teacher Education and Training*, Department of Education and Science: A Report by a Committee of Enquiry appointed by the Secretary of State for Education and Science, under the Chairmanship of Lord James of Rusholme, HMSO, London, 1972.
- 9 Young, *op.cit.* p.16.
- 10 *Ibid.*, p.16-17
- 11 *Ibid.*
- 12 William Taylor, *Society and the Education of Teachers*, Faber, London, 1969, p.41.
- 13 *Ibid.*, p.44.
- 14 See Holly, *Society, Schools and Humanity*, Paladin, London.
- 15 D K Wheeler, in his book *Curriculum Process* (London University Press, 1967) concurs with this when he writes 'It is with... deliberate, systematic, planned attempts to change human behaviour that curriculum is concerned. By 'curriculum' we mean the planned experiences offered to the learner...' (p.11).
- 16 Eric Hoyle, 'How does the curriculum change?' *The Curriculum: Context, Design and Development*, ed. Richard Hooper, Oliver and Boyd in association with the Open University Press, Edinburgh, 1971, p.385.
- 17 Bertrand Russell, *On Education*, Unwin Books, London, 1960, p.169.
- 18 R W Tyler, *Basic Principles of Curriculum Instruction*, University of London Press, Chicago and London, 1971.
- 19 Nathaniel Cantor, *The Teaching-Learning Process*, Holt, Reinhart and Winston, New York, 1953, p.67.
- 20 *Ibid.*, pp.79-80.
- 21 Tyler *op.cit.*, pp.79-80.
- 22 *Shorter Oxford Dictionary*, 1959.
- 23 See various pilot courses published by the University of London Goldsmiths College, London.
- 24 H Taba, *Curriculum Development: Theory and Practice*, Harcourt Brace and World, New York, 1962, pp.289-300
- 25 Tyler, *op.cit.*, p.55.
- 26 J F Kerr, 'The Problem of Curriculum Reform' *Changing the Curriculum*, ed. J F Kerr, University of London Press, London, 1968, p.28.
- 27 Kay Metzi, *Art in the Primary School*, Blackwell, Oxford, 1968, p.101.
- 28 Synonymous with 'integrated learning' is 'team teaching', a subject which Joy Taylor deals with in Chapter 9 of her book *Organising and Integrating the Infant Day* (George Allen and Unwin, London, 1971). She sees it as a co-operative alternative to traditional ways of teaching (p.101) and proposes three main ways of organising for this method of working.
- 29 Tyler, *op.cit.*, pp.44-62.
- 30 Janet Lancaster, 'The Pattern of the Integrated Day', *Int.J. Educ. Sciences*, Vol.4, No.3. ECRU (Leeds University, 1971) pp.136-137.
- 31 John Lancaster, *Introducing Op Art*, Batsford, London, 1973.
- 32 P J Kelly, 'The Process of Curriculum Innovation, 1970/71' *Paedagogica Europaea*, Vol VI, Braunschweig, Germany, Georg Westermann, 1971, pp.84-106.