

Developments in Collaborative Learning

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As part of the degree programmes of both the 4-year B.Ed. (Hons) and the 2-year B.Ed. (CDT) courses at Thames Polytechnic one of the projects which students have to participate in is a Social and Environmental one. Essentially its title is self-explanatory. Students participate in the identification and solution of an opportunity found in a social and environmental context and in doing so have to work as members of a group.

The project is intended to give a focus within which students are able to develop skills and understandings which are not only concerned with the manipulation of tools and machines but also in the very important area of human relationships.

Initially students visit sites within easy reach of the Polytechnic campus which offer suitable design opportunities, opportunities which have been identified by staff as being both welcome and feasible and which will enable students to make a positive contribution to the enhancement of site facilities. On such visits students consult with those concerned with the site and identify specific problems which demand practical solutions. Further consultations take place with tutors and site clients in an effort to ensure that possible opportunities can be accurately identified, resourced, and feasibly taken on. Before these initial visits are arranged students normally self-select

themselves into groups normally consisting of four students, though exceptionally of five.

Host institutions tend to be primary and special schools, day centres for the handicapped, hospitals, colleges, or homes for the elderly.

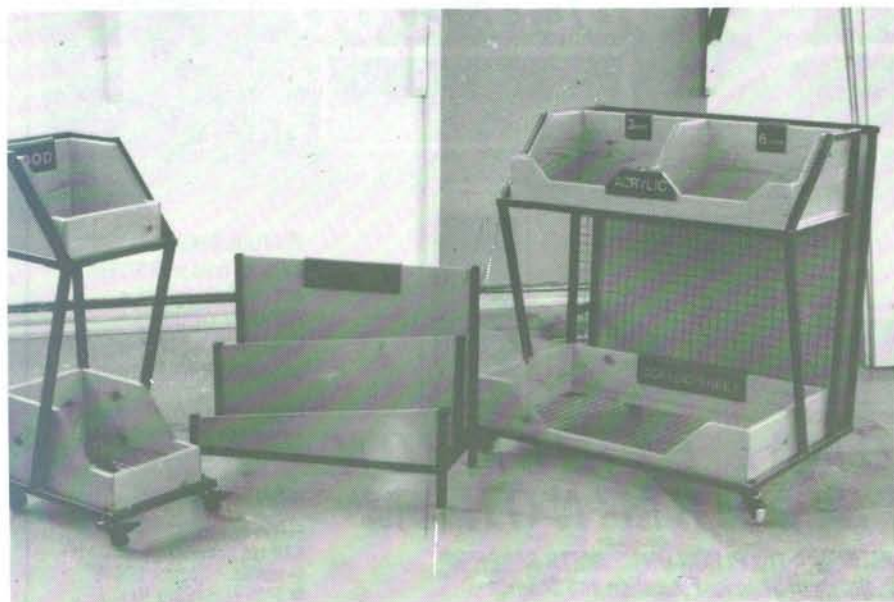
It is intended that host institutions should benefit from the practical solving of a design problem and that our students should benefit from working for a client and also from having to work in a group. Since the host institutions are treated as the client and the development of the work takes place by negotiation there is inevitably much interaction not only within the student groups but also between them and the client and with Polytechnic supervisors. The funding of projects is also done by negotiation.

Indeed the constant interaction and evaluation of the ongoing work maintains a tension between the students. On the one hand they are concerned to satisfy the clients by producing a high quality and useful solution to a real problem, and on the other hand they are concerned to safeguard the assessments of their own contributions to the work.

There is, in a sense, formative evaluation taking place throughout the project and the usefulness of this is perhaps emphasised by the group desire to ensure that they will achieve a satisfactory agreed standard. There is a constant monitoring of each other's

contribution in an effort to ensure that personal assessments will not be adversely affected by any individual lack of participation. It can be observed that summative individual assessments are made at the conclusion of the projects and this requires some precise presentational and organisation skills. Students can present their individual contributions either singly or jointly, and if joint presentations are made it is necessary for each student's individual contribution, in each assessment section, to be clearly identified. It has to be demonstrated that students have fully participated in all aspects of the process, and cannot avoid participation in any of the prescribed sections. It is their varying individual contributions in all these areas that finally lead to the individual assessments.

Some groups, of course, have a very tight organisation, and manage the quantity and quality of each other's work in such a way that a common mark becomes possible. Indeed, an alternative method of assessment in this area might be to specify that only a common assessment will be made. No doubt this would have implications with regard to students and their monitoring of each other's contributions. Some students aspire to higher levels of achievement than others and perhaps this latter suggestion would bring too much interpersonal pressure to bear on individual students. There are already



A solution to the problem of tidy storage of small offcuts of materials in Design and Technology Departments. Work on this project was done by Stella Spence, Fiona Clarke, Mike Arnold, Steve Lane, and Ken Riddell.

tensions evident in group work and this possibility could perhaps exacerbate them.

Certainly some groups are able to establish cohesion easily whilst others find it more difficult. The production of research, ideas, and artefacts flows more easily with those groups who are quickly able to organise themselves into a working group. Such groups are able to establish their own ground rules for the organisation of the necessary work and seem more easily able to agree to disagree when necessary. They arrange formal meetings, keep minutes, arrange a division of tasks wherever necessary, such as for research and investigation, and plan the progress of their contributions.

Brainstorming is a common tactic used to produce thoughts and ideas but such groups seem never to leave meetings without a clear idea of the results of their deliberations. Agreement on what has been said and on courses of action is a noticeable feature of such groups.

Where groups have difficulty in working together the projects are less clearly defined in terms of probable outcomes. Sometimes groups are formed from disparate personalities who, for one reason or another, have not previously formed any strong alliances. Planning becomes difficult. Individuals seem to find it more difficult to contribute a positive input into the

proceedings which rapidly causes the work to become fragmented. Arranging meetings and agreeing on outcomes and on individual task setting becomes a major headache. The manufacture of a finished artefact becomes a more difficult task because the interpersonal tensions between group members become more important than the task in hand.

Nevertheless, in outline all groups follow a similar procedure. Initially they have to decide which of the arranged project areas they wish to participate in and fairly rapidly arrange to visit the client. This first contact between the students and client is important so that some degree of trust can be built up on both sides of the partnership. It is also important for the students to discover precisely what the requirements of the client are. It is only when they know precisely the needs of the client that they can proceed with any further work with any degree of confidence.

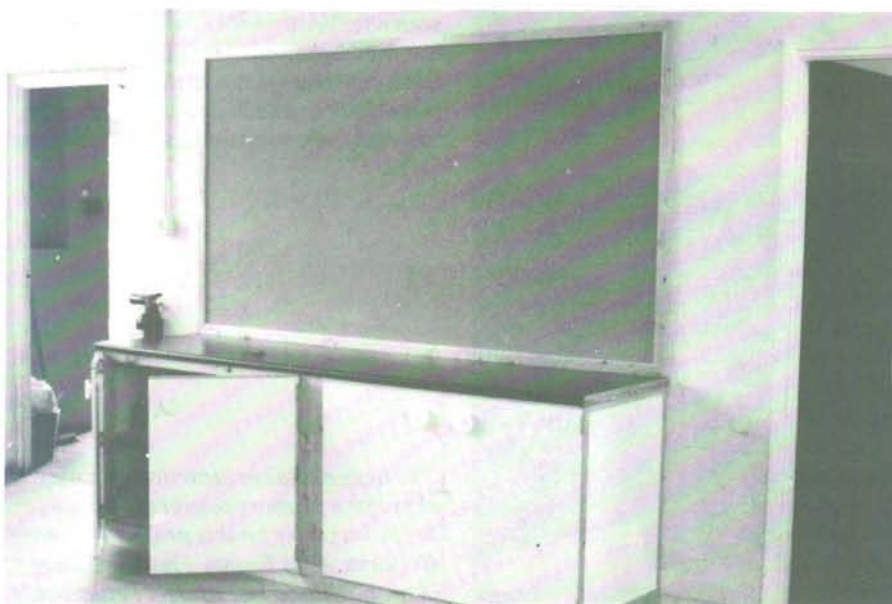
It is at this stage that some of the projected projects are dropped in favour of alternative ideas. Certainly when Polytechnic staff approach prospective client participants there must inevitably be some difficulty on the part of the clients with regard to the possible scale of their suggestions. They have no knowledge of the students at this stage or of what they might be capable of. Later, having met the students, clients are sometimes able to offer alternative

suggestions of opportunities which need a solution. This also occurs the other way round. Students sometimes spot other opportunities which seem to them to be more interesting or worthy of solution.

Having established the nature of the problem students then plan how they intend to proceed. Much letter writing and telephone calling takes place as the research and investigation phase gets under way and students have demonstrated that they are not restricted by their physical location. On one recent project the students arranged to have information faxed to them from France when they discovered that this location was the only one in Europe with the necessary information. Furthermore, visits to factories have proved useful in procuring a variety of useful components. It is important to note that while all this is going on the students are only timetabled for one whole day per week for work on this project. The length of the project varies from five to eight weeks, depending on the course.

Regular conferring with tutors takes place and there is also a formal opportunity for each group to make a presentation to the rest of the course outlining their own proceedings. In this way suggestions and questions are highlighted. The work continues on site or on the campus as necessary.

A matter of constant concern to students is that regarding assessment.



The design, construction, and installation of storage and display equipment in a secondary special school in West Wickham. The project was done by Jean Osborne, Alan White, Mike Judge, Sarah Sutton, and Geoff Worham.

The original briefing papers give clear instructions regarding procedures and the specific details of assessment. However, even though clear outlines are given there is still concern over how individual student assessment takes place when students are in fact working as members of a group.

First of all it should be noted that students are not expected to replicate each others work but are expected to demonstrate that they are able to complete all relevant component areas of the design and make continuum. This is one area where precise planning of work areas by the group is necessary. All students have to demonstrate a facility for the complete process. The individualised parts when brought together in a final presentation demonstrate how well the group structure has worked. However, students are never sure whether they have done enough, and ongoing tutorial guidance is a regular feature.

Nevertheless we ask them to produce a record of events which precisely details the contributions of the members of the group and consequently highlights the proportions of the whole activity which have been undertaken by the members of the group. In doing this students are able to record the organisation, planning, feasibility, and resourcing decisions which were made prior to manufacture, and following group agreement on the precise definition of the context of the

project. Notes on conversations with clients and staff are included, together with details of decisions taken, and in addition to an ongoing evaluation of the process of design and manufacture. This inevitably reflects their ability to overcome and adapt to problems or setbacks which they encounter.

In addition students are also expected to produce a design development folder which reflects the process through which they have researched and developed the solution to their specific problem. This can be a cumulative folder, reflecting the efforts of the whole group, as long as it is suitably coded so that individual student's efforts can be identified. Inevitably these folders tend to be extensive. One recent group also made a videotape of the whole procedure from beginning to end which was fully edited and dubbed with a soundtrack.

Finally the students have to produce a manufactured item. For almost all groups this results in a product which can be installed or used by the client and which satisfies the original need. In a minority of cases it may only be possible to manufacture a scaled prototype. Nevertheless, even with a prototype the craftsmanship is expected to be of a high standard.

To give some idea of the kinds of projects undertaken the following is a brief list:

- a play-frame for a pre-school play group;

- equipment to help teach the Derbyshire Language Scheme;
- the design and building of a primary school garden learning facility;
- a multi-purpose workbench facility for a disabled person's day centre;
- a survey of how a further education college library could be made more accessible to students with physical disabilities.

The importance of this project lies in the fact that it involves a real problem set in a live context. It is not an exercise set up with an imagined context. Also students need to be able to communicate with colleagues so that they can work together. All other course projects are individual projects and this is the one opportunity for them to demonstrate teamwork and interpersonal communication skills. Certainly when the students go out into the schools they will need to be able to communicate with a variety of people in order to proceed with their work, especially since the range of CDT work is now so wide.

Hopefully it provides students with an example of the kind of projects which are possible when they eventually teach in the schools. Not all school projects have to begin with a design brief aimed at the individual pupil and with the GCSE pupils are encouraged to identify their own design opportunities. Perhaps our students will be better able to direct their pupils towards opportunities in contexts of a broad social and environmental nature. It remains to be seen whether they shortly become more involved in commercial projects as well. Such contexts are not excluded from possibility and such developments may increase the opportunities for marketing ideas.



The design and construction of a play shop for a primary school in Sidcup. Work was done on this project by Ossie O'Garro, Alan Brown, Trevor Southee, Alan Thredder, and Martin Pentecost.