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ABSTRACT

This study reports on attempts to involve forty British teachers in a program of research into implementing inquiry/discovery approaches to teaching in classrooms, following the failure of a previous curriculum reform movement at the implementation stage. It was hypothesized that a fundamental problem of curriculum reform lies in the clash between reform theory and theory implicit (often unconsciously) in teachers' practice, and that fundamental change in classroom practice can only be brought about if teachers become conscious of the theories that guide their practice and are able to reflect critically about them. Organizational structure of the study is described, including (1) a focus on practitioner-defined, practical problems; (2) collaboration between researchers and practitioners; and (3) a concern for generalizability. A second-order, action research role for the investigators is also presented: how can one initiate teachers into the activity of reflecting about their practice? Theoretical concepts of classroom structure used by the teachers were clarified and explicitly formulated, and used as the basis for teacher-teacher/teacher-researcher discussion. The criteria for testing practical theories of inquiry/discovery teaching are also outlined. Triangulation (observation from the viewpoint of three separate groups) was chosen as the main strategy for teacher monitoring, and its use is illustrated. Six hypotheses relating to teacher self-observation/self-criticism/change developed during the project are presented, as are as forty-three hypotheses on the second-order action research role of the research team. (MJB)

DEVELOPING HYPOTHESES ABOUT CLASSROOMS FROM TEACHERS PRACTICAL CONSTRUCTS: AN ACCOUNT OF THE WORK OF THE FORD TEACHING PROJECT.

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THIS PAPER WAS PREPARED AS A CONTRIBUTION TO A SYMPOSIUM ON 'MODES OF THOUGHT AMONG TEACHERS' AT THE ANNUAL MEETING OF THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION, SAN FRANCISCO, APRIL 19 - 23, 1976.

The Context of the Project *

The Ford Teaching Project was an attempt to involve forty teachers in the East Anglian region of the U.K. in a programme of action research into the problems of implementing inquiry/discovery approaches in classrooms.

The project developed out of a concern for the fact that the curriculum reform movement, sponsored by the Nuffield Foundation and the Schools Council in the U.K., has largely failed at the level of classroom implementation. Adopting the R.D. and D. model of research, development, and diffusion, ideas have been poured into the system. Many became distorted in the process of dissemination. Teachers in the target audience, sceptical of the possibilities of implementing the reformers ideas in the circumstances of their classrooms, negotiated what they were prepared to buy. As Brugalmann[1] has pointed out, what is implemented is nearer to what is sold than the reformers and their sponsors realise. Even those teachers who consciously embrace the radical nature of the innovations offered fail to ask later whether these are the ideas which actually guide their practice. The theories one consciously subscribes to are not necessarily those which unconsciously guide practice. Curriculum reformers are either confronted with the cynics, who refuse 'to dream' and subsequently negotiate the transformation of their ideas into something that can be adapted to

* The Ford Teaching Project was sponsored by the Ford Foundation and based at the Centre for Applied Research in Education at the University of East Anglia, U.K. from 1973 - 75. In writing this account of the projects work I am enormously indebted to my ex-colleague Clem Adelman. Many of the ideas reported here were generated initially by him, especially those related to the eliciting of teachers' categories and methods of classroom observation.

'their own reality', or with the dreamers who idealise their practice to fit 'their dreams".

The fundamental problem of curriculum reform lies in the clash between the theories of the reformers and those implicit, often unconsciously, in the practice of teachers. Reformers fail to realise that fundamental changes in classroom practice can only be brought about if teachers become conscious of the theories which guide their practice and are able to reflect critically about them. Their attempts to advocate their own theories reflect a lack of self criticism on their part also. For they could present their ideas in an experimental form, as ideas to be tested and evaluated by the teachers themselves. In this way teachers would be encouraged to reflect about the theories implicit in their own practices. If a clash exists between the theories of reformers and teachers then testing the former will involve teachers suspending judgement about the truth of their own and ceasing to regard them as self-evident. The curriculum reform movement has had a largely missed opportunity to involve teachers in the process of theory development.

Perhaps the notable exception among curriculum reformers in the U.K. is Lawrence Stenhouse[2], the Director of the Schools Council Humanities Project. Stenhouse sees curriculum development as the business of getting teachers to test the feasibility of a curriculum proposal in practice. Concerned with helping them to handle controversial issues with adolescents in the classroom in an educationally worthwhile way his team defined a set of teaching principles for discussion-based inquiry aimed at an understanding of issues. These included the infamous criterion of 'procedural neutrality' and 'protecting

divergence'. The team asked teachers to explore the problem of implementing these principles in practice. A considerable amount of their resources went into helping teachers at the classroom level to collect and analyse data about their own classroom situations.

It was out of my involvement in this work, as a member of Stenhouse's team that the idea of the Teaching Project (eventually sponsored in 1973 by the Ford Foundation) arose. It became clear that many of the problems of implementing discussion-based inquiry approaches were caused by teachers habitual and unconscious behaviour patterns. For example, students failure to discuss ideas could be explained in terms of teachers tendencies to 'invite concensus', 'reinforce some views rather than others', and 'promote their own views'. It was only by becoming aware of these patterns and reflecting about the theories implicit in them that teachers were able to modify their behaviour. Once they became conscious that their actions conformed to such descriptions they had reasons for modifying their conduct in the classroom. The theory implicit in these descriptions, once conscious, had practical implications. It furnished reasons for refraining from performing under these descriptions and thereby generated new practical theories e.g. about ways of 'protecting divergence' in discussion. Such theories were implicit in teachers' conscious attempts to change their behaviour patterns in the light of the project's principles of procedure.

It also became clear that many of the salient patterns referred to could be generalised across classrooms, subject areas, and

schools. Teachers involved in the project were drawn from different subject areas and exhibited similar behaviour patterns. It was this observation which suggested that the reasons for the general failure of teachers to implement the 'inquiry/discovery' approaches advocated by the majority of curriculum development projects might be highly generalisable, even across student age levels. It suggested the possibility of teachers getting together across classrooms, schools, age-levels, and curricula, to develop collaboratively a practical theory of 'inquiry/discovery' teaching.

The Organisational Framework of the Project.

Forty teachers were invited to join the project from twelve schools. They were supported by a central team of three; two full-time researchers - Clem Adelman and myself - and a secretary, Tina Reay who was also responsible for co-ordinating liason between schools and schools and ourselves. In addition two local authority advisers to schools were nominated by the local authorities in the region to help us support the work of teachers in their area on a part-time basis.

The teachers were grouped in school teams where it was hoped they would meet frequently to discuss teaching problems and share ideas about methods of collecting data. The teams were interdisciplinary in the sense that members were drawn from different curriculum areas. They were also constituted in different kinds of schools i.e. Junior (7-11), Middle (8-12 or 9-13) and Secondary Schools (11 or 13+). Arrangements were made twice termly at Teachers Centres for inter-school meetings between 2-4 teams. The meetings, convened by the local authority advisers, brought teachers together from the different kinds of schools involved. During the four terms the

project lasted in schools all the teachers were also brought together for three residential four day conferences; at the beginning, halfway through, and at the end of the period (1973-74). These arrangements were intended as a context in which teachers had opportunities for lateral communication across established educational boundares. These boundaries tend to be 'guarded' by those above them in the educational hierarchy. House[3] has argued that lateral communication between teachers increases rewards from peers and feeds professional ambition. It therefore threatens hierarchical control over teachers access to ideas and has political implications for increasing their professional autonomy. It was our view that lateral communication about classroom problems increases teacher autonomy because it supports critical reflection about practice, and thereby gives teachers greater control over their own behaviour. The provision of such opportunities for sharing ideas reflected our aspiration to involve a group of teachers in the development of a theory of their own practice - in this case of inquiry/discovery teaching - which subsequently other teachers might have access to as support for their continuing reflection about classroom problems.

The Projects Design as Classroom Action Research

Those curriculum reformers in the U.K. who have expressed concern with the failure of the R.D. and D. model to secure implementation have tended to offer a problem solving approach as a possible solution to fostering innovation at the classroom level. MacDonald and Walker[4] have defined the main features of this approach as follows:

"In the Problem-solver perspective the receiver ... initiates the process of change by identifying an area of concern or by sensing a

need for change. Once the problem area is identified, the receiver undertakes to alter the situation either through his own efforts, or by recruiting suitable outside assistance.....the receiver in the P-S model is actively involved in finding an innovation to solve his own problem..... The relationship between sender and receiver is one of collaboration".

The essential features of the problem-solving approach are:

(1) its focus on practical problems defined by practitioners

(2) collaboration between outsiders and practitioners, who in dialogue seek solutions to the practitioners problem.

Initially these reflected the basic elements of our projects design with one exception. Our design reflected a concern for generalisation. We wanted teachers, not only to monitor their own problems and develop practical hypotheses about how they arose and could be resolved, but to explore the extent to which these problems and hypotheses could be generalised to other teachers classrooms. In this connection we were attracted by Rappaport's[5] definition of action-research assomething which:

".....aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework".

We consequently came to prefer 'action research' rather than 'problem-solving' as a description of our design. However, on later reflection Rappaport's view of Action-Research appears to be distorted by his interests as a social scientist. We were concerned with the development of a general theory. But we would prefer to describe this as a

practical rather than a social science theory. Practical theories have evaluative implications for the question of 'what ought to be done?' and if by 'a social science theory' is meant something which is value-neutral then this would not reflect our aspirations.

In our view action-research involves theorising about practical problems in particular situations and exploring the extent to which these practical theories are generalisable. Implicit in our design is a distinction between practical and 'theoretical' theories.

In the early part of 1973 we set about our task of recruiting teachers who experienced some dissonance between their practice and their aspirations to implement inquiry/discovery approaches. At this time we were not interested in the 'no-problems' people. However, it was difficult from our position as university researchers to get access to such people. Approaches had to be made down the hierarchy from local authority administrators to headteachers before gaining access to groups of teachers. Although we stated clearly that we were looking for teachers with a capacity to reflect about their practice on more than one occasion we had reasons to suspect the motives of administrators in sending us to certain schools. One school had recently undergone an inspection and we later inferred that the administrators wanted us to get involved with it to give its teachers 'a good kick up the pants'.

Once approached by their Local Authority, headteachers tended to feel under some obligation to involve their staff. So by the time we met groups of 'interested' teachers in schools it was difficult

to determine how the project had been communicated to them, and whether their motives for joining stemmed from a genuine desire to reflect about their classroom problems. The difficulties this presented for us will become clear if I explain our attempts to put across the idea of collaborative action-research to the forty teachers who assembled for our 'launching off' conference during the Easter 1973 vacation.

Rather naively, we assumed they were all anxious to 'get cracking' on some systematic reflection on their classroom problems. We outlined the main purpose of the conference as 'the negotiation of research tasks, roles, procedures, and methods' and had produced a document[6] to serve as the basis for discussion. The idea was to revise the document as a result of discussion and distribute it as an agreed contract between teachers and ourselves. A brief summary of the documents is as follows:

A. Action-Research Tasks

1. To identify and diagnose in particular situations the problems which arise from attempts to implement Inquiry/Discovery approaches effectively, and to explore the extent to which problems and diagnostic hypotheses can be generalised.

2. To develop and test practical hypotheses about how the teaching problems identified might be resolved and to explore the extent to which they could be generally applied.

3. To clarify the aims, values, and principles implicit in Inquiry/Discovery approaches by reflecting about the values implicit in the problems identified.

B. Roles

Responsibility for the action-research tasks to be shared between teachers and the central team working in dialogue with them. The central team would also take some responsibility for circulating the reports of school teams to other schools.

C. Methods of Data Collection

1. Teacher Field-Notes

Keeping field-notes is essentially a method of reporting observations of, and reflections about, classroom problems and the teachers own reactions to them. They should be written as soon as possible after a lesson, and if possible can draw on impressionistic jottings made during a lesson. The greater the time lapse the more difficult it becomes to accurately reconstruct problems and responses and retain conscious awareness of ones thinking about them at the time.

2. Pupil Diaries

Since the practical problems of teaching are problems which arise in the teacher's relationship to his students the latter are in a good position to identify and diagnose them. However, there is the difficulty of getting honest feed-back from students. One possible way around the difficulty is to ask students towards the end of sessions to produce in writing their own accounts of the lesson, and to give them control over teacher access.

Even if the teacher never gains complete access students might draw on these diaries when discussing classroom problems with him. The fact that they have reflected about them prior to discussion may increase their capacity to report their views honestly.

3. Teacher-Student discussion

Teacher field-notes and student diaries might be used as resources in discussions about classroom problems where teachers and students share their accounts of lessons. These could be tape recorded for further study.

4. Tape Recording

Teacher field-notes alone cannot capture what the teacher was unaware of at the time. Tape recordings can. They can provide a teacher with valuable data about his own and his students behaviour, and thereby help him to become consciously aware of both his own actions and students' responses to them. Tape-recordings of classroom events can be useful sources of evidence against which to check teachers' and students' retrospective accounts of lessons.

5. Case Studies

At the end of the last term of the reseach teachers might produce a case study of problems and strategies with a particular class of students during that term. The study would be based on data collected by the methods and techniques outlined above.

D. Reporting Procedures

At the end of each term each co-ordinator of a school team would send the central team a report on team meetings within the school. The report would cite common problems, and hypotheses

identified by the team.

E. Ethics of Research

Since the action-research would involve other teachers, as well as central team members, having access to data from a teacher's classroom some agreement had to be reached about 'who has rights of control over what data?' The following procedural principles were suggested:

(1) Individual teachers ought to control both the extent to which, and the conditions under which, other teachers have access to data from their classrooms.

(2) Headteachers ought to control the extent to which classroom data from their school is made accessible to 'outsiders', and the conditions under which access is given.

(3) Individual teachers ought to control the central team's access to both their classrooms and private interview situations with students.

(4) Classroom data gathered by the project's central team ought to be made accessible to the teachers concerned, except data over which students have rights of control i.e. student accounts of classroom problems and teaching strategies.

(5) Students interviewed by the central team ought to control the extent to which others, including their teachers, have access to their accounts.

The teachers' general reaction to the document was that they didn't have time to carry out the tasks in the ways suggested. We realised that such scepticism is often well founded. Schools have not on the whole institutionalised support for reflective teaching. Teachers embark on innovations without the time and opportunity required for resolving the

classroom problems they pose.

We spent a considerable part of our initial discussion with headteachers trying to negotiate institutional support for the work of school teams e.g. in terms of opportunities to meet together in school time. 'Interested' headteachers at the time said they 'would see what could be done', but many, as we discovered later, did very little. Perhaps, in this initial stage, we should have concentrated more on the selection of schools than the recruitment of teachers within them. There is probably a strong correlation between the opportunities an institution allows for practical reflection and the ability of the teachers who work in it to be aware of gaps between aspirations and practice. In retrospect it was clear that the two school teams who made the greatest initial progress on the tasks outlined were those with most opportunities for discussion and reflection in their schools.

Many teachers at the conference not only felt they didn't have time to reflect about problems but also that there was little point in doing so. These teachers had little sense of their practice not matching their dreams. They assumed they were already inquiry/discovery teaching quite successfully. Later we learned that some teachers decided to get involved simply because participation in projects enhances career prospects, and as they were already 'doing inquiry/discovery' involvement might bring rewards with a minimum of effort. There was another, smaller group of teachers, who appeared to lack any committment to inquiry/discovery approaches at all. Again, we later discovered that these had simply come at the 'invitation' of their headteachers, and 'if you want to get a good reference you don't say no'.

Our attempts 'to negotiate' teacher participation in action-research resulted in a rather reserved 'acceptance' of our document in principle, with some suggested alterations. At the time, our ignorance of why teachers

had come, prevented us from appreciating the unreality of our attempts to negotiate a contract for action-research. During the first term of the project in schools it became clear that, in the majority of cases, action research was simply not getting 'off the ground'. Regular team meetings only materialised in two schools. A small minority of teachers used field notes, tape recorded their lessons, and discussed classroom problems with students. The majority asked students to keep diaries, but reported little evidence of any deeper thinking beyond 'it was a bit boring', or 'the lesson was all right'. Feed-back from schools was sparse. About two-thirds of the teachers appeared to believe they had few problems in implementing inquiry/discovery approaches successfully. We had 'agreed' to go into schools to work with teachers once problems began to emerge. But telephone inquiries during the first half of the term were met with the typical reply 'Everything seems to be going well', implying 'Don't call us, we'll call you'.

This experience of trying to involve teachers in action research led to further developments in the project's design. We faced a situation where two-thirds of the teachers who had joined the project appeared to have little interest in doing action research or opportunities within their schools to cultivate such interests. One must therefore draw a firm distinction between those teachers who are ready to reflect more deeply about their practice because they already at least sense gaps between it and their aspirations, and those who are not ready because they have no sense of any such gap existing. After the first conference it became clear that our problem was not simply that of supporting through dialogue a group of teachers who were either adopting a reflective stance or ready to do so. With the majority of teachers our problem was how to motivate them to adopt a reflective stance to their practice. The trouble with the action reseach approach as a strategy for supporting classroom

innovation is that it presupposes readiness to reflect. In the absence of any sense that there may be something problematic about their practice general aspirations to involve teachers in the development of practical theory are so much 'pie in the sky'. Even those dozen or so teachers who were motivated towards the idea of action research found pressures of time and work load over-riding their committment to the enterprise.

In the light of these considerations we defined a second-order action research role for ourselves; namely, that of developing practical hypotheses which are relevant to the question 'how can one initiate teachers into the activity of reflecting about their practice?' It was in this context of reflection about the problems of implementing teachers' participation in action research that the idea of the self-monitoring teacher began to crystallise as the key concept for the second-order reseach. Self-monitoring is the process by which a person becomes aware of his situation and his own role as an agent in it. Awareness is, in the language of Dewey, the end-in-view of the self-monitoring agent. However, self-monitoring, although a necessary condition of awareness is by no means sufficient. It expresses an objective attitude towards situation and self and indicates that certain subjective obstacles to awareness have been overcome e.g. those of bias and prejudice. As Hamlyn[7] has argued 'objectivity' does not imply the achievement of 'truth'. It remains possible for a person who gives an objective account of his situation to honestly misdescribe some aspects at the same time e.g. due to the complexity, ambiguity, or insufficiency of the evidence.

The concept of self-monitoring clarified for us what was involved in practical reflection. In its light one can make a clear distinction between:

(1) Teachers who are adopting an objective stance to their practice but require support in collecting and analysing more sufficient

data as a basis for constructing accurate accounts.

(2) Teachers who are not adopting an objective stance but inasmuch as they sense or feel their situation to be problematic are ready to do so.

(3) Teachers who are neither ready or able to adopt an objective stance to their practice.

We now think that at the beginning of the project only one of the forty teachers was self-monitoring to any significant extent. Another twelve probably had some genuine sense of their teaching being problematic. Two-thirds of the teachers fell into the third category. We estimated that at the end of the project twenty five teachers had made some progress at self-monitoring. Eight teachers dropped out during the first term.

Teachers' Theories of Teaching

The negotiation of 'tasks, roles, procedures, and methods' was not the only aim we set ourselves at the 'launching off' conference. Assuming that the majority of teachers present were aware of a gap between aspirations and practice we wanted them to begin to explore typical problems. We realised that teachers would initially be very defensive if we asked them to cite their problems in the presence of people they hardly knew. So we prepared excerpts of lessons from transcripts, video, and tape-slide recording, for them to discuss. These excerpts were taken from the lessons of teachers not involved in the project. We hoped that the material would enable them to talk about typical classroom problems without drawing too much attention to their own practice.

The discussions of transcripts and recordings were marked by apparent communication difficulties. Different teachers appeared to use different terms without it being clear if they meant similar or different things by

what they said. They also appeared to use the same terms but to disagree in their application.

We felt that if teachers were subsequently going to share ideas they would have to develop a common language for talking about classrooms together. We listened to the recordings of the discussions after the conference with a view to clarifying the communication difficulties which arose, and found that a number of terms tended to be used again and again in teachers judgments about teaching situations. The most frequently recurring terms, other than 'discovery' and 'inquiry', were:

formal - informal

structured - unstructured

framework

teacher directed

self-directed (child)

guided

open ended

dependent (child) - independent (child)

subject centred - child centred

We invited teachers to discuss the meanings of these terms at team and regional meetings and to report back. We also went into schools and discussed them with teachers. As a result of these discussions we discovered that although teachers might be using different terms they were often doing so to label the same things. A surprising degree of consensus appeared to exist about which dimensions of meaning are significant in appraisals of teaching situations. Three main dimensions emerged:

A
(Formal - Informal
(
(Dependent - Independent

The terms formal - informal were used to pick out the degree of intellectual dependence - independence of students on the teachers

authority position.

B (Structured - unstructured

(Subject centred - child centred

Structured was interchangeable with framework, but more widely used than the latter. Structured - unstructured could be interchanged with subject-centred - child centred.

Both these sets of terms referred to the teachers' aims and were used to describe the degree to which they were concerned with getting students to achieve preconceived knowledge outcomes. The more the teachers aims are concerned with getting preconceived knowledge outcomes the more structured or subject centred the teaching. The more they are concerned with the process rather than the products of learning, with how the student is to learn rather than with what, then the more unstructured or child centred the teaching.

C Directed - Guided- Open Ended

These three terms picked out points along a single dimension and referred to the methods by which the teacher tries to implement his aims. The teachers' methods tend to be directive when they prescribe in advance for students how a learning activity is to be performed. They are guided when they are responsive to problems perceived by students in performing learning activities. e.g. asking questions, making suggestions, and introducing ideas in response to task problems cited by students. Open ended methods are negative in character, being solely concerned with refraining from imposing constraints on students abilities to direct their own learning. The directed - guided - open ended dimension picked out the degree of control the teacher tries to exert over the learning activities of the student.

In order to facilitate communication between teachers about the above dimensions we suggested descriptions of teaching situations should be

couched in the following terms only:

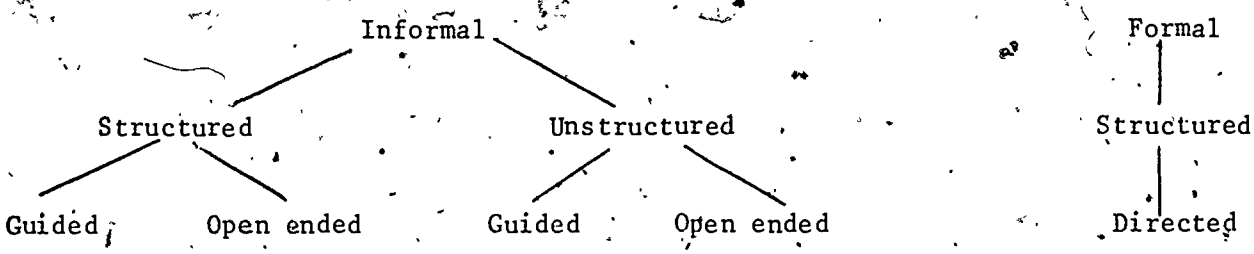
Formal - Informal

Structured -- Unstructured

Directed - Guided - Open Ended

Discussions and interviews with teachers about the meanings of terms also clarified apparent disagreements about the application of terms. Teachers held different views about which meanings were compatible and incompatible with each other. Thus for some teachers an informal classroom was associated with unstructured teaching and seen to be compatible with a structured approach. For others, there was no incompatibility between structured teaching and an informal classroom situation. This explained disagreements about whether a particular classroom situation was to be classified as informal rather than formal. Faced with an example of structured teaching some teachers would have little difficulty about also classifying it as informal, while other teachers would argue 'it can't possibly be informal'. Similar problems arose with appraisals of the extent to which aims are structured rather than unstructured. Some teachers strongly associated open-ended strategies with the pursuit of unstructured aims, while others believed guided methods were compatible with such aims. When faced with an example of guided methods the latter would have little difficulty in entertaining the possibility that the teaching was 'unstructured' whereas for the former 'unstructured-guided' teaching was virtually impossible to imagine.

It became clear that the ways these meanings were associated with each other in teachers' minds reflected their theories of inquiry/discovery teaching. The following associations were elicited:



It should be obvious that the meanings identified were determined by our teachers values. The meanings which are significant are made so by teachers aspirations to foster and protect self-directed learning (independent reasoning) in classrooms. They pin point variables which may affect students abilities to direct their own learning. Thus the degree to which teachers intend preconceived knowledge outcomes may influence the control they attempt to exercise over students thinking, which in turn may influence the extent to which the learning situation provides a context which protects (informal) and fosters self-direction.

The above outline schematically represents the range of teachers' views about how pedagogically significant classroom variables interact with each other. It consequently reflects the different practical theories they brought to bear in analysis of the classroom data presented to them at the first conference. Many of the disagreements between teachers could be explained not just in terms of terminological confusions - although these also abounded - but in terms of conflicting practical theories. Although there was general agreement about the effects of structured-directed approaches on the learning situation there was disagreement about how a learning context which protected and fostered self-directed learning (independent reasoning) could be achieved. A few teachers we discovered were sufficiently sophisticated to realise that it might be appropriate to hold different theories in different contexts. These tended to be aware of more than one pattern of meanings. However, a substantial number of teachers believed that an informal - structured - guided pattern could be realised in any classroom situation.

I shall now briefly set out explicitly the theories which are implicit in each of the patterns of meaning cited in the above scheme:

1. Informal - Structured - Guided

A teacher can pursue preconceived knowledge outcomes by guiding students towards them without imposing constraints on their ability to direct their own learning.

2. Informal - Structured - Open ended

A teacher can pursue preconceived knowledge outcomes and foster and protect self-directed learning if he solely concentrates on removing constraints and refrains from any kind of positive intervention in the learning process.

3. Informal - Unstructured - Guided

A teacher can foster and protect self-directed learning and exercise positive influence on the learning process so long as this influence is not exerted in the direction of bringing about preconceived knowledge outcomes.

4. Informal - Unstructured - Open ended

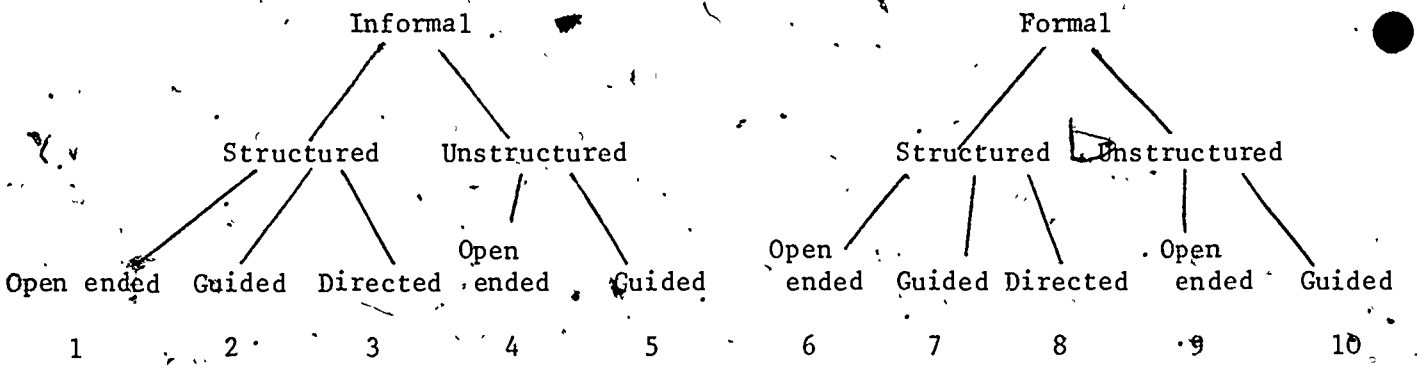
A teacher cannot foster and protect self-directed learning and pursue preconceived knowledge outcomes or exercise positive influence on learning processes. He must restrict his strategies to protecting self-direction on the part of the student.

5. Formal - Structured - Directed

A teacher fails to protect self-directed learning when he pursues preconceived knowledge outcomes in a way which is intended to make the student intellectually dependent on his authority position.

During the second term of the project we asked teachers to identify which of these theories guided their own practice and to test the extent to which the theory accurately described it. For example, if a teacher became aware that he was adopting a structured - guided approach he would know that theory 1 was tending to guide his practice. He could then test the extent to which it was being realised by assessing whether his approach actually protected and fostered self-directed learning. If it didn't then he was in a position where he needed to generate new theory.

The schema outlined was derived empirically and describes a number of theories which actually informed our teachers' practice. However, it does not represent the full range of theories it would be logically possible to develop about the relationships between teachers categories. By relating the categories in terms of all their logically possible combinations we eventually produced the following typology of practical theories:



Not all of these ten types could possibly guide practice in the sense of reflecting teaching patterns a teacher might want to realise. The typology reflects both unintended as well as intended outcomes of teaching. Types 3, 6, 7, 9 and 10 indicate gaps between aspirations and practice while 1, 2, 4, 5, and 8 indicate the realisation of the teachers' intentions. For example, in type 7 'structured - guided' signifies an attempt to protect self-directed learning while pursuing preconceived knowledge outcomes. However, the presence of the third category, 'formal' indicates that guidance fails to protect self-directed learning when teaching is structured.

We found that a large number of our teachers operated with the theory that it was possible to protect self-directed learning and pursue preconceived knowledge outcomes at the same time (type 2) if they adopted responsive

(guided) rather than directive methods of teaching. However, on reflection many of them discovered that the structured-guided approach did not work. They became aware that such approaches unintentionally resulted in students remaining in a state of intellectual dependence on their authority position. As a result the theory implied by the formal - structured - guided association (type 7) began to inform their practice and was implicit in a switch to a more informal-unstructured approach in the classroom (types 4 & 5).

It is worth pointing out the implications of the theories reflected in this typology. The value of self-directed learning is implied by both the formal - informal and the directed - guided - open ended sets of categories. The former set picks out the extent to which self-directed learning is actually protected while the latter picks out whether the teacher is trying to protect self-direction. Both 'guided' and 'open ended' indicate a desire not to intervene in ways which impose constraints on self-directed learning. If the theory implicit in 'informal - structured - guided' (type 2) guides a teacher's conception of his practice it will have normative implications for him. The truth of the theory implies that he ought to adopt a 'structured - guided' approach in his classroom. However, if he discovers that his theory is false, and that the 'formal - structured - guided' pattern (type 7) tends to hold instead, then he develops a new theory which implies he ought to refrain from adopting 'structured - guided' approaches. The theories of teachers are not value-free and imply practical judgments about what ought to be done; which is what makes them practical theories. If teachers are not modifying their teaching behaviour over time one has good grounds for assuming that they are not testing and developing theory.

The categories generated from our discussions and interviews with teachers

provided the basis for theory clarification, testing, and development, in the project. They furnished a framework not only for discussions between teachers but also for dialogue between teachers and ourselves. So many past attempts to produce theories of teaching have been practically fruitless because researchers have refused to take into account the perspectives of practititioners and to build theory from this standpoint. They have all too often resulted in the development of 'theories' which were largely irrelevant to teachers practical concerns, because the concepts in which they wereframed derived from the researchers need to locate theory within the context of a value-free 'theoretical' discipline. But if theory development is to have any practical significance for teachers it must be rooted in those conceptualisations which arise out of their practical deliberations about 'what to do'. And these conceptualisations will inevitably express an evaluative point of view. In our view there can be no value-free educational reseach since what makes research 'educational' is its contribution to the development of theories which have normative implications for those who are committed to 'education'.

Criteria for Testing Practical Theories of Inquiry/Discovery Teaching

Both at the initial conference and in later discussions and interviews with teachers it was clear that they characterised inquiry/discovery teaching as an attempt to protect and foster self-direction in the learning situation. This aim was assumed to be conceptually related to inquiry/discovery approaches. In other words it was not possible for the teacher to adopt the approach without attempting to protect and foster self-direction. The adoption of the approach logically required him to hold these aims as his ends-in-view. Our teachers disagreed about whether other ends, such as knowledge outcomes which are extrinsically related to these approaches, could be pursued at the same time. But what was agreed was that for the inquiry/discovery

teacher learning outcomes do not necessarily justify means. Whatever outcomes by way of knowledge are pursued the methods one adopts must satisfy the criteria of protecting and fostering the students ability to achieve this knowledge by his own powers of reason.

It is against these criteria that the inquiry/discovery teacher needs to test the sort of practical theories I have outlined. However, 'self-directed' learing is a rather abstract idea and we thought we could help teachers in the task of testing and developing theory if we could analyse it into more concrete criteria.

There has been a tendency for theorists to view educational aims as end-products of learning and to try to analyse abstract ideas into more specific behavioural objectives. However, in performing our analysis we were heavily influenced by the philosophical work of R.S. Peters on the nature of discourse about 'aims' in education. His views were first articulated in a seminal paper published in 1963[9] entitled 'Must an Educator have an Aim?' Peters argued that it is important not to confuse two quite distinct ways of conceptualising aims in education. Sometimes aims are appropriately conceived as products or end-states. It is here that the language of objectives is appropriate. At other times it is more appropriate to view aims as clusters of values and principles of procedure which not so much define the intended products of teaching and learning activities as the manner in which they are to be performed. Peters argues:

"Values are involved in education not so much as goals or end-products, but as principles implicit in different manners of proceeding or producing."

We believed that 'self-directed learning' should be conceived as a procedural aim of this kind, and that it would distort its nature as a

process criterion to view it as an end-product or object of mastery by students. There is no end-state that can be labelled 'self-directed' as opposed to 'other-directed'. People can be placed on a continium but judgments are necessarily qualitative. Students can become more rather than less self-directed. But as a criterion it can never be fully realised. Objectives appropriately specify standards of mastery learning. Students can gain mastery in terms of knowledge and skills but they cannot gain mastery in self-direction. The standard is an infinitely receeding one. The fostering and protection of self-direction then is a criterion by which a teacher can criticise his performance but it is never an aspiration that can be fully realised. There is therefore necessarily an element of indeterminancy in practical theorising about education procedures. Nevertheless we were convinced that the quality of teachers judgments could be enhanced by clarifying the values and principles implicit in the complex idea of self-directed learning.

It is perhaps no coincidence that the first person in the U.K. to launch a major attack on the objectives model of practical theorising was also the first person to operationalise R.S.Peters' views in a piece of practical curriculum development. I refer again to Lawrence Stenhouse the director of the Schools Council Humanities Project. Stenhouse wrote:

> "We adopted a research plan based upon the specification of a procedure of teaching which should embody the values implied in the aim in a form which could be realised in the classroom. This means that the changes which we specify are not changes in terminal student behaviour but in the criteria to which teachers work in the classroom. These changes are defined by enunciating certain principles of procedure or criteria of criticism which are expressions of the aim. They are, if you like, specifications of a form of process." [10]

Following Peters and Stenhouse we set about the task of analysing the 'aim' of our teachers into procedural values and principles. But we did so only after preliminary discussions with them about the values they believed to be embodied in their aim. These discussions served as orientation points for our analysis.

We suggested that the aims of 'protecting and fostering self-directed learning' could be analysed into the following student 'freedoms':

(a) to identify and initiate their own problems for inquiry

(b) to express their own ideas and develop them into hypotheses

(c) to test their ideas and hypotheses against relevant evidence

(d) to discuss ideas i.e. freedom to defend their own ideas in the light of rational criteria, and to bring these criteria to bear on the ideas of others, including those of the teacher.

In order to exercise these freedoms two sets of conditions are necessary. First, students must be free from external constraints on their ability to exercise them. In other words, students must be 'free from' external constraints if they are to be 'free to'. Secondly, the existence of these negative freedoms may not be sufficient for self-direction. Students must also possess the necessary intellectual capacities if they are to exercise the positive freedoms. For example, students may be free from constraints on the expression of certain ideas but be unable to express them because they lack the necessary concepts. The first set of conditions we called extrinsic enabling conditions and the second set intrinsic enabling conditions.

The values which can be analysed from the aim require teachers who are orientated by it to proceed in the light of certain principles. These

principles specify their role responsibilities for creating the conditions which are necessary for the realisation of the aim. The distinction between extrinsic and intrinsic enabling conditions makes it possible to analyse the principles into two clusters. The first cluster we called negative principles because they specify responsibilities for removing external constraints. The second cluster we called positive principles because they specify responsibilities for fostering the necessary intellectual capacities.

Negative Principles

Refrain from (1) preventing students from identifying and initiating their own problems

(2) preventing students from expressing their own ideas and hypotheses

(3) restricting students access to relevant evidence and drawing their own conclusions from it

(4) restricting students access to discussion

Positive Principles

(5) help students to develop the capacity to identify and initiate their own problems

(6) help students to develop their own ideas into testable hypotheses

(7) help students to evaluate evidence in the light of its relevance, truth and sufficiency

(8) help students to learn how to discuss

It should be clear that the negative principles provide criteria for assessing the extent to which the teaching approach protects self-directed learning and thereby maintains an informal learning context.

The positive principles provide criteria for assessing the extent to which the capacity for self-direction is being positively fostered by the teacher within informal learning contexts. According to our teachers the category 'informal' merely signifies independence from teacher imposed constraints. It is a further question whether students are 'free to' direct their own learning within the informal situation.

About half-way through the second term of our work with teachers we circulated a document[11] which included both the categories and theories we had derived from discussions with them and the criteria for testing theories we had analysed from their 'aims'. We hoped the document would provide some guidelines for self-monitoring in the classroom. However, we realised that it would only be useful for those teachers who had already begun to question their own practical theories. Fortunately, over the previous months we had begun to make some progress in this direction.

Triangulation as a Method of Initiating Self-monitoring

During the first term of the project the need to develop strategies which would motivate the majority of our teachers to self-monitor their practice became apparent. We finally decided on a more interventive approach than originally envisaged. It took the form of Clem Adelman and myself initiating a triangulation procedure in some teachers classrooms, and then circulating some full sets of data gathered in this way to all the other teachers in the project. Realising that triangulation can be a threatening process we only selected those teachers we believed to be ready to begin to self-monitor their practice in some depth, and hoped that they would also be prepared to let other teachers have access to the data gathered in the process. We also hoped that the fact that

some teachers were prepared to give others access to 'their problems' might motivate the rest to take a deeper look at what they were doing; albeit by the use of rather gentler methods than full-blown triangulation.

The idea of triangulation developed out of a combination of Clem Adelman's interest in Ethnomethodology, particularly the work of Cicourel and Garfinkel, and my own previous attempts in the Humanities Project to help teachers compare their own accounts of classroom discussion with those of their students. I had found teachers extremely reluctant in the main to elicit feed-back from students, and even those who tried were largely unable to elicit honest accounts. The intervention of 'an outsider' for the latter group was essential to get the process going. It therefore came as no great surprise when we found teachers in the Ford Project were either not trying to elicit their students accounts or trying unsuccessfully.

Triangulation[12] involves gathering accounts of a teaching situation from three quite different points of view; namely, those of the teacher, his students, and a participant observer. Who in the 'triangle' gathers the accounts, how they are elicited, and who compares them, depends largely on the context. The process of gathering accounts from three distinct standpoints has an epistemological justification. Each point of the triangle stands in a unique epistemological position with respect to access to relevant data about a teaching situation. The teacher is in the best position to gain access via introspection to his own intentions and aims in the situation. The students are in the best position to explain how the teacher's actions influence the way they respond in the situation. The participant-observer is in the best position to collect data about the observable features of the interaction between

teachers and students. By comparing his own account with accounts from the two other standpoints a person at one point of the triangle has an opportunity to test and perhaps revise it on the basis of more sufficient data.

Because we were operating in a context where the teachers we selected had been unsuccessful in eliciting honest feed-back from students the participant-observers (Clem Adelman and myself) took the initiative in collecting accounts. And, because we were primarily concerned with fostering self-monitoring in teachers the accounts were primarily collected for the teacher to study. However, we were aware of the potentiality of triangulation as a research method which can develop research potentiality at all points of the triangle. The participant-observer is able to check his own accounts against those of the teacher and his students, and whereever possible we encouraged teachers to involve students in the process of comparing the three sets of data. Triangulation can not only foster dialogue between an outside-researcher and a teacher-researcher. It can also foster three-way discussion and develop research potential in students.

The fact that we took the initiative for collecting accounts, primarily with the aim of developing the self-monitoring potential of our teachers in mind, determined the techniques we used. We tended to have a post-lesson interview with the teacher before interviewing the students (interviews were recorded on tape). This enabled us to identify the kinds of data it was necessary to collect from students if the teacher was to have an opportunity to compare two accounts of the same event. It also enabled us to identify discrepancies between the teacher's account and our own which then provided further criteria for eliciting relevant information from students.

The danger of interviewing the teacher first is that it leads to an over-structured interview with the students and prevents them from focussing on their concerns in a lesson. However, although we often had a clear view of the sort of information we required we tried to interview students in a fairly unstructured way, only 'homing in' on the events we had in mind after some account of them had been initiated by students. If the students omitted any reference to them we tended to mention them towards the end of the interview. Interviewing the teacher prior to the pupils is also less threatening to the teacher. He tends to feel freer to say what he wants because he is not worrying about how the interviewer's questions are influenced by what the students have said to him and whether his own account is wildly discrepant with theirs. There is also a danger that the participant-observer over-structures his interview with the teacher since he will tend to view the situation as an opportunity for testing his own accounts of events. Here again we tried to work from the teachers own judgments about which features of the lesson were significant, introducing our own 'agenda' when it matched his or was a natural development of it.

The participant-observer also exercised the initiative in negotiating the teacher's access to student accounts. He only interviewed students with the teacher's permission, and made it clear that teacher access would have to be negotiated with students. Prior to an interview with students we told them that we were after honest accounts and that in order to ensure this we would give them control over the teacher's access. Only on two occasions did groups of students (we normally interviewed groups selected by the teacher) refuse to give teachers access but many groups demanded some reassurance from teachers that they would discuss their accounts with them andnot react over-defensively to what was said.

The participant-observers had a significant role to play in creating conditions of trust between teachers and students. Students generally feared their teacher's reaction. This accounted for their reluctance to give him honest feed-back directly in the face-to-face situation. We found that when a teacher was able to conform to the conditions of access negotiated with students through us, and demonstrate an open attitude to their comments, he was increasingly able to collect their accounts without the help of the participant observer. Once he came to appreciate the value of triangulation the participant-observer could hand over much of the initiative for the collection of accounts to him. As the project progressed we found that many of our teachers began to initiate triangulation procedures for themselves. They called us in, told us what to look for, and took the initiative in eliciting both our accounts and those of students; although on occasions they still asked us to interview students in order to check on their own progress in getting honest feed-back.

It was important for the participant-observers in interview situations to refrain from introducing their own views in ways which inhibited the interviewee's freedom of response. Formally we only gave the teacher access to our own accounts after he had given his. Although later, when teachers began to exercise more control over the triangulation process and were more open to alternative views, we were able to have a frank exchange of views with them in the post-lesson situation. The interview situation became transformed into one of discussion. Teachers also suspected that their students would tend to give us what 'we wanted' in our interviews with them. It was therefore important to interview in a way which demonstrated to teachers that we were not manipulating students to give accounts which confirmed our own.

As participant-observers we were anxious not to impose our own judgments

on teachers. Teachers feel very threatened by people they perceive to occupy evaluation roles. Perhaps this stems from the fact that much of the teacher evaluation currently practiced gives teachers few rights of reply and is therefore perceived to be a rather punitive activity. Triangulation places 'the outsider' in a different light. For it requires him to place his own appraisals of a situation in the context of alternative views, including those of the teacher. However, there is a danger, when 'the outsider' takes the initiative in collecting accounts. The sooner the teacher is able to take the initiative in this respect the better. But in the initial stages, when the teacher is unable to exercise these initiatives, 'the outsider' has to exercise them, and demonstrate by the way he proceeds his own openness to alternative views of a situation.

As well as observing, and in the initial stages interviewing, the participant-observers recorded lessons. If the classroom was highly centralised, in the sense that it was possible to monitor everything that was going on at the same time, we used tape-recordings. If the classroom was decentralised we adopted a tape-slide technique of recording developed by Clem Adelman.[13] The teacher wears a radio-microphone which picks up his interchanges with students as he moves around the classroom. The participant-observer takes photographs (pulsed onto the tape), which help to place the talk recorded in a visual context. He tries to visually document 'to whom the teacher is talking', 'when the teacher moves from one place to another or from one student or group to another', 'when students leave or enter the group the teacher is talking to', 'the nature of the task the teacher is talking to the students about'.

We didn't use video-tape recordings because the majority of our teachers didn't have play-back facilities. The main function of recording was to collect data to help teachers self-monitor their situation. So the

recording medium had to be something which could be used easily by teachers. The participant-observers recordings were used both in interview situations and by teachers when comparing accounts. In post-lesson interviews with teachers we sometimes adopted the device of playing the tape-recording and allowing the teacher to stop it and comment when he wanted to. It helps him to 'reconstruct' classroom events and means that he has more than memory to go on. We also found it useful to adopt this approach in interviewing with students. When comparing accounts recordings are useful as a basis for checking. They provide behavioural evidence which can be used to falsify accounts. For example, if a student argues that his teacher was always pressing him to agree with his ideas by constantly saying "Do you agree with that?' the teacher (or student or both) can turn to the recording as evidence of how often the teacher said this sort of thing.

We tried as much as possible to self-monitor our own conduct as participant-observers and interviewers within the triangulation situation. We partly did this by encouraging teachers to give us feed-back about how they viewed our role. Here is one example of how some teachers reacted to triangulation material gathered by me:

"The arrival of the first transcripts of tapes made during lessons, and of subsequent discussions about those lessons between John Elliott and the pupils in the absence of the teacher was a very important moment, for this was the first time that the teachers had come face to face with facts and evidence about their own teaching. Not only that, but it was apparent that the pupils did not always see the teacher's aims in the way that the teacher did, and adjusted their responses in lessons accordingly.

Of course, it could be that the pupils were adjusting their responses to John Elliott in a similar way, and so in one case at least, a further discussion took place involving John Elliott, the pupils and the teacher. From our point of view this was a very important tape because it seemed to show us just how careful one had to be in accepting as evidence the responses of pupils in a group situation with or without the teacher. Notwithstanding this, there was certainly food for thought in the tapes, which were then discussed at central conferences."[14]

It is evident from these remarks that the interviews with students were a source of considerable anxiety. Teachers frequently cited the collection of student data as that part of the process which aroused the greatest anxiety for them.

Here are some excerpts from one of the triangulation studies[15] referred to by the teachers quoted above:

Observer — Do you know that you use the words "Do we all agree?" quite a lot?

Teacher — No I didn't (pause) OK - I know I use that a lot.

Observer — Three or four times.

Teacher — I am asking for assent.

Observer — Are you? Is that what you are asking?

Teacher — I think probably I am. I think possibly I use that when I don't get ... if I make a statement and I haven't got a ... I don't know sometimes if it is a rhetorical question or whether it is a question I want an answer to or whether it is just a statement, but I make a statement and I hope the response will come from it. If a response doesn't come from it, you either repeat it in a different way to a single individual and put them on the spot, or you perhaps

get over it by saying OK or 'Do you all agree with that?'. I suppose they can possibly con me by saying yes and carry on. It is something I hadn't thought of.

Observer Do they all say yes?

Teacher Well they didn't all say no. I reckon if you take a non-negative approach to be an affirmative, which is perhaps a big thing to do. I don't think you ought to do that really. Yes that's naughty isn't it!

Observer Well the thing is I suppose when you say "Do we all agree?" they can say no.

Teacher I give them the opportunity to say no.

Observer They can say no, but how do they see it. If they see it as your seeking agreement ...

Teacher I think a lot of the time one must be seeking agreement ... what I am trying to put forward is what I feel to be a reasonable statement; a true statement. Although I didn't today, I do in fact sometimes put forward daft statements and you do usually find that they disagree if there is something stupid. It was a bit tame today - I mean you were coming in part way through a situation which wanted finishing and therefore I finished it. In terms of them going away and doing things - and I thought you would be more interestdd in discussion because of the material you had got - your recording technique ...

Extract from observer's notes (written during lesson)

Look at old tables of results. 'What's happened?' Teacher asks specific pupils questions. When he disagrees raises his voice quizzically as if he disagrees. Question and answer. Hints. When right answer is given it is reinforced by the teacher. 'Right'. (guessing game) Do you all

agree with that? Reply by one boy 'Mm'. When boy responds in a way which doesn't fit what teacher wants it is chopped. People not encouraged to elaborate on ideas. Wants to get them critical of John Innes compost manufacturer. John Innes made by pupils promotes growth better than commercial product. Asks why paper pots are better than plastic pots. Often makes an interpretation. Asks pupils if it is a 'reasonable guess'. Someone murmurs again 'yes'.

Interview with Pupils

Pupil But he wouldn't ask you what you think your conclusions were he'll put his own conclusion up on the board, and you have to write it. He says do you agree, not always but he don't want to rub it off so you just say yes to keep him quiet.

Observer You say yes to keep him quiet?

Pupil Keep him happy

.....

Observer There was a time when he said he was making a guess and he asked you if you agreed whether it was a reasonable guess. I don't know if you remember that?

Pupils Yes

Observer And one person said yes and everybody else kept quiet. Now what I want to know is whether the person who said yes really did agree with him or just said yes because they thought he wanted them to say yes, and why everybody else kept quiet?

Pupil Well he would have liked us to say yes, really, cause I mean you could see it.

Pupil If you'd said no you'd waste time arguing wouldn't you.

Pupil Yeh, if you ever say no he'll stand there and just keep on and on.

Pupil He'll keep on till you come to his way of thinking.

Pupil So it's best to say yes to start with.

Observer So even if you did disagree when he said "Do you all agree?" you wouldn't.

Pupil If you said no he'd keep on to you until you said yes.

Pupil If you said no he's going to say why not.

Pupil And if you argued with him he'd come round to the same point where you left off.

Pupil Back to his way of thinking.

Excerpt from tape-recorded lesson

Teacher Yeh, do you all agree with that?

Pupil Mm

Teacher What do you think Derek? I mean are you bothered?

Teacher .....Would that be the only thing you want to know about a plant?

Pupil How to condition it Sir.

Teacher Yeh, do you all agree with that?

The anxiety our collection of students accounts aroused was carried into local inter-school meetings. Those who had been involved in the triangulation studies discussed their experience with those who were not involved.

Here is an episode[16] from one such discussion held during the second term of the project:

Adviser Do children feel they are being inspected in any way?

Secondary Teacher (A) No I don't think so - they will often open up with them.

Primary Teacher (B) Pupils will open up with strangers who are just inquiring. Whereas they know the teachers are trying to find out what they know and therefore they try to give the 'correct' response.

Secondary Teacher (A) .... all that he (John Elliott) got from them was all criticism of the lessons.

Secondary Teacher (C) This attempt to get frankness can obtain complete nonsense from the children and often means that later a more authoritarian approach has to be adopted with them.

Secondary Teacher (D) I feel that this can cause trouble.

Secondary Teacher (E) The children can in fact give false information. Children do not talk frankly.

Secondary Teacher (C) Possibly children may like the idea that talking to the project team reflects an unfavourable image. To what extent do children realise the uniqueness of John Elliott's position? (as an outsider coming in to interview)

- - -

Primary Teacher (B) It's easier in the Primary School.

Primary Teacher (F) Yes in the Secondary School you have the problem of adolescence, twisting of the evidence, etc.

- - -

Secondary Teacher (C) By what criteria does a child get to know a teacher? Should we be judged by those we don't want to be judged by?

Primary Teacher (G) Children are used to visitors. I've had no trouble.

Secondary Teacher (E) Do children <u>really say</u> what they mean in the Primary School?

Primary Teacher (B) They try to reason out the correct response they ought to make.

Primary Teacher (F) Young children cannot rationalise the problems we are posing to them. They are not capable of making true judgments on effectiveness of lessons . . . etc.

Secondary Teacher (E) I have heard on tape some quite sensible judgments.

Primary Teacher (F) They become more coherent as they move higher up the school.

Primary Teacher (B) They still tend to give responses you expect.

Primary Teacher (F) Press the red button and you get the red response.

We only attended the local inter-school meetings on request, because we felt that our absence would allow teachers to feel freer to criticise our role. The above verbatim account was sent to us by the Local Authority Adviser who chaired the meeting, having first obtained the permission of the teachers to do so.

At the end of the second term we tried to summarise and respond to some of the feed-back we were getting: [17]

"Some teachers felt that John Elliott's questions were rather biased towards seeking criticism and that this distorted students real attitudes towards the teaching.

He agrees with this criticism and in the light of it has tried to make his questions more open. The reason for the biased questioning was that he was trying to document classroom problems which could be related to the ways teachers influenced student responses.

Some teachers felt that the students were manipulating us and using us as a vehicle for destroying the teachers self-esteem, by giving us fake accounts of their interpretations and assessments of the teacher's performance.

This is certainly a possibility of which we were aware when playing back student accounts to teachers. Whenever possible we discussed this with teachers.

Some teachers felt that we did not interview a representative sample of pupils to get a valid picture of the problems.

We were not concerned with such a sample, because we were not trying to elicit 'a class view'. Usually we interviewed groups of students whom teachers had selected as presenting particular difficulties. We sometimes interviewed 'no problem' students in order to compare their accounts with 'problem' students. We did ask teachers to select 'problem' students on the assumption that they presented obstacles to the realisation of teachers' aspirations."

Triangulation enables the teacher to make some assessment of his ability to self-monitor his teaching situation. The more congruent his own accounts are with those of students and the participant-observers the more objective he is likely to be. This doesn't mean that agreement necessarily indicates objectivity. It merely means there is a prima facie case to be made for the objectivity of accounts which are agreed unless there is evidence to the contrary. We would for example be suspicious of any consensus which tended to suggest that no gaps exist between the teachers performance and his aspirations. This would suggest that both the students and the participant-observers accounts are distorted by their desire to reinforce the teachers self image.

Also, an absence of consensus should not be taken to necessarily indicate that the teachers account is distorted by subjective factors. Majorities are not always right. Some evidence for assuming that a teacher's account, even if it is not congruent with others, is relatively objective would be its tacit acknowledgement of a gap between aspiration and practice. Such acknowledgement would suggest that the natural tendency to idealise practice

had been resisted. In conclusion then I would simply assert that agreement and disagreement can be assumed to indicate objectivity and subjective distortion respectively, only in the absence of any evidence to the contrary.

Some of the early triangulation studies I have described were, with the permission of the teachers involved and their headteachers, circulated to other teachers in the project. They also provided the basis for discussion at our interim conference at the end of the second term. At this conference they were used as data for testing the practical theories of the teachers studied.

Here is one teacher's account of the conference experience: "These conferences were a new experience for the teachers. At the second one several transcripts of various lessons, together with three tape-slide compilations provided the raw data for discussion. It soon became apparant that the teachers at the conference had become much more sympathetic towards the teachers and children depicted on the tape-slides than they had been at the previous conference. One of our members felt that he was beginning to see his teaching in a different way. He was able to locate it within the general spectrum of the various inquiry/discovery approaches being adopted by project teachers, using terms that were beginning to emerge as a shared language for describing and talking about teaching e.g. formal/informal, structured/unstructured, guided/open ended. Whether this is going to prove valuable to him remains to be seen, but it is certainly true that he is thinking far more about the way in which he is teaching. Indeed the value of this research to us may lie in the analysis the teachers make of their methods and their whole approach to teaching." [18]

A conference observer from New Zealand noted:

"On several occasions I noticed considerable tension in some of the teachers. I suspect it was due to their recognition of the gulf that existed between the realities of their day-to-day teaching experience and the ideal inquiry/discovery environment which was unfolding at the conference. The tension was associated with defensive statements of the type:

'No one can do inquiry/discovery all the time', 'I teach ....rigidly because I feel children need to be taught skills so they will avoid frustration', 'some methods are better for only some children', 'there's nothing new here ... primary schools have been doing it all along'.

I estimated that roughly half of the teachers showed this kind of reaction at one time or another."[19]

The circulation of triangulation data around schools, discussions between teachers at local inter-school meetings, and the experience of the interim conference began to take effect during the third term. Many teachers began to feel freer to look at, and share, their own classroom problems once others had demonstrated a willingness to do so. We discovered the crucial role local inter-school meetings and central conferences played in this respect. The school based teams, with two notable exceptions, collapsed as a basis for sharing ideas and classroom data. This was partly due to lack of institutional support and partly to the fact that in secondary schools feelings of inter-departmental competition prevented the members of the inter-disciplinary teams from exposing their teaching to each other. Teachers felt more able to share their classroom data with teachers from other schools. Here tape-slide recordings proved to be an invaluable tool. Some teachers were able to 'take their classrooms' to the local meetings and discuss the events

recorded with teachers from other project schools. With the collapse of school based teams the local meetings became the main setting for sharing ideas and experience for the majority of the thirty teachers who by this time remained attached to the project.

During the third term about twenty four teachers were actively engaged in studying their own teaching in some form. Only about six adopted the full blown triangulation method but the others began to use some of the methods origianlly suggested at the 'launching off' conference. Some tape recorded lessons or parts of them regularly, others kept field notes, and there was an increase in the general effort to obtain honest feed-back from students.

Initial attempts at obtaining student feed-back took an interesting form. Rather than collect students' interpretations and judgements about a particular situation many teachers unwittingly interviewed, or held discussions, at the more abstract and less threatening level of pedagogic theory. For example, rather than ask students 'To what extent did I restrict your freedom to choose your own problems?' there was a tendency to ask 'To what extent should teachers allow you to choose your own problems?' Such discussions were valuable inasmuch as they clarified for the teacher the value-systems of their students and thereby helped them assess some of the problems and possibilities of protecting and fostering self-directed learning. They also gave teachers an opportunity to clarify and discuss their own educational values with students. Discussions about pedagogic values appeared to be necessary before teachers felt ready to involve students in the more concrete activity of lesson analysis.

In general teachers tended to find 'their own level' of research

activity. They adopted methods which produced 'illuminating' but not 'overwhelming' data. They worked from the least to the most threatening gradually. Our observations of this process suggested that triangulation should appropriately come at the end of attempts to develop self-monitoring potential with teachers who are largely unreflective about their practice. We would in retrospect suggest that teachers need to work through the following sequence of activities:

1. Listening or viewing recordings of their teaching situation.
2. Listening or viewing recordings and then systematically trying to note salient patterns in their classroom behaviour.
3. (2) plus dialogue with a participant-observer.
4. (3) plus dialogue with students about pedagogic values.
5. Triangulation controlled by participant-observer.
6. Triangulation controlled by the teacher.

At the end of this process teachers should be able to act as participant-observers in each others classrooms. Indeed during the second half of the project we found an increasing number of teachers able to do this productively. Their main problem again was gaining opportunities in their schools to do this. If these opportunities are not structured into the school time-table the prospect of teachers being able to give each other this kind of support is rather gloomy. And in the U.K. there are few roles in the educational system which can be developed to provide such participant-observation support, at least at the level at which it needs to be sustained.

Developing Hypotheses from Classroom Data

The data collected by triangulation and other methods enabled teachers, in dialogue with ourselves as participant-observers, to clarify and test the theories implicit in their practice. As a result some teachers generated new theories. Since practical theories have normative implications one would expect these new theories to be reflected in conscious changes in teaching approach. This is an important point with respect to the teachers role in theory development. The ability to explicitly formulate theories is not the only criterion for assessing a teachers ability to participate in theory development. The fact that a teacher modifies his teaching as a result of self-monitoring is also a criterion. In consciously changing his practice he will have developed a new theory which will be implicitly reflected in it. Since a theory generated from self-monitoring will be consciously held a teacher should be able, when called upon to do so, to make it explicit. However, he need not necessarily have to explicate a practical theory in order to be said to have developed it.

I shall now use the triangulation data quoted previously to illustrate how a teacher can use it to clarify, test, and generate his own theories of inquiry/discovery teaching.

The students argue that the teacher imposes constraints on their freedom to express their own ideas (See principle 2under 'Criteria for Testing Practical Theories). They cite on their own initiative the behaviour 'Do you all agree with that?' as a way in which the teacher imposes constraints by indicating the idea he wants expressed.

The participant-observer notes both teacher behaviours which appear to indicate the outcomes desired and student responses to these behaviours.

He notes the "Do you all agree?" behaviour and students responses to it. His observations are supported by the recording. The teacher also accepts that he says "Do you all agree with that?" frequently, and describes the intention behind it as "asking for assent". Gradually the normative implications of his practice begin to dawn on him, "I don't think you ought to do that really. Yes that's naughty isn't it."

The study of this triangulation data convinced the teacher, that in spite of his professed aspirations to implement inquiry/discovery approaches his teaching was in fact formal - structured - directed and that behaviours like "Do you all agree with that?" deliberately fostered his students dependence on his authority position. Having clarified and tested the theory implicit in his practice in this way he later dramatically switched to an unstructured-open ended approach which he hoped would protect the self-directed learning of his students. His conscious switch to a new teaching approach reflected the development of a new theory, the applicability of which would require further self-monitoring.

The conscious development of new practical theories from self-monitoring we called 'hypotheses', to highlight the fact that they are open to experiment. If a theory is held unconsciously, as it was initially by the teacher cited, it is not open to experiment. But once it is consciously held by a teacher it is so open.

From triangulation and other classroom data we began to identify those practical theories which not only applied in individual instances but also appeared to have a more general applicability. These were identified from our dialogue with some of the teachers. By formulating them as 'general hypotheses', and then circulating them to all teachers, we hoped they would provide a focus for self-monitoring activity. In exploring the

applicability of the hypotheses to their particular situation teachers would necessarily have to clarify and test their own practical theories. We realised there was a danger that teachers would not test 'the hypotheses', but simply accept or reject them in the light of their perceived consistency or inconsistency with their own theories. However, this danger was somewhat reduced by the fact that the first batch of general hypotheses were only introduced towards the end of the second term when an increasing number of teachers had already started to engage in some form of self-monitoring. In other words many of the teachers had already begun to clarify and test their practical theories.

The general hypotheses introduced during the course of the project were as follows:

1. Teachers are unlikely to move away from a formal situation if they adopt short-term structured approaches

The adoption of a short-term structured approach will tend to plunge the teacher into one of two possible dilemmas. First, students may adopt a line of reasoning which takes their thinking in a different direction to the one the teacher wants it to go in. Given he has set himself a limited time in which to achieve his objectives, the teacher either has to make his objectives more long-term or exert more control over students reasoning. In opting for the latter he inevitably increases the students intellectual dependence on his authority position.

Second, students may fail to do much reasoning of their own at all. Again, in order to realise his objectives in the time set the teacher may lead students towards them by providing them with hints and clues. In this way 'a guessing game' is initiated which caters to students dependency-needs inasmuch as it involves guessing what the teacher has

in mind.

2. In order to cut out 'the guessing game' and move from a formal to an informal situation teachers may have to refrain from the following behaviours which tend to indicate a structured approach to students:

(i) Changing Topic

When teachers change the topic under discussion they may prevent pupils from expressing and developing their own ideas, since pupils tend to interpret topic changes as attempts to get conformity to a particular line of reasoning.

(ii) Positive Reinforcement

Utterances like 'good', 'interesting', 'right', in response to ideas expressed can prevent the expression and discussion of alternative ideas, since pupils tend to interpret such reinforcement as attempts to legitimate the development of some ideas rather than others.

(iii) Selective critical questioning

When teachers ask critical questions to some pupils rather than others they may prevent the former from developing their ideas, since such questions will tend to be interpreted as negative evaluations on the ideas expressed.

(iv) Leading questions and statements

Questions and statements containing information about the answer the teacher 'has in mind' may prevent pupils from developing their own ideas since they will tend to interpret such acts as attempts to constrain the direction of their thinking.

(v) Inviting Consensus

When the teacher responds to pupils ideas with 'questions' like 'Do you all agree?', 'Anyone disagree with that?' he will tend to prevent the expression of divergence because pupils will interpret such 'questions'

as attempts to impose a consensus view.

(vi) Question/Answer Sequences

When the teacher always asks a question following a pupil's response to his previous question, he may prevent pupils from introducing their own ideas. They may interpret such patterns as attempts by the teacher to control the input and sequencing of ideas.

(vii) Introducing Factual Information

When teachers introduce factual information in person, either in verbal or written form, pupils may be prevented from evaluating it, since they will tend to interpret such interventions as attempts to get them to accept its truth.

(viii) Not Inviting Evaluation

When teachers do not invite pupils to evaluate the information they are studying pupils will tend not to criticise it because they interpret the situation as one in which the teacher does not want criticism.

It is perhaps worth pointing out the symbolic-interactionist perspective reflected in the formulation of the above sub-hypotheses. The influence of the teacher is exerted via students interpretations of his behaviour. Interviews and discussions with students elicited the rules they apply in interpreting what teachers mean by what they say. By studying such data one can come to understand how teachers often unintentionally impose constraints on self-directed learning. The student data reminded teachers that 'good intentions' are not enough. These intentions have to be clearly indicated to students. And if students strongly associate some behaviours with particular intentions the teacher may need to change his behaviour repertoire in order to make his intentions clearer.

3. Teachers adopting long-term structured approaches in contexts where students are psychologically dependent on them are less likely to move away from a formal situation than teachers who adopt unstructured approaches.

When students are psychologically very dependent on the teacher, the teacher may only be able to decrease that dependency if he convinces his students that it is impossible for them to get the answers out of him. Any indications they have that a structured approach is being adopted, even in the long-term, will encourage them to devote much of their energies to getting the answers out of the teacher.

Of course, a teacher may try to convince students that he hasn't 'any answers he wants' when he has, but an honest response to the situation described would be to pursue more unstructured aims.

4. In order to adopt convincing unstructured approaches and thereby move away from formal situations it may be temporarily necessary to adopt openended rather than guided methods.

Guidance within a structured approach tends to take a different form to guidance within the unstructured approach. A clear indication of this difference can be found in the language of classroom questioning. Within the structured approach the teachers questions tend to be subject focussed whereas within the unstructured approach they tend to be person focussed. For example, compare the following two excerpts from the lessons of two teachers using the materials of the same curriculum project (The Schools Council Science 5 - 13 Project)

a) Teacher What's happening?

Girl Disappearing like Alkaseltzer.

Teacher What does that mean - it is disappearing like Alkaseltzer?

Girl — Disappearing in the water.

Teacher — What do you call that then, when something disappears in the water ... Does it disappear altogether?

Girl — No.

Teacher — Where is it?

Girl — ... inside there and ...

Teacher — Have we lost it Christine? Have we lost the ammonium chloride - we have lost it - it has gone, we have got none left, where is it?

Christine — It has dissolved in the water.

Teacher — ... what is this?

Christine — Substance.

Teacher — Substance?

Christine — Oh sorry.

Teacher — So what have you got here?

Christine — A solution.

Teacher — How did you get a solution Christine?

Christine — By putting the ammonium chloride in.

Teacher — And what has happened to it?

Christine — It dissolved.

Teacher — So how do you get a solution? Dissolving something in -

Christine — Water.

b) Teacher — Now what made you decide to build this one?

Boy — Because a triangle shape is better than a straight one.

Teacher — How do you know?

Boy — A straight one will crack, it will go like that. We are going to have one straight support.

Teacher — One straight up the middle. What has been your biggest problem with this?

Boy Well they slip and the sellotape sometimes comes off.

Teacher So how can you overcome the problem?

Boy We haven't really, but we have made it.

Boy We have got some string.

Teacher Good.

Notice that in one excerpt the teachers language refers to an objective event the students are being asked to explain, while in the other excerpt the teachers language refers to the students own mental processes and states. In the first excerpt the teachers questions normally indicate a concern subject matter whilein the second they normally indicate a concern for the students own perspective on the subject matter. The former normally indicates that the teacher is wanting certain answers, since students expect him to be experts on the subject-matter. The latter normally indicates to students that the teacher merely wants them to reflect on their own problems, decisions, beliefs etc., and primarily expresses a concern to foster self-directed learning. Of course, subject focussed questions, if they are responsive to problems in the task defined by students, do not preclude a concern to foster self-direction. The language simply indicates that the teacher also has other concerns in mind.

When students experience a need to depend on the authority position of the teacher, and are not convinced that he is not prepared to satisfy those needs, they will tend to interpret person-centred language as his attempt to conceal the answers he wants. Consider the following lesson excerpt:

Teacher You have got quite a strong thing there. Do you need that? 1

Boy No. 2

Teacher I am not saying yes or no. 3

Boy I don't think we need it anyway. 4

Teacher Why not? 5

Boy It isn't really helping much, look. 6

It is obvious that when the boy says 'no' he interpreted the teacher's question (1) as an indication, albeit masked, of the desired conclusion. In other words his reply was based on guesswork rather than independent thought. The teacher then denied that his question was determined by any conclusions he may have had in mind, and implies it was intended to get them to reflect on their own judgment (3). The boy didn't appear to be totally convinced that the teacher didn't want them to reverse their judgment, but the remark prompted him to assert that he had independent reasons for reversing it 'anyway'. In other words, he asserted the autonomy of his own judgment, which the teacher then made him demonstrate by giving reasons (5).

If the boy had valued independent reasoning less and wanted a more dependent relationship with his teacher the situation would have been more difficult to retrieve. The informal pattern, in which students are forced to be independent but wanting dependence, is highly unstable. Our teacher was able to salvage the situation precisely because he was operating within a fairly well established informal pattern in which the boy wanted to reason independently. The more unstable informal situation - with students still demanding the dependent relationship - can probably only be stabilised if the teacher is prepared to adopt a very unstructured approach and convince his pupils that it is being adopted by using completely open ended methods, which merely indicate to students the freedoms they have in the classroom. This would involve refraining from using even person-centred guidance. As we have seen students can be reluctant to believe that teachers mean what they say in 'asking person-centred question'; viewing them instead as mere appearances

masking the existence of pre-conceived objectives.

5. In contexts where students are developing confidence in their own reasoning powers teachers can change from unstructured open-ended to unstructured guided (person centred) approaches without imposing constraints on self-directed learning.

When students do not experience strong needs to depend on the authority position of their teachers they are less liable to misinterpret person-centred guidance as 'concealed' indications of the answers teachers want, and less liable to feel constrained by them if they do.

6. In contexts where students are developing confidence in their own reasoning powers teachers might adopt long-term structured approaches without imposing constraints on self-directed learning.

Once students come to value, and are more confident about, directing their own learning they are less interested in eliciting answers from the teacher. So even if they are aware that he wants certain answers they will try to reason them out for themselves, providing the teacher does not prevent them from doing so by his attempts to short-cut the reasoning process in favour of quick answers.

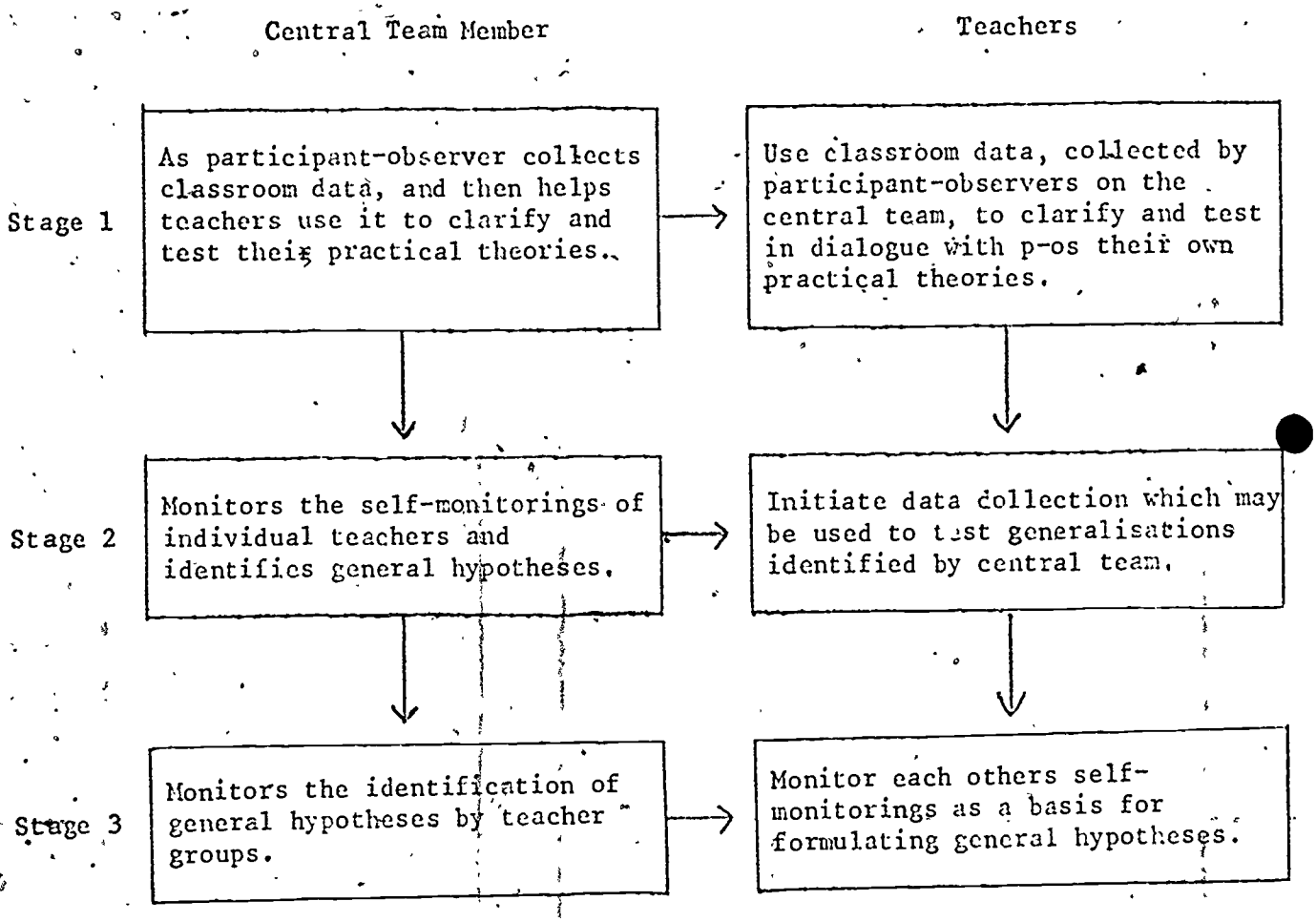
These hypotheses locate teachers practical theories in a developmental sequence. Overall they suggest that different theories are applicable at different stages of the innovation process i.e. from a context in which students have strong dependency needs to one in which they have begun to value and developed some confidence in their own powers of self-direction.

The sub-hypotheses listed under (2) were formulated out of the initial triangulation studies in the second term and circulated throughout the project towards the end of that term. They aroused considerable interest

amongst teachers. One secondary school teacher reported that he felt very strongly that they didn't apply to his teaching. However, he also reported that having tested them he was rather surprised at the extent to which they applied. A primary school teacher reported that his initial reaction was to argue that they applied to secondary but not primary teachers. He was also surprised to find that they were more applicable to his situation than he had expected. In fact we believe that one effect of teachers testing the applicability of these hypotheses, and then discussing their findings together at meetings, was the virtual disappearance of the widespread belief in the existence of a radical difference between practice in primary and secondary classrooms.

The rest of the general hypotheses were only formulated towards the end of the final term of the project. They emerged partly as the product of further theory testing with teachers, and partly out of our monitoring of autonomous studies our teachers were increasingly able to initiate and sustain without heavy central team support. During the final term of the project several teachers embarked on case studies of work with a particular class over that term. Twelve studies were eventually written up. They contain evidence of teachers clarifying, testing, and generating theory. Our role on the central team was increasingly that of monitoring the self-monitorings of individual teachers with a view to identifying hypotheses which might have some generalising power. But as these were introduced and tested by more and more individuals we found that discussions at local inter-school meetings began to focus on the generalisable features of life in classrooms. In other words teachers were increasingly able to monitor each others studies and begin to formulate their own general hypotheses. We estimated that about twelve teachers were in this position at the end of four terms.

The shifts in central team - teacher roles in theory development during the life of the project can be crudely represented as follows:



Of course, we found ourselves in different role relationships with different individuals and groups at any one time. It is also possible to bring some teachers, who are not normally self-monitoring, in at Stage 2, providing they have access to other teachers classroom data.

Developing Self-monitoring Ability: Some Hypotheses

Earlier I explained how the project central team came to formulate a second-order action research role for itself. From reflections on our own practice we have generated a number of practical hypotheses connected with the problems and possibilities of developing self-monitoring abilities in teachers. In this final section of the paper I shall give a brief account of these hypotheses.

1. The less a teachers personal identity becomes an inextricable part of his professional role in the classroom the greater his ability to tolerate losses in self-esteem which tend to accompany self-monitoring.

In order to adopt an objective attitude to his practice a teacher needs to be able to tolerate the existence of gaps between his aspirations and practice with a consequent lowering of professional self-esteem. The more a teacher self-monitors the more mastery of his craft appears to elude him. As one teacher commented:[20]

> "Nothing is ever in a state of stasis, nothing is ever finalised, always there is reappraisal in the light of new experience. Like children we hanker after the finiteness of things, and like children, we are disturbed when there is frequent reassessment and modification."

Tolerance is difficult to achieve if a teachers sole source of personal achievement and satisfaction lies in his classroom practice. In order to tolerate losses of self-esteem it would be necessary for him to get satisfaction from his performances in extra-professional situations. We had little success with those teachers whose personal identity was inextricably linked with their professional role in the classroom.

2. The less financial and status rewards in schools are primarily related to administrative and pastoral roles the more teachers are able to tolerate losses of self-esteem with respect to classroom practice.

This is particularly true in the context of our expanding, reorganised,

secondary schools. Systematic reflection on practice is demanding in terms of time. It was our secondary teachers who complained most about lack of time. Does this mean that they work harder than our primary and middle school teachers? Not necessarily. But for the primary school teacher the demands of reflecting about the classroom constitute an extension of his existing commitment to the activity of teaching. But the secondary school teacher 'on the way up' is increasingly committed to administrative and pastoral functions which are only indirectly connected with the classroom. Thus, the demand to 'give more' to the classroom situation is a demand to go 'against the grain'. It generates conflict between alternative commitments. This is particularly so when posts of responsibility are increasingly allocated for adminstrative and pastoral functions divorced from teaching.

All this suggests that, in secondary schools especially, the organisational structure encourages the sacrifice of a genuine concern for the quality of teaching in deference to administrative and pastoral concerns. To ask ambitious teachers to submit to the demands of classroom action research is to generate inner conflict - hence the excuse of time - and invite them to put both their institutional status and ambitions at risk. Almost without exception those teachers with the least capacity for self-criticism have been those who have identified themselves strongly with roles outside the classroom situation. It is as if they can function within the system in a number of fragmented roles without severe personal stress only by maintaining a low degree of self-awareness about their classroom performance. Otherwise the awareness of conflicting demands would be an intolerable state to function in. The only way to resolve such stress is either to identify exclusively with the administrative or pastoral roles so that the quality of teaching no longer impinges on questions of self-esteem, or to withdraw from the former and sacrifice status

and opportunity completely.

One of the current myths in education is that teaching experience necessarily qualifies a person to make educational policy decisions. Yet given the increasing role fragmentation in educational institutions it is in fact extremely difficult for a person to move into a policy-making role without sacrificing depth for shallowness of understanding in the classroom. We reached a stage in the project where some of our teachers were faced with the problem of school and department heads who were so out of touch with the reality of the classroom at their own level of perception that they were incapable of responding supportively with a sympathetic and understanding 'ear'.

3. The more a teacher comes to value himself as a potential researcher the greater his ability to tolerate losses of self-esteem.

We found that once a teacher began to percieve himself as a potential researcher he developed a greater tolerance of gaps between aspirations and practice. An outside participant-observer can do much to help a teacher develop this 'alternative self' by treating him as a partner in research activities.

4. The more a teacher perceives classroom observers as 'researchers' rather than 'evaluators' the greater his ability to tolerate losses of self-esteem.

For our teachers an 'evaluator' ascribes praise and blame and gives them few rights of reply. The role we tried to adopt focussed on the study of practice rather than the practitioner. We tried to set out appraisals of practice in a context of dialogue with the teacher. Within this role teachers tended to perceive us as non-judgmental. The tolerance of gaps between aspirations and practice, reflected in our refusal to ascribe

blame, helped at least some teachers to tolerate them as well.

5. The more access a teacher has to other teachers' classroom problems the greater his ability to tolerate losses in self-esteem.

Once our teachers began to realise others had similar problems to themselves and were able to study them objectively they tended to tolerate losses in their own self-esteem more easily.

6. The more a teacher is able to tolerate losses in self-esteem the more open he will be to student-feedback.

Many of our teachers claimed that student-feedback was the most threatening kind of feedback they could have. This is possibly because students are in the best position to appraise their practice and therefore the status of their feed-back tends to be greater than that of feed-back from casual observers or those who have more indirect access to classrooms, e.g. via recordings. Openness to student feed-back will therefore indicate willingness to change ones appraisal of oneself as a practitioner.

7. The more a teacher is able to tolerate losses in self-esteem the more open he will be to observer feed-back.

If not as threatening as student feed-back observer feed-back is threatening enough.

8. The more a teacher is able to tolerate losses in self-esteem the more willing he is to give other teachers access to his classroom problems.

Our experience indicates that initially teachers are more open with professional peers from other schools, especially if they are teaching a different age-range, than with teachers in their own schools. Our interdisciplinary teams tended to collapse because interdepartmental competition made openness between teachers difficult.

9. The more open a teacher is to student feed-back the greater his ability to self-monitor his classroom practice.

The reasons for this and the next two hypotheses have been explained in an earlier section.

10. The more open a teacher is to observer feed-back the greater his ability to self-monitor his classroom practice.

11. The more open a teacher is to feed-back from other teachers the greater his ability to self-monitor his classroom practice.

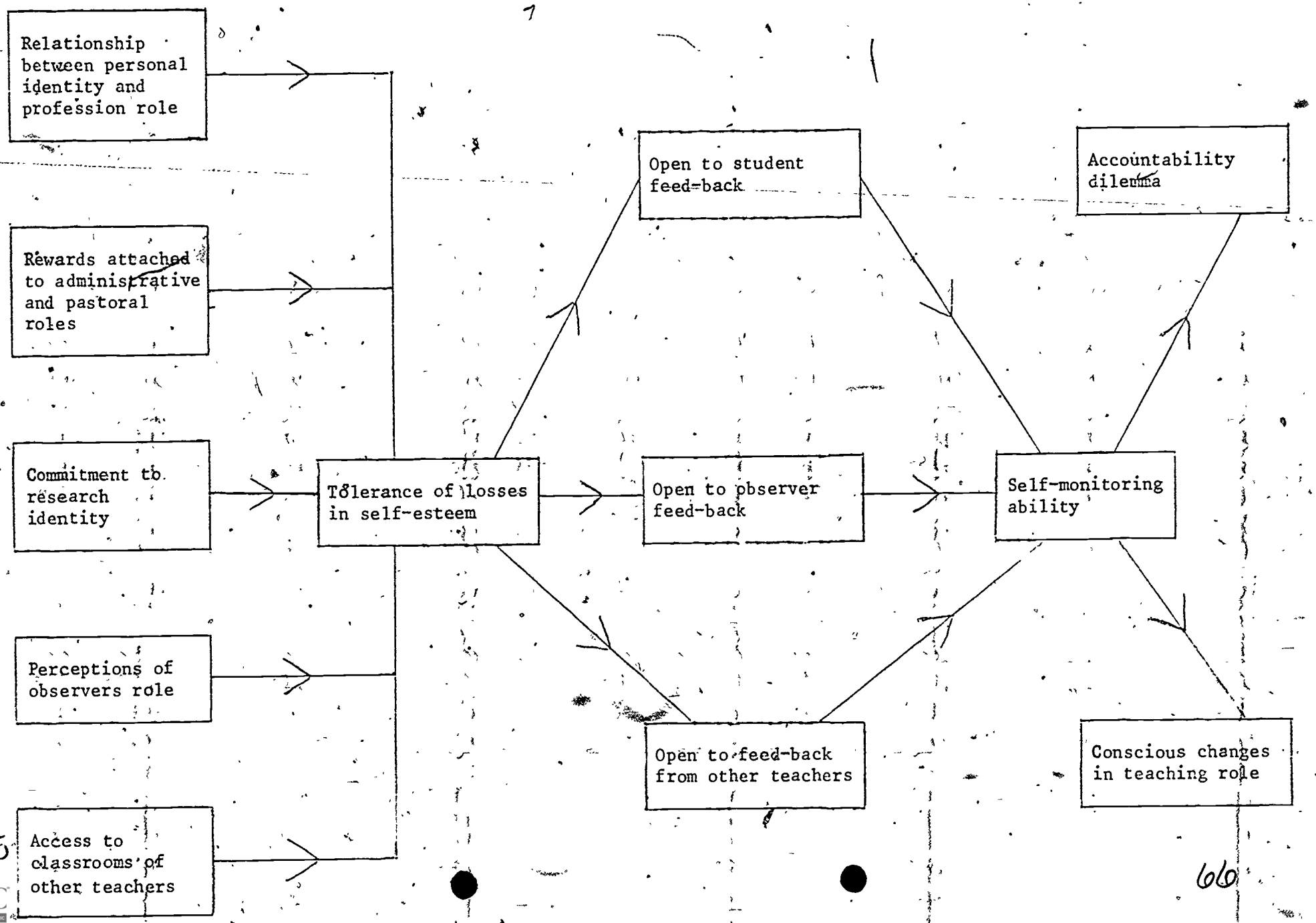
12. The greater a teachers ability to self-monitor his classroom practice the more he will experience conflict between his accountability as an educator for how students learn (process) and his accountability to society for what they learn (in terms of knowledge outcomes).

Self-monitoring sensitises teachers to accountability issues. The issues presented themselves in the project as a dilemma between protecting self-directed learning and pursuing preconceived knowledge outcomes.

13. The more able a teacher is at self-monitoring his classroom practice the more likely he is to bring about fundamental changes in it.

This is the main premise on which the project was founded. Our experience tends to confirm it. Once teachers began to clarify and test their practical theories the new theories generated tended to be reflected in changes in practice. The main problem is getting teachers to self-monitor their practice.

We have attempted to formulate these hypotheses sequentially.[21] The relationships between the variables they specify are expressed by the following basic theoretical model:


Relationship between personal identity and profession role
Rewards attached to administrative and pastoral roles
Commitment to research identity
Perceptions of observers role
Access to classrooms of other teachers
Tolerance of losses in self-esteem
Open to student feed-back
Open to observer feed-back
Open to feed-back from other teachers
Accountability dilemma
Self-monitoring ability
Conscious changes in teaching role

From the basic hypotheses cited additional ones can be deduced:

14. The less a teachers personal identity becomes an inextricable part of his professional role the more open he will become to student feed-back.

15. The less a teachers personal identity becomes an inextricable part of his professional role the more open he will become to observer feed-back.

16. The less a teachers personal identity becomes an inextricable part of his professional role the more open he will become to feed-back from other teachers.

17. The less a teachers personal identity becomes an inextricable part of his professional role the greater his ability to self-monitor his classroom practice.

18. The less a teachers personal identity becomes an inextricable part of his professional role the more he will experience a tension between his accountability as an educator for process-values and his accountability to society for knowledge outcomes.

19. The less a teachers personal identity becomes an inextricable part of his professional role the more likely he is to bring about fundamental changes in his classroom practice.

20. The less financial and status rewards in schools are primarily related to administrative and pastoral roles the more open will teachers become to student-feedback.

21. The less financial and status rewards in schools are primarily related to administrative and pastoral roles the more open will teachers become to observer-feedback.

22. The less financial and status rewards in schools are primarily related to administrative and pastoral roles the more open will teachers become to feed-back from their professional peers.

23. The less financial and status rewards in schools are primarily related to administrative and pastoral roles the more able will teachers become at self-monitoring their classroom practice.

24. The less financial and status rewards in schools are primarily related to administrative and pastoral roles the more teachers will come to experience a tension between their accountability as educators for process-values and their accountability to society for knowledge outcomes.

25. The less financial and status rewards in schools are primarily related to administrative and pastoral roles the more will teachers become able to bring about fundamental changes in their practice.

26. The more a teacher comes to value himself as a potential researcher the more open will he become to student-feedback.

27. The more a teacher comes to value himself as a potential researcher the more open will he become to observer-feedback.

28. The more a teacher comes to value himself as a potential researcher the more open will he become to feed-back from professional peers.

29 The more a teacher comes to value himself as a potential researcher the more able will he become at self-monitoring his classroom practice.

30. The more a teacher comes to value himself as a potential researcher the more he will come to experience a tension between his accountability as an educator for process-values and his accountability to society for knowledge outcomes.

31. The more a teacher comes to value himself as a potential researcher the more he will become able to bring about fundamental changes in his practice.

32. The more a teacher perceives his classroom observers 'as researchers' rather than 'evaluators' the more open he will become to student-feedback.

33. The more a teacher perceives his classroom observers 'as researchers' rather than 'evaluators' the more open he will become to observer feed-back.

34. The more a teacher perceives his classroom observers 'as researchers' rather than 'evaluators' the more open he will become to feed-back from professional peers.

35. The more a teacher perceives his classroom observers 'as researchers' rather than 'evaluators' the more able he will become at self-monitoring his practice.

36. The more a teacher perceives his classroom observers 'as researchers' rather than 'evaluators' the more he will come to experience a tension between his accountability as an educator for process-values and his accountability to society for knowledge outcomes.

37. The more a teacher perceives his classroom observers 'as researchers' rather than 'evaluators' the more he will become able to bring about fundamental changes in his practice.

38 The more access a teacher has to other teachers classroom problems the more open he will become to student-feedback.

39. The more access a teacher has to other teachers classroom problems the more open he will become to observer feed-back.

40. The more access a teacher has to other teachers classroom problems the more open he will become to feed-back from other teachers.

41. The more access a teacher has to other teachers classroom problems the more able he will become at self-monitoring his classroom practice.

42. The more access a teacher has to other teachers classroom problems the more he will come to experience a tension between his accountability as an educator for process-values and his accountability to society for knowledge aoutcomes.

43. The more access a teacher has to other teachers classroom problems the more he will become able to bring about fundamental changes in his practice.

We hope that these second-order hypotheses about the problems and possibilities of initiating teachers into classroom action-research make at least a small contribution to practical theorising in the field of inservice teacher education.

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