Originating CDT Projects

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In a work entitled the 'Dream Lucian describes how as a boy he was confronted by two women who ask him to choose under whose guidance he should make his career. One was charming and ladylike who introduced herself as 'Education' the other hard-handed, rude and dusty who represented 'Sculpture'. 'Education' implored the youth not to practice the Arts. It was, she said, socially disreputable and even if he could prove himself to be another Phidias, he would still be one of the hoi polloi, another craftsman, a mechanic. The boy took her advice and sought education and finally relates, with a degree of smugness, of his growing reputation as a literary man, received even in the most exclusive circles.

I am not sure whether Lucian's assessment of the social standing of the artist was accurate but I suspect it was Painting and sculpture had no muse in the ancient world and it was a considerable time before chairs of Art were established in universities. Craftsmen and mechanics . . . well theirs is another story. Art and Design when they exist as university courses are often of the sort that Lucian may well have approved. Frequently they do not involve the actual handling of media, paint, clay or whatever. No dirty process of aesthetic and practical development. The student makes no criticisms or judgements until all is well dried and the patina of time has settled on that which is to be studied.

The establishment of a hierarchy in educational terms has made it acceptable in some quaters to remove Design and Technology into the realms of pure theory. The students need have no connection with the practice of their studies. The discipline is self sufficient and requires no extrinsic justification. Pure scholarship is in every way respectable.

The reverse of the coin is presented by those who see it as a duty to discard subject philosophy and theory as a hindrance to the practicalities and honesty of making. Craft skills, industrial needs, function, tradition and intuition are only damaged, they argue, by placing too much store in theory and new ideas. But practical ability practised in a vacuum and without reference to collective memory and experience causes many to accept Lucian's narrow views.

How much better it would be if the extremes combined in a spirit of cooperation. A joining together of skills, abilities and understanding to develop in partnership with students the foundation for a brighter tomorrow.

CDT at its best is the bridgehead which can forge the links of reality between the academic and practical areas of study and underpin the creative, technological and ethical development of our future society. The relentless pursuit of the elements of our subject in isolation only leads to fragmentation and polarization.

A great part of the problem is the vast spectrum of activity which can justifiably be referred to as CDT. It is this diversity that entices a lot of us to contribute to this area of the curriculum. But it is this diversity that can also frighten us when we are confronted by the prospect of devising the scheme of work which will equip our students for their future progress.

Naturally teachers who are hard pressed and caring, will devise strategies that offer their students the greatest prospect of success, usually quantified at this point in time by achievement in external examination.

These requirements often lead to teaching which is self-contained. The examination syllabus dictates what goes on in the classroom and studio causing the teacher to search for material and projects which support the obligations of examination and make the best of the restrictions of environment, finance, option schemes, personal expertise and much, much more. Manipulation of these restraints produces methods which can be adopted or discarded to maintain 'standards'. Inevitably the teaching becomes knowledge led, method dominant, logical, sequential and safe. In CDT that often means following rigidly set projects which only offer scope for minor change and adaptation by students. We try to fool ourselves that this is a process of design.

The curriculum spread embodied in CDT is vast and it is not surprising that teaching the subject has become such a daunting task. It is also not surprising that the teacher at the 'sharp end' will welcome pre-packaged, tried and tested material as a lifeline to the success being demanded in education. The sight of CDT teachers buckling under the weight of teaching material at courses and exhibitions is one with which we are all becoming familiar.

The spiral of technological progress, unrestrained and almost uncontrolled is another pressure on the teacher of CDT. Today's expert can so easily become tomorrow's 'has been'. A fact that has not been overlooked by the manufacturers of pre-packaged teaching impedimenta.

Is there a way in which the limiting factors I have mentioned briefly can be neutralized or minimized? Is there a way forward? I believe there is but it requires CDT teachers to accept two precepts. One, that in teaching the subject it should be student centred and two, that creative design activity is the most important aspect of CDT curriculum.

How can we change our existing curriculum to ensure that all of our pupils have an experience that is educational and stretches every pupil or student in our charge so that they all make best use of their potential? To try and get some answers to these important questions I would like, for the time being at least, to discount all the reasons for not changing, how and what we teach, in departments of Craft, Design and Technology. No talk of examinations, finance, option groups, lack of expertise or skills etc. Let us examine the ideal so that we can confront our present situations and assess just what we might need to do to consolidate or improve our existing work.

I have suggested that we will be able to change what is taught in our departments but as you can probably guess what I really means is how are you going to change what is taught in your departments? If you do not personally instigate change then it becomes less valuable. If the changes are only the liking for and the use of someone elses course and material the work becomes diluted by transference. A sort of CDT chinese whispers.

Before any changes can be considered we have to believe them to be necessary. This will inevitably mean that you will examine the underlying philosophy that motivates your courses. It might be useful at this point if you could record in

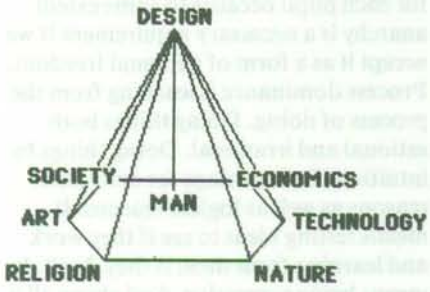
not more than 25 words what the raison d'etre of your course is. This can then be used as a starting point if you wish to make a comparative evaluation.

I think it might also be useful if I were to tell you briefly what motivates the courses for which I am responsible. I have already indicated that I see designing as the cardinal discipline in CDT. It is pivotal and supports every other activity in the spectrum of activity our departments encompass. That is not to suggest for one moment that I am anti technology or craft, just that I see these other aspects of the subject as enabling rather than ends in their own right. How then do I define design? If we had a long time perhaps we could get to grips with that problem. Certainly single statements or phrases leave out too much. Problem solving which is what I often hear design described as is just such a statement. The Design Council[1] have come up with a fairly comprehensive definition which I am sure you are familiar with. To refresh your memories they say that

> 'In the English language the word DESIGN can mean a great many things. Most other European languages have no single equivalent word and indeed some of them borrow the English DESIGN for some usages that their own traditional words do not admit. Thus Design can embrace the activity and products of the architect, the engineer, the craftsman, the decorator and the artist. It can describe the work of the textile designer, the silversmith, the choreographer and the creator of stage and television settings. One can design a machine, a system, a circuit or an experiment. To design is always to prescribe some form, structure, pattern or arrangement for a proposed thing, system or event. A design is always an integrated whole, a balanced prescription, a product of judgement and invention as well as of knowledge and skill.

That is a fairly comprehensive statement. Indeed it is so wide it is hardly usable as a starting point for devising a design education programme. But even with such a broad definition, words are still missing that I would like to see included. Words like society, environment, ecology, economy, ethics, technology, aesthetics, quality, emotion, the list could go on and I am sure you would only be too happy to add to it.

Skolimowski,[2] an architect, wrote a paper entitled 'Space, quality of life and architecture' and expressed his philosophy in a simple diagram. In his diagram design is at the pinnacle and man at the centre. The other factors he considers to be important are firmly included in the base giving a good foundation.



Bruce Archer[3] defines designing in a deceptively simple way when he says that:

> 'Design is that area of human experience, skill and knowledge that reflects man's concern with appreciation and adaptation of his surroundings in the light of his material and spiritual needs. In particular it relates with configuration, composition, meaning, value and purpose in man made phenomena'.

This series of admirably comprehensive statements clearly set out the boundaries in which designing is located. The teacher of design, however, will still need to carefully unpack and re-order these components before they can be of use. When sifted the information will not offer the teacher an instant panacea or for that matter a series of teaching packages. But it will offer the starting points for the creative teacher to discover what is to be taught.

From these starting points personal philosophies may develop which teachers can then use for guidance when formulating their own curriculum strategies. In the Department of Design and Technology at De La Salle College our philosophy has been developed over a number of years and been refined into a shorter and shorter statement. To some extent that is because all colleagues in the department understand and accept the general aims, even when subject matter is extremely diverse and specialised. There are no empires to be built, we all accept the concept that we support, in whatever form, the process of design.

We believe that it is our major concern to create an environment in which individuals or groups can work in a positive, creative and autonomous manner.

A most important aspect of all the courses is the development and maintenance of a design process which allows personal and creative growth. Although the acquisition of traditional skills and technologies has a place on the course care is exercised to establish a central position for design and to ensure that an obsession with skills and technology does not negate creativity. The balance between new technologies and methods and traditional expertise often provides the stimulus and motivation for exceptional design.

Students are asked to approach design through a series of analytical and intuitive experiments which are intended to challenge any established preconceptions and encourage fresh perceptions of the place of form and technologies in designing. All courses are structured so that no area of craft, design or technology is followed in isolation.

How does this philosophy translate into a taught course? How does this help to originate CDT projects? I will try to answer these questions in turn. To aid the translation I find it helpful to remind myself from time to time how I work as a teacher and as a designer.

I believe that there are only two ways in which a designer can work and that includes those designers who are in the process of being educated. They can work creatively or they can work non-creatively and conventionally. It can of course be argued that design work progresses by an amalgamation of both modes of working, a compromise

situation. The ability to compromise is certainly a good asset for a designer to have, but to be able to compromise the deisgner must first learn to recognize creativity. Without that ability the compromises are one sided. It is also argued that we cannot teach creativity, but if that is true we can certainly encourage its development.

Just as I believe that there are only two ways of designing I also believe that there are basically only two ways of teaching. We can use techniques and strategies that are method dominant or conversely, that are process dominant. I should like to explain a little more fully what I mean by these two modes of teaching.

To see examples of method dominance we have only to look about us. We are surrounded by teachers in a variety of subject areas who use this strategy. In essence it requires a statement of aims and objectives, closely followed by the production of a body of knowledge, carefully structured to support the perceived requirements. A programme is devised so that there is a gradual unfurling of knowledge and skill which is transferred to the pupil. The programme has to be organized, logical and sequential and will require the transference of all the component parts of the programme if success is to be assured. In designing and making, this sort of activity is often visualized in a graphic diagram; some kind of flow chart by which the pupils and the teacher can check that they have kept to the rules and not broken the conventions. There are lots of reasons why this sort of strategy is helpful and useful. But there is one overpowering reason why it is not suitable for the teaching of design and that is because following rules and conventions does not lead to creativity.

This sort of teaching encourages linear thinking. The measured, analytical approach breeds an almost moral self righteousness exuded by those who have absolute knowledge, proved by analysis and measurement. But this limited primitive rationalism, one step at a time approach, excludes not only the effects of human emotion and irrational behaviour but has also led to some very unacceptable situations. Nuclear physics has certainly produced cheap sources of energy, but it has also produced problematic waste and the nuclear bomb! Micro electronics and control technology have lowered production costs and improved efficiency in industry. The cost to society has been massive unemployment! The list could go on. I am not suggesting a Luddite approach to technology and progress but I am suggesting that a different kind of thinking might be more helpful to building a better society and world to live in.

Process dominance in teaching still requires the existence of aims and objectives but they are much more flexible. They may actually be different for each pupil because to some extent anarchy is a necessary requirement if we accept it as a form of personal freedom. Process dominance is learning from the process of doing. Doing things both rational and irrational. Doing things by intuition. Doing things for emotional reasons as well as logical reasons. It means testing ideas to see if they work and learning from them if they don't. It means being expressive. And above all it means being analytical, critical, selective and sensitive. It means understanding concepts of quality. It means showing initiative and persistence. It means being able to think laterally and diversely. To be able to think round corners because that is creative.

Adopting these propositions will lead to different teaching strategies and emphasis. Students will operate on a need to know basis. The teacher who in the past has been under pressure to be the fount of all knowledge will now become a director of resources and research, suggesting where information might best be gathered and helping to organize and analyse the material as a precursor to some form of realisation.

Curriculum boundaries will assume less importance as researching students cross them in the search of the knowledge and skills to realise their designs. Territorial prejudices will assume less importance as student and teachers work as a team. Educational blind spots will be put aside as pupils see practical ways of using what had only previously been theoretical. And perhaps most importantly, because students are negotiating their own education and progress, failure is not built into the course, particularly true for those who may otherwise have been judged to be non-examinable. Far-fetched? Not if we can create situations in which our students will experience the joy of being creative and successful.

All this freedopm and self direction on the part of the student leads one to the thought that the teacher is only there to offer space and facility. And that being done the outcome will be creative, vital work . Not true and if I have given you that impression I will try to rectify it.

Certainly pupils need starting points, programmes of work, information, knowledge and skills, both intellectual and practical. What they do not need, in almost all cases, is a situation that specifies as a starting point: Design and make a . . . Identify a need for a . . . Draw three ideas for a . . . And from that point in time the work and research becomes more narrow and more restricted. It generally ends with the production, almost by numbers, of a product or object which has been motivated by the teacher's preconceptions, inhibitions and limitations.

What do we put in place of this method of teaching? I would like to see a syllabus devised and offered to children, from a very early age, which covers an area of study we might call 'foundation studies'. Be careful, this is not an opportunity to 'fill' children with knowledge and skills although the outcome will be pupils who have both attributes. Rather it is an opportunity to introduce pupils in the very broadest and most open ended way to the world they live in, see and in every other sense, experience. It would be an opportunity to cross the whole curriculum, to manipulate the component parts that make up this growing experience and to express, record and debate the outcomes of it.

In our curriculum area we could isolate components that would support our developing philosophies of the subject. This would allow us to develop modules or units of education and experience which could explore, without developing or reinforcing preconceptions. The units would cover

the spectrum of activity we consider to be important. They may have simplle titles such as, Basic Design, Basic Technology, Materials Investigation, Critical Studies, etc. The titles are not important so long as they are finding out courses.

In Basic Design we might find out what happens to the apparent intensity of a primary colour when it is placed on a white, grey or black background, when it is placed on another different primary colour or on a complementary or secondary colour. Because we know some of the outcomes of this sort of work we can suggest some starting points. If the results are observed, recorded and discussed it will not be long before other suggestions for experiment are put forward by the pupils. This situation will almost certainly take us outside the limitations of our own knowledge and we will be working in the unknown.

In Basic Technology we might explore concepts of structural strength. Who can build the tallest, widest, smallest structure using straws and pins? Let's explore and record the reasons why some stood up, fell down, collapsed, comparing them with examples we can find about us. Which structure was the most economical, the heaviest, the lightest, the most aesthetic? Can we translate our ideas into other materials? And so on.

In Materials Investigation we might explore what happens to a piece of metal, wood, plastic, clay, leather, paper, etc. when we beat it with a hammer, cut it with a saw, scrape it with a knife. What happens to the same materials if we heat them with a blow torch, immerse them in water, stain them with paint, felt tip pens, water colour? How can we join these materials to themselves, to each other? Can we predict what will happen when we have gained some experience? Are we always right? Let us record the outcome of our experiments by writing, photographs, video and tape recordings, drawings, as computer data and by specimen retention.

When these areas of research are underway we can, as teacher directors, present our students with opportunities to use their new and developing skills and knowledge. They can use their knowledge in isolation or in combination with others. They may use it functionally or decoratively. They may use it to solve a problem in part or in full. They may use their knowledge to help others or purely for some piece of self expression. But however they use it they will be designing.

This will not happen overnight, or at the wave of a magic wand. But it may not happen at all unless we originate projects in CDT that will give us the means to free ourselves and our students from the straight jackets we sometimes most thoughtfully and caringly impose on them.

How then do we originate CDT packages at De La Salle? Our strategies change but we always use a design process so we can maximize the opportunities for our course members to be creative. But rather than talk about the process in generalities I thought I could describe an actual example of how we coaxed the 'Support through Change' retraining students into creative activity.

We started the process with a staff meeting in which we discussed a variety of ways in which we might contribute to the problem. The problem being that the students had to devise self contained teaching packages to sustain them for a term in schools whilst they released a member of the school department to a term of INSET.

We knew that their skills and abilities in CDT were developing and so to some extent were limited. We also knew that they had, because they are teachers and mature, experiences, interests, skills and abilities that lay outside CDT mainstream. These skills and abilities we thought might give support and to some extent boost confidence, if they could be tapped.

We decided on a plan of action and devised a one day course and a timeable for development and production of the necessary teaching material. We decided to offer a course which gave some insight into how a team of teachers with different specialties might take a thematic approach to the teaching of Design and Technology. Before the day of activity, however, we thought it necessary to point out that there were many ways of approaching the subject so a formal curriculum lecture was delivered entitled 'Teaching Strategies'.

Having decided what we wanted to do with the group to inspire activity, we organized the day so that morning coffee, lunch and afternoon tea was provided so that they could not escape the consequence of an input and perhaps more importantly, that they could continue to work without interruptions.

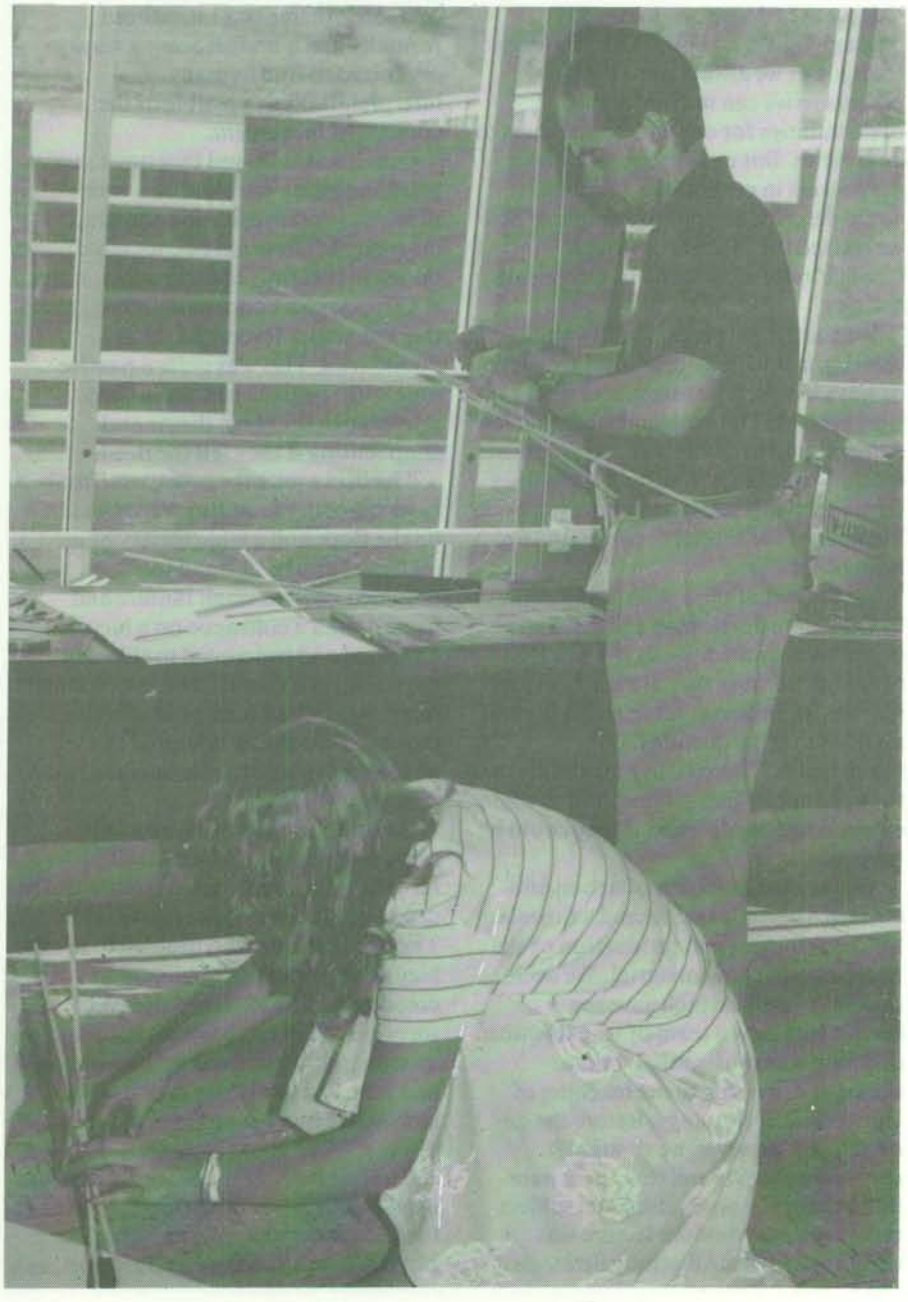
After a short introduction the course members made short presentations about their last CDT teaching experience in schools. This produced a feeling of comradery as the group shared successes and difficulties. After coffee the theme was introduced formally and a brainstorming session organized to find as many interpretations as possible of the concept of *movement.*

Lunch was followed by a quiet session when the group were shown a series of slides which expressed in some way, movement. These were extremely diverse taking in concepts like transport, water, electricity, sport and many, many others that cut across several teaching boundaries. This was quite a passive time with students just noting any reference to the given theme and contributing if they felt the need.

The decks were then cleared to make a large space in the studio. Paper was laid on the floor and a wide variety of media, materials and basic hand tools were provided. With a small fanfare and some drama a colleague on a bicycle appeared and proceeded to ride around the studio in a figure eight, over a small ramp, which had been made for the purpose. The rather bemused students were asked to record this ongoing event in any way they chose.

Some decided to work in groups, some on their own. Methods of recording the event varied from video to drawing. That was quite predictable. The two students who decided to use the bicycle's progress through puddles of coloured paints to record the event surprised all of us. After an hour and a quarter's hectic activity we had coffee and returned to discuss the outcomes of labour. We had a lot to look at and discuss.

The last hour of the day was occupied by two colleagues from opposite ends of the CDT spectrum talking about the bicycle. It was explored as transport, as a



piece of technology, as an image in advertising, as an instigator of social change, as a structure and in terms of aesthetics. It was explored as a convertor of human energy, as an alternative power source and as a bit player in the futurist movement. The bicycle had become the centre of a diverse lesson and a teaching aid.

Finally the students were asked to consider how they, working in teams, could develop the theme of movement into a CDT project for use in schools. A timetable for producing and developing the material was proposed and staff time for help and advice allotted.

The results were creative, exciting and original. The projects were diverse covering topics such as animation, the fairground and town planning. The projects were devised to cover the spectrum of activity in CDT but also devised to introduce their pupils to the projects through a process of design. But perhaps the most important aspect of the project was that each student had been exposed to a situation where they had been creative. They had originated the teaching material and although they were able to exchange material to increase their teaching resource, they knew that the process they had undergone was repeatable. They were self-reliant.

References

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3. Baynes, K., 'Towards Defining a Design Dimension to the Curriculum', Journal of Art and Design Education, Vol. 4, No. 3.