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THE FIRST YEAR
OF THE NATIONAL DEVELOPMENT PROGRAMME IN COMPUTER ASSISTED LEARNING
- AN ISSUES PERSPECTIVE -

THIS CONFIDENTIAL DISCUSSION DOCUMENT WAS PREPARED
BY MEMBERS OF UNCAL, THE INDEPENDENT EDUCATIONAL
EVALUATION UNIT AT THE UNIVERSITY OF EAST ANGLIA.

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AIMS OF THE REPORT

1. To promote constructive discussion of educational issues raised by the National Development Programme in Computer Assisted Learning.
2. To provide a progress report on the National Development Programme in Computer Assisted Learning from an issues perspective. To alert people to issues and perspectives which they may not have considered.
3. To enable people to alert UNCAL to issues and perspectives which are not raised in the Report, and to inadequacies in the treatment of points of view which are represented.

AUDIENCES OF THIS REPORT AND SEQUENCE OF DISTRIBUTION

1. National Development Programme in Computer Assisted Learning Directorate. (March 1974)
2. National Development Programme in Computer Assisted Learning Committee. (May, 1974)
3. National Development Programme in Computer Assisted Learning Project Staff.
4. National Development Programme in Computer Assisted Learning Project Committees.
5. Other interested parties.

At each stage of the dissemination of the Report, comments will be invited on its contents. These comments will, subject to negotiation, either be added to the Report before it passes to the next audience, or incorporated at a later stage. The Report in its final form will be modified by the feedback it generates, and will then be made available to all those who have received it at an earlier stage, unless it seems more reasonable to restrict its circulation.

This "snowball" dissemination strategy, by initiating a two-way communication process between the reporters and the readers, means that the document functions not only as a report, but also as an instrument of further enquiry and as a validation effort.

THE FORM OF THE REPORT

The Report takes the form of a fictitious dialogue in which the participants comment upon various aspects of the National Development Programme in Computer Assisted Learning. Although they manage to disagree on most of the issues which emerge in conversation, we have deliberately avoided consistency of role or perspective on the part of the participants. It is important to emphasise that while the Report reflects the range of issues and views which we have identified, it does not indicate how widely held is any particular view nor, in most instances, who holds it.

While many of the comments embodied in the Report have been made by participants in the National Programme, or inferred from information gathered by the UNCAL Unit, others have been elicited from people outside the National Development Programme. Some of our respondents have expressed a wish to remain anonymous at this stage, and we have respected that request.

The Report was prepared by Barry MacDonald and Robert Stake.

RATIONALE OF THE REPORT FORMAT

1. The Report reflects the structure of the activity it is designed to promote, i.e. discussion.
2. A conversational style conveys the tentative and speculative nature of the views it embodies. It prompts readers to draw upon their own experience for amplification, confirmation and challenge. It stimulates personal judgement rather than pre-empting it.
3. Conversation is readily added to or subtracted from. This is an advantage in a report that is intended to be cumulative.
4. Much of the data for the Report has been informally provided. The style permits the reproduction of many comments in an unprocessed form.
5. We believe that the dialogue format combines attractiveness, accessibility and economy.

DISADVANTAGES OF THE FORMAT

1. The dialogue tends to suggest that there are only two views about the issues raised. The creation of more than two participants is one way of avoiding this limitation. We have preferred the strategy of commenting on some aspects of the National Programme more than once in the course of the Report in order to extend the range of views expressed.
2. Some readers would prefer a more formally structured, summarising report which marshalled the arguments and related them systematically to relevant areas of Programme policy. There may be a need for such a presentation. If so, we should prefer to attempt it in the ultimate edition of the Report.
3. The Report may give the impression that the National Development Programme in Computer Assisted Learning has been widely subjected to a searching critique. As far as we know, this is not the case. Our procedural assumption is, however, that the development, extension and diffusion of reflective debate about the Programme is consistent with its educational aims.
4. The format will not satisfy those who need immediate resolution of issues. It provides little measurement of the state of affairs, little evidence of the suitability of options. It offers no recommendations. Such a report is not likely to be considered proper in some evaluation designs.

NOTE

We hope to arrange an occasional reunion of our two conversationalists, unless the consensus of reader response suggests that the expense would not be justified.

- 0 "Shall we talk about the National Programme?"
- 1 "If you like."
- 2 "You don't sound very enthusiastic."
- 3 "Well, I have the humanist's natural prejudice against computers in education. 'Computers against education', is the feeling I have. Skinner, programmed learning, teaching machines, CAI. It's never been an instrument of the imagination, has it?"
- 4 "Look, it's the National Development Programme in Computer Assisted Learning. Hooper and his assistants have carefully emphasised that word 'learning'. It's not called computerised teaching or automated instruction. Doesn't that indicate a humanistic outlook?"
- 5 "Perhaps, but labels are just part of the packaging. It is 1974. You don't seriously expect me to swallow the rhetoric, do you?"
- 6 "Why so sceptical?"
- 7 "That's easy. We're talking about two million pounds. You can buy a lot of curriculum development for that money. The Schools Council spends less than one and a quarter million pounds a year for all its curriculum work. Everyone will have their own ideas about how the two million might be spent. I'm not the only one who's looking very hard at the National Programme. Those of us on the outside, and especially those who wanted but are not getting a share of the jam, are going to give this Programme a very tough-minded 'evaluation'."
- 8 "Fair enough. Some on the inside are sceptical too. But I have a feeling that there's something more lying behind your attitude. I don't know what it is."
- 9 "You're right. I'd better come clean. I've heard that the National Programme is just a political 'holding' operation masquerading as curriculum development."
- 10 "What on earth do you mean?"
- 11 "The British computer industry is a 'lame-duck' and there are fears that the Americans will take over the whole show, hard and soft, within a decade unless the home industry gets a boost. The Government can't make up its mind, so meanwhile they keep their options open by providing training situations for the staff who will be required if they decide in the end to compete against the Americans for the market?"
- 12 "You believe that?"
- 13 "I've heard it said. Hasn't this two million pounds got strings attached? You know, UK hardware or no deal?"

- 14 "It doesn't look that way. Most of the Projects have American hardware. In any case, Programme money isn't made available for computer purchase. The Projects have to provide their own. Only about 20 per cent of Programme money has gone on hardware, and that's largely for terminals."
- 15 "I still think it is a political gambit."
- 16 "Two million pounds of public funds are likely to be. But shouldn't we look at the Programme in terms of what it's doing, instead of speculating about the motivation behind it. That's rather irrelevant, I feel."
- 17 "Not entirely - it is related to questions of future national policy, and that is relevant. But now that we've touched on Programme hardware policy, let me make another point. I think National Programme cash should be looked upon as 'risk capital' and used to support projects too costly for local authorities or universities. Especially LEAs. Existing hardware is largely in the hands of the universities, so National Programme policy confines the money largely to the 'rich' end of the teaching spectrum. "To those who have, shall National Programme money be given."
- 18 "But this is a development programme. It will inevitably reflect rather than correct the current state of the field."
- 19 "To some extent that's true, but this tendency could be modified if the National Programme adopted a more reasonable policy on hardware purchase."
- 20 "I think the DES Guidelines determined that. But, look, we both know the pitfalls of a Fairy Godmother approach."
- 21 "I'm not suggesting giving computers away, but they might consider having a pool of small computers that they could loan for feasibility work in the less well-endowed sectors of education."
- 22 "Think of the implications of such a policy. There'll be no assimilation if the price is too high, and it would be if the LEAs were faced with the cost of hardware, software and personnel, all at the same time. Did you have something else in mind when you mentioned 'risk capital'?"
- 23 "Yes. There are intellectual risks too, and institutional risks. Schools need help in the management of pupils. Computers might help. Would that be too risky? The National Programme seems to favour cautious developments, safe and rather dull."
- 24 "Medical Diagnosis, Remedial Reading?"
- 25 "Just the icing on the cake, you know. And I understand that those particular Projects are being approached with extreme prudence."

- 26 "I should certainly hope so. The whole area is risky, isn't it? Let me draw a parallel. When interactive graphics became available in the USA, people rushed immediately to the innovative, far-out, 'ultimate goal' type of project, which cost far too much ever to be practical. People recoiled from it and the result was that interactive graphics was set back by four or five years. The same could happen with CAL, if they're not hard-headed and realistic about costs and applications."
- 27 "That's all very well, but I don't want computer assisted learning to become the repository for cast-off instructional functions and I can see that happening, especially in the 'service' type teaching projects."
- 28 "Then you don't believe that instrumentation changes orientation?"
- 29 "It's not a question of whether I believe it, but whether they do. I do believe that the National Programme should aim for educational excellence."
- 30 "As I see it, it is pushing hard in that direction with emphasis on creating opportunities for the learner."
- 31 "Well, I've had my say for the moment. Tell me your overall impression of the Programme."
- 32 "I think it's ambitious, well-planned, decisive and, er, muscular."
- 33 "'Muscular?'"
- 34 "Determined, and a little bit edgy."
- 35 "Is that a compliment?"
- 36 "I think so, on the whole. I think Hooper and his growing team at the Directorate have done a pretty good year's work. They've signed up several Projects with good records to build the network around."
- 37 "You approve of the plan and of their early work?"
- 38 "I have some anxieties, things that worry me and things that puzzle me, but I think they have a right to feel pleased about the start they've made."
- 39 "What are the main accomplishments?"
- 40 "To get the Programme off the ground, translating the blueprint into action without dithering about. They're a very time-conscious group, and Hooper has shown himself to be a very effective organiser. Some promising Projects have been put together and they seem to have established good lines of communication with the participating groups. They know what's been happening in CAI in America and elsewhere. Hooper's done his homework, so no one in the Programme is likely to reinvent the wheel."
- 41 "Can you point to some accomplishment that would not have happened if the Programme Directorate had been less able, a more ordinary three or four people?"

42. "That's difficult, as you know. Wouldn't it be fair to say that they have been very successful in achieving institutional cooperatives in British higher education, against an entrenched tradition of autonomy and competitiveness?"
43. "'Oh, come on! Shotgun marriages, with the dowry split after the ceremony?"
44. "That's unfair, but let's wait and see whether these cooperatives become viable or merely nominal."
45. "OK. What are the failures of the National Programme so far?"
46. "I don't believe anything could be called a failure."
47. "What did you have in mind when you said you had some anxieties?"
48. "Anxieties is perhaps too strong a word. Queries might be better."
49. "Alright, can you be specific?"
50. "Yes, I think so. Let's take one that keeps nagging me. Is the National Programme too much an 'advocate' of computer assisted learning?"
51. "I don't see that as an issue. Of course, the Programme staff believe in the potential of computers for assisting teachers and learning."
52. "When I first heard about the Programme, I thought it was going to take a cool, detached look at the educational potential of computers. I'm sure the word 'impartial' was mentioned. I understood that the Programme would take an evaluative stance, that at the end of its term it would be prepared to say, "Increased investment in CAL, at least in specified areas, is thoroughly justified", or, "CAL is a poor investment", or any shading of endorsement or rejection in between."
53. "And isn't that still true?"
54. "Well, now I understand the Programme to be aimed at the assimilation of CAL. That makes it an advocate of CAL, committed to its successful implementation. It is not really free to find fault with CAL."
55. "Wait a minute. I'm not happy with the way you imply that the Programme people must be either enthusiasts or sceptics. Everyone has his enthusiasms and doubts about anything of importance. Doesn't the Programme recognise its evaluation responsibility even though it is encouraging development? Surely the goal of 'assimilation' is not intended to override judgements of educational value?"
56. "I wasn't thinking so much of individuals. Individuals can be flexible, change their minds, switch from enthusiasm to criticism, take highly qualified and complex views. I agree. But public agencies spending public funds have to meet a set of expectations which do not allow them to behave like individual people."

- 57 *"Is the National Programme a 'public agency?'"*
- 58 *"Yes. It may be small but it will behave as a public agency. I think it's difficult for public agencies to change course, or even to admit error. Apart from anything else, decision-making may be influenced by social and political considerations which can override judgements of educational merit. As far as the National Programme is concerned such pressures are bound to constrain, and may even render irrelevant in particular cases, the efforts of Programme Officers to adopt an evaluative stance."*
- 59 *"I can see that, but it still seems to me that the Programme puts a lot of emphasis on evaluation. In fact, I am a bit confused about the relationship between the various evaluation components. Can you clarify that for me?"*
- 60 *"As you say, the Programme has evaluation components. A large commitment. Perhaps too large. This evaluation responsibility has been diversified, both by entrusting it to people with different perspectives, and by locating it in different places. The central Programme staff includes people with expertise in management, computer systems and academic achievement. John Fielden, an economist on sub-contract, is an independent evaluator of cost effects, as well as an auditor of accounts. The evaluation project at the University of East Anglia is providing an independent study of the whole Programme. And each of the fifteen or so funded Projects has acknowledged its commitment to report on the success of its mission."*
- 61 *"What does all that add up to in terms of a balance between scepticism and advocacy?"*
- 62 *"I don't know. I assume that the people entrusted with evaluation at the Project level are not independent. Some of those persons will have development roles as well as evaluation roles. They will have personal and institutional investments to protect. Advocacy will be easier for them than scepticism. Hooper and his team are tied up in the national goals. In solving the development problems of the day and in reacting to the issues within the Programme their judgements, I think, are likely to be reasonable and impartial. But with regard to the long run role of CAL they are going to be advocates, aren't they?"*
- 63 *"How about the MacDonald evaluation team in Norwich?"*
- 64 *"Well, they have not seized upon particular issues such as 'the advocacy issue' as a basis for data gathering. In fact they are trying more to help recognise issues than to resolve them. They are looking for instances that illustrate issues. They examine problems, breakdowns, crises. They interview people inside and outside the Programme."*
- 65 *"Then they are Hooper's spies?"*
- 66 *"So some people see them. But they are likely to tell more on Hooper than to him. They value their independence and they are committed to formative evaluation. They want to help the Directorate understand problems. They want to help Project staffs with understandings too."*
- 67 *"But MacDonald's contract is with Hooper?"*

- 68 "That is right. He does not report to Hooper's boss. He does not have a commission from the future consumers of CAL. One can wonder if MacDonald would bite the hand that feeds him."
- 69 "You mean their 'independence' is just another label?"
- 70 "I'm not saying that. I am saying that they too have to earn their credibility as independent sources of information."
- 71 "You're beginning to sound a bit like me. I think there's a real danger with this National Programme of ignoring fundamental questions, long-range issues and, let's face it, the need for more research."
- 72 "But it's not basically a research programme."
- 73 "Exactly. I'm objecting to the restrictions in the remit. Actually, I think the whole thing could have been handled better by the various Research Councils. I know the Councils are supposed to deal only in research and not in development, but such rules should not prevent them from behaving sensibly. They have the expertise, they know the field, they know what's ripe for development."
- 74 "I don't see the problem. Surely it's sensible to make a national investment in development at this point, and to create a special structure for it. The Councils will go on funding research, which will feed and complement the development, and the development will raise new questions and issues for research. That seems to me to be a healthy process."
- 75 "I might admit that to be notionally attractive, but what's the reality? Research money is getting tighter, the Councils must be looking for economies. Where better than in a field where there's a large new fund. I should not be surprised to find that within a short time the National Programme is left with a monopoly of the field, as traditional sources dry up. What happens then to the iterative relationship between research and development."
- 76 "I find that a bit cynical, not to mention over-stated. Let's wait and see. Let me ask what research issues you are particularly worried about?"
- 77 "The major researchable issue is "learning", the nature of learning processes that we're playing around with. The thing that matters is to get our teachers to understand what learning really is and what teaching really is. Personally, I don't think that we understand learning and the learning situation well enough now to justify spending two million pounds on development."
- 78 "Do you think we should close the schools until we find out? No, more seriously, there is some pressure, I understand, on Projects to adopt more experimental designs, with control groups and so on."

- 79 "You're missing my point. It's not a matter of controlled experiments. OK, so you put some program into a computer and you put people through it and you prove that they achieve the objective more quickly than people who took the traditional course. You could create almost any experiment and produce that result. It is easy to do if you never compare the experimental treatment with the optimum control treatment. If as much effort were put into thinking how the course could be taught by traditional means, you might well find out that there's no time saved and no difference in achievement. That's not what I mean by research anyway. CAL is a new learning context, socially structured unlike any other, and it's the social construction that has to be studied, not the pre and post performances of the students."
- 80 "You seem to feel strongly about that."
- 81 "It incenses me that the National Programme says it has turned its back on the CAI tradition but some of the people in it are still wedded to that tradition and share its assumptions. It's humbug."
- 82 "Keep your voice down. There's a bloke at the next table with a tape-recorder. Your thinking is confused. You're projecting views on to Programme people that they don't have."
- 83 "I don't see the Directorate disavowing the technocratic view."
- 84 "Wait a minute. Are you saying that the Programme Directorate ought to compel everyone in the Programme to adopt a particular definition of what is desirable and how it can be attained and demonstrated?"
- 85 "I am saying that they ought to follow the logic of the stance that Hooper outlined in the NCFE paper of 1973."
- 86 "And I'm saying that you misconstrue the Programme stance, which is broad and eclectic. A Programme of this size and spread is bound to make room for a range of logics, including computerised programmed learning. The Directorate itself does not speak with one voice on these issues. But in any case, development projects must be primarily concerned with evidence of accomplishment which can be used to justify institutionalisation and dissemination. Apart from anything else, that's a political reality."
- 87 "Politics. You've hit on the key word there. When I heard the Programme Committee was going to consist of representatives from seven Government Departments, I thought, "Hell, what's to be done is going to be determined by politics rather than by what's educationally worthwhile. By playing safe they'll probably trivialise the whole thing". I still worry about this."
- 88 "What's your worry exactly?"

- 89 *"Members of the Committee have private as well as public interests. They have political as well as educational concerns. Some members of the Committee are affiliated with agencies or institutions that are benefitting from, or could benefit from, support from the National Programme. There are conflict of interest problems built into that situation. I would certainly hope that these interests are made explicit and that the people concerned do not, in fact, take part in discussions where their interests are involved."*
- 90 *"That's a bit purist isn't it? You want to exclude from the discussion those who have the most detailed knowledge. It's a bit like cutting off your nose to spite your face. Look here! Computerised learning is in its infancy in this country. If you're going to represent on your Committee those who know the field, you're bound to get these affiliations. Surely the Parliamentary model of declaring an interest before engaging in a debate is sufficient? In any case, even if I conceded that you have a point, it only applies to a minority of the Committee."*
- 91 *"That's not going to satisfy anybody. The National Programme is going to make some bad investments in institutions or agencies which are represented on the Committee. It also worries me that a non education industry, the British computer industry, has a lot at stake, so that pressures for positive findings, or at least non-disruptive findings, might occur. It seems to me that the chances of advocative bias are also increased by the extensiveness of internal evaluation activity. We will need to look very closely at the validity of positive evaluation findings."*
- 92 *"Can the Programme itself provide validity checks that would satisfy you?"*
- 93 *"I think the best checks consist of covering a range of views, a range of data, about what is going on in the National Programme, paying particular attention to the critics. Perhaps MacDonald is doing some of that."*
- 94 *"Do you mean you would pay more attention to reports that come from the independent evaluators than from the Directorate?"*
- 95 *"Not at all. The best understandings of CAL are likely to come from the Projects and from the Programme Directorate. What I will be looking for from MacDonald is corroboration, elaboration, bases for confidence in what the participants have to say, and especially direction as to what lacks corroboration and still needs to be challenged."*
- 96 *"Bias worries you, doesn't it? Are there other kinds of bias in the National Programme that concern you?"*
- 97 *"Yes, I am uneasy about the emphasis that the Directorate gives to what they call 'good housekeeping'."*

- 98 "I'm surprised to hear you say that. I'm quite taken by the business-like way Hooper and his colleagues have impressed on the Projects the need for efficient management. They've certainly alerted Project people to the advantages of planning their work, setting themselves tasks and deadlines, lines of communication and responsibility. Some Project people have told me that they really appreciate this pressure to organise themselves in a coherent way."
- 99 "That's all very well, but I've spoken to others who're not quite so grateful. After all, we're not talking about a manufacturing operation in the commercial sense, are we, nor a military operation. I'm worried about the advocacy of rational methods, this conviction that more structure, more explication, and earlier setting of goals, terms and lines of responsibility will necessarily improve the quality of the Programme. Oh, I'm quite sure that all these things will make Hooper's job easier. I'm tempted to imagine Richard Hooper looking at his watch and saying, "It's now 10.30 a.m. At this moment the following activities are taking place at these points in England, Scotland, Northern Ireland and Wales. Mr Fielden will give you the exact recurrent and non-recurrent cost per minute, Mrs Frewin the programming language, and Mr Miles the objectives being pursued."
- 100 "You know that's a travesty. You're implying that the whole structure has been designed to facilitate central control, and has no other justification. An accountability structure, perhaps. I expect you think they're not nice to animals, either."
- 101 "OK, I take it back. I have no reason to doubt the conscientiousness of those who are advising and setting these standards, and I don't doubt that the effects are sometimes salutary. We both know how badly managed a great deal of research and curriculum development work has been in the past. But I am sure that there are some people, some teams, that operate less effectively under such demands."
- 102 "You haven't suggested an alternative, though, have you? Is it that you don't believe that teachers can learn to change their ways? Surely they can keep their goals, and even their methods of work, but merely learn to be more careful, deliberate and open about them. Surely the kind of people having major responsibility in the NDPCAL could be more explicit without any loss. It seems a small price to pay."
- 103 "How can you assume what the price is? We don't even know what this national management model is replacing, do we? Hooper only, among the Directorate staff, has worked in a University setting, and that was in the Open University, which is quite different from any other University. I would have liked to have seen a little more openness on the part of the Directorate about the possibility of finding some virtues in the way that educationists have traditionally worked, instead of what seems to me to be a brash assumption that, whatever the setting, what is needed is some kind of engineering model aimed at reducing redundancy to zero."

- 104 "I'd like to make several points in repudiation. Firstly, Hooper, Miles and Frewin, far from being the kind of mindless mechanists you seem to think, have made very clear their approach is a flexible one, adapted to circumstances and to individuals. I think you will find much more diversity of operational styles among the Projects than you would expect. You target two things, I think. You fail to take account of the characteristics of a step-funding operation. Projects must render accounts of their progress by specified dates if they want further support. Now, in such circumstances, it's no use saying: 'leave the Projects to work things out in their way and they'll get there eventually'. Step-funding means progress at each stage. There's less room for unsystematic trial and error if Projects want to remain in the Programme. At each stage they're competing for scarce resources. All that Hooper is doing is spelling out this message to the Projects. It's straightforward practical realism, not a messianic ideology. Secondly, nobody would guess from your remarks that this was a 'matched funding' operation. Programme money is matched by host institution money. It's a collaborative programme. Hooper isn't in a position to play 'Big Brother', even if he wanted to, and I've got to be convinced that he does. Both parties have bargaining power. Either can withdraw. It has happened already."
- 105 "But you would concede that there is some conflict between the Programme Directorate and at least some of the Projects?"
- 106 "Well of course there is conflict. Let's not be naive. They have different priorities. Shared resources, the pooling of ideas, reconciliation of differences, transferability, dissemination - these are the priorities of the Directorate, whereas the prime interest of most of the Projects is the development, legitimisation and institutionalisation of their own teaching. Hooper's job is to negotiate an optimum balance of effort that will secure both sets of goals. Hooper's walking a tightrope."
- 107 "OK. Let's leave that one. I've had my say. I think he fell off the tightrope with his first step."
- 108 "You said you'd leave it."
- 109 "Sorry. Let me take up another point. Here I'm with Hooper all the way. I'm impressed with how many of the National Programme Projects are being run by teachers."
- 110 "As against?"
- 111 "Computer people. Hardware specialists, systems analysts, educational technologists, and so on. It seems that the educationists are in charge. Is that deliberate? Has Hooper something to do with that?"
- 112 "Yes, I think so. He wants the educational issues to the forefront. Effective teaching is his priority. Anyway, he's very concerned about which person will direct a Project."
- 113 "You don't sound entirely happy about that."

- 114 "Well, if you have a rule-of-thumb that says the best developer will be the one who has the best track record, you are likely to pick for key positions those people who are most sought after, most mobile, most likely to have competing interests, extensive commitments, most likely candidates for promotion elsewhere. You are, in fact, relying on individuals who may leave the Projects before their completion, perhaps before they are well started."
- 115 "That's a risk, and I know that the Programme has already had some setbacks of that kind. But don't forget that mobility of personnel helps diffusion. Of course, it would be wrong to be indifferent to a candidate's record, or to regard a good record as reason for not supporting someone."
- 116 "But maybe more attention should be paid to back-up personnel. There's another issue in this area that concerns me even more. There may be a danger in encouraging the principal educationist in a Project group to take on the task of Project Director. It may, in fact, mean that educational issues are given less attention."
- 117 "How's that?"
- 118 "Directing a major development project, especially an inter-departmental or inter-institutional one, calls for administrative skills that many fine teachers don't have. And what's more, the demands of administration make it very difficult for the director to contribute his educational expertise to curriculum development. Gillian Frewin has said that something like 25 per cent of project personnel time will be spent on documentation and reporting."
- 119 "That's certainly something that needs to be looked at. I'd like to know how the administrative burden is being undertaken, how administrative assistants are being used, and what protections are built into the Projects so that the directors are as much a part of the educational work as they should be."
- 120 "Skipping from the Project Directors to the Project Evaluation people, if I may, I find that quite a few of them are bothered by the problems of designing a formal study. Some of them have been persuaded that they should have an experimental research design. What do you think?"
- 121 "A developmental project is a good place to do research on teaching, I think. But experimental research is not necessarily useful in a development project. Sometimes it is, sometimes it is not. Highly controlled treatments, a fixed environment, control groups and even statistical equilibrations are appropriate if it is recognised at the outset that the really important questions are but few in number, and amenable to controlled variation of teaching, and objective measurement of learning. They will be more useful, I think, in a CAI development than CAL. These controls, especially control groups, are extremely costly and should only be used when there is a reasonable expectation that useful answers to major questions will be forthcoming."
- 122 "Then it's a mistake sometimes to use a control group?"

- 123 "Of course."
- 124 "And student achievement tests?"
- 125 "Of course. It is a mistake to suppose that comparisons between student test scores will tell us what we want to know about the quality of a development. Each Project has its own questions. The design of studies has to serve the particular character of the Project."
- 126 "Will those designs answer questions that the National Programme staff has?"
- 127 "Not usually. The central staff cannot expect the answers of the Projects to accumulate to provide a national answer. The Programme staff have to raise the national questions, and get answers to them."
- 128 "Should the National Programme have anything to say about the evaluation designs of the Project?"
- 129 "Advice, perhaps, although advice from a funding source sounds like polite command."
- 130 "But Hooper has to know what he's getting for his money, doesn't he? He has to know whether or not the Projects are keeping their promises."
- 131 "Yes. But the more Hooper tells them what he wants to know, the more they will create information that has little use to their own Projects. You are frowning. Are you thinking, 'Hooper should be able to get more than that for the money the Projects spend'?"
- 132 "Well, I recognise that the Project money is only partly the Programme's money. Funding is cooperative. Programme money pays for development and it pays for computer aided courses for the students. These students are real people, taking the course for real purposes, once and only once. It's unethical for the institution to assign them to a control group if that means they would take what's believed to be an inferior course."
- 133 "You recognise the non-equivalence of purpose between the National Programme and the individual projects."
- 134 "There's more difference than is being recognised."
- 135 "Taking all these issues and accomplishments and potential faults into account are you optimistic or pessimistic about the development of CAL in this country?"
- 136 "Some use of computers in the classroom is inevitable. It won't be because it's cheaper to do it that way or because some essential things can be taught better that way. It will be because it will be."

- 137 "So the National Programme need not really concern itself with the possibility of turning back?"
- 138 "It would be irresponsible to ignore it but wrong to give serious study to the demise of CAL. The National Programme must answer questions about 'How?', not really 'Whether?'"
- 139 "Are you thinking more about how to organise courses and institutions to use CAL or how to help one institution to utilise what's been developed by another?"
- 140 "Both. But transfer is the larger question. And it's not only a question of transfer between institutions, but transfer among people in the same institution teaching the same subjects. And then the special question of benefits from CAL developments in one subject matter accruing to developments in another."
- 141 "Are you saying that we do not know whether Mechanical Engineering can benefit by CAL developments in Electrical Engineering?"
- 142 "Yes. This is not a place where one stands on the shoulders of giants. There is no reason to be very optimistic about transfer. But the Open University has shown that we can start pretty much from scratch with each course and create a whole panorama of new curricula. At the Open University no course development team has much of a legacy from previous course development teams. I think the National Programme will reach the same conclusion."
- 143 "They're going to have to solve the language problem if they really hope to disseminate successfully. Are the languages of commercial computing good enough for educational purposes?"
- 144 "For some, especially those of us who think of ourselves as humanists, it is difficult to see the educational implications in the choice of computer language. Judging by the heat of the argument, we had better do our homework. The National Programme Directorate is worried about languages with limited transferability. A lot of money is involved. We haven't heard the last of this one."
- 145 "Well, taking it all together, in your opinion, right today, can Britain afford to use CAL in education?"
- 146 "No, but it will."