Evaluating CDT Practice in the Spirit of CDT

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The rationale for evaluation of CDT practice

Craft, Design and Technology was born in 1977 when Swain (1977) then HM Staff Inspector for CDT, wrote of the issues, problems and advantages of CDT, underpinning the change of philosophy and name over its fore runner. Official DES blessing followed shortly with a section devoted to CDT in the 'red book' (HMI, 1977). The gestation period occupied approximately 5 years, reflecting often isolated curriculum development initiatives which sought to integrate and extend the best of the Schools Council projects Project Technology, Design and Craft as well as handicraft as practiced at the time.

From 1977 on CDT must be seen as a centre-periphery model of curriculum development because of its DES and HMI advocacy which extended to the production of a film[1] to disseminate the innovation. However in common with earlier developments of CDT predecessors (Dodd, 1978) no informal inset provision was generated for existing teachers whose initial teacher education had been in various evolutions of handicraft. Hence CDT was learned in an ad hoc manner on the grapevine supported by some teachers' attendance at the annual DES national 1 week CDT course, by a variety of occasional LEA courses or by courses organised by professional associations.

Hence CDT elicited varying degrees of support and opposition; some of the latter still being articulated.

The erratic, piecemeal development and dissemination of CDT enabled some school courses and departments to change titles without a review of practice and philosophy.

> 'A number of new titles have replaced Handicraft but this does not necessarily imply a change of course content or a renewal of approach'. (Zanker 1977)

Such a view still pertains in some quarters, though Lawton (in Skilbeck, 1984, p.16) remarks that most curricula develop irrationally from tradition.

The phenomena to which Zanker refers follows a misunderstanding of CDT and a desire to maintain a contemporary image. It must be acknowledged that pressures on teachers to be involved with and develop other aspects of schools militate against a thorough examination of subject change, persuading many to rely on established coping skills developed over years and stemming from initial teacher education. The net effect is for rhetoric to mask reality and become a substitute for a clearly thought out and defined policy for CDT practice. The situation is exacerbated by the divergent nature of CDT which has been referred to as polymorphous (Toft in Cross & McCormack, 1987, p.298).

Therefore, a means is needed of gauging if differing practices reflect the ethos of CDT simultaneously broadening and deepening teachers' understanding of CDT. A contribution to this would be an evaluation system which involved teachers at all stages, making available information from which they and others can decide changes to practice in a positive and co-operative manner.

A formative pro-active evaluation would encourage teachers to frequently monitor activities and relate them to pupils' needs, trends in society and education, enabling them to lead and innovate from an informed position.

> '. . . there is little evidence of active initiatives elsewhere in the system'. (Skilbeck, 1984, p.95)

The ethos of CDT

A number of definitions[2] of CDT have evolved. A distillation of these and others shows CDT to be a practical problem solving activity, centering upon the man-made environment and using combinations of materials and tools to satisfy human needs. Hence CDT is essentially a learning process rather than a subject, through which skills and attitudes in the cognitive, affective and psychomotor domains are developed in pupils. By definition no rigid body of knowledge exists, CDT content being flexible and permeable in order to fuse activities reflecting these concerns.

Unlike its forerunner, handicraft, it has no hierarchy of tools, equipment and processes to facilitate the manipulation of materials into artifacts. The techniques etc. developed and the materials used are those appropriate to the solutions of identified problems.[3]

Manufacturing processes remain as a harmonising feature though their centrality is reduced by the context which drives their pursuit. This context enables the development of more all embracing skills including observation, discrimination, communication, self expression, creativity and appreciation of the effects of CDT operations upon society.

Thus CDT is activity based, seeking to develop pupils' competence and capability to intervene in and modify their world. Toft (in Cross & McCormack, 1987, p.298) describes CDT as being enshrined with 'doing'.

This ethos provides a number of points for evaluating CDT practice.

Features of a CDT evaluation model

Devising criteria is synonymous with evaluation usually as a primary procedural point. However in planning an evaluation it is important that the general model as well as the procedure adopted supports the purpose of the evaluation. Hence for the purpose in question the model needs to:

— reflect the ethos of CDT
— adapt to varying situations
— encourage and support curriculum development and continued monitoring of practice.

This latter point is particularly important as it seeks to formalise and extend what teachers do everyday in an informal, ad-hoc way during and at the end of lessons to improve pupils' performance and response (Stake, 1976, p.8). However, this natural activity needs agumenting and extending so that evaluation will

> 'precede curriculum development and not follow in its wake'. (Simons in Lacey & Lawton, p.118)

From this and previous points in this paper, psychometric methods are inappropriate, emphasising objective product testing. There is no single interpretation of CDT which has been shown to be a process, so experimental testing has no reference point, except for application of the ethos. If reference points could be located, the results of before and after tests need to be qualified or they are easily misinterpreted and therefore misleading (Harlen in Skilbeck, 1984, p.135). Lacey and Lawton (1981, p.21) also point out

that this model cannot effectively evaluate a new development which is different from its predecessors and this clearly applies to CDT. Neither do psychometrics help identify or correct weaknesses in teaching (Stake, 1976, p.22), which is a central concern of this proposal, because they are based on examining approaches to teaching and learning situations and comparing effects on outcomes. It becomes more sensible to examine the situations as the determining factors. To do otherwise is to adopt a simplified and distorted view of education (Lacey & Lawton, 1981, p.38).

> 'Classrooms are not like laboratories or agricultural research establishments. Education takes time . . .' (Lacey & Lawton, 1981, p.20)

Evaluations founded on experimental design are judgmentally summative in their results even though they represent only a snapshot in time of the subject. A CDT evaluation needs to develop congruence between practice and ethos, to encourage change, to improve quality, i.e. formative evaluation. Parsons (in Lacey & Lawton, 1981, p.43) considers most evaluation to be formative, as some magnitude of change results, while Stake (1976, p.19) points out that it differs from summative evaluation only in terms of its rationale. Hence features of summative evaluation procedures may be appropriate, provided they are directed towards different ends.

The social anthropology evaluation model is considered to be relevant to curriculum development by permitting detailed study of practice in a limited context (West, 1975, pp.15-16). By permitting wide ranging data to be gathered, including unplanned side effects, it is, like CDT, dynamic and as a result is adopted as the corner stone to the evaluation model generated here. When dovetailed with the interaction model (West, 1975, pp.17-18) for observing and examining transactions during teaching and learning, a model is created of the relationship between curriculum, methods and context, i.e. practice,

> '. . . a disciplined study of educational processes'. (Stake, 1976, p.24)

The particular form of anthropology model adopted is illuminative evaluation which its originators emphasise has no one form (Parlett & Hamilton, 1972, p.15). Through its concern with the 'learning milieu' it recognises the variety of factors which influence a programme and is particularly suited to small scale evaluation.

Through

> 'observation linked with discussion and background enquiry . . . an informed account of the innovation in operation'. (Parlett & Hamilton, 1972, p.31)

is developed.

The broader understanding of the processes and development of an innovation provided by illuminative evaluation is criticised as being subjective, anecdotal and idiosyncratic, (Parsons in Lawton & Lacey, 1981, pp.45-53) providing little validity. However in the same paper Parsons remarks

> 'The scope of evaluation studies has been admirably broadened and there are sound arguments for moving beyond narrow criteria for judgement. But illuminative goal free, transactional, responsive, holistic, humanistic, soft evaluation can still be encompassed within a framework of broad discipline, policy orientated research'. (in Lacey & Lawton, 1981, p.52)

Parsons adds that evaluations of this type are eclectic in nature. This is so with this framework which in implementation features aspects of goal free, participative and democratic evaluation compaginated with self evaluation as a means of augmenting teachers' professionalism and providing inset.

Self evaluation has been a common approach to the present accountability phase of evaluation (Becker in Skilbeck, 1984, p.108). It is essentially an internal, managerial procedure eliciting opinion rather than data. As a result responses tend to justify present practice through rhetoric (Simons in Skilbeck, 1984, pp.50-52). Objectivity is minimal causing doubts about validity and reliability. Simons also observes that influence on curriculum development is otiose. Such approaches can increase staff awareness of, and responsibility to, issues (Stake, 1976, p.28) thereby raising professionalism. If such procedures operated in a decentralised manner then teacher support is likely to be maximised. If this were dovetailed with a participative/collaborative approach, inducting teachers into evaluation techniques, then Simons' (in Lacey & Lawton, 1981, p.134) deskilling observations would be redundant. This would provide confidence and understanding for effective continued self monitoring.

> 'Consequently the centre-periphery model is ineffective: it is responsible for the gap between policy and practice. Involving people in finding their own solutions to the problems which they see as being important is a more certain way of causing real change in the system'. (Nisbet in Skilbeck, 1984, p.170)

The evaluator's role

An evaluation which satisfies the principles/requirements outlined would represent a changed role for an evaluator, who must combine established conventions with educating about the purposes and methods of evaluation as well as the nature of CDT in such a manner that curriculum development results. In effect a professional mentor.

Only a CDT teacher has the understanding to undertake responsibility of such an evaluation (assuming a background in evaluation), as supported by Stake (1976) with whom Eraut concurs.

> 'The main purpose of many educational evaluation studies will be to increase the understanding educators have of particular educational programmes. The responsibility evaluators have to be of service to educators requires a thorough understanding of education as a profession, as an art . . .' (Stake, 1976, p.11)
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> 'Making judgements of reasonableness implies knowing what is practically achievable in a given context. So evaluators who lack appropriate knowledge of practice can be on dangerous ground if they cannot find ways of getting access to it'. (Eraut in Skilbeck, 1984, p.62)

This arrangement increases validity and credibility where the self-evaluation dimension is concerned with the injection of objectivity (Mathias, 1983, p.5).

The evaluation system advanced is cyclical in nature over 3 years. The evaluator leads and involves CDT in evaluation during year 1 where the recommendations may be quite extensive. This completes the evaluators task. It is then the responsibility of the CDT staff as a team to prioritise and work during year 2 to implement recommendations and self evaluate. Similarly during year 3, when the cycle is complete, so that year 4 replicates year 1, aiming to update and reintroduce objectivity into the system but with greater team work and, perhaps, a different evaluator. Hence continual advance, response and innovation to the changing CDT and educational scene is encouraged. Additionally a form of inset regarding evaluation is provided.

It could be argued that the evaluator be an LEA advisor but this would be counter productive. Such a person is too much of a centrist, authority figure. In any event LEA advisers have too many calls upon their time as well as their own interests and directions with schools to protect. Evaluation findings could also be compromised as the LEA would be influential in applying some evaluation recommendations. Thus the adviser has a clients role in concert with headteacher and CDT staff of a school to be evaluated. It is this grouping that would need to agree the appointment of an evaluator.

The procedure for evaluation

An illuminative evaluation has 3 stages (Parlett & Hamilton, 1972, p.16): observation; enquiry; interpretation. In this procedure these are rejected as being nebulous, offering insufficient structure and focus to guide novice evaluators in an embrionic system. Instead West's (1975, pp.23 & 24) 3 summative evaluation stages are used preceded by atmosphere setting. Whilst the direction and bias of these stages differ from West's intention, the spirit is maintained. It is important that the adoption of this, or other, procedure must be policy orientated towards the institution and department concerned (Parsons in Lacey & Lawton, 1981, p.3). Failure in this risks 're-invention of the wheel' or imposition of bureaucratic formulae which serve only to reinforce the status quo.

The five stages presented in an ideal sequential form are:

— atmosphere setting.
— performance evaluation.
— context evaluation.
— intrinsic evaluation.
— report.

The fourth stage is West's first and whilst in practice stages will overlap it is recommended, for reasons that will become apparent, that this stage remains separate. Only the first stage is considered in any detail here and little reference made to techniques, about which much is written elsewhere.[4]

The atmosphere stage is fundamental to success, setting the tone for the evaluation by establishing ground rules and providing opportunities for the evaluator and staff to develop empathy. Various evaluation authorities refer to the importance of develolping personal relationships and trust between all involved (see for instance Adelman in Skilbeck, 1984, p.30; Eraut in Skilbeck, 1984, p.57). This is vital if teachers' suspicions of evaluation and defensive postures are to be eliminated.

This stage represents a two way interchange of information. The evaluator must determine how the department functions; its tendencies; contradictions; how it views and approaches change; collective and individual aspirations; providing insight for the remainder of the evaluation and its report. This might be achieved by attending department meetings, as a neutral observer, socialising with staff etc. The evaluator should aim to become 'part of the furniture'. As this stage progresses the evaluator should develop in staff an understanding of the nature and purpose of evaluation. Staff must realise that it is a procedure for making information available to influence decision making. The nature and definition of CDT and its implications for the evaluation need agreement so that procedures can be established for the remaining stages, including agreeing limits to confidentiality where personal staff inputs are concerned e.g. interviews, observations (Pring in Skilbeck, 1984, p.40). This equates to establishing the criteria for the evaluation which provides objectivity and reliability (Simons in Skilbeck, 1984, p.52).

Such procedures need not be generated in open discussion. In cases where strong personalities are dominating discussion it would be prudent to make use of questionnaires and interviews before final discussion of suggested criteria. No partner should have a veto over others' suggestions to be encompassed in the study. Agreement is preferable but not at the cost of weak, narrow foundations. The evaluator should extend the criteria to reflect contemporary education and CDT issues. Such elements mirror Ravens' (in Skilbeck, 1984, pp.24-25) concern for the social goals of schools and Lawton's (in Skilbeck, 1984, p.7) cultural mediation role of schools. CDT teachers cannot be divorced from the controversy of what education should be about.

Whilst this stage is perhaps the most critical of all, demanding diplomacy, it is also potentially the most educative and collaborative, a view supported by Toft (in Cross & McCormack, 1987, p.300).

The performance evaluation stage is an exercise in goal free evaluation, as no explicit intention is made to determine the existing course aims. To do so would prejudice the evaluator's objectivity. To some extent this goal free dimension is compromised by the intimacy of the atmosphere stage which has displayed existing concerns, values etc. and also by the purpose of the evaluation.

This stage is centrally concerned with examining existing practice to determine congruence with CDT ethos and other generated criteria. Do teaching strategies suit the activities pursued and do both reflect CDT? The dominant technique here is likely to be observation throughout the department on several occasions to obtain valid and consistent results. Marland & Hill (1981, p.68) refer to the dangers of antagonising staff and harming relationships if observation is stumbled into. Hence sensitivity is required. Each staff member can in turn accompany the evaluator during observation as preparation for self evaluation, alternatively video recordings of lessons could be made, but

this presents other problems and stresses. Pupils' work should be considered and questioned as to its nature and quality and their enjoyment of it.

Context evaluation considers the effects on practice of school conditions, environment, resources and staff and reflects much of the hidden curriculum. Items for evaluation include the time-table; class organisation; staff attitudes and values; the nature and organisation of workshops; the department atmosphere and image e.g. display of pupils' work and stimulus materials; etc. The result of the evaluation may recommend changes for CDT to be optimised. Not all of these issues will be in the control of CDT staff.

In West's terms

> 'The intrinsic evaluation of curriculum materials involves a detailed analysis of publications and associated materials with a view to identifying and evaluating their most important implications for pupils, teachers and schools'. (West, 1975, p.25)

At this stage it provides a means of gaining further information about the professionality of department staff. It may reveal contradictions between existing practice and the department's intentions. It may indicate that the department has advanced from its stated intention, or omitted planning and management considerations. The exposed strengths and weaknesses may modify or reinforce the evaluator's findings. Items to consider include department philosophy, aims and objectives, schemes of work, proposed teaching and learning strategies, quality of pupil 'handouts' and worksheets etc.

Intrinsic evaluation's stage in the procedure provides a cross check on the department's intentions revealed in the performance evaluation and defines intended or unintended outcomes. Execution of this stage before peformance would prejudice the evaluator's objectivity and impose existing intentions as criteria.

It is argued that the report stage is where evaluation proper takes place.

> 'Most writers and professional practitioners in evaluation see the process as concerned with full description and provision of information for decision makers. I would not argue with the purpose of such research but it is misleading and presumptuous to call it evaluation. The evaluation itself lies with those who decide or implement policy, drawing on the findings or descriptions of researchers but setting these in the wider context of values and options'. (Parsons in Lacey & Lawton, 1981, p.41)

The aim of the report should be to

> 'sharpen discussion, disentangle complexities, isolate the significant from the trivial, and to raise the level of sophistication of debate'. (Parlett & Hamilton, 1972, p.30)

Hence the report should be

> '. . . evocative rather than prescriptive, i.e. to raise questions, options, alternatives'. (Simons in Lacey & Lawton, 1981, p.124)

Pring (in Skilbeck, 1984, p.44) recommends staff and evaluator discussing the first draft of the report and including criticisms and comments within it. Whilst maintaining the framework's collaborative and educative aspects there is a danger of compromise and dilution of findings and it can also be time consuming and generate a cynical staff response.

More efficiently the evaluator would produce a report.[5] Such a report should be discussed by the evaluator with CDT staff. Staff then prioritise the findings within their control and submit subsidiary reports to interested parties e.g. Headmaster, LEA adviser, governors etc. reflecting the content and spirit of the evaluator's report in addition to staff decisions, but presented in an appropriate style. This reflects Adelman's view (Skilbeck, 1984, p.36).

Following this CDT staff, evaluator, headteacher and LEA adviser should meet to discuss the evaluation generally and to agree external input and support to department for resulting developments. This may include inset provision, capital expenditure, changed time-table provision etc.

Conclusion

Having participated, staff should perceive evaluation as a positive, helpful tool and have increased professional skills sufficient to enable continuous monitoring, through self evaluation, of developing practice. But do evaluators of the kind describe here exist? How do schools identify them?

To meet the requirements of an evaluator a group of informed CDT teachers needs establishing. Such teachers would need to be successful and forward looking with an ability to form positive and progressive relationships. This could be on a geographical basis but risks maintaining LEA boundaries which would negate desirable cross-fertilisation by esoteric reinforcement of LEA advisers' views. It would also provide a centrist, authoritarian input which could prove counter productive. LEA partnerships represent an improvement though still not ideal.

Decentralisation is preferable. CSE consortia fulfill this criteria and are now redundant with the genesis of GCSE. Hitherto such consortia have provided mutual support and cross-fertilisation of innovation through, for example, various moderation procedures, but especially group moderation. However such consortia are often LEA based and cover large areas. Subdivision into smaller areas encompassing a number of LEA's would be preferable. However some agency is required to initiate the retention and re-direction of CSE consortia and also to propose appropriate staff as evaluators. In view of GRIST arrangements it would be appropriate for LEA's to have this role. An operational evaluation network should provide efficient, guaranteed, incremental inset which would, in the final analysis, be school focussed. Similarly LEA support would be needed for 'cover' in the evaluator's school, though this may only need to be on a part-time basis.

Support would also be needed for the identified teachers to be trained in the methods and techniques of evaluation. This provides polytechnics and universities with a role in the system which could extend to consultancy when evaluators are in the field. This represents an additional means of providing increased objectivity and reliability to the evaluation as the institutions validate the procedures used.

These latter two points provide a role for LEA advisory staff who would, no doubt, discharge LEA's responsibilities. Advisors would be instrumental in establishing the network, assisting, at least, in the identification of potential evaluators and supporting them in the administration of their task.

When operational and pursued in 'local' school group situations, the evaluation network and framework will enable common conventions, problems and phenomena of teaching CDT to be identified and codified into subject theory. Strategies and innovations can then be devised to improve and capitalise on existing practices in a methodical, empirical manner, utilising the skills of teachers in 'local' groups.

References

1. Practical Thinking, CFL Vision (formerly Central Film Library).
2. For example, DES (1985) GCSE National Criteria for CDT. Association of Advisers in Craft, Design & Technology (1982), Foundation Studies in CDT, Yorkshire, AACDT.
3. For historical reasons concerned with the nature, development, resourcing and associated economics of handicraft, wood and metal materials predominate, though work in some plastics materials is increasing and the use of concrete has been observed. There is no philosophical reason why the materials used in the realisation of solutions to problems should be restricted. A place for ceramics and glass, for instance, can be appropriate.
4. Eraut in Skilbeck (1984), p.58, indicates a number of appropriate techniques; Parlett & Hamilton (1972), pp.18-23, discuss four techniques appropriate to illuminative evaluation; Toft in Cross & McCormack (1987), pp.301-302 outlines some appropriate techniques in the specific context of CDT.
   Simons advises that the techniques used should build on those with which teachers are already familiar e.g. questionnaires, interviews, observations, listening to dialogue. This demystifies evaluation by relating it to practice and so provides confidence for future self evaluation (Lacey & Lawton, p.124).
   Harris et al (1982) details a variety of approaches for the gathering of evaluatory data.
5. It is important that the report includes background information about the department and staff in addition to detailing evidence, methods used to gather information and conduct the evaluation. This is especially important where judgements and recommendations are involved. It provides a degree of quantifiable data reinforcing validity and reliability. See Williams in Lacey & Lawton (1981), p.80 and Parlett & Hamilton (1972), p.25.

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