

Using a Team Approach in the Delivery of National Curriculum Technology

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Over the last two decades, the practical elements of the curriculum, notably woodwork, metalwork and technical drawing, have gone through a substantial amount of change. Such a statement, on the face of it, seems acceptable. It is true that the actual titles given to these areas of study have changed more than once with varying combinations of Craft Design and Technology, CDT (Woodwork), CDT (Metalwork), CDT (Design and Communication), CDT (Technology), Rural Craft and of course Woodwork, Metalwork and Technical Drawing appearing on the timetables of many schools. Since the introduction of the National Curriculum such timetables have been further confused by the inclusion of Technology, a combination of Design and Technology, and Information Technology. Given that technology, according to The National Curriculum Council, is, or could be, made up of 'inputs' from CDT, Art and Design, Business Studies, Home Economics (formerly Domestic Science, formerly Cooking) and, of course, Information Technology and given that Mathematics and Science also have a part to play in school Technology, it would appear that the practical curriculum is the very epitome of curriculum change towards which the student of change could turn for inspiration.

But this is not so.

Certainly attempts have been made outside the classroom to influence and change the content of this area of the curriculum in terms of published resource material and available equipment for use in the classroom (notably computer equipment), inservice training for teachers (including retraining) and the introduction of new courses for the training of new entrants to the field (the credibility of which must be questionable as the deliverers of such courses generally base their delivery upon their own experiences, experiences usually in one or more of the 'discreet' subject areas mentioned previously which we are led to believe change has overtaken).

And, of course, the teachers themselves have made attempts to change the content of their courses, their delivery and indeed the very appearance of their classrooms. Indeed, it is this latter preoccupation with the classroom environment where drawing boards, woodwork benches and metalwork lathes are placed side by side supported by the latest posters of BPs Young Designer of the Year Competition that has captured the imagination of most 'forward thinking' teachers. Alas, such changes have remained superficial, for there is still no widespread evidence within CDT classrooms, woodwork classrooms, metalwork classrooms, home economics classrooms etc. that its occupants are at ease with what they are doing. Many pupils and teachers alike, given the opportunity, would sooner go back to the construction of ellipses, the dovetail joint and screw cutting than looking for design opportunities. It would appear that, within the last decade, as education has become more accountable, including the curriculum itself, with the formulation of the National Curriculum it fell upon the various National Curriculum Working Groups, inadvertently, to substantiate the need for curriculum time for their particular foundation subject. Of course, this could be mere speculation but if choices did have to be made, for after all, the school timetable is finite, public opinion would fall solidly behind the inclusion of the likes of mathematics, english and science but a hard battle would have to be fought for the inclusion of woodwork and metalwork or even CDT (metalwork) and CDT (woodwork) or even Home Economics. It may well be then that in recognising this need for a substantive argument in favour of the inclusion of 'the practical subjects' within the National Curriculum, the National Curriculum Working Group for Technology created a well documented philosophy outlining the importance of an education in this area of the curriculum and called the subject 'Technology'. However, close examination of the reports of The Working Group reveals that the underlying philosophy, and the content of the Programmes of Study

(what should be taught) bear little resemblance to 'the practical subjects' mentioned previously. It is true that there are many attempts within the reports to link suggested practices within Technology with the likes of CDT, Home Economics, Art and Design etc. but these seem to be more an attempt to win over the support of teachers than anything else, for if The Working Group did consciously re-write this area of the curriculum then the problems of 'who was going to teach it' and 'what to do with the apparently redundant teachers of metalwork, woodwork, home economics etc.' must have been high on the agenda. Comment on the latter was surprisingly clear in that Lady Parkes, chair of The Working Group, in a letter to the then Secretary of State for Education, stated that 'teachers will welcome the opportunity to develop coherent programmes of activities for design and technology (Technology) to which they can contribute their own subject expertise', (presumably teachers of CDT, home economics, woodwork etc.). Thus, given that Technology has a discreet philosophy of its own which sets it apart from other areas of the curriculum and further that it has no real relationship with 'the practical subjects' or even the so called contributory subjects of CDT, home economics, Art and Design, Information Technology and Business Studies (the argument for which has been documented elsewhere — Weston, 1991), it would seem that the change effected upon this area is extreme if not total.

Whereas the staff involved in the delivery have apparently been sheltered from such fundamental change, almost with a 'laissez-faire' approach and indeed appear to have been positively encouraged to avoid change by 'contributing' to Technology through pursuance of their own (unchanged) expertise.

With National Curriculum Technology now 'on line' in the majority of schools this mis-match of change between teachers and the subject (Technology) has become a major problem. Teachers are

still clinging to their own subject discipline in the belief that their little bit contributed is sufficient yet unable to see where this fits into the whole. Feelings of apprehension and fear abound and morale is often low. Teachers who do take the positive approach with collaborative planning and initiatives are not wholeheartedly clear that what they are doing is 'right'. Change has passed them by.

A more positive outcome of the way in which Technology has been introduced into schools is the common belief in schools that the delivery of Technology depends upon teachers from different disciplines working together (as suggested by the Technology Working Group). Although this is not strictly true, in the sense that the relationship between a single teacher and a group of young design technologists (often referred to as mentor group organisation) is educationally more important than ensuring that pupils 'experience a range of disciplines' by continually moving from teacher to teacher, it does mean that Technology teachers are used to meeting together regularly to discuss and plan the curriculum. Given that each member of these meetings is a design technologist and thus somewhat of an expert in 'design team' methodology, you would expect that participation, collaboration and initiative and all the things that go to make up a successful group approach would be evident. But this is not usually so, for the very reason set out above. Group members still look for security within what they know best (their own discipline, which in some cases may have no bearing whatsoever on the business in hand), actions, if any are hesitant and misdirected, comments are guarded, agreements are misunderstood and ignored, group cohesion is limited and frustration is rife.

Managers of schools are now becoming more and more aware of this problem within their Technology Departments and are usually looking to the Co-ordinator or Head of Technology to sort it out. Of

course even they do not understand the problem and how it has arisen and often see the Co-ordinator's role as getting a team of teachers ('ideally' a CDT teacher, a home economist, an artist, a business studies teacher and an IT teacher) to simply work together without too much antagonism.

Another view, the view taken here, is that the members of the Technology team or group should be seen as technologists (just as the Mathematics team is comprised of mathematicians and the Science team of scientists) and that (a) within an existing team emphasis should be placed upon the role that the individual performs (or does not perform) within the team rather than the 'specialism or expertise' that individuals may bring to the classroom, and (b) when recruiting a new member to a team, a major criteria should be how an individual would fit into an existing team in terms of adding to the effectiveness of how the group operates rather than 'a willingness to teach whatever'.

The study of groups and how they operate is a complex matter. What follows is a brief look at how the above proposal may assist teachers of Technology in bringing about change within themselves in order that they may deliver the new subject of Technology which has crept up and beyond them.

A team or a group?

In the introduction, the word 'team' and the word 'group' have been used without any clear distinction. There is a distinction which requires clarification. Handy (1976) suggests that 'a group is any collection of people who perceive themselves to be a group'. It is accepted that persons belonging to a group usually interact with each other and are aware of each other. However, Handy (1976) offers further, crucial, clarification:

A dozen individuals in a pub by random chance are not a group, although they may be interacting (talking), have a common objective (drink and socialisation), and be aware

of each other. But put those same people in an emergency situation, let them be trapped by fire in the saloon bar, then that random collection of people will become a group, will start to have some collective identity, because they will start to perceive themselves as a group, with another sort of objective and with needs for other sorts of interaction ... Common objectives, defined membership criteria, predetermined hierarchies, these are not enough without this self perception by the members. (Handy, 1976, p. 145/146).

Thus it seems that the crucial requirement for a group is 'self perception' a phenomenon which is both difficult to describe and difficult to quantify although spontaneously identifiable when it is there. How often have we sat at a 'group' meeting where the conversation is amiable, there is an agenda to follow, someone is religiously taking the minutes, the chair conducts the meeting and yet no-one really experiences that feeling of 'worthwhileness' about matters. Often, after the meeting, comments like 'I don't know, there still seems something missing' or 'another boring meeting' are secretly shared. As often as not, what is missing is this 'self perception'.

Bass (1960), on the other hand, offers an alternative, in defining a group as:

A collection of individuals whose existence as a collection is rewarding to the individuals (or enables them to avoid punishment). A group does not necessarily perceive itself as such. The members do not have to share common goals. Nor are interaction, interlocking roles, and shared ways of behaviour implied in the definition, although these are common characteristics of many groups. (Bass, 1960, p.45).

Thus our search for clarity appears to have foundered, yet Adair (1986) proposes that the introduction of 'a broad qualification and focus upon groups

found in work environments', which is what we are primarily concerned with, enables a much more definitive description to be made:

If the *work* qualification is introduced then many of the disagreements and differences of emphasis among psychologists about what distinguishes those collections of individuals that are groups from those that are not begin to fade. A collection of people is clearly a work group when it possesses most if not all of these characteristics:

- A definable membership — a collection of two or more people identifiable by name or type. (1)
- Group consciousness — the members think of themselves as a group, have a collective perception of unity, a conscious identification with each other. (2)
- A sense of shared purpose — the members have the same common task or goals or interests. (3)
- Interdependence — the members need the help of one another to accomplish the purposes for which they joined the group. (4)
- Interaction — the members communicate with one another, influence one another, react to one another. (5)
- Ability to act in a unitary manner — the group can work as a single organism. (6)

(Adair, 1986, p.6). Numbers in *italics* are inserted for my convenience.

In adopting Adair's definition of a work group it may be worthwhile considering the Technology 'group' (referred to in the introduction) and how its characteristics might satisfy Adair's criteria. There seems little argument that the group satisfies requirements (1). Satisfying requirement (2) is arguable, some members may think of themselves as part of the group whilst others, for some or all of the time will not. Some may prefer to

identify with other, sometimes opposing groups (in terms of opposing change) within which they may feel more secure in the misguided hope that the feared unknown may eventually go away, and may well be seen by other members of the group as 'not to be trusted', whilst others may form together into smaller groups in opposition to the main group for the same reason. Similarly with requirement (3), a lack of understanding of the prime task of the group, depending entirely on a common understanding of the subject Technology, which is likely to be missing, may well be substituted by individual tasks or goals or interests which may not only be at variance with the 'real' or intended task of the group but may also be at variance with each other. Individuals may also attempt to redirect the group as a whole towards their particular goal either through self interest or an unwillingness to move away from what is familiar and thus 'safe ground'. Requirement (4) is a little less clear. Assuming that the members joined the group voluntarily with a full understanding of and acceptance of the purposes of the group (to be part of a fundamental change in their view of what they do and how they do it), then (4) seems to be met. But it is more likely the case that members are there not out of choice and would much rather use the time 'constructively' in pursuing things as they are within their own disciplines, requiring little or no help from outsiders. Interaction (5) in terms of members communicating with each other may well take place but the relevance of what is communicated may be questioned. Social conversation may be prevalent thus avoiding the task and trivialities may be used to fend off any doubt about a members understanding of the task thus avoiding what may be perceived as professional embarrassment. In addition, if (2) and (3) above are not met, members may simply 'switch off' and decide that the proceedings have nothing to do with them and merely remain silent. Finally, requirement (6) seems to be a non starter as it is unlikely that the group will be able

to work as a single organism if (2) to (5) are not met.

In analysing the Technology group in this way we have obviously touched upon the ways in which groups work, a subject which is a lot more complicated and which will be looked at in greater detail later.

In turning now to the word 'team', Adair (1986) determines that 'a team can be distinguished from a group' and offers Bernard Babbington Smith's definition:

a team is a group in which the individuals have a common aim and in which the jobs and skills of each member fit in with those of others, as — to take a very mechanical and static analogy — in a jigsaw puzzle pieces fit together without distortion and together produce an overall pattern. (Adair, 1986, p.95)

Adair (1986) goes on to say that 'a common task and complimentary contributions are essential to the concept of a team'. Further clarification is offered by Adair with the following illustrations of teamwork:

Example 1

Nature of task: Can be carried out by a single person, but time required is not available.

Implications: Several people doing the same work may complete the task in the given time, for example, 500 envelopes that need to be addressed, filled, stamped by and dispatched in the afternoon post. Each knows what to do and does it independently.

Example 2.

Nature of task: Effort or force required cannot be exerted by one person, for example, to lift a lorry off someone who has been knocked down.

Implications: A group of people must work together. A degree of co-ordination will be needed between the operatives.

Example 3.

Nature of task: Several distinct operations are required at the same time or in concert for example an orchestra.

Implications: Here someone beyond the operators may be needed to organise and co-ordinate, for example a conductor.

It seems then that the members of a team contribute their individual skills which, when combined together sometimes under the direction of a leader although not always, can carry out an operation or task which an individual alone is not capable of. Further, each team member is clear as to what he or she has to do, which may or may not be identical to that of other team members. Where individual team tasks are different it does not require that each team member has an understanding of the tasks of other members. Where co-ordination is required amongst team members this is usually left to the team leader to organise and supervise.

Finally, Adair (1986) suggests that a team can be made up of a number of experts who may work together to solve quite complicated problems, usually by dividing the problem into smaller problems and allowing the team member with the appropriate expertise to work on these smaller more focused problems: 'Supposing, lastly, that a task is so complicated that more than one expert is needed to solve it. When it can be broken down into a number of smaller problems, which have to be worked out consecutively or in parallel, these can be tackled by several experts. You need in effect a series of little experts rather than one big one in such cases ...Clearly we are over the threshold of teamwork. Each member is an expert in his own way.'

It would appear then that Technology teachers are in fact members of a team in that they each have an expertise or subject discipline from which to contribute and a leader (Co-ordinator or Head of Department) who organises the members in the execution of tasks. However, given that the expertise and

disciplines available have eluded change (as suggested earlier) and probably remain as skills and knowledge associated with home economics, metalwork, woodwork etc., it is unlikely that the combined efforts of the team will be equated to the teaching of Technology. Indeed, it is likely that co-ordination between members will concentrate on administrative tasks, timetabling, room sharing and resources and the organising of such will be the main function of the Co-ordinator, the actual primary task of each member being taken for granted (what they should teach and how it should be taught), remaining unquestioned and unchanged.

Clearly, promotion of change amongst technology staff may only be accomplished from within a working group (as described previously). It is possible that, once change has been brought about the working group may become a team in using new knowledge and skills and expertise to perform new tasks and pursue new goals more efficiently. This transitional change process may be viewed as follows:

Stage One

The Technology Department comprises a team of 'experts' commonly from the subject disciplines of home economics, art and design, CDT, business studies, information technology and even woodwork, metalwork and technical drawing. They work together as a team under the direction of the Head of Department but co-ordination is usually concerned with timetabling, rooming, resourcing and administration. What is actually taught by each member is not questioned. The title Technology Department is misguided as it is unlikely that Technology is taught to any great extent.

Stage Two

The team is reformed into a working group. Through interaction and interdependence a sense of shared purpose develops and common tasks and goals are shared. New understandings

knowledge and skills are acquired and change takes place. Members are now able to perceive themselves as 'technologists' and it is likely that Technology will be taught.

Stage Three

The new Technology group now have the confidence to form into a Technology team so that new skills, knowledge and expertise can be used effectively.

If working groups are to be used as the agent of change then how groups work, member roles and the role of the leader need closer examination.

Roles within the work group

Roles within a group may be divided into three types — group task roles, group maintenance roles and individual roles. In that the way such roles affect the functioning of the group may well affect the intended purpose of the group (in our case to bring about change within a group of teachers charged with the teaching of Technology), it is important that such roles are understood and recognised, certainly by the leader (the Co-ordinator of Technology). It may well be that such understanding could be usefully shared with one or two others of the group who may be at the forefront of the initiative. Further, if ownership of the initiative is to be shared amongst all members, and some would say that this is important from the outset, then such understanding might be shared with the group as a whole. How the latter is actually implemented is a matter of judgement, too slowly may promote feelings of embarrassment and betrayal. It is certainly an issue that has to be considered, sooner or later.

Adair (1986), although making it clear that a group member may adopt many roles, considers that group task roles are mainly concerned with the function of 'facilitating and co-ordinating (these) group problem solving activities'. He cites the work of Benne and Sheats in 1948 in proposing the following categories of group task roles:

Initiator-contributor

Suggests to group new ideas, new group goals, or new definition of problem; proposes new procedures, ways of handling some difficulty or forms of organisation.

Information seeker

Asks for clarification of suggestions in terms of factual accuracy; seeks information and facts relevant to problem.

Opinion seeker

Ask not for facts but for clarification of the values pertinent to what the group is undertaking or involved in the various suggestions.

Information giver

Offers facts or generalisations which are 'authoritative' or relates his own experience to the group problem.

Opinion giver

States his belief or opinion pertinently to a suggestion made or alternatives being canvassed.

Elaborator

Spells out suggestions in terms of examples or developed meanings or offers reasons for suggestions and tries to deduce consequences of following them.

Co-ordinator

Shows or clarifies the relationships among various ideas and suggestions and tries to pull them together; attempts to co-ordinate the activities of members or subgroup.

Orienter

Defines the position of the group with respect to its goals; summarises what has happened; points to departures from agreed directions; raises questions upon direction which the group discussion is taking.

Evaluator — critic

Subjects the accomplishment of the group to some standard or set of standards.

Energiser

Prods the group to action or decision; attempts to stimulate or arouse the group to 'greater' or 'higher quality' activity.

Procedural technician

Expedites group movement by doing things for the group, performing routine tasks, for example distributing materials, rearranging seats, operating tape-recorder.

Recorder

Writes down suggestions, makes a record of group decisions; acts as a 'group memory'.
(Adair, 1986, p.41-42).

Group maintenance roles are considered to be those member functions which focus upon contributions which are designed to promote, according to Benne and Sheats (1948), 'the building of group — centred attitudes and orientation among the members of a group or the maintenance and perpetuation of such group centred behaviour', here, seven categories are afforded;

Encourager

Praises, agrees with and accepts the contribution of others; indicates warmth and solidarity in his attitude toward other group members; indicates understanding and acceptance of other points of view, ideas and suggestions.

Harmoniser

mediates the differences between other members; attempts to reconcile disagreements, relieves tension in conflict situations through humour, pouring oil on troubled waters, and so on.

Compromiser

Operates from within a conflict in which his idea or position is involved. He may offer compromise by yielding status, admitting his error, by disciplining himself to maintain group harmony or by 'coming half way' in moving along with the group.

Gatekeeper-expediter

Attempts to keep communication channels open by encouraging or facilitating the participation of others ('we haven't heard the ideas of Mr X yet', and so on); proposes regulating flow of information, for example limit on length of contributions so all can have a say.

Standard setter

Expresses standards for the 'group or applies standards in evaluating the quality of group process.

Group observer-commentator

Keeps records of various aspects of group process and feeds such data with proposed interpretations into the group's evaluation of its own procedures.

Follower

Goes along with the movement of the group, more or less passively accepting the ideas of others, serving as audience in group discussion and decision.
(Adair, 1986, p.42-43).

Thus, task roles and maintenance roles by examination are quite positive in the functioning of a work group. However, as anyone who has been part of a group will know, there are usually members who take on quite negative roles and are always ready to 'throw a spanner in the works'. Indeed there are those who see it as their prime function whether they agree or disagree with the group's actions or direction. Benne and Sheats (1948) see such actions by individuals as an attempt to satisfy individual needs and suggest that a high incidence of such actions may require a group to look seriously at the way its members are operating before proceeding with the task(s) in hand:

Attempts by 'members of a group to satisfy individual needs which are irrelevant to the group task and which are non-oriented or negatively oriented to group building and maintenance set problems of group and member training. A high incidence of 'individual-centred' as opposed to

'group centred' participation in a group always calls for self-diagnosis of the group'.

(Adair, 1986, p.43).

Such negative roles are categorised by Adair, from the original work of Benne and Sheats, as follows:

Aggressor

Deflates status of others; expresses disapproval of the values, acts or feelings of others; attacks group or the problem it is working on; jokes aggressively; shows envy towards others.

Blocker

Tends to be negative and stubbornly resistant; disagrees and opposes without or beyond reason; attempts to maintain or bring back an issue after the group has rejected or by-passed it.

Recognition seeker

Works in various ways to call attention to himself: boasting, reporting on personal achievements, acting in unusual ways or struggling to prevent his being placed in an 'inferior' position.

Self-Confessor

Uses the audience opportunity which the group setting provides to express personal, non-group oriented ideas, feelings and insights.

Playboy

Makes a display of his lack of involvement in the group's processes, in the form of cynicism, nonchalance, horseplay and other less studied 'out of school' behaviour.

Dominator

Tries to assert authority or superiority in manipulating the group or certain members of the group, by example flattery, asserting superior status or right to attention, giving directions authoritatively, interrupting the contributions of others.

Help-seeker

Attempts to call forth 'sympathy' response from other members of the group, through expressions of insecurity, personal confusion or depreciation of himself beyond reason.

Special interest pleader

Speaks for the 'small businessman', the 'grass roots' community, the 'housewife', all 'work people' and so on, usually cloaking his own prejudices or biases in the stereotype which best fits his individual need.

(Adair, 1986, p.44)

Adair is somewhat critical of Benne and Sheats' total disapproval of the individual role within the functioning of groups, a disapproval which is quite evident in the categorisation. It is well to remember that as individuals we have certain characteristics which are sometimes difficult to adjust or amend. Attitudes develop over a long period of time and are not changed overnight. It could be argued that self interest is a vital part of the functioning of the individual. Let us not fool ourselves into thinking that such individualism can be negated by 'a sharp word in the ear of the offender'. It is a matter of balance, between meeting the needs of the group on the one hand and those of the individual within the group on the other, a task usually falling at the feet of the leader. As Adair (1986) puts it:

Achieving a balance between the interests and self-expression of each individual on the one hand and of the group on the other, is one of the most challenging tasks of leaders. It is best done by reference to the third dimension — the common task. For it is the value of that task which draws us together and underpins our unity. (Adair, 1986, p.59).

In consideration of the change agent system

So far, in addressing the problem of change facing the Technology Department, we have to a degree assumed that the strategy proposed, that

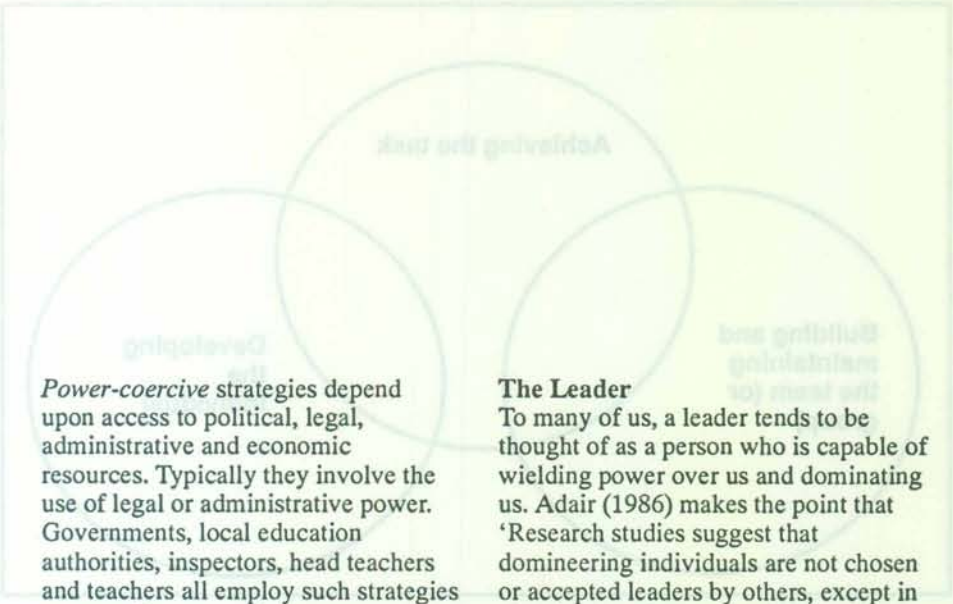
of 'group managed' or 'self managed' change is the only possibility available. Of course, it is not, but in looking at the work of Ray Bolan, 'The management of educational change: towards a conceptual framework', it does appear that the 'group strategy' is favourable.

Bolan (1975) suggests that educational innovation comprises three major systems which, over the time of the process of innovation interact with each other. They are The Change Agent, The Innovation and The User. It is the opinion here that, first of all, the innovation with which we are concerned, that of the introduction of National Curriculum Technology into schools is the problem with which the Technology Department is faced and as such is not the prime subject of this paper. Our concern is with the Technology Department itself and how it might handle the innovation. Secondly, if a 'group managed' strategy is under consideration then the change agent and the user are the same. Thus it is with the Change Agent System that we are concerned.

Bolan (1975) suggests that the change agent may be 'an individual teacher, head or adviser, a teachers' centre, a local authority or national government'.

Bolan goes on to say that one of the most important considerations with the change agent is its authority relationship with the user. In our case this does not seem to be a problem in that the change agent and the user are the same. However, it could be that at a micro level authority relationships within the work group itself, at times, could present a problem. For instance, the relationship between The Head of Department of many years experience and the young probationer within the group may change between group work situations and 'normal' professional duties and may need careful handling.

The change agent has access to a variety of innovation strategies and Bolan offers Benis, Benne and Chin's typology:



Power-coercive strategies depend upon access to political, legal, administrative and economic resources. Typically they involve the use of legal or administrative power. Governments, local education authorities, inspectors, head teachers and teachers all employ such strategies at some time or another.

Empirical-rational strategies assume that men are reasonable and will respond best to rational explanation and demonstration. Typically they involve the use of education, training and publications to disseminate knowledge and research findings.

Normative—re-educative strategies assume that effective innovation requires a change of attitudes, relationships, values and skills and, therefore, the activation of forces within the client system. They typically involve a consultant/change agent who works in co-operation with a client system and uses behavioural skills.

(Harris et al., 1975, p.277).

In considering the above strategies it is important to realise that in reality they do not usually exist in their pure form and innovations usually make use of all during the process. However, close examination of the normative — re-educative model, where changes in attitudes, relationships, values and skills and 'the activation of forces within the client system' would seem to suggest a similarity with the 'group managed' strategy for change within the Technology Department referred to earlier and would seem to place our proposal on sounder theoretical footing.

Many references have been made so far to the role of the leader within the work group, a person who is obviously the king pin of change. It is to the role of the leader that we now turn.

The Leader

To many of us, a leader tends to be thought of as a person who is capable of wielding power over us and dominating us. Adair (1986) makes the point that 'Research studies suggest that domineering individuals are not chosen or accepted leaders by others, except in situations such as prison. Physical strength or size, a dominant personality, or a will for power over others, is not the answer'. And further that 'effective leadership is founded upon respect and trust, not fear and submission'. Adair insists that 'leadership involves focusing the efforts of a group of people towards a common goal and enabling them to work together as a team. A leader should be directive in a democratic way'.

What must be borne in mind regarding the leader of the work group (the Technology Co-ordinator or Head of Technology) is that he/she may not necessarily possess such qualities. The leader in this case may have been placed in the position based on completely different criteria such as most senior in the department (in terms of years in the profession), being in the right place at the right time, 'sideways promotion', a very able teacher of children etc., misguided but well intentioned criteria. It must also be realised that in most cases the Technology leader is not starting from scratch, the leader and the group may have been established for some time before the problem of Technology implementation arose and he/she may have to re-establish lost credibility and respect. Thus the leader him/herself may have to go through a process of self-appraisal if the group is to function well. As Adair (1986) puts it, 'an important aspect of leadership is knowing yourself. Knowing your own strengths and weaknesses is a key step on the path of making the most of what you have to offer'. Indeed, Adair goes on to suggest that such self-appraisal is crucial when recruiting to a team in that, 'you should deliberately choose individuals (to work with you) who have strengths, knowledge and experience which you do not possess

in considerable measure'. Thus knowing oneself and knowing the individuals within the group is a key component of effective leadership.

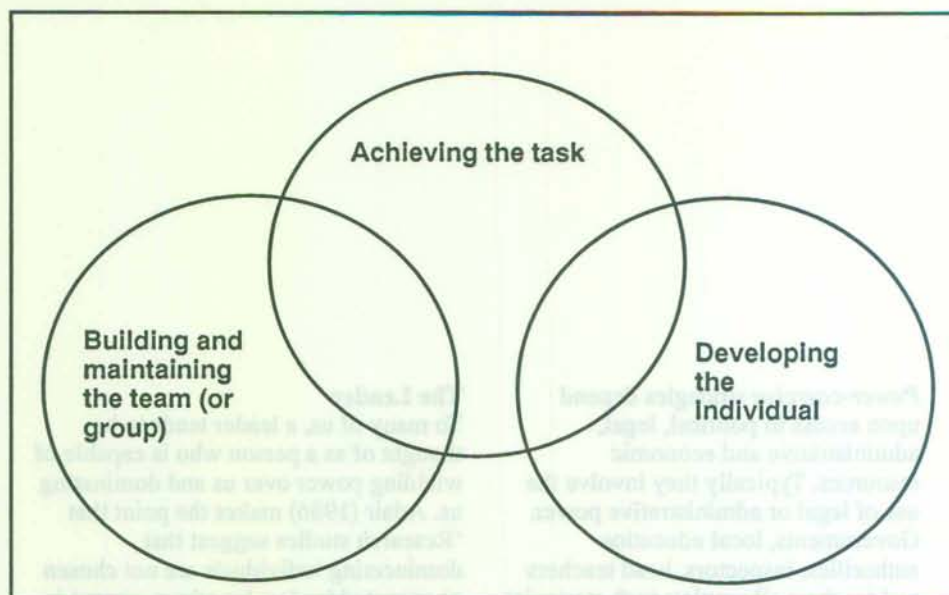
A point that appears particularly pertinent to the leader of the Technology work group:

The first responsibility of leadership is to define the objective. Achieving the aim is the ultimate test of leadership. Until you know clearly what it is you want to achieve you can't begin to direct other people towards it. When the objective or task is not easy to define the effective leader takes the time to think it out. Without a clear goal there is no such thing as concerted team work. Besides, who will follow a leader who does not know where he is going? If a blind man leads a blind man they will both fall into a ditch.

(Adair, 1986, p.120).

Thus, the leader of the Technology group must have some idea of what it is the group should do, which direction they should proceed with the implementation of National Curriculum Technology. Such ideas should not, of course, be dogmatic and should be flexible enough to encompass the views and ideas of the rest of the group. Adair's use of the phrase 'to direct other people towards it' is a little unfortunate, in that in the context of a work group, this should not be a primary function of the leader. Really, the Technology leader needs sufficient vision to provide starting points for the group but with sufficient self-awareness to avoid self indulgence in ideas and directions that become self centred and not in the best interests of the group and the solution to the problem. He/she needs to 'make sure each individual knows and feels that his part of the task is making a significant contribution to the group's overall task', as Adair puts it.

It seems wise, to begin with at least, for the leader to use his/her time in getting to know and understand the people within the group, as Adair puts it 'that does not



mean being matey or familiar. It just means the willingness to spend time talking and listening'.

Adair (1986) offers a diagrammatic representation of 'the leader's core responsibility' (see opposite).

Without doubt the position of leader within the work group is crucial. The skills required of a good leader are wide ranging, skills that cannot be learned 'overnight', if at all. Some would argue that leaders are born, not made. Suffice it to say that the concept of leadership is too complex a matter to pursue in any greater detail here but that is not to belittle its importance.

Finally, a word of caution for all leaders, from Handy (1976):

...the management of people is like driving a car or, perhaps, making love. Most of us do it at some time or other. Most of us do it at least adequately though perhaps we worry from time to time that we might do it better. But we are certainly not going to admit it openly, certainly not going to ask for lessons in it, hardly prepared to discuss it except in a jocular vein. For the management of people is something that all able-bodied men can take in their stride. Or is it? (Handy, 1976, p.87).

Conclusion

The implementation of National Curriculum Technology within schools is, and is likely to continue to be, a very difficult undertaking. It involves a fundamental change in the philosophy of the teaching which it is proposed that it should replace. It involves a considerable amount of change both to procedures, teaching and learning strategies and not least to the attitudes and values of its teachers. The National Curriculum Technology Working Group, the prime instigating body of the Technology initiative proposed that the subject be delivered by the then teachers of Craft Design and Technology, Art and Design, Home Economics, Business Studies and

Information Technology and in so doing set the scene for a team approach. Many schools have taken this lead and are encouraging such teachers to work together in the planning and delivery of the new subject through 'topic' and 'thematic' approaches. Even if such approaches are not successful, and there is little evidence of success yet, they are at the very least bringing teachers from different disciplines together, often for the first time. So far, as has been mentioned earlier, such teams are preoccupied with systems and procedures, classroom organisation and monitoring than with the real problem of understandings, philosophies, values and attitudes. Although the team approach is universally accepted, there is little evidence that the ways such teams work (or do not work), the way they are constituted, the operational problems they encounter, and their effect on individuals has been considered. It is almost as if the assumption is that provided a team exists (in terms of a group of people meet together at intervals to discuss Technology implementation), or even that provided the collective term Technology is substituted for the discreet subjects on the timetable, then implementation will naturally follow. This is not so. The teachers concerned are going through a period of extensive change and as such need all the help and support they can get. The 'work group' seems to offer an effective means of providing this support, whilst at the same time providing the means to carry through the initiative. Essentially, the work group is a 'self managing' system of change where the change agent and the user are one and the same. Such work groups will require careful and considered guidance in the initial stage, a stage where most of the

effort will be directed towards self-appraisal both of the individual members and the group as a whole. The leader, the Technology Co-ordinator, has a major role to play in building and maintaining the group.

Finally, although it is recognised that other strategies are available, it is the opinion here that because of the peculiar nature of the problem and the extent and breadth of the change involved the work group strategy of change management offers the only long-term realistic means of successful implementation of National Curriculum Technology.

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